

Informatic Architecture:
Urban Data Analysis for a Community Machine

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Committee:
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Jennifer Dee

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Abstract

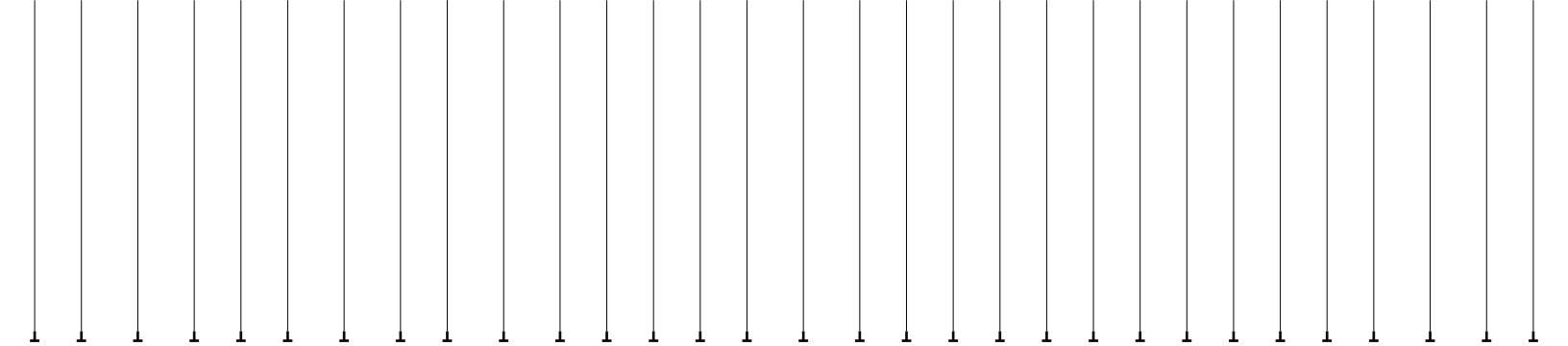
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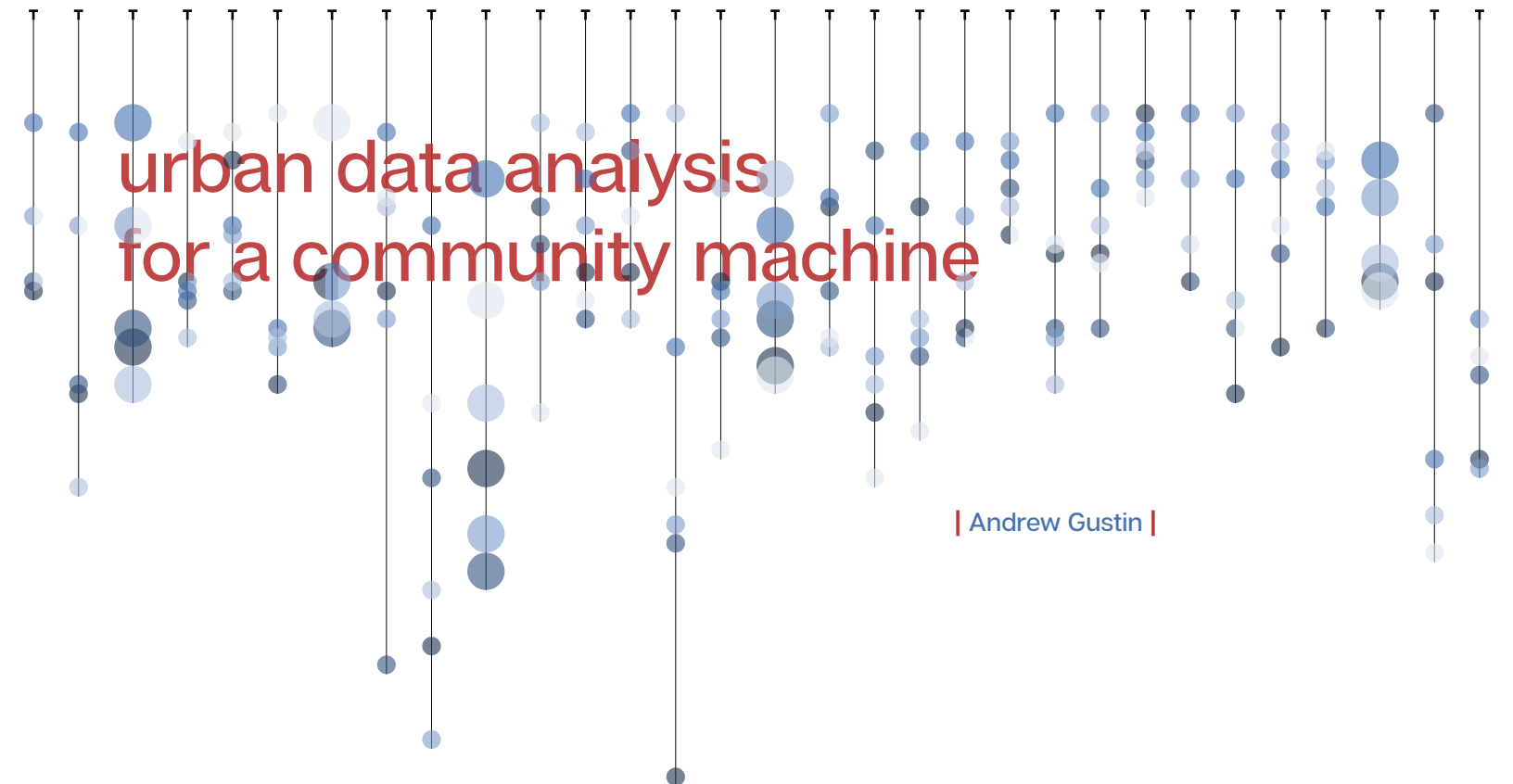
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What is architecture's response to the Information Age? The focus of this thesis project is to develop a data-rich design methodology that challenges conventional practice by using "big data." This begins with critical examination of contemporary work that uses quantitative information: MVRDV (datascapes) and Carlo Ratti/MIT Senseable City Lab (futurecraft). Next, a methodology is developed, which uses two datasets to make informed decisions. The first selects a study city and identifies city-wide issues. These problems are then examined on a local scale in the site selection dataset. Both datasets utilize a series of evaluative tools (average, sum, subcategory frequency, percent normalization) to compare cities/sites and reach conclusions. The methodology applies "big data" to select a city (Phoenix, AZ), choose a site (undeveloped park in SW Phoenix), and formulate a program that responds to a community's needs (community farm, STEM programs and library, community center, site and neighborhood improvements). The design project is a Community Machine, a building that reacts to shifts in data as information is added/updated. This machine abandons more conventional notions of form-making for a design that prioritizes flexibility, adaptability, and dynamism. In the end, data can democratize the design process, uncover unknowns, and expand the traditional scope of architects. Deeper data integration and public interaction/input within the conceptual framework are possible future steps for a system that is built to improve and change.



informatic architecture



urban data analysis
for a community machine

| Andrew Gustin |

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for giving me enough support for multiple lifetimes

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for pushing, teaching, and helping

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for planting the seed

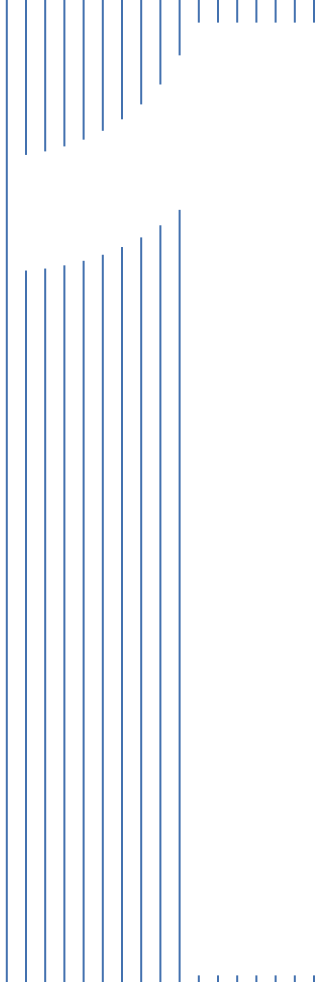
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for teaching me how to be creative

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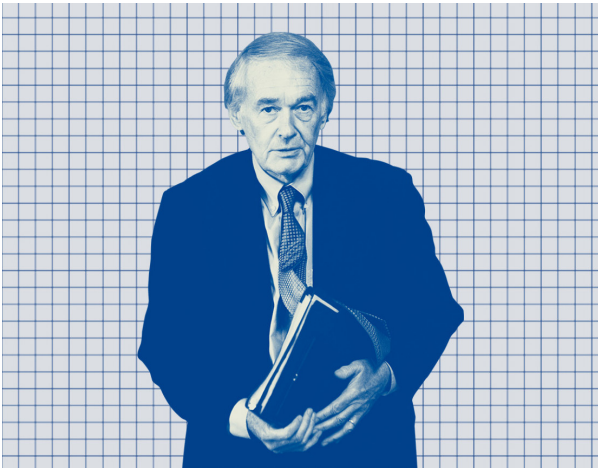
“ I had the idea for FiveThirtyEight while waiting out a delayed flight at Armstrong New Orleans International Airport in February 2008. For some reason – possibly the Cajun martinis had stirred something up – it suddenly seemed obvious that someone needed to build a Web site that predicted how well Hillary Clinton and Barack Obama, then still in heated contention for the Democratic nomination, would fare against John McCain...Most of [political coverage] is filler, packaged in the form of stories that are designed to obscure its unimportance. Not only does political coverage often lose the signal – it frequently accentuates the noise... The bar set by the competition, in other words, was invitingly low. ”

“ Someone could look like a genius simply by doing some fairly basic research into what really has predictive power in a political campaign. So I began blogging at the Web site Daily Kos, posting detailed and data-driven analysis on issues like polls and fundraising numbers. I studied which polling firms had been most accurate in the past, and how much winning one state – Iowa, for instance – tended to shift the numbers in another. The articles quickly gained a following, even though the commentary at sites like Daily Kos is usually more qualitative (and partisan) than quantitative. In March 2008, I spun my analysis out to my own Web site, FiveThirtyEight, which sought to make predictions about the general election. ”

– Nate Silver¹

NOV. 30, 2018, AT 5:58 AM

Which Senators Might Be Vulnerable To A Primary Challenge In 2020?



OCT. 16, 2018, AT 2:00 PM

No, LaCroix Isn't Poisoning You Like You're A Giant Cockroach

UPDATED DEC. 2, 2018, AT 9:29 PM



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RANK STRENGTH CARMELO	CURRENT CARMELO	TEAM	CONFERENCE	REGULAR SEASON			PLAYOFFS		
				PROJ. RECORD	PROJ. POINT DIFF/45	CHANCE OF MAKING PLAYOFFS	PLAYOFF ADJUSTMENT	CHANCE OF MAKING FINAL	CHANCE OF WINNING TITLE
1747	1652	Warriors 18-9	West	57-25	+8.8	>99%	+73	81%	47%
1687	1700	Raptors 20-4	East	61-21	+7.2	>99%	+30	41%	16%
1673	1659	Thunder 16-7	West	54-28	+5.2	98%	+32	13%	7%
1672	1671	Rockets 11-11	West	51-31	+4.0	94%	+40	14%	8%
1654	1650	Bucks 18-7	East	55-27	+6.7	>99%	+24	23%	7%
1642	1642	Celtics 13-10	East	53-29	+5.1	>99%	+29	18%	5%
1636	1638	Nuggets 18-7	West	54-28	+5.7	98%	+20	8%	3%
1629	1653	76ers 17-8	East	53-29	+3.8	>99%	+25	14%	4%
1591	1560	Pelicans 18-12	West	45-37	+2.1	86%	+41	2%	<1%
1584	1584	Jazz 11-13	West	46-36	+1.9	75%	+45	2%	<1%

Why California's Wildfires Are So Destructive, In 5 Charts

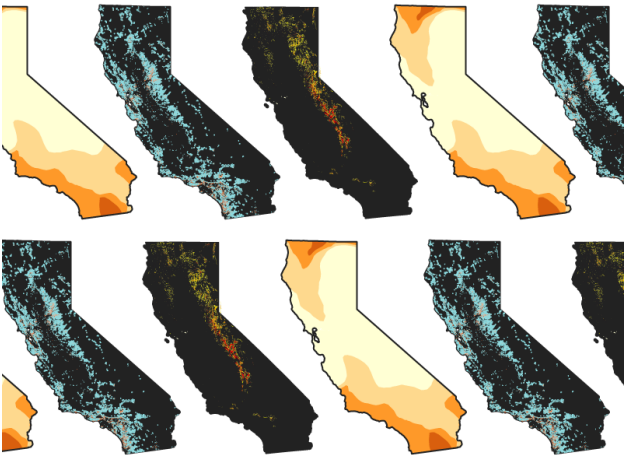


Figure 1: Sample FiveThirtyEight articles

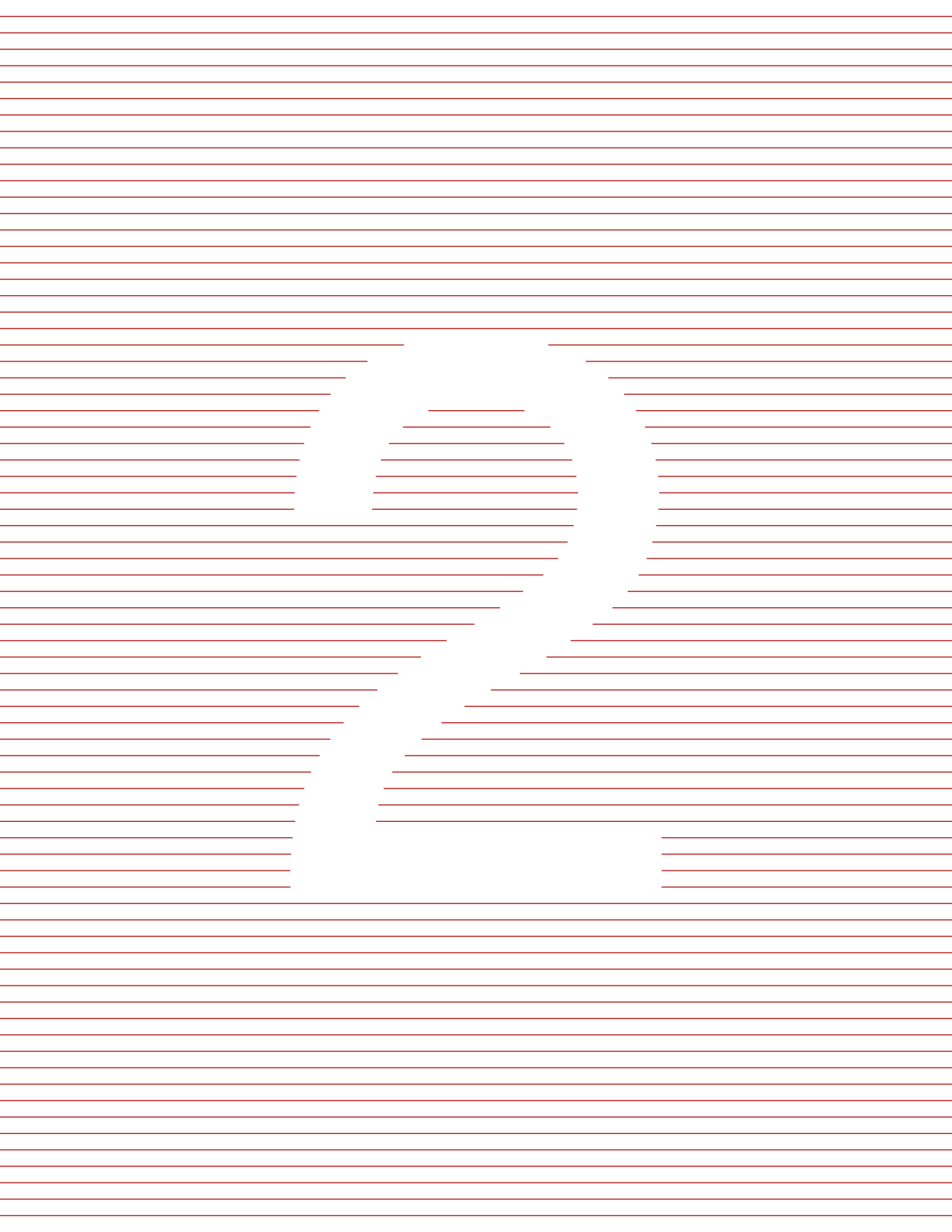
This project found its roots in the work of statistician/writer Nate Silver and FiveThirtyEight (*Figure 1*). The data journalism website has brought about a shift in political analysis with articles that are based on quantitative information, rather than pundit interpretations. In 2008, “the FiveThirtyEight forecasts correctly predicted the winner of the presidential contest in forty-nine of fifty states as well as the winner of all thirty-five U.S. Senate races.”² After a series of successes and an increase in popularity, FiveThirtyEight has slowly expanded its reach to include data-rich journalism related to politics, sports, science, life, and economics. This movement towards data collection/analysis to uncover valuable information is not isolated to journalism. For example, modern major league baseball is dominated by statistics known as “sabermetrics” and multinational tech companies (i.e. Google) mine colossal amounts of consumer data to enhance services. This is known as “big data,” which is a “term that refers to the availability of massive amounts of machine-readable information. This information is generated by the sociotechnical systems in which humans are increasingly entangled, by choice or by necessity...Since the ‘digital exhaust’ generated by these systems is so closely connected to

our daily lives, it becomes a valuable resource for observing processes and interactions of society at almost no cost.”³ Overall, collection and analysis of quantitative information has spread because “the true promise of the Information Age isn’t tons of data but decisions and actions that are better because they are based on an understanding of what is really going on in the world.”⁴

As other fields have rapidly adopted big data as a decision-making tool, the question becomes what is architecture’s response to the Information Age and/or how can architecture use big data? This is an especially pertinent question considering the expansion of the urban environment and data collection. There will be as much urban fabric constructed over the next forty years as the last ten thousand. Every two days, more data is collected than the total captured between the start of recorded history and the last decade. “This information is increasingly spatial, and, more than ever, urban in its origins and character.”⁵

This thesis project, is driven by the fact that there is an apparent divide between the current practice of architecture and the statistical analysis of the Information Age.

Although data has always been a part of architectural practice, most of this work is cursory and those firms who have accepted data more readily have barely scratched the surface of its potential use. It is the position of this thesis that “the practice of architecture, which has traditionally been aligned with permanence and stability, must change to accommodate and take advantage of the rapid changes and increased complexities of contemporary reality.”⁶ In response to this concept, the focus of this thesis is to develop a data-rich design methodology that challenges many architectural practices that are often unquestioned. This project collected a considerable amount of data, organized this information into sections, and applied a set of evaluative tools in order to understand an unfamiliar city, select a project site with significant need, and develop a program that reflects the demands of a community. The results of this data analysis are then used to design a Community Machine, a responsive building capable of adapting to shifting data trends and therefore neighborhood need. The following sections describe this design methodology that should represent the starting point to a data-rich or informatic architecture.



data + design

“ I consider it unlikely that architecture and planning will match the contribution Hush Puppies have made to society today, let alone approach that of the transistor or loop, until a total reappraisal of its particular expertise is self-imposed, or inflicted from the outside. Designers and architects would be better employed in devising new languages of comparison from computers, then in using them to confirm the obvious.”

– Cedric Price⁷

Throughout history, architecture has had a relationship with numbers: “[f]rom the time of ancient Vitruvian geometric ideals to modern Corbusian regulating lines and Miesian modular grids, architecture has always been bound to (if not by) a conscious use of numbers.”⁸ Data has been used to understand zoning/code restrictions, analyze context, and make performance-related decisions. For the most part, however, the usage of data has been limited, especially with social data. For example, pre-design context research has many architects examining the same sets of problems and applying similar techniques, which ultimately leads to a predictable set of outcomes. This information is often unquestioned, untested, and limited in scope giving it an undersized impact on the design process. The result could be a design that does not fully address context, a program with missing parts, and/or a building that is not entirely appropriate for a site. This is a missed opportunity and is illustrative of architecture failing to fully accept the Information Age.

Cities are made up of a complex system of urban invisibles (ex: crime, pollution, education) that are not readily perceptible to the human eye.⁹ These unseen actors have an impact

on cities and the understanding of them can reconfigure or challenge existing beliefs.¹⁰

Toby Segaran, a computer scientist and author, believes that “almost every field is becoming more reliant on data analysis for advancement.”¹¹ This section will examine two contemporary examples (MVRDV and Carlo Ratti/MIT) that have given data heightened importance in the design process. These works were used as a starting point for the conceptual framework developed in this thesis project.

datascapes

“ Can we understand the contemporary city at a moment when globalization has exploded its scale beyond our grasp? Have we lost control of its quantities, or can we analyze its components and manipulate them? Imagine a city that is only described by data. A city that wants to be explored only as information. A city that knows no prescribed ideology, no representation, no context. Only huge, pure data ”

– Winy Maas¹²

In the 1990s, Winy Maas, Jacob van Rijs and Nathalie de Vries (MVRDV) began to explore the connection between quantitative information and the built environment. MVRDV wanted to move beyond the arbitrary¹³ to “[leave] behind the critical theory that sought a solution outside the boundaries of a given system.”¹⁴ The firm instead sought to collect and analyze information to understand the forces that act upon a city.¹⁵ The goal was to use data to generate unique urban/architectural forms, guide practitioners (architects, planners, landscape architects, city officials/policy makers) identify urban problems, inform the public, and to begin devising design solutions.¹⁶

MVRDV developed a conceptual framework that uses quantitative information to construct qualitative visualizations known as “datascapes.” These are provocative three-dimensional maps that convey data-driven urban designs. Datascapes are “visual representations of all the visual and non-visual influences that have an impact on or regulate the work of an architect.”¹⁷ The images depict “what-if” scenarios that project possible futures reflecting legal, environmental,

economic, social, and political pressures.¹⁸ In this process MVRDV acts as the “expert’ in portraying the ‘abstract systems’ that surround our society” through the “acceptance and assumption that the reality in which architects are attempting to operate is largely quantifiable and exceedingly complex.”¹⁹ Datascares are not completely objective, however, as MVRDV manipulates the information in order to develop an emotionally laden argument. James Corner, put this plainly when he stated: “They differ from the quantitative maps of conventional planning in that they image data in knowingly selective ways. They are designed not only to reveal the spatial effects of various shaping (e.g. regulatory, zoning, legal, economic, and logistical rules and conditions), but also to construct a particular eidetic argument.”²⁰ Datascares, therefore, are not the literal interpretations of data and statistics as they are often portrayed.²¹

datatown (1999)

MVRDV's Datatown (*Figure 2*) project represents a datascape archetype. The purpose of this study was to examine the consequences of the population of the Netherlands increasing by four times. Datatown was a hypothetical self-sustaining megalopolis found inside of a 400km by 400km block (160,000,000,000 m²). Using computer generated visualizations, the firm examined a series of future “what-if” scenarios.²² Datatown's land was divided into a list of sectors that were required for sustaining life. Datascales were then constructed to examine six of these sectors: living, agriculture, CO₂, energy, waste, and water. The result was a series of abstract dystopic images depicting

extreme scenarios. For example, the living sector has 17% of the population living in villas, with the remaining 83% in a prodigious 1.52x1.52x1.26 km housing block.²³ This image used the monumental living container to display the alarming rate of population growth and to question current housing typologies/densities ability to address these changes. In the end, “[t]he datascape exposes extreme conditions and new spatial boundaries that are unexpected. Datascales have paradoxical properties. They are rational because they derive from given data; they are irrational because the spatial restrictions produce extreme and sometime surreal images of the area.”²⁴

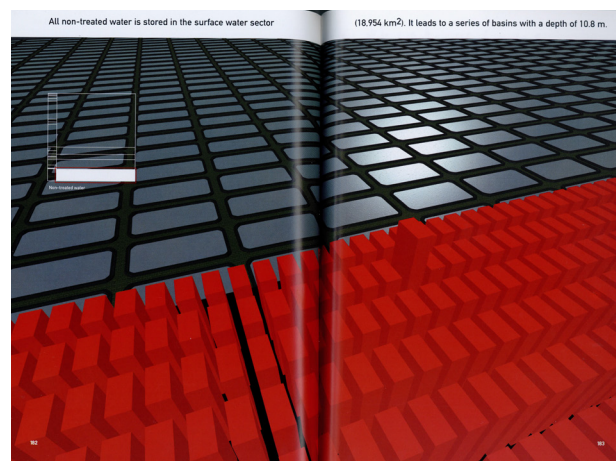
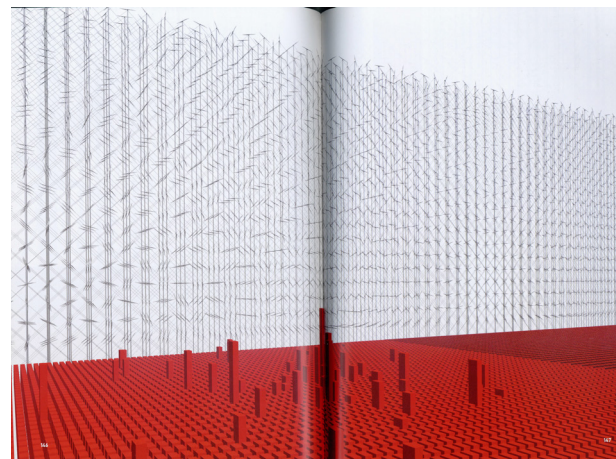
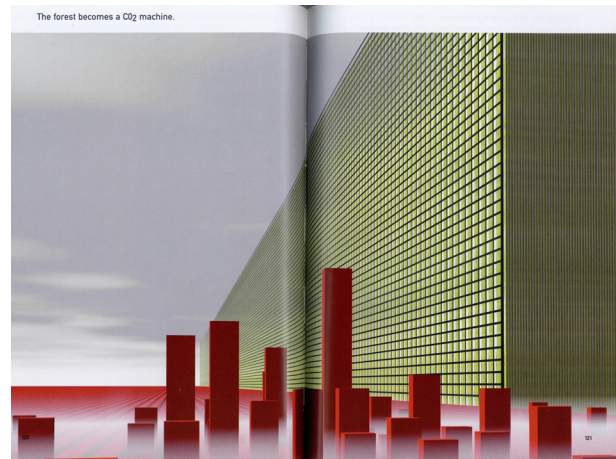
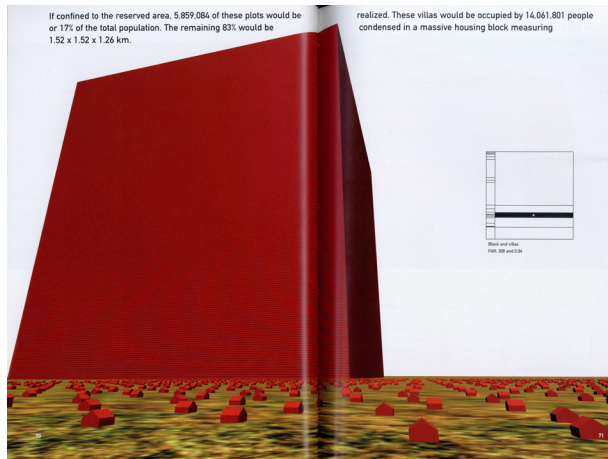


Figure 2: Datatown sectors

discussion

MVRDV's datascares started a broader conversation related to data's place in an architectural practice. Brett Steele wrote that MVRDV's work brought about "[a] renewed attention on the part of the architect to his or her own procedures for quantifying, analyzing, and transforming the organizational and formal features of a project."²⁵ There is, however, a myth associated with the firm's usage of data in the design process. MVRDV has produced a series of research-oriented books that explore possible applications of data in the urban environment. For example, *FARMAX* studies densities, *DATASCAPES* examines hidden limitations, and *INFRASTRUCTURE* looks at use.²⁶ Although these projects are interesting and filled with evocative images, this work does not appear to explicitly translate into

MVRDV's built projects (*Figure 3-8*). There is also no evidence of a true data-oriented design methodology. If data collection and analysis truly is a part of the firm's design process, there is a lack of transparency with respect to its use. The datascares depict far-fetched, dramatized, and distorted futures that are difficult to grasp as potential realities. Does this make them any different than works of art? The projects appear to be loosely based on data and "MVRDV's treatment of them as objective research is misleading, and counterproductive."²⁷ These projects serve a purpose in expanding the scope of architectural rhetoric, but George Weinberg suggested "that the calculations and statistics presented by MVRDV are not scientific. Can this method really be used as an analytical tool?."²⁸



Figure 3: The Couch



Figure 4: Baltyk



Figure 5: Glass Farm



Figure 6: Tetris Hotel



Figure 7: Markthal Rotterdam



Figure 8: The Imprint

futurecraft

“ The digital revolution – the convergence of bits and atoms – is poised to be the most radically disruptive change that has ever recast the design, construction, and operation of our built environment. Just as machines brought standardization and high output, digital tools can bring dynamism, variation, and responsiveness. The question now becomes, How will architecture evolve in the digital era? ”²⁹

Carlo Ratti and the MIT Senseable City Lab provided an updated understanding of

MVRDV's datascape known as futurecraft.

This concept works to “extrapolate from the present condition and to place ourselves,

as designers, in a fictive but possible

future context with the intent of realizing

or precluding that future through public

discourse.”³⁰ Futurecraft does not include

the development of imaginary utopias/

dystopias (datascape) and it does not set the

unrealistic objective of solving all the world's

problems. Instead, the intention of futurecraft

is to positively influence a conceivable near

future. Designers adopting futurecraft must

propose tangible, rather than abstract,

design experiments that are “tested in urban

space and subjected to public debate, a

process that functions like natural selection

in biology. The public will eventually steer

broader technological development toward

the most desirable future.”³¹ Futurecraft

works to challenge traditional methods

through design experiments that test future

scenarios, advance urban development, and

crowdsource.

Futurecraft is composed of two overarching concepts. First, the theory contends that designs should be responsive, sentient, or living. Digital tools could be used to link public spaces to humanity (*Figure 9*): “From social science to mathematics to economics, we can now use this data to address deep questions about how humanity lives. Citizens are empowered to think, act and transform their public space; they are creating a groundswell of urban innovation that is only just rising

today... This is a new era for the global village: an internet-mediated space of communication and habitation.”³² Futurecraft argues that humans are cyborgs dependent on tools to survive. Smart phones make up a new generation of these tools that can be used to manipulate physical space. This could bring about a responsive architecture with designs that contain a “sensing organ or device that enables the organic or inorganic system of which it is a part to actively respond to things



Figure 9: Cybernetic society uses phones to manipulate physical space

happening around it.”³³ A responsive design is agile, capable of change, efficient, interactive, and personal.³⁴ Futurecraft architecture is therefore not fixed, but dynamic and shifting based on an information feedback loop.³⁵ The result is a city that appears to have a closer relationship to living organisms than the static built environment that exists today:

“ A living, cybernetic program in spaces of dynamic interaction will make architecture more like an extension of the body – and it is cyborg ‘tools’ that enable the environment to respond. Augmented or ‘living’ architecture is the large-scale hardware that digital-physical cyborgs create, plug into, and interact with. Active buildings are at once an environmental life support, social catalyst, and a dynamic set of experiences. While congenital digital systems integrate seamlessly with human biology, the same prosthetic devices interface with the digitally augmented environment through real-time information flows...Ultimately, technology recedes into the background, and interaction is brought to the fore. Buildings can be simple – rather than voluptuous and shocking – but even more integrally vibrant and living. ”³⁶

Second, futurecraft calls for a publicly augmented design process that more accurately reflects a series of social and technological trends occurring across the globe: urban subversions (Arab Spring, Occupy Wall Street, Blackberry Riots, #15M Movement), digital fabrication (labs, 3d printers, laser cutters), open software (Linux), and

crowdsourcing (Wikipedia, Kickstarter, social media) (*Figure 10-13*). Each of these utilize the general population to shape environments (virtual and physical) and as a valuable resource for decision-making.³⁷ Ratti argues for a design process that moves beyond the “Promethean Architect” at the isolated center to a participatory process that leads to designs that more accurately reflect the needs of users:

“ Why can’t open sourcing, a methodology that commands almost limitless potential in the digital world (proven time and again by the likes of Mozilla, Airbnb, and the Internet itself), and which has existed throughout the history of architecture, have the same transformative effect on contemporary design and building practice? Where is the Linux of homes or offices or libraries? Page through any design magazine – you won’t find a building without a signature. The world of architecture circles on its well-worn orbit, seemingly outside the gravitational pull of networked participation. Can architecture really remain aloof? The same energetic participation that drives Etsy, fantasy football, and Tahrir Square could pump a collective vigor into architecture. The success of software is a direct provocation for architecture’s paradigm shift, order of magnitude beyond that of the stone arch or steel-and-glass construction. How can the new tools available to the architect bring people together – not only to inhabit, but to change, augment, and ultimately create the environment around them? ”³⁸

The question becomes: how can the public participate without inciting chaos? The MIT

Senseable City Lab suggested a modified A/B method in which digital platforms are used as a feedback loop for active engagement in the process: “The public can augment – rather than replace – the architect.”³⁹ The result is

a democratized design methodology that considers general opinion and community needs. The following are four case studies that integrate concepts of futurecraft into realized and unrealized projects.



Figure 10: #15M Movement



Figure 11: Arab Spring

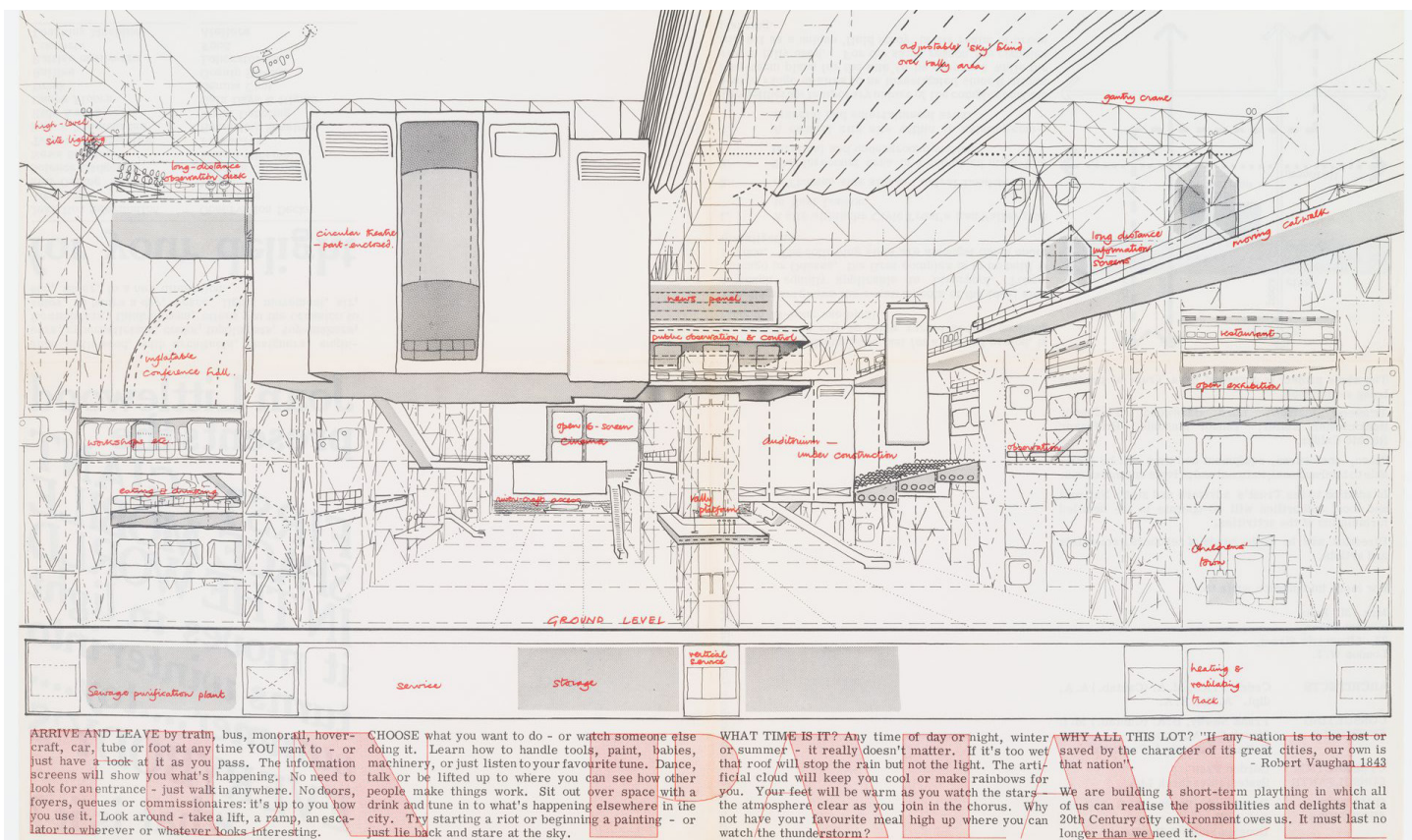
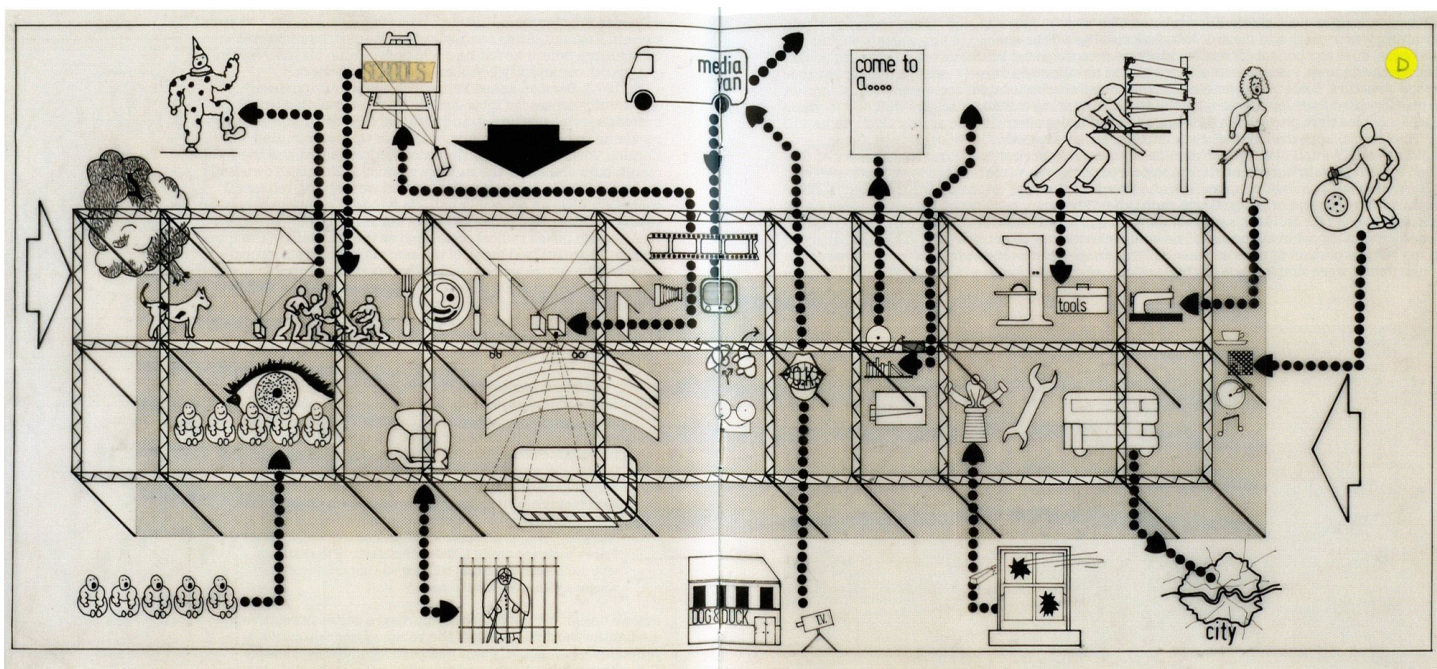


Figure 12–13: Digital fabrication works by Neri Oxman

fun palace (1960-1964)

This is a historical example of futurecraft that was particularly informative for the design project of this thesis. The Fun Palace (*Figure 14-15*) was designed by Cedric Price (architect) and Joan Littlewood (theater director), but was never constructed.⁴⁰ The project was a massive, highly-flexible temporary structure meant to be a “laboratory of fun.” A series of cranes mounted on 75 steel towers were used to construct and deconstruct portions of the building depending on shifting activity/program.⁴¹ The result was a “form and structure, resembling a large shipyard in which enclosures such as theaters, cinemas, restaurants, workshops, rally areas, can be assembled, moved, re-arranged and scrapped continuously.”⁴² Architecture for Price was

performative because it did not require fixed rules, “but rather it has to provoke continuous dialogue and civic participation.”⁴³ The Fun Palace used time as a design tool. The project itself was meant to be temporary, but was composed of a sequence of events that required endless modifications: “For Cedric Price architecture doesn’t have to solve problems because it works too slowly for that; architecture can raise new desires, new needs, new impetus.”⁴⁴ In the Fun Palace, the visitor would directly modify the architecture depending on changing needs/desires. This led to an indeterminacy in the design and program and a series of drawings that only provide a snapshot of this dynamism.⁴⁵



digital water pavilion (2008)

The Digital Water Pavilion by Carlo Ratti Associati (*Figure 16-17*) reflects many of the ideals of the Fun Palace and futurecraft, but translated into built form. The pavilion was the entrance to Expo 2008 in Zaragoza, Spain, but is still in use today.⁴⁶ The aim of the project was to create a “flexible multifunctional space, with a wall composed of falling [water] droplets, each precisely controlled by digital nozzles to generate patterns, writing, or entrances. The result is a space that is interactive and reconfigurable. Using sensors, each wall responds when people approach, parting to become an entrance or an exit. Internal partitions can also shift depending on the number of people present.”⁴⁷ The pavilion is located under a movable 400mm-thick

roof that is supported by twelve hydraulic pistons allowing for varying roof heights.⁴⁸

The roof is also the location of the digitally controlled solenoid valves that create a spatial curtain of water.⁴⁹ The architecture is meant to reflect the needs of its users as the building can be turned on/off, lifted/lowered, and reconfigured.⁵⁰ The result is a structure that is the “manifesto for digital, responsive architecture, the question for designers was how to create architecture that was also extremely fluid and reconfigurable. The resulting structure aims to stand as a possible answer to that endeavor: it is fluid in the most literal sense of the word, but also fluid in terms of being reconfigurable and responsive.”⁵¹



Figure 16-17: Pavilion uses water to create space

trash track (2009)

Trash Track is a project by the MIT Senseable City Lab that examined the movement of disposed trash to expose the complexities and inefficiencies of existing waste systems.⁵² Waste often travels great distances through “an elaborate network of transfer stations, landfills, and reprocessing plants by truck, train, boat, and plane, and is constantly rerouted by regulations and markets.”⁵³ Trash Track used 2,000 remote tracking GPS devices that were attached to different types of trash at locations across Seattle, WA in order to trace the movement of garbage. After initial disposal, the

tagged trash was tracked for three months. Some elements of garbage were moved well beyond city limits to resting places across state and country borders (*Figure 18*). The goal of the project was to “[reveal] the unseen processes of waste removal” in an effort to “increase awareness of the environmental impact of individual waste generation, and encourage citizens to act more sustainably. This information would inform infrastructure planning at the city, regional, or international scale, as well as trash-disposal decisions at the individual, human scale.”⁵⁴

LIVE Singapore! (2010)

This is a project by the MIT Senseable City Lab that attempts to “[close] the feedback loop between people moving in the city and the digital real-time data collected in multiple networks. It gives the data back to the people who themselves generate it through their actions, allowing them to be more in sync with their environment” while also being able to make “decisions on the basis of information that reflect the actual state of their city.”⁵⁵ This was undertaken through the development of an open platform that combines and disperses this live information for use by developers, government officials, and the public. The goal of this project was not to directly address different urban problems, but to instead create a centralized location that collects and combines this information

(*Figure 19*). LIVE Singapore! was different from many of the other studies conducted by the MIT Senseable City Lab because it incorporated a combination of very different types of information that can be used to uncover surprising connections.⁵⁶ The data collected displays many of the island’s “key urban networks” including: airport traffic, taxi fleet movements, public transportation networks, traffic patterns, environmental/ climate conditions, container shipping port conditions, cellphone usage, and energy demand.⁵⁷ This information has been used for a variety of studies. For example, research combined rainfall and taxi traffic data in order to understand the effects of precipitation on taxi supply and demand in Singapore.⁵⁸

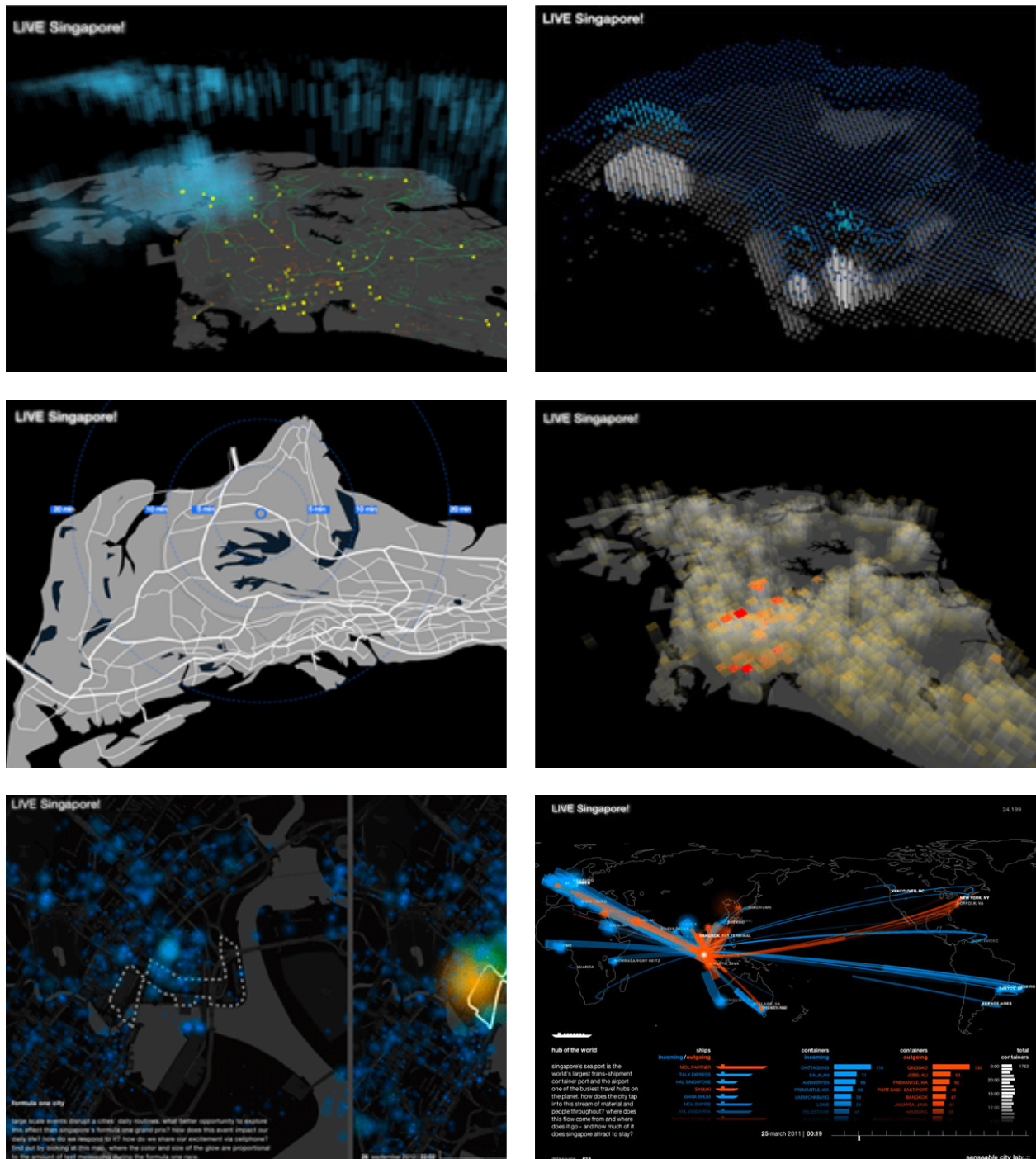


Figure 19: Visualizations displaying live information. From top left to right: "raining taxis", "urban heat islands", "isochronic Singapore", "real-time talk", "formula one city", "hub of the world"

discussion

The project outlined in the following sections could act as an example of futurecraft as the design process includes public input and a built form that is responsive. In the end, the concepts and ideas presented by Carlo Ratti in several publications were particularly informative for this thesis. The previous projects undertaken that exhibit futurecraft, however, are sensor and technology dependent. Carlo Ratti's focus on the "future" works to challenge existing conditions, but is also limiting because projects/processes have to constantly reinvent the wheel. The reliance on sensor technology acts as a limiting factor

because the projects can only collect and analyze very specific sets of data. Trash Track is a single example of an expanding set of projects that tackle a singular problem. Although learning about a specific topic in the urban environment can be extremely useful, systems are so complex and interconnected that these studies only display a partial picture. In the end, this project attempts to navigate an intermediate layer between datascaping and futurecraft with a transparent methodology that collects a wide range of information to understand the present condition to design for a better future.



methodology

“ Coined by media theorist Lev Manovich in 2007, the concept of cultural analytics can be seen as the consequence of ever-increasing computational power to manipulate enormous amounts of data in real time, the ability of advanced visual interfaces to explore these datasets, and the desire of researchers to explore such resources in new ways. No longer limited to advanced scientific research, such tools and methods can be applied to areas of social and cultural interest forming the arena of digital humanities. ”⁵⁹

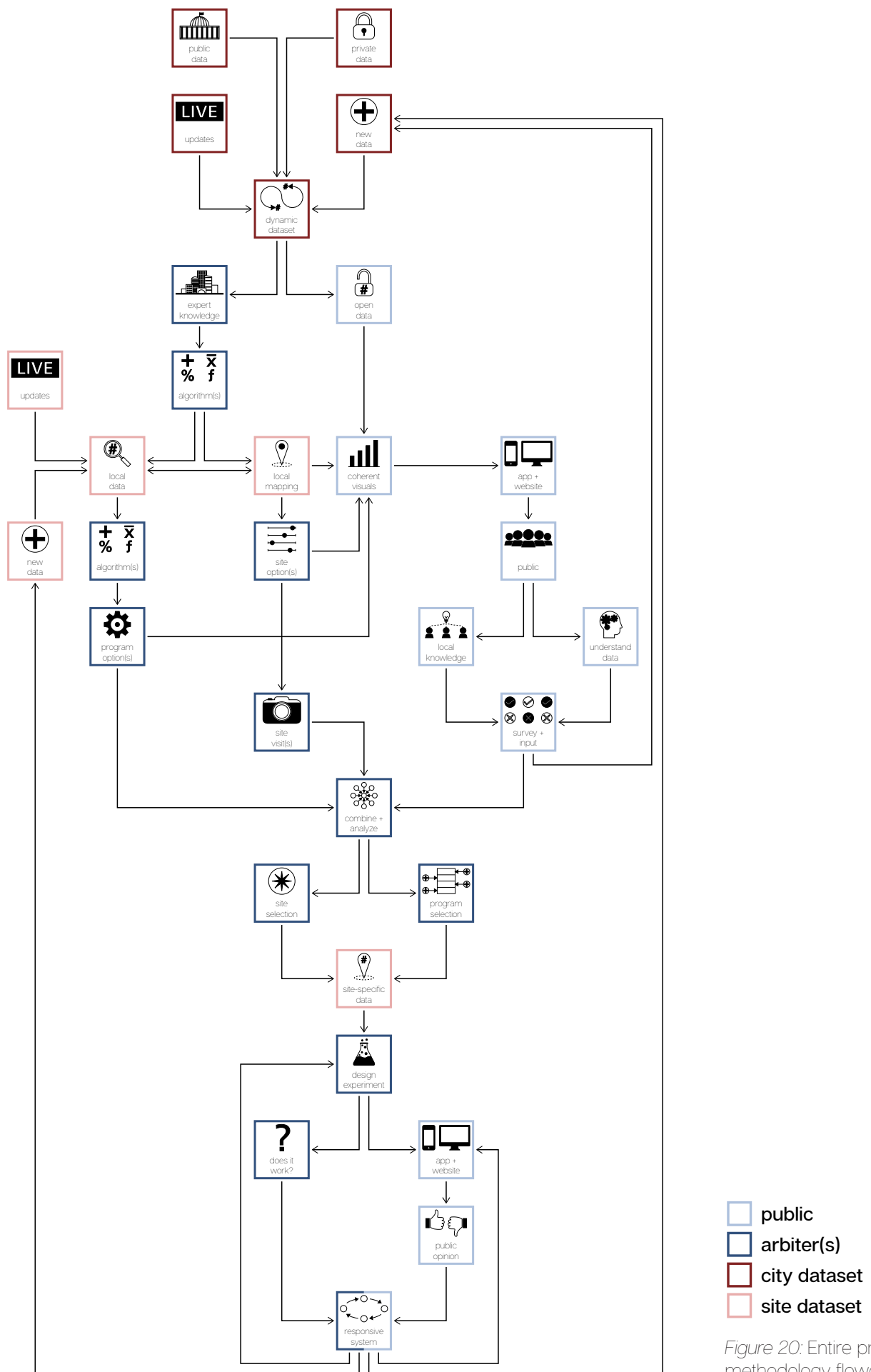


Figure 20: Entire project methodology flowchart

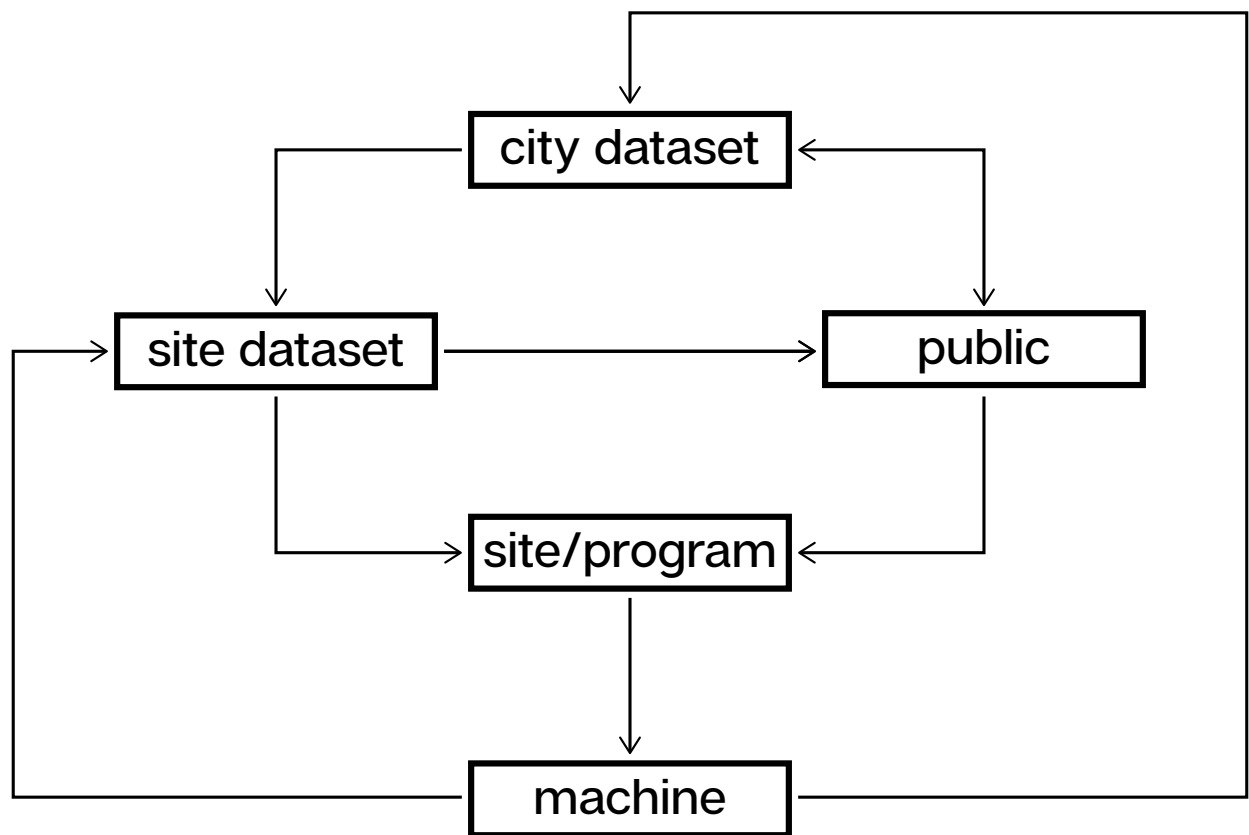


Figure 21: Methodology flowchart summary

This project's goal is to create a methodology in which big data can translate into a design. A data-driven design approach requires a new design process that reconsiders traditional architectural paradigms. A methodological system was developed as the project progressed and required considerable alteration/adjustments from its original conception. This should represent the first test of an experiment that could be adjusted and improved with repetition and expansion.⁶⁰ This thesis tested the developed method with a design project that follows the majority of the process. Steps not taken are a consequence of constraints in time and resources.

Figure 20 displays a flowchart of the entire methodology developed for this project.

This will be examined in a series of sections: city dataset, site selection dataset, publicly augmented, site/program selection, and Community Machine. *Figure 21* displays a summary of this method and the interaction between parts. The process begins with a city dataset used to compare cities and indicate problems each has relative to each other. This dataset provides the foundation for those data points that are examined on the local scale in the site selection dataset. The

city and site selection datasets are integrated into a website and application. These web-based tools are the point of interaction and feedback mechanism for the public. The two datasets and public feedback are then used to select a site and program. Finally, the entire system is incorporated into a Community Machine, which is a responsive building that is a live reflection of its surrounding community. Data points are constantly evolving over time and the design of the Community Machine reflects this dynamism. The entire system is a responsive feedback loop in which continually updating and expanding datasets bring new results in statistical analysis and a concomitant shift in the Community Machine. In the end, this method is used in order to select a study city, chose a site, and select a program for this thesis project.

players + parameters

players

The design methodology developed has three fundamental players: arbiter(s), the public, and data (*Figure 22*). Each player contributes to the system and inclusion is required for successful application of the process.

The arbiter(s) control the system and are required to have/use an applicable knowledge base in order to make educated decisions.

This may be the case, but most decisions are still directed by the data/evaluative tools. The arbiter(s) could be a panel of experts including: urban planners, architects, landscape architects, city officials, statisticians, data scientists, and developers. For this project, I acted as both the creator and lead arbiter.

Assistance from my thesis committee, fellow students, and the University of Washington eScience Institute also represent arbiter input.

Throughout the explanation of the method, those instances where an arbiter is required will be noted.

The public plays an important role that requires both active participation and passive

involvement. The vast majority of the data collected in this project is related to human populations, their daily lives, and practices. Without a public there are no data points to draw from as each individual going about their daily lives provides valuable passive involvement. The methodology, however, is also publicly augmented. People have valuable knowledge and opinions that can act as important data points, especially on a local scale. Citizen input represents an additional check on the process by pointing out mistakes, directing additional avenues for data collection, and providing local on-the-ground advisement. Public participation is a clear problem in traditional design practices and one this system attempts to address. This aspect of the project is completed at only a conceptual/framework level.

Finally, the backbone and ultimate decision-maker for the entire methodology are the data points themselves and evaluative tools used to understand and compare them. If the arbiter(s) maintain their defined bounds, then

the majority of the decision-making is derived from the data. For this reason, undertaking this process might uncover unexpected results that are outside of what would have been traditionally chosen or expected.

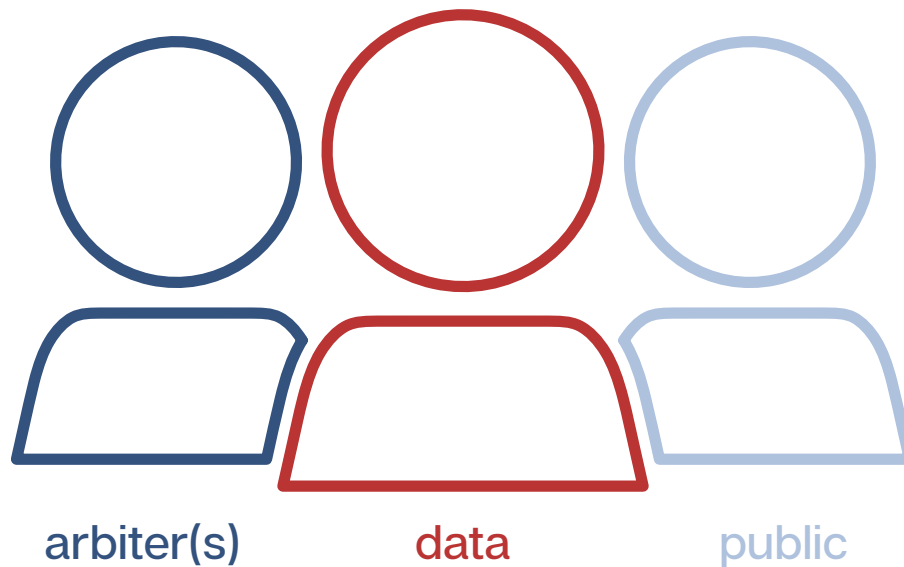


Figure 22: Players of the game

parameters

Data collection for this project needs to be qualified through a set of parameters that bear mentioning. As arbiter of the process, I established these parameters in order to define the bounds of the datasets.

1. The first parameter is to manage the scale.

This is required from a logistical standpoint because this project lacked a data collection team and/or the computer coding necessary to collect and analyze vast amounts of information. Being limited by ability and time means that the scale had to be manageable, yet large enough to provide a statistically significant sample capable of representing the process. The city selection section will examine how the project's scale is managed.

2. Second, the datasets are composed of “unfocused” data. This means that the quantitative information collected is not limited by topic. Many of the previous design projects that incorporate data, including most of the work by Carlo Ratti and the MIT Senseable City Lab, are focused on specific outcomes (ex: Trash Track). Although analyzing a specific topic clearly has its advantages and can act

as a powerful tool, this project is attempting to uncover information that was previously unknown by casting a wide net to expose a broader set of problems. Narrow-topic datasets could limit what is discovered and effectively handicap the eventual design project/Community Machine. In an effort to establish an unfocused dataset, information includes a wide range of topic areas and data was collected with a what-can-I-get-my-hands-on approach. The goal is to have a result that is dictated not by desires/biases of a designer, but instead the needs of a specific community. In the end, a substantial amount of the data collected was accidentally stumbled upon. In many cases, the data included might not have had a clear design response, but this would be the concern of the arbiter(s) later in the process.

3. The third parameter is that data points related to a specific topic area must exhibit source congruency or standardization. For example, a data point related to obesity cannot come from two or more sources if they are to be compared to one another. This does not mean that different obesity/weight estimates could not be used in the

dataset, but that information from each source must be compared and analyzed separately. Maintaining congruency effectively limits the potential pool of sources to only those that contain information for each of the study cities/sites.

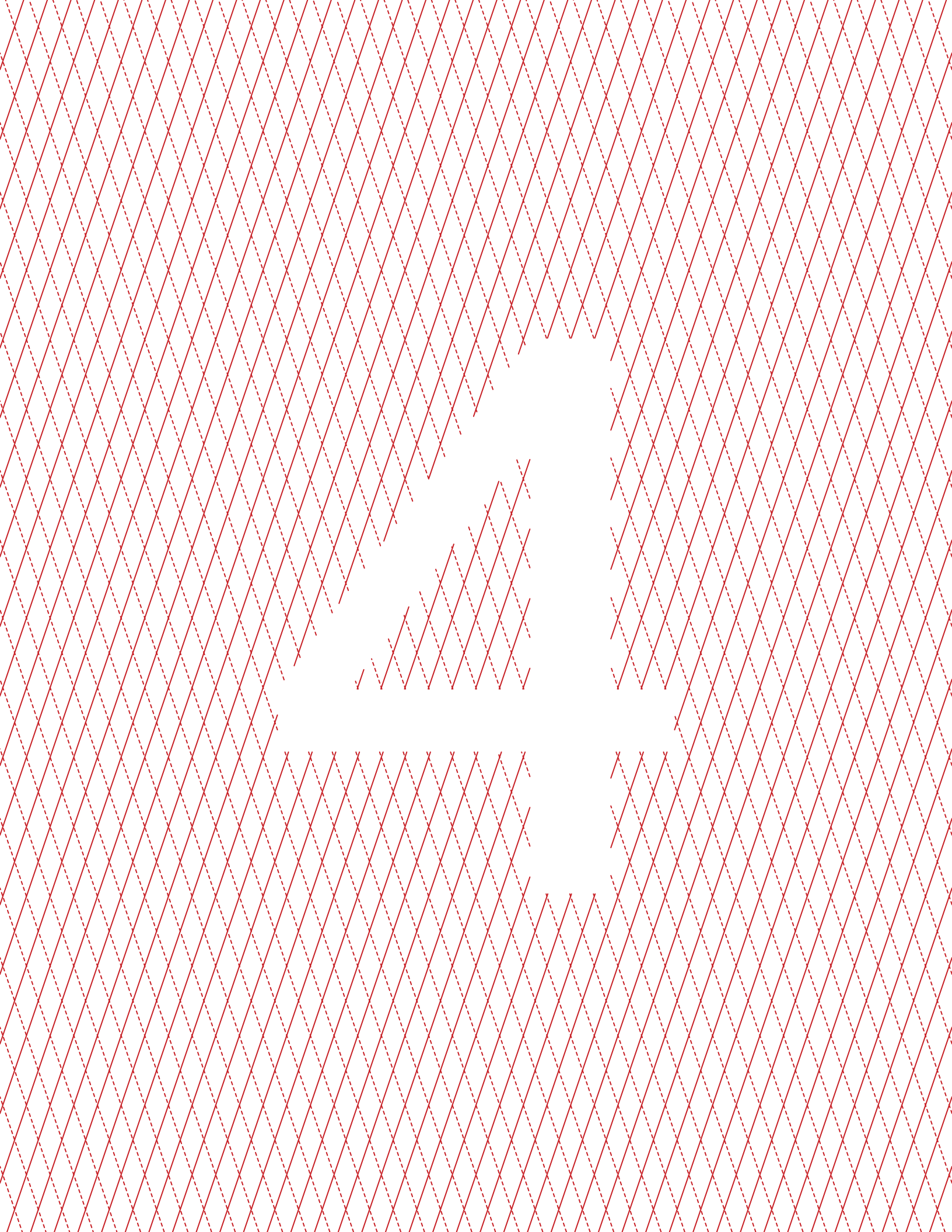
4. Fourth, all quantitative information that undergoes statistical analysis must contain values in order to compare cities/sites. All datasets in this project do not have instances where there is data for a select group of cities/sites and not others. Omitting data points that are missing information was used to limit the size of the dataset and standardize evaluation.

5. The fifth parameter is that the datasets did not weight the topic areas on importance. This represents an aspect of the process that could be criticized and/or adjusted depending on the desired result. Weighting importance would require substantial arbiter input, which is antithetical to the goals of this experiment. This could also lead to less unexpected solutions as it would essentially direct the problems addressed by the Community Machine. A relevant example to the datasets in this project that used a weighting tool is the

U.S. News & World Report *2018 Best States Rankings*.⁶¹ This project compared each state by seventy-seven metrics across eight categories and thousands of data points. For the 2018 rankings the following represents the categories and their representative weights: healthcare 16.1%, education 15.5%, economy 14.4%, opportunity 13.4%, infrastructure 12.5%, crime and corrections 10.6%, fiscal stability 9.5%, and quality of life 8.1%. The weighting was based on two surveys conducted by McKinsey and Company that asks the public what their level of satisfaction was related to different government services and where the government should focus resources: “The weights for the 2018 Best States rankings are based on the average responses from two annual surveys: one conducted in the fall of 2016 that included 11,100 respondents from 22 states and another conducted in the fall of 2017 that included 20,100 respondents from all 50 states. Survey respondents were adults ages 18 and up who collectively represent all U.S. adults. The survey results were weighted to be representative of the country’s population across all ages, genders, ethnicities and household incomes.”⁶² Overall, the U.S. News project provides a foundational

example on how this process could adopt a weighting system. The weighting was mostly based on public opinion (experts seemed to have some say in the process), which acts as a relatively objective measurement that matches the goals of this project. Without the ability to conduct extensive opinion polling and not necessarily wanting to adopt the weighting outlined above, the datasets in this project are unweighted.

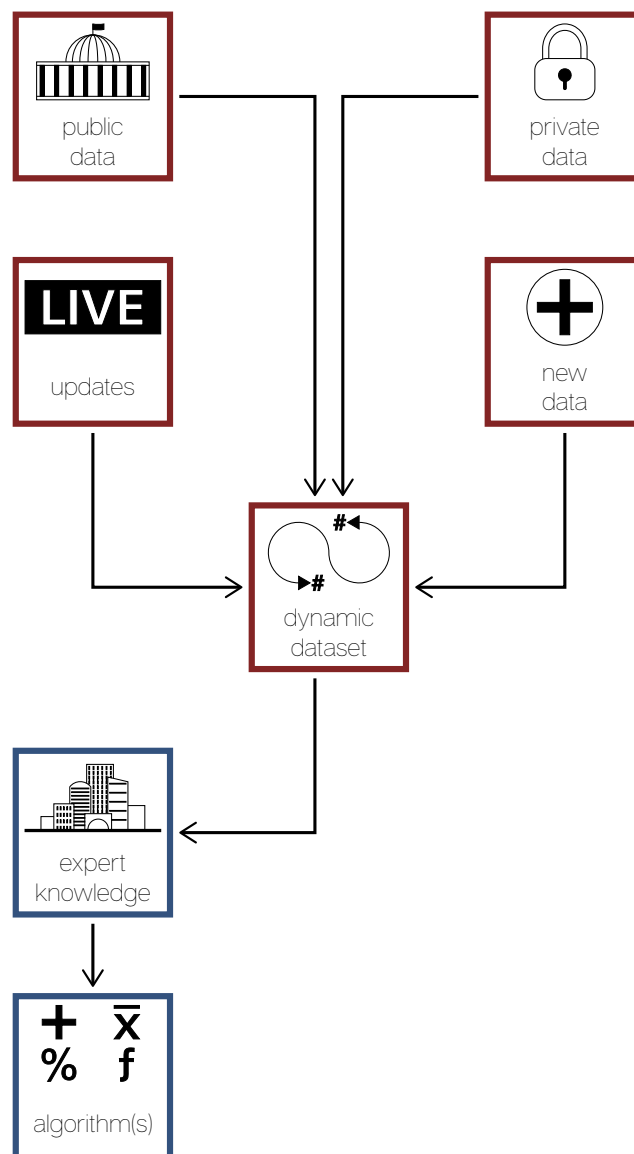
⑥ Finally, the quantitative information utilized in both datasets are made up of “dumb data”. This term refers to readily available data points collected by a third party. The ambitions of this project are not to use high-tech sensing equipment that is often the focus of Carlo Ratti and the MIT Senseable City Lab. Instead, the goal is to gather publicly available data into a single usable format. In the age of information there are vast amounts of data points being collected, especially by various government organizations. This project is not advocating against using high-tech sensing equipment, but instead arguing for the utilization of information that already exists. In the end, this project combines and analyzes a set of “dumb data” in order to come up with a relatively smart design solution.



city dataset

The uppermost portion of the methodology flowchart is comprised of the city dataset (Figure 23), which uses a compilation of data that is continuously updated and expanded to compare cities. This section of the conceptual framework is considered “live,” but the example carried out in this project only captures a moment in time. The arbiter(s) use expert knowledge to then

create a series of evaluative tools that are applied to analyze and understand thousands of data points. The city dataset is imperative because it is used to identify problematic data points that can then be examined on a local scale in the site selection dataset. The size of this dataset (number of data points) does not necessarily have defined bounds, but is instead limited by time and resources.



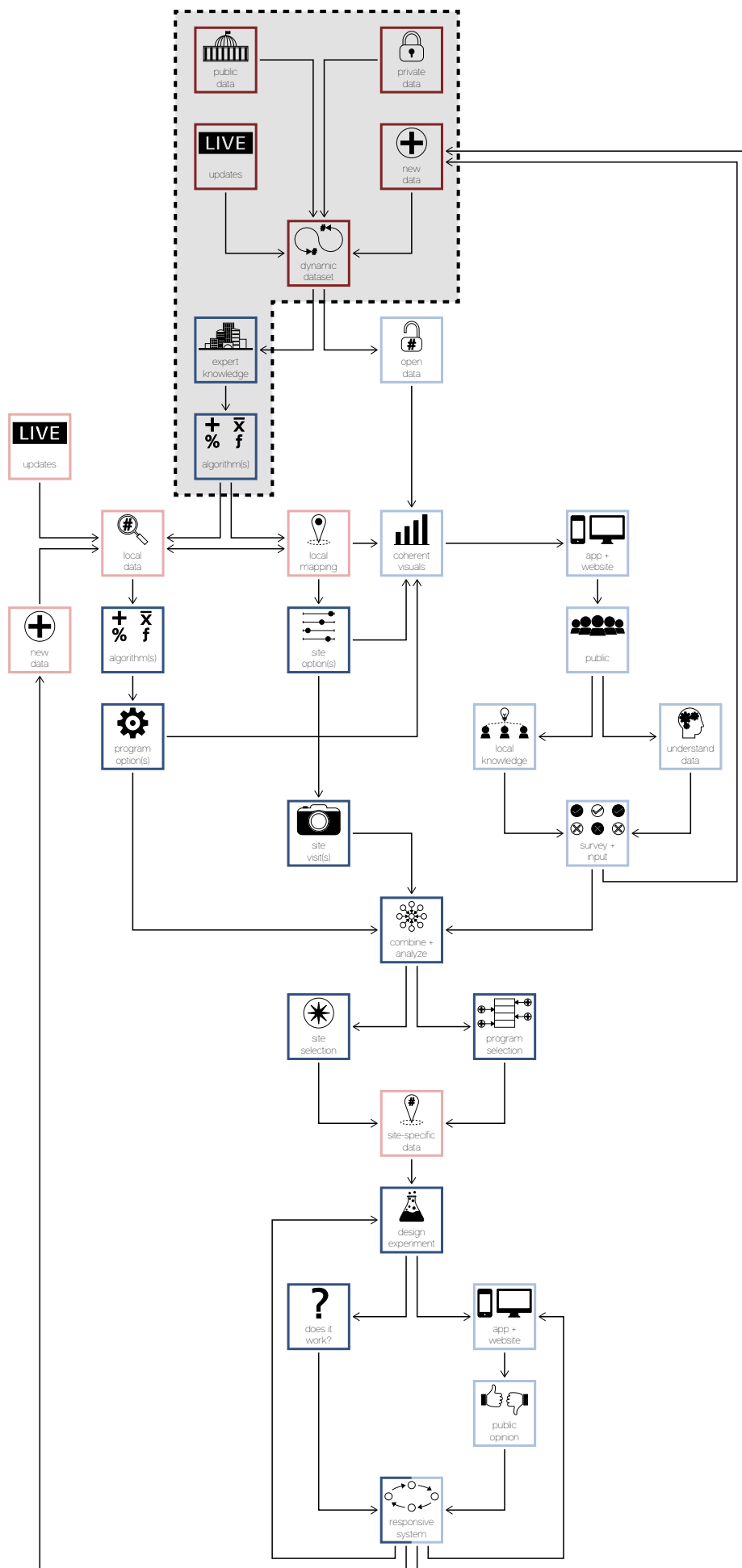


Figure 23: City dataset portion of methodology

city selection

why city?

Why does the methodology start at the city scale? Although conclusions made at this level are general, considerable value can be gleaned from this information. Cities represent highly complex systems that have, throughout history, been difficult to grasp. Jane Jacobs, in her 1961 book *The Death and Life of Great American Cities*, suggested that “[c]ities happen to be problems in organized complexity, like the life sciences...[Cities] do not exhibit one problem in organized complexity, which if understood explains all. They can be analyzed into many such problems or segments which, as in the case of life sciences, are also related with one another. The variables are many, but they are not helter-skelter; they are ‘interrelated into an organic whole.’”⁶³ Jacobs believed that planners/architects in the 1960s lacked a true understanding of the complexities of the city and were therefore unable to identify the needs of a place.⁶⁴ Kevin Lynch agreed with this sentiment when he wrote: “Cities are too complicated, too far beyond our control, and affect too many people, who are subject

to too many cultural variations, to permit any rational answer. Cities, like continents, are simply huge facts of nature, to which we must adapt. We study their origin and functions because that is interesting to know and handy for making predictions. Someone might say ‘I like Boston,’ but we all understand that this is merely a trivial preference, based on personal experience. Only a Sunday journalist rates Boston in comparison to Atlanta. Scholars analyze hard data, such as population, dollars, and traffic flow.”⁶⁵ Collection of data at a city scale attempts to uncover the urban invisibles that help to define the experience of place, but are not necessarily readily discernible. Data can be used to understand a city at a variety of scales and dimensions.⁶⁶ Although quantitative information will only provide a partial picture of the city, the age of information has proven that there is much to gain from its careful study.

Cities are important considering that the world is quickly urbanizing: “Some calculations suggest that the urban population is increasing

by a quarter of a million per day, amounting to a new London every month. The year 2008 was a decisive turning point – when more than half of humanity lived in cities – and growth has only accelerated since. Statistics from the World Health Organization suggest that 75 percent of humans might be city dwellers by 2050.”⁶⁷ As cities grow, systems become increasingly complex, demanding, and difficult to understand. For example, consider the natural resources required by a metropolis in order to provide the energy, food, and water to millions of people.⁶⁸ Data is a tool capable of exposing inefficiencies and identifying issues that qualitative and anecdotal research might fail to divulge.

Cities are also useful places to study because they are uniquely apt for experimentation. Design experiments can be tested under various conditions and can often provide valuable insights regarding the built environment. Economist Edward Glaeser suggested as much when he wrote: “The city is humanity’s laboratory, where people

flock to dream, create, build, and rebuild.”⁶⁹

Cities, however, are not problems that can be solved by plugging numbers into an equation:

“There is no single paradigm that has come to dominate our understating of cities, and... there is unlikely to be one.”⁷⁰ Instead, data can be utilized to address problems that would have otherwise been left hidden, while also allowing for unique design solutions. Cities represent useful testing grounds for experimentation as data does for the design fields.

six cities

For this project, six study cities were selected by the arbiter in a relatively arbitrary process of elimination. This represented a reasonable amount for data collection and comparison. This also meant that there would neatly be three at the top and three at the bottom when ranking the cities.

The process of city selection (*Figure 24*) begins by looking exclusively at the census designated west because of proximity, familiarity, and comparability. Wallace Stegner is an important writer (fiction and nonfiction), historian, and environmentalist who dedicated much of his life's work to understanding this region of the country. Stegner argued that the west is not necessarily defined by geography, but instead correlates to themes of aridity,⁷¹ government owned property,⁷² and a distinct western character.⁷³ Most importantly, however, the west is linked by the prevalence of space.⁷⁴ It is this vast space that led to an urban character that is uniquely American, with development that is automobile centric, limited/defined only by natural features (less about access to natural resources), and characterized by sprawl/growth. This is an

environment that is ripe to account for change and, therefore makes for an interesting study.

The following acts as a series of steps that were applied in order to select the final six study cities.

1. The census separates the west into two groups of states: Mountain (Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, and Utah) and Pacific (Alaska, California, Hawaii, Oregon, and Washington). The list of potential cities began with the 31 metropolitan areas in these states that have a population over 400,000. This limiting factor worked to separate the cities from the large towns.

2. Next, the two megacities that appeared on the list were eliminated. The greater Los Angeles and San Francisco areas include several cities on the list that are in close proximity. The metropolitan area of Los Angeles-Long Beach-Anaheim is adjacent to Riverside-San Bernardino-Ontario, Oxnard-Thousand Oaks-Ventura, and Santa Maria-Santa Barbara. The metropolitan area of San Francisco-Oakland-Hayward is adjacent to San Jose-Sunnyvale-Santa Clara, Santa

Rosa, and Vallejo-Fairfield. Both cities are a part of a virtually unending urban area that would be better to compare against each other than many of the other cities on the list. For this reason, it was appropriate to exclude Los Angeles, San Francisco, and those metropolitan areas adjacent in this study.

③ Third, there is an unsurprising aggregation of larger urban areas across coastal and inland California, which make this the largest state by population in the country. When selecting study cities, it was appropriate to select one inland and coastal California city. For this reason, Sacramento and San Diego were selected for examination and six cities were omitted from the list.

④ Fourth, after considering data accessibility, especially beyond readily available sources (ex: census), there would be an appreciable drop in data points for smaller cities. For this reason, nine cities were taken off the potential study list, as these cities had a metropolitan population under one million residents.

⑤ Fifth, Las Vegas posed a strong possibility of being an outlier because of its unusual

industries. The unique conditions of Las Vegas could skew the results in a study that only compares a select set of cities. With an abundance of caution, Las Vegas was not included on the final list of study cities.

⑥ Finally, the list of seven cities remaining contains two options located in the Pacific Northwest (Seattle and Portland). For this project, it seemed logical to select one because both cities, although distinct, could have a very similar set of problems worth addressing. Seattle, in this situation, seemed to be the prudent choice because it could act as a control in this data-driven experiment. This is following the basic tenants of Richard Wurman's First Law, which states: "You can only understand something new relative to something you already understand."⁷⁵

This process of elimination left six study cities for examination in the city dataset (*Figure 25*): Seattle, San Diego, Sacramento, Phoenix, Denver, and Salt Lake City. Geographically, this represents an even distribution with two cities that are water based (San Diego, Seattle), mountainous (Denver, Salt Lake City) and inland valley (Sacramento, Phoenix).

west
(US Census Designation)

mountain
NV, ID, MT, UT, CO, AZ, NM

pacific
WA, OR, CA, AK, HI

metro
>400,000 people

larger

smaller

mega city
composed of several large metros

california
coastal/valley redundancies

- Los Angeles | Long Beach | Anaheim CA
- San Francisco | Oakland | Hayward CA
- Phoenix | Mesa | Scottsdale AZ
- Riverside | San Bernardino | Ontario CA
- Seattle | Tacoma | Bellevue WA
- San Diego | Carlsbad CA
- Denver | Aurora | Lakewood CO
- Portland | Vancouver | Hillsboro OR/WA
- Sacramento | Roseville | Arden-Arcade CA
- Las Vegas | Henderson | Paradise NV
- San Jose | Sunnyvale | Santa Clara CA
- Salt Lake City UT
- Tucson AZ
- Honolulu HI
- Fresno CA
- Albuquerque NM
- Bakersfield CA
- Oxnard | Thousand Oaks | Ventura CA
- Stockton | Lodi CA
- Colorado Springs CO
- Boise ID
- Ogden | Clearfield UT
- Provo | Orem UT
- Spokane | Spokane Valley WA
- Modesto | CA
- Santa Rosa | CA
- Visalia | Porterville CA
- Reno NV
- Santa Maria | Santa Barbara CA
- Vallejo | Fairfield CA
- Salinas CA

- Phoenix | Mesa | Scottsdale AZ
- Seattle | Tacoma | Bellevue WA
- San Diego | Carlsbad CA
- Denver | Aurora | Lakewood CO
- Portland | Vancouver | Hillsboro OR/WA
- Sacramento | Roseville | Arden-Arcade CA
- Las Vegas | Henderson | Paradise NV
- Salt Lake City UT
- Tucson AZ
- Honolulu HI
- Fresno CA
- Albuquerque NM
- Bakersfield CA
- Stockton | Lodi CA
- Colorado Springs CO
- Boise ID
- Ogden | Clearfield UT
- Provo | Orem UT
- Spokane | Spokane Valley WA
- Modesto | CA
- Visalia | Porterville CA
- Reno NV
- Salinas CA
- Los Angeles | Long Beach | Anaheim CA
- Riverside | San Bernardino | Ontario CA
- Oxnard | Thousand Oaks | Ventura CA
- Santa Maria | Santa Barbara CA
- San Francisco | Oakland | Hayward CA
- San Jose | Sunnyvale | Santa Clara CA
- Santa Rosa | CA
- Vallejo | Fairfield CA

- Phoenix | Mesa | Scottsdale AZ
- Seattle | Tacoma | Bellevue WA
- San Diego | Carlsbad CA
- Denver | Aurora | Lakewood CO
- Portland | Vancouver | Hillsboro OR/WA
- Sacramento | Roseville | Arden-Arcade CA
- Las Vegas | Henderson | Paradise NV
- Salt Lake City UT
- Tucson AZ
- Honolulu HI
- Albuquerque NM
- Colorado Springs CO
- Boise ID
- Ogden | Clearfield UT
- Provo | Orem UT
- Spokane | Spokane Valley WA
- Reno NV
- Fresno CA
- Bakersfield CA
- Stockton | Lodi CA
- Modesto | CA
- Visalia | Porterville CA
- Salinas CA

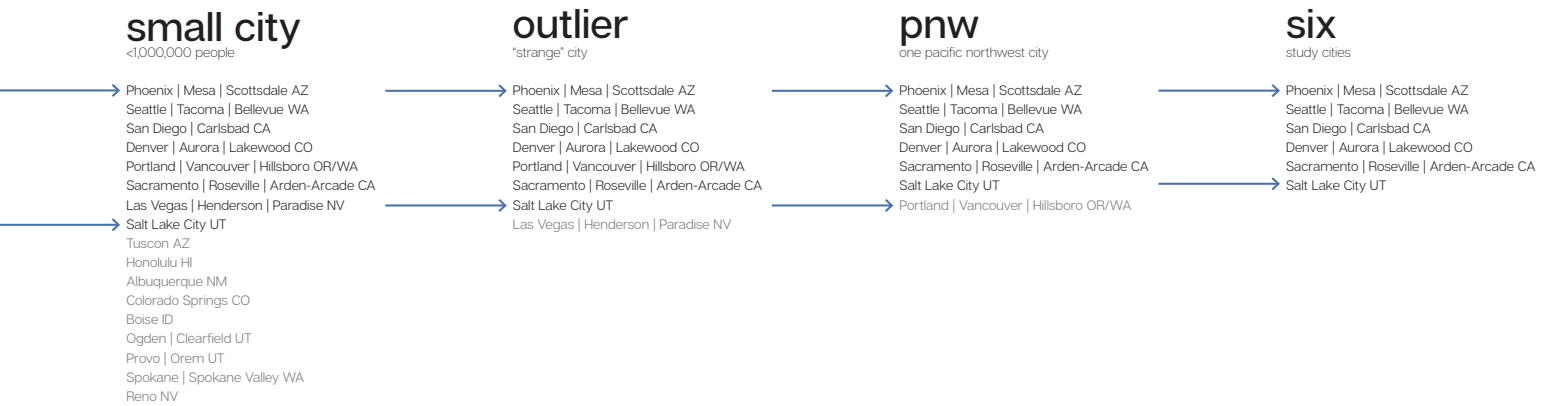


Figure 24: Matrix displays the process of city selection

On April 3, 2018 The New York Times Upshot published an article by Jed Kolko and Josh Katz that examined city similarities based on job mixes. This article was produced as part of a series attempting to identify the eventual location of Amazon's HQ2, but also acted as affirmation of the process of city selection outlined above. The study argued that city similarity can be identified using "job mix, which reflects both local advantages and history (coal, a port, great universities) and

local demand (a young population that needs teachers, or an older population that needs nurses)."⁷⁶ As a part of the Upshot study, users are able to choose a specific metropolitan area and a list of the top ten most similar cities is generated. When examining each of the six study cities chosen in this project, at least one of the other cities appeared on the top ten list (*Figure 26*). Although this metric is not perfect, and the New York Times admits as much, it affirmed selection of these six cities.

The New York Times

TheUpshot

Metros most similar to Seattle

	SIMILARITY	DISTANCE (MI.)
1. Boston	79	2,482
2. Portland, Ore.	79	142
3. Chicago	78	1,721
4. San Diego	78	1,049
5. San Francisco	78	676
6. Philadelphia	77	2,368
7. Baltimore	77	2,327
8. Atlanta	77	2,176
9. Austin, Tex.	77	1,763
10. Phoenix	76	1,112

Figure 26: What's your city's twin?



Figure 25: Six study cities

sources + data points

SOURCES

The city dataset was intended to collect a wide-range of data points that span a large variety of topic areas. This required a wide-ranging set of sources. *Figure 27* displays some of the categories of source types for the six-city dataset. Data was only collected from organizations that were deemed reputable, with the understanding that it would be difficult/impossible to avoid the use of some problematic data points. A major problem with data is that it is often collected in an attempt to convey a singular story and, therefore, can be tampered with or analyzed to present desired solutions. For this reason, the data was mostly taken from government sources. The dataset in its entirety is also large enough to keep potentially problematic information from having too much weight during evaluation.

Government-collected quantitative information acted as the backbone for the entire project “because of their reliability.”⁷⁷ The United States Census, including the American Community Survey and the Population Estimates Program, provided demographic information that was

the starting point for this dataset. Data from many different governmental organizations were used including but not limited to: Environmental Protection Agency, Federal Bureau of Investigation, Centers for Disease Control and Prevention, U.S. Department of Agriculture, National Center for Education Statistics, National Oceanic and Atmospheric Administration, and U.S. Bureau of Economic Analysis. For the most part, the information gleaned from these sources required considerable searching. There are varying levels of transparency regarding access to government information. Although the Open Data Movement has greatly expanded availability, in many cases information was very difficult to find and rarely was there a publicly accessible central location. It took considerable patience and time to find information using these organization's websites. The expansion of a central database, such as data.gov, could go a long way towards consolidating access to valuable information. This would have greatly assisted this research project, but would also act as a powerful tool



nonprofits



social media



government org.

Science

journals

United States
Census
Bureau

census

GALLUP

opinion polls



FiveThirtyEight
news organizations



indexes



private companies



academic research



research labs



associations



organizations



foundations



institutes

Figure 27: Dataset source types

for the government to operate with greater intelligence and efficiency.

Opinion polling was also a very important source of information in the six-city dataset. The majority of survey data included was from the management consulting company Gallup. This firm was chosen because the website has a significant amount of publicly usable polling information, conducts non-political polling, and is well respected. The news agency FiveThirtyEight rates pollsters “based on the historical accuracy and methodology of each firm’s polls.” Although this rating is based on political polling data, it provides context for Gallup’s reliability. Overall FiveThirtyEight gives Gallup a “B” based on analyzing the accuracy of 79 different poll results, which puts this firm in the upper tier in quality.⁷⁸ Gallup conducts considerable polling related to community well-being, including various health, safety, and economic statistics. The information used was derived from small press releases and larger publicly-accessible reports. Overall, opinion polling was extremely valuable for this project, especially because the public participation portion of the methodology was not completed.

News organizations also acted as important sources in the six-city dataset. This was especially the case for those that have adopted data journalism. FiveThirtyEight and The New York Times’ Upshot represent popular examples of these organizations. FiveThirtyEight examines politics, sports, science, life, and economics using statistical analysis, data visualizations, and computer programming to uncover and convey data-rich information. Nate Silver, the founder of FiveThirtyEight, described a process for data journalism that provides a particularly relevant and illustrative example for this project (*Figure 28*). This starts with “data collection,” which can be taken from polls, experiments, “or scraping data from websites.” Next is “organization,” which is important to run statistical analysis and to create descriptive visualizations. Third is “explanation,” which examines the “why” and “how” in journalism through “statistical tests to look for relationships in the data.” Finally, “generalization,” which “is a fundamental concern of science, and it’s achieved by verifying hypotheses through predictions or repeated experiments.”⁷⁹ This and other data journalism websites were useful because they provided access to valuable datasets. This includes data that these organizations statistically analyzed, but also raw information

collected from third party sources. For example, FiveThirtyEight created a weather unpredictability index that was a valuable way to rate the six cities based on weather.⁸⁰ Overall, much could be learned from the work of these organizations (how to manage, understand, and apply data), but they also provided data points for usage in this project's datasets.

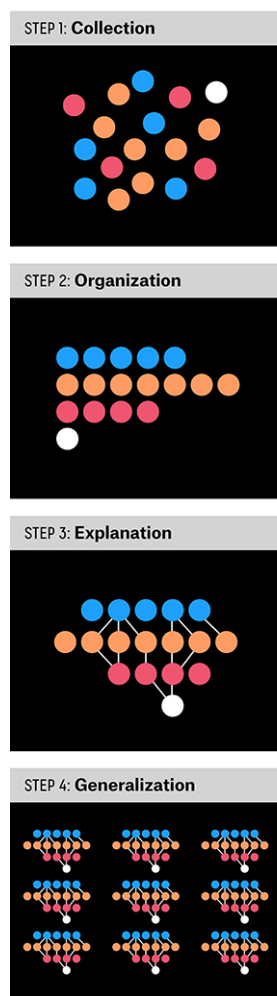


Figure 28: FiveThirtyEight's data journalism process

From the outset, the goal of this project was to include public and private data. Private data, for obvious reasons, is difficult/impossible for the general population to access.

Multinational companies, such as Google, collect unfathomable amounts of information. In an effort to include some of this data, this project incorporated material from Google Trends. This provides quantitative information on Google searches regarding various topics largely for marketing purposes. Comparing this information between the six study cities added an understanding of internet search traffic, but only scratched the surface related to what these companies could provide from a data perspective. Similarly, social media web applications collect an aggregation of valuable information. This project used trending and market data from Instagram, Facebook, and Twitter. In the end, this information was mostly useless in the context of this project, but was nonetheless included as an example. In the future, if private data has a safe means of distribution, information collected by social media and search engines could be included in this method's datasets.

A wide range of nonprofits, organizations, institutes, associations, and foundations were also useful for data collection. When looking

for very specific information related to a topic there is almost always a reputable group that undertakes studies related to that subject. For example, the American Lung Association has data points related to lung health and air quality.

Indexes are powerful resources that often do not provide base data points, but can be used to understand generalizations. In many ways, the six cities dataset is an index that compares different cities by a series of metrics. The *Energy Efficiency Scorecard* by the American Council for an Energy-Efficient Economy is an index that was included in the dataset.⁸¹ Over time, as the city dataset theoretically expands and includes a larger amount of information, indexes would be less useful. In order create a robust dataset for the purposes of this project, Indexes were included in an effort to fill gaps that might otherwise not be filled.

Finally, academic research and peer-reviewed journals were important (but underutilized in this project) sources to gather very specific information. An example is research undertaken by Southern Methodist University's DataArts project, which includes an *Arts Vibrancy Index*.⁸² Without the SMU data, the city dataset would not have included

anything related to the arts. This example illustrates a major theme in gathering data. With considerable digging and refined search words, there is information related to almost every topic available on the internet. Data collection for this project certainly did not stop because of a lack of new sources and topics. There is virtually a limitless amount of information that is accessible. Unfortunately, central locations that combine useful information are few and far between.

In total, the six-city dataset for this project included 67 different sources (*Figure 29*). If this project were to continue, the number of sources would only grow with time. To put 67 sources into context, the U.S. News & World Report *2018 Best States Rankings* used 26 sources, despite the thousands of data points it took into consideration.⁸³

ACT | American College of Sports Medicine | American Community Survey | American Council for an Energy-Efficient Economy | American Lung Association | Association of Religion Data Archives | Asthma and Allergy Foundation of America | Attom Data Solutions | Brookings Institute | Bureau of Economic Analysis | Bureau of Labor Statistics | Centers for Disease Control and Prevention | CNN | CollegeBoard | County Election Offices | County Health Rankings + Roadmaps | Department of Agriculture | Department of Energy | Department of Housing and Urban Development | Department of Transportation | ESPN | Environment America | Environmental Protection Agency | Environmental Working Group | Facebook | Federal Bureau of Investigation | Federal Transit Administration | Feeding America | FiveThirtyEight | Gallup | Google Trends | Hashtagify | Instagram | Institute for Health Metrics and Evaluation | Kids Count Data Center | Milken Institute | National Assessment of Educational Progress | National Association of Counties | National Center for Education Statistics | National Highway Traffic Safety Administration | National Oceanic and Atmospheric Administration | National Renewable Energy Laboratory | New York Times | Niche | Northwest Climate Toolbox | Open Data Network | Pew Research Center | Population Estimates Program | Public School Review | Reason Foundation | Resource Center for Child and Adolescent Health Science | Smart Growth America | SMU National Center for Arts Research | Substance Abuse and Mental Health Services Administration | Sustainable Development Solutions Network | Tax Foundation | The Institute for College Access and Success | Time | Trust for Public Land | TomTom | US Census | US News | Walkscore | WalletHub | We Are Still In | Yale Program on Climate Change Communication

Figure 29: 67 dataset sources

data points

A potential critique pertaining to the data collection for this project was that the data points used were at a variety of scales. Initially, the goal was to collect information at only the metropolitan level. Early into data collection it became evident that including information at only a single scale would inhibit the size of the dataset and topic areas included. For this reason, information was incorporated at the city, metropolitan, county, and, sparingly, at the state level. Bernease Herman, a Data Science Fellow and a member of the Research Staff at the University of Washington's eScience Institute provided advice on data management and evaluation throughout the project. She indicated that having varying scales of information was accepted practice, especially when desired information was found only at a specific scope.

The dataset used the most recent information available as of January 2018. This research project's duration was so long that much of the material used in the dataset was not current by the time the project was completed. Conceptually, this dataset would continually update and respond to changes in information. Without a means to do so (programming

or sophisticated data collection tools), this aspect of the project was not completed. The dataset, however, still represented an adequate example of the process. A cutoff threshold for when data from the original source was collected was never explicitly set, but very few data points were included that were not between 2015-2018. Centralized data collection, such as this, could be used to encourage updated studies to replace existing or outdated data points. Deeper research into the various sources might uncover if and when included data points are updated, but this was not specifically examined as a part of this project.

In total, the six-city dataset included 9,810 data points (*Figure 30*). The dataset can be found in its entirety in *Attachment 1*. Although it is difficult to put this into perspective, opinion polling metrics can be applied to aid in understanding the dataset's statistical significance. SurveyMonkey has created a "sample size" calculator. The term "sample size" refers to "the number of completed responses your survey receives. It's called a sample because it only represents part of the group of people (or target population

whose opinions or behavior you care about.”⁸⁴

This calculator requires a population size, confidence level (%) and margin of error (%) inputs and uses an equation to calculate a sample size. Using the SurveyMonkey calculator, a survey of the entire United States (325.7 million people) with a confidence level of 99% and a margin of error of +/- 2% would require a sample size of only 4,161 people. The 10,000 data points of this project cover more topics than a survey, but are related to much smaller populations. Without being a

statistician, it seems that this dataset is much too small from a single topic standpoint, but adequate to gain a more general understanding. Following the rule of thumb that suggests that “the larger the sample size, the more statistically significant it is,” this dataset, as it is gradually added to and expanded, will only become more significant.⁸⁵ For the purposes of this project, the six-city dataset is most likely in the statistically relevant realm and therefore conclusions made should not be discounted.

9,810	67
data points	sources

Figure 30: Robust dataset is statistically significant

data organization

Organizing the data was extremely important, especially for the evaluative process.

Large datasets require intricate systems of organization. For example, the U.S. News & World Report *2018 Best States Rankings* are made up of 8 categories, which are then broken down into elements related to those categories, and are based on 77 different metrics. MVRDV's Datatown project similarly "collected, sorted and synthesized [information] into... six sectors. The data were sorted alphabetically into a field of 'barcodes' (lines of information), and later resorted to fit practical needs. These barcodes can be described as 'data pods' or 'blocks' that collect and store urban information in specific categories such as air quality, carbon monoxide levels, ozone levels, population density, land area, crime rate indexes, etc. In Datatown, every datascape (image) deals with one or two of these influences, and reveals their impact on the design process by illustrating their extreme scenarios."⁸⁶ Finally, Nate Silver stressed the importance of composing data in such a manner to allow for statistical analysis and visualizations. For this reason, the six-city dataset was carefully categorized for eventual evaluation.

Figure 31 displays a single path through the dataset. The outermost layer of organization is made up of 7 different pods. The pods represent the general topic areas that are included in the six-city dataset: "Safety," "Health," "Education," "Environment," "Existing Conditions," "Economy," and "Community". The information related to each pod was also combined to formulate totals that provide a general understanding of the six cities. The following represents a very brief understanding of some of the information included in each pod. The "Safety" pod includes information related to crime, traffic/pedestrian safety, and natural disasters. "Health" includes information ranging from physical and mental health to statistics pertaining to specific ailments. The "Education" pod contains topics related to attainment, enrollment, and quality but also considers child well-being. "Environment" includes climate, pollution, energy, and transportation. "Existing Conditions" has a wide range of topics including demographics, density, and housing, but also, important design considerations related to access to parks and recreation, arts, libraries, and other leisure activities. The "Economy" pod includes information related

to personal and city economies as well as the cost of living and homelessness. Finally, “Community” contains data points related to pride, well-being, and activism.

Next, the pods are broken down into categories. For example, the “Health” pod is made up of lifestyle, mental health, physical health, healthy eating, health stats, and facilities and services categories. This is then broken down into subcategories. For example, the lifestyle category under the “Health” pod is broken down into alcohol, tobacco, sleeping, teen pregnancy, and drug sub categories. These subcategories are then broken down into sub-subcategories. Under the “Health” pod, lifestyle category, and alcohol subcategory there are use, risk perceptions, dependence, and treatment sub-subcategories. Finally, these sub-sub categories can then be broken down into base data points.

Organization of the data to this level of detail is important because it allows for conclusions to be made from generalized totals down to the more detailed sub or sub-subcategory level. For example, valuable information could be gleaned from the results of the “Environment”

pod that could lead to conclusions, but a more detailed response might occur by examining the subcategory related to the projected cost of climate change. There are instances throughout the dataset where the base information is found at the sub-subcategory or even subcategory level. This is dependent on the amount of detail each level of organization includes, with certain parts of the dataset containing considerably more information than others. For example, the Institute for Health Metrics and Evaluation has a substantial amount of quantitative information related to mortality rates, with detailed material on very specific causes of death. On the other hand, the dataset has only a single data point related to sleep provided by the Centers for Disease Control and Prevention. The dataset contains an additional pod called “General Data,” which is made up of useful information (demographic, employment, etc.) that was not analyzed using the evaluative tools.

Pods

Category

Sub Category

health



lifestyle



alcohol



education

mental health

tobacco

environment

physical health

sleeping

safety

healthy eating

teen pregnancy

economy

health stats

drugs

existing conditions

facilities + services

community

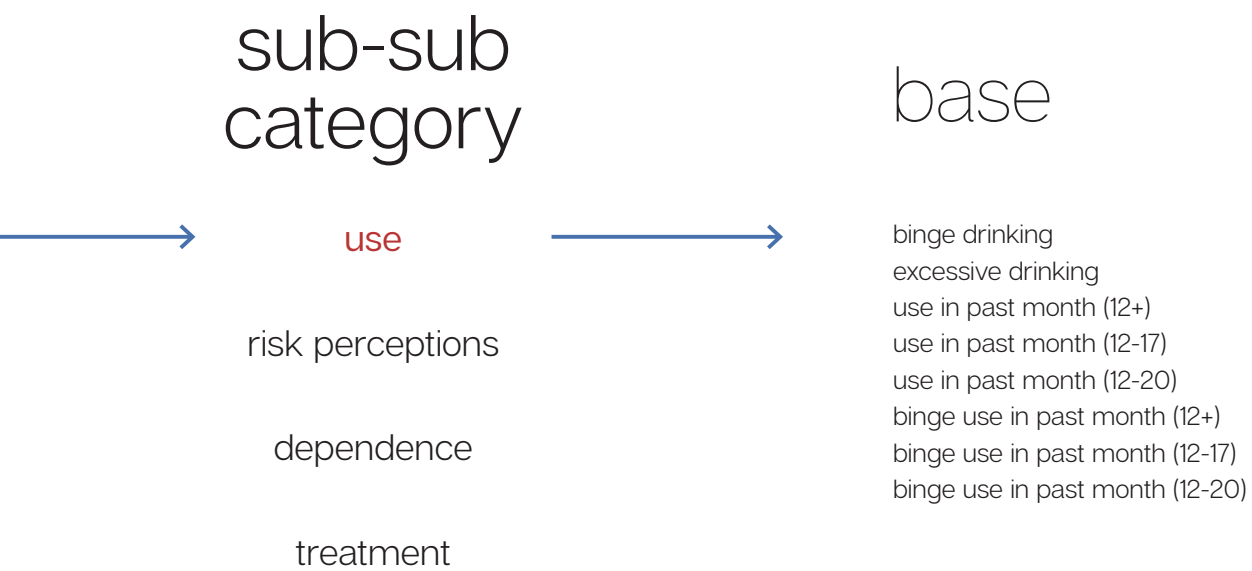


Figure 31: Data organization of "health" pod

evaluative methods

One of the most important responsibilities of the arbiter(s) is to establish methods of statistical analysis to reach conclusions from thousands of data points. This is what Nate Silver would call “find[ing] the signal in the noise.”⁸⁷ With assistance from Bernease Herman at the eScience Institute at the University of Washington, four evaluative tools were developed. Without knowing the outcome of these tools from the onset, the project adopted four methods instead of one in order to confirm results, limit reliance on a single tool, and broaden overall understanding. Each evaluative tool has strengths and weaknesses. The hope was that the deficiencies of one method might be compensated by the strength of another. The term “issue” will be consistently adopted when

discussing the results of the evaluative tools.

This term is used to describe when a data point is or is not comparatively problematic; or represents a possible challenge that a city does or does not face.

Three of the four evaluative methods are ranking based. A city is given a “1” when a data point is deemed to have the largest issue. A city is given a “6” when the data for a specific city is deemed the least problematic (*Figure 32*). The arbiter(s) must evaluate each data point to determine what should and should not be considered a cause for concern. For this reason, the dataset could have points of contention throughout based on how each ranking was determined. For example, a lack of belief in climate change could result



Figure 32: Evaluative tool ranking method

in the dismissal of the entire climate change category. This aspect of the dataset is extremely important because it essentially debunks the misconception that this tool could exist without human input. The larger the dataset becomes; the more information experts must rank. The data itself determines the path, but the arbiter(s) must guide it.

Each evaluative tool is described in detail in the remainder of this section. In order to help understand the process, an example taken directly from the six-city dataset is broken down for each method. This example is located under the “Health” pod, healthy eating category, and healthy eating subcategory. Here, there are two sub-subcategories: one provides general statistics related to healthy eating and the other contains information pertaining to the consumption of fruits and vegetables.

Visualizing the different evaluative tools was an important means to understand the outputs and compare the results between methods. For each evaluative tool, a distinct data graphic and mode of representation was created with a consistent form of organization

for comparison between tools. These graphics are displayed for each of the evaluative tools (*Figure 40-43*) and are shown in detail in *Appendix A*. This series of data graphics would not be used for wider public consumption as the information requires too much specific knowledge related to the evaluative methods and the graphics themselves.

The first evaluative tool is mean/average, which is ranking based. The example that is used to understand this statistical analysis typology can be seen in *Figure 33*. Examining the sub-subcategory of healthy eating, there is an opinion poll collected by Gallup that asks respondents about their healthy eating habits on the previous day. Sacramento has the lowest percentage at 64.1% and is therefore given a “1” ranking, as the arbiter(s) deemed this to be the most problematic. The other cities are then ranked 2-6 based off of the initial “1” ranking. Since there are no additional

data points under the healthy eating sub-subcategory that need to be evaluated and combined, this ranking represents both the initial ranking, but also the mean value. This is a good example of data organization in which the base value is found at the sub-subcategory level, instead of the base.

Next, under the sub-subcategory labeled “fruits and veggies,” the base data provided by the American College of Sports Medicine is ranked using the same strategy. In this case, the Phoenix metropolitan area has the

HEALTHY EATING

Healthy Eating | Gallup | Metro | 2015/2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
healthy eating all day the previous day (%)	65.5	69.4	64.4	64.1	64.6	64.2
healthy eating all day the previous day rank (out of 189)	52	18	73	76	70	75
healthy eating rank	5	6	3	1	4	2

Fruits and Veggies | American College of Sports Medicine (ACSM) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
consuming 2+ fruits per day (%)	28.8	36.2	26.9	37.9	30.8	33
consuming 2+ fruits per day rank	2	5	1	6	3	4
consuming 3+ vegetables per day (%)	16	22.5	15.1	22.5	16.8	16.7
consuming 3+ vegetables per day rank	2	5	1	5	4	3
fruits and veggies mean	2	5	1	5.5	3.5	3.5
healthy eating mean	3.50	5.50	2.00	3.25	3.75	2.75

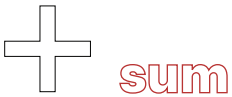
Figure 33: Mean evaluative tool example

smallest population that consumes 2+ fruits per day and is therefore given a “1.” Similarly, Phoenix has the smallest population that consumes 3+ vegetables a day and is also given a “1.” The other cities are once again ranked based on these initial “1” rankings. With two values under the fruits and veggies sub-subcategory, the mean/average evaluative tool is used to combine these rankings and provide a new mean/rank that indicates fruit and veggie consumption. The dataset, as it currently stands, takes these mean values out to two decimal points.

Finally, the mean of the sub-subcategories is then averaged to find the healthy eating subcategory mean. This process was carried out across the entire dataset, through each level of organization, and totaled. The means that are lower in value (closer to “1”) represent cities with greater cause for concern. In this example, Phoenix's subcategory mean value is “2.00,” which is by far the lowest value. From this information the arbiter could posit that Phoenix has issues related to healthy eating.

The mean evaluative tool is useful in determining generalizations related to issues

that each city faces. The mean tool is also capable of evaluating those parts of the dataset that contain a significant number of data points without giving these areas more weight when they are combined and totaled. The mean tool, however, has a tendency to hide extremes. In many cases, those data points that represent a comparatively greater cause for concern might not be as easily identified. As more data points are added, there is a better chance that extreme mean values from one city loses separation between another.



The next statistical analysis tool is sum. Sum is also ranking based and will therefore use the initial rankings that were explained in the mean/average section. *Figure 34* displays the same example outlined above with the sum evaluative tool. Instead of averaging the rankings, they are added together. In this example, the healthy eating rank based on the Gallup poll is added to the initial ranking of consumption of 2+ fruits per day and consumption of 3+ vegetables per day. This provides a subcategory sum related to healthy eating. The sum values that are lower

represent cities with greater issues. In this example, Phoenix has the lowest value at “5” and San Diego has the highest value at “16.”

The sum evaluative tool is expedient. It is by far the easiest method to complete and it can help the arbiter(s) determine those areas of the dataset that need additional data points. At the same time, sum can quickly provide considerable weight to those sections of the dataset that contain more information, while those with less could essentially disappear.

HEALTHY EATING

Healthy Eating | Gallup | Metro | 2015/2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
healthy eating all day the previous day (%)	65.5	69.4	64.4	64.1	64.6	64.2
healthy eating all day the previous day rank (out of 189)	52	18	73	76	70	75
healthy eating rank	5	6	3	1	4	2

Fruits and Veggies | American College of Sports Medicine (ACSM) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
consuming 2+ fruits per day (%)	28.8	36.2	26.9	37.9	30.8	33
consuming 2+ fruits per day rank	2	5	1	6	3	4
consuming 3+ vegetables per day (%)	16	22.5	15.1	22.5	16.8	16.7
consuming 3+ vegetables per day rank	2	5	1	5	4	3
healthy eating sum	9	16	5	12	11	9

Figure 34: Sum evaluative tool example

f subcategory frequency

The next evaluative method is subcategory frequency, which is also ranking based. This test takes the results of the mean evaluative tool to the subcategory level and then re-ranks the cities 1-6 following the same steps outlined in the description of the mean evaluative tool. In this example (*Figure 35*), the subcategory healthy eating mean has the following values: Seattle 3.50, San Diego 5.50, Phoenix 2.00, Sacramento 3.25, Denver 3.75, and Salt Lake City 2.75. The cities are then re-ranked with the city that has the lowest value given a “1.” In essence, this ranking provides a quick

summary at the subcategory level. Next, at the pod level of organization, all subcategory rankings are analyzed by the frequency of “6,” “5,” “4,” “3,” “2,” and “1” occurring in each city. With this test, a higher frequency of “1” or “2” represents a city with more problems/ challenges. *Figure 36* displays the subcategory frequencies for the “Health” pod. In this example, Phoenix has by far the highest frequency of “1” rankings, which means that health is most likely a cause for concern in the Phoenix area. These frequencies were also summed and averaged in order to further test

HEALTHY EATING

Healthy Eating | Gallup | Metro | 2015/2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
healthy eating all day the previous day (%)	65.5	69.4	64.4	64.1	64.6	64.2
healthy eating all day the previous day rank (out of 189)	52	18	73	76	70	75
healthy eating rank	5	6	3	1	4	2

Fruits and Veggies | American College of Sports Medicine (ACSM) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
consuming 2+ fruits per day (%)	28.8	36.2	26.9	37.9	30.8	33
consuming 2+ fruits per day rank	2	5	1	6	3	4
consuming 3+ vegetables per day (%)	16	22.5	15.1	22.5	16.8	16.7
consuming 3+ vegetables per day rank	2	5	1	5	4	3
fruits and veggies mean	2	5	1	5.5	3.5	3.5
healthy eating mean	3.50	5.50	2.00	3.25	3.75	2.75
healthy eating subcategory rank	4	6	1	3	5	2

Figure 35: Subcategory frequency evaluative tool example

this evaluative tool, but this only reaffirmed the conclusions that were already reached.

The subcategory frequency evaluative tool is powerful. It essentially takes the mean method to a level of organization (subcategory) that is before average values become less capable of indicating extremes. This tool is able to maintain an association to specific

topics, which makes it easy to identify causes for concern in a city. Overall, the biggest weakness in this evaluative method is that it does not display differences in values. A city could get a “2” ranking and be only a small fraction from being a “1”. When examining the totals and pulling relevant information from the six-city dataset to the site selection dataset this is significant.

SUBCATEGORY FREQUENCY

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
frequency of "6"	1	5	0	1	5	4
frequency of "5"	7	4	0	3	3	7
frequency of "4"	9	10	3	3	2	4
frequency of "3"	4	1	4	7	10	4
frequency of "2"	4	4	8	7	3	3
health frequency of "1"	1	2	11	5	3	4

Figure 36: Subcategory frequency of "health" pod

% percent normalization

The final evaluative method, percent normalization, is the only tool that is not ranking based. Instead, this statistical evaluation measures the difference between values. Percent normalization is determined using two equations.

The first equation is used when a higher base value is determined by the arbiter to indicate greater issue. For example, the Center for Disease Control and Prevention has examined the suicide rate per 100,000 residents (*Figure 37*). In this example, the higher the base value or suicide rate, the greater the cause for concern. This means that Salt Lake City (Salt Lake County) has the most problematic data with a suicide rate of 22.2 people per 100,000 residents. The equation divides a city's base data point by the base data point of the city that is indicated as having the greatest issue. This is essentially providing the percent difference in value between the city with the greatest issue and all of the rest. Using this equation, the city with the most problematic data point will always be given a "1" or 100 percent. Looking at the example, Salt Lake City (Salt Lake County) has the most problematic data point and therefore the equation looks

like this: $(22.2/22.2) = 1$. Therefore, Salt Lake City has a percent normalization value of "1." When comparing this value to Seattle (King County), which has a suicide rate of 12 people per 100,000 residents, the equation looks like this: $(12/22.2) = 0.54$. This is indicating that the value of Seattle's base data point is 54% of Salt Lake's.

The second equation is used when a lower base value is determined by the arbiter to indicate greater concern. This is illustrated using the healthy eating example that was applied to understand the other evaluative methods (*Figure 38*). In the data from the American College of Sports Medicine related to the consumption of 2+ fruits a day, the city with the lowest base value is considered to have the greatest cause for concern, which in this case is Phoenix (26.9%). The equation is the same as the first but subtracts this value from 2. For example, when looking at San Diego the equation would look like this: $2 - (36.2/26.9) = 0.65$. This is indicating that the value of San Diego's data point is 65 percent of Phoenix's.

equation 1: higher = greater issue

$$\left[\frac{\text{city x}}{\text{city with greatest issue}} \right]$$

SUICIDE

Suicide | Centers for Disease Control and Prevention (CDC) | County | 2012-2016

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
suicide (per 100,000)	12	12.4	15.8	13.2	15.8	22.2
suicide % norm.	0.54	0.56	0.71	0.59	0.71	1.00

Figure 37: Percent normalization higher-greatest issue

equation 2: lower = greater issue

$$2 - \left[\frac{\text{city x}}{\text{city with greatest issue}} \right]$$

HEALTHY EATING

Healthy Eating | Gallup | Metro | 2015/2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
healthy eating all day the previous day (%)	65.5	69.4	64.4	64.1	64.6	64.2
healthy eating all day the previous day rank (out of 189)	52	18	73	76	70	75
healthy eating % norm.	1.02	1.08	1.00	1.00	1.01	1.00

Fruits and Veggies | American College of Sports Medicine (ACSM) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
consuming 2+ fruits per day (%)	28.8	36.2	26.9	37.9	30.8	33
consuming 2+ fruits per day % norm.	0.93	0.65	1.00	0.59	0.86	0.77
consuming 3+ vegetables per day (%)	16	22.5	15.1	22.5	16.8	16.7
consuming 3+ vegetables per day % norm.	0.94	0.51	1.00	0.51	0.89	0.89
fruits and veggies % norm.	0.93	0.58	1.00	0.55	0.87	0.83
healthy eating % normalization	0.98	0.83	1.00	0.78	0.94	0.92

Figure 38: Percent normalization lower-greatest issue

Only the base value for each of the data points use the two equations outlined. These data points are then averaged in order to combine values through the different levels of organization. For example, the percent normalization values for eating 2+ fruits a day and 3+ vegetables a day are averaged in order to get a sub-subcategory percent normalization value. This is then averaged with the healthy eating sub-subcategory value to form a healthy eating subcategory percent normalization.

Percent Normalization is an important measurement that displays differences in values. This is used to determine the numerical contrast between the greatest issue and all others. This can be an important tool in identifying extremes, which is often the most illustrative of what should be examined in detail. This evaluative tool, however, takes a considerable amount of time to apply to a larger dataset. It also does not have a logical method for connection between initial evaluations, as averaging out the results of this statistical test brings with it the same issues as the mean tool.

totals

Each of the evaluative methods were applied across all levels of the data organization. Then these values were totaled in order to provide a holistic or generalized understanding of the six cities and the issues that they face. This marked an important crossroads because a decision was required in order to determine how the project progressed. Any of the six cities could be chosen for examination in the more specific site selection dataset.

In order to continue following the data and maintain its position as the most powerful

decision-maker, this project used the totals of the evaluative tools to determine the study city that would then be examined on a local scale. *Figure 39* provides a summary of the totals of each evaluative tool. Subcategory frequency indicates the number of times a city was ranked “1.” In this case, Phoenix has substantially more “1” rankings and therefore has the greatest cause for concern. The city with the lowest sum value has the most problematic data points. This is once again Phoenix by a significant margin. The percent normalization value that is closest to “1.00”

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
total mean	3.80	3.37	2.88	2.87	3.67	3.53
total sum	2,224	2,098	1,675	1,841	2,048	2,099
total frequency of "1"	10	15	43	25	7	15
total percent normalization	0.32	0.51	0.63	0.58	0.44	0.62

Figure 39: Evaluative tool totals

indicates the city has more troublesome data points than the others. Phoenix by a small fraction has a percent normalization value that expresses problems. Finally, the mean evaluative method total with the smallest value marks the city with problematic data points. In this case, Sacramento by one hundredth over Phoenix. In the end, Phoenix's evaluative results were either first (3) or second (1) when indicating overall issue. Therefore, Phoenix was chosen as the study city to examine more closely in the site selection dataset.

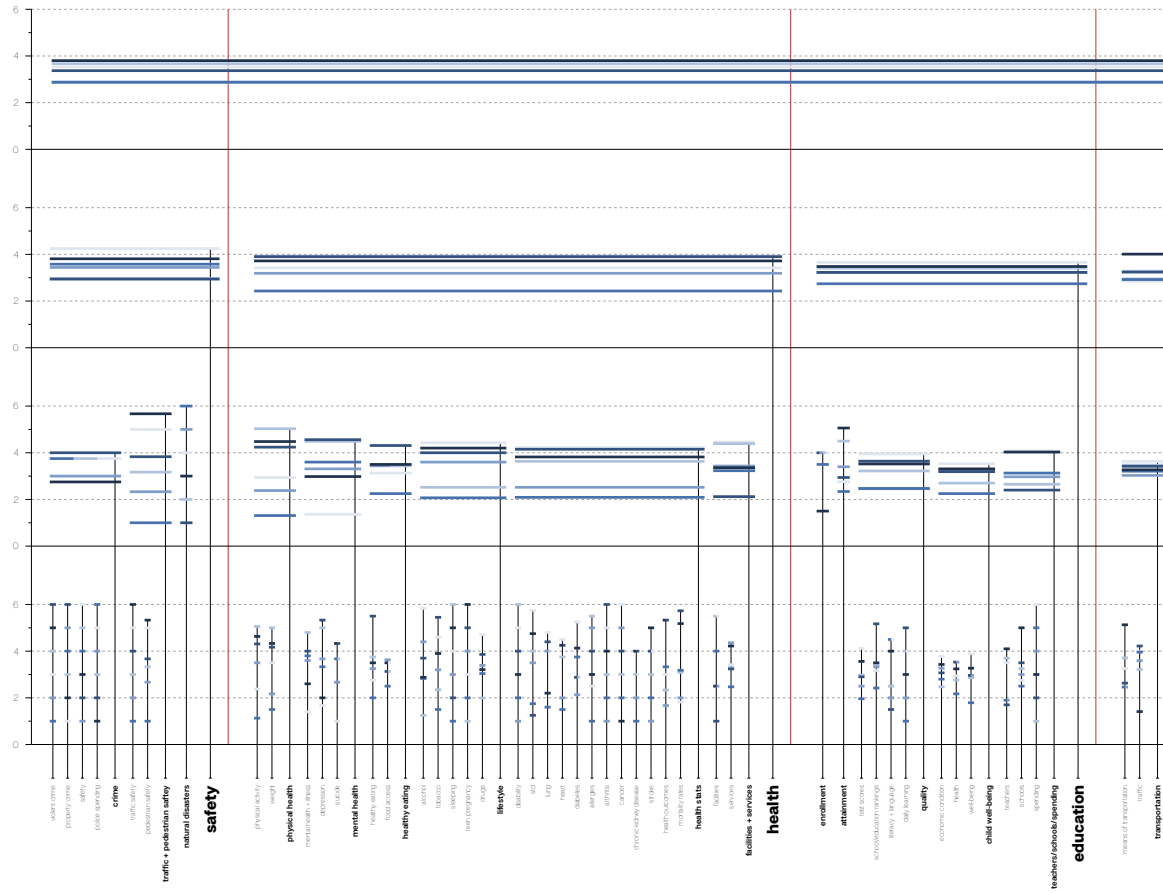
With Phoenix selected, the six-city dataset required reexamination in order to pull out the necessary information that could then be utilized in the site selection dataset. In order to parse this information, the entire six-city dataset was filtered at the sub-subcategory level to include only those data points where Phoenix is projected to have the greatest relative issue for each of the four evaluative tools (*Attachment 1*). Next, an additional table was created that compares the four evaluative methods at the subcategory level to understand when each recognized Phoenix as exhibiting the greatest issue and to display evaluative method congruency (*Attachment*

1). This table was then filtered to include only those instances where one of the evaluative tools indicated Phoenix as having an issue. Overall, the four evaluative tools displayed a fair amount of congruency. Of the 70 different subcategories, categories, and pods that indicated the greatest issue in Phoenix using at least one of the evaluative methods, 47 were across all four. This congruency suggested that it was not necessary to choose one tool as the overarching-decision maker. The two tables were then used to determine what data points should be examined at a local scale in the site selection dataset. These tables acted as a list of data trends that guided the next phase of the methodology.

X
mean



issue
+ -



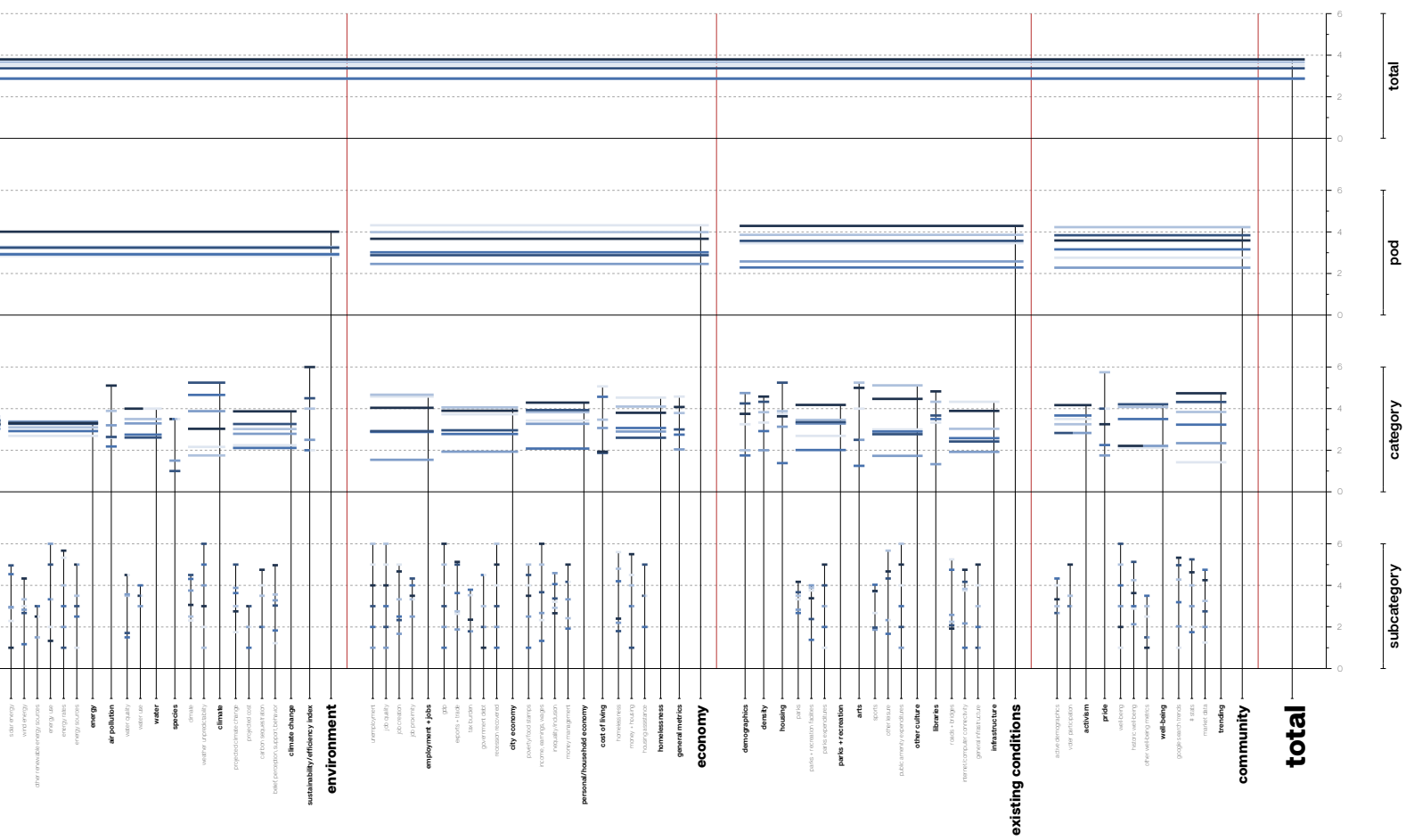
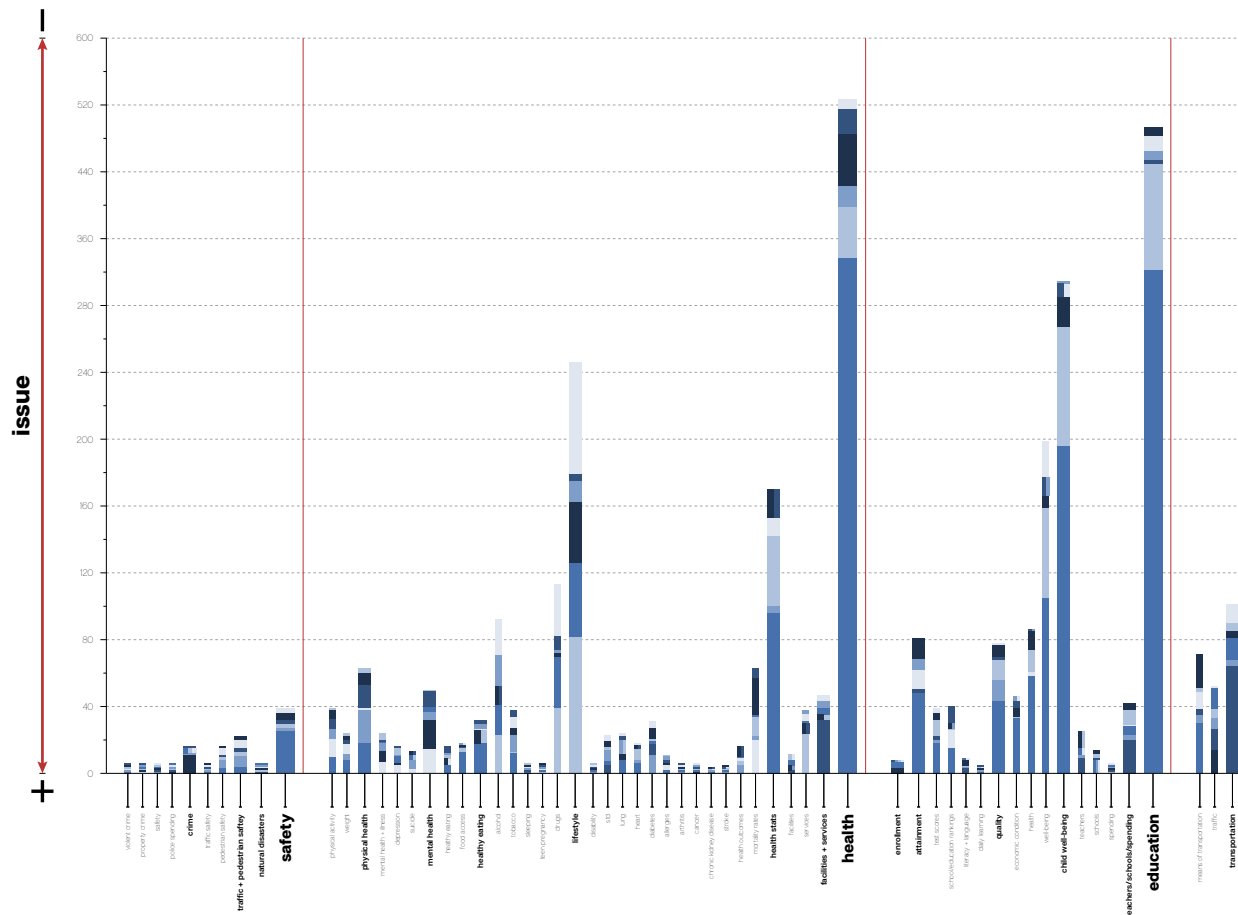
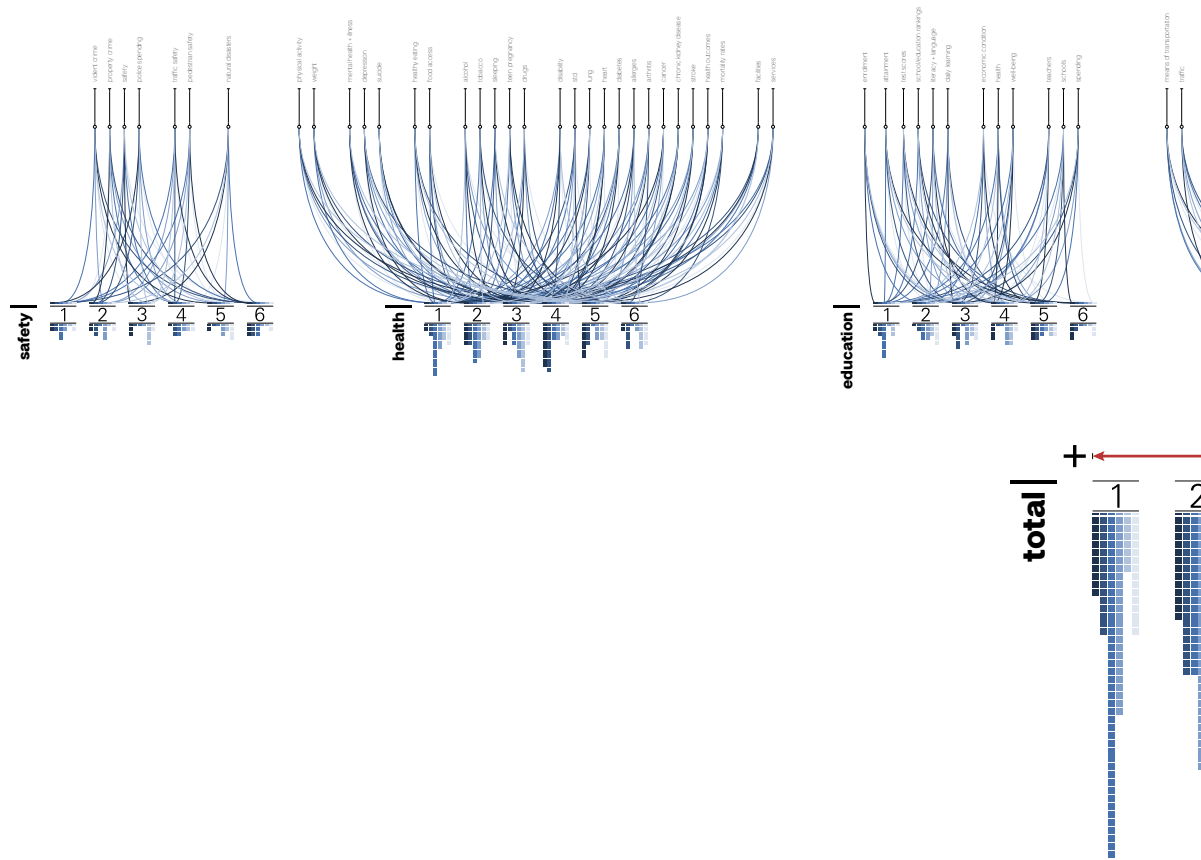


Figure 40: Visualization of mean evaluative tool results

- seattle
- san diego
- phoenix
- sacramento
- denver
- salt lake city
- subcategory
- category
- pod
- total



subcategory	frequency
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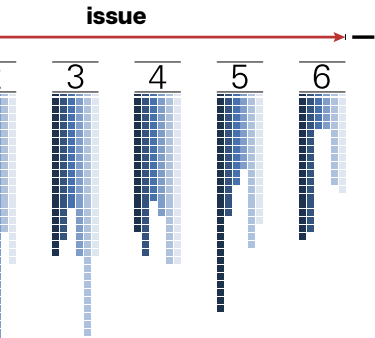
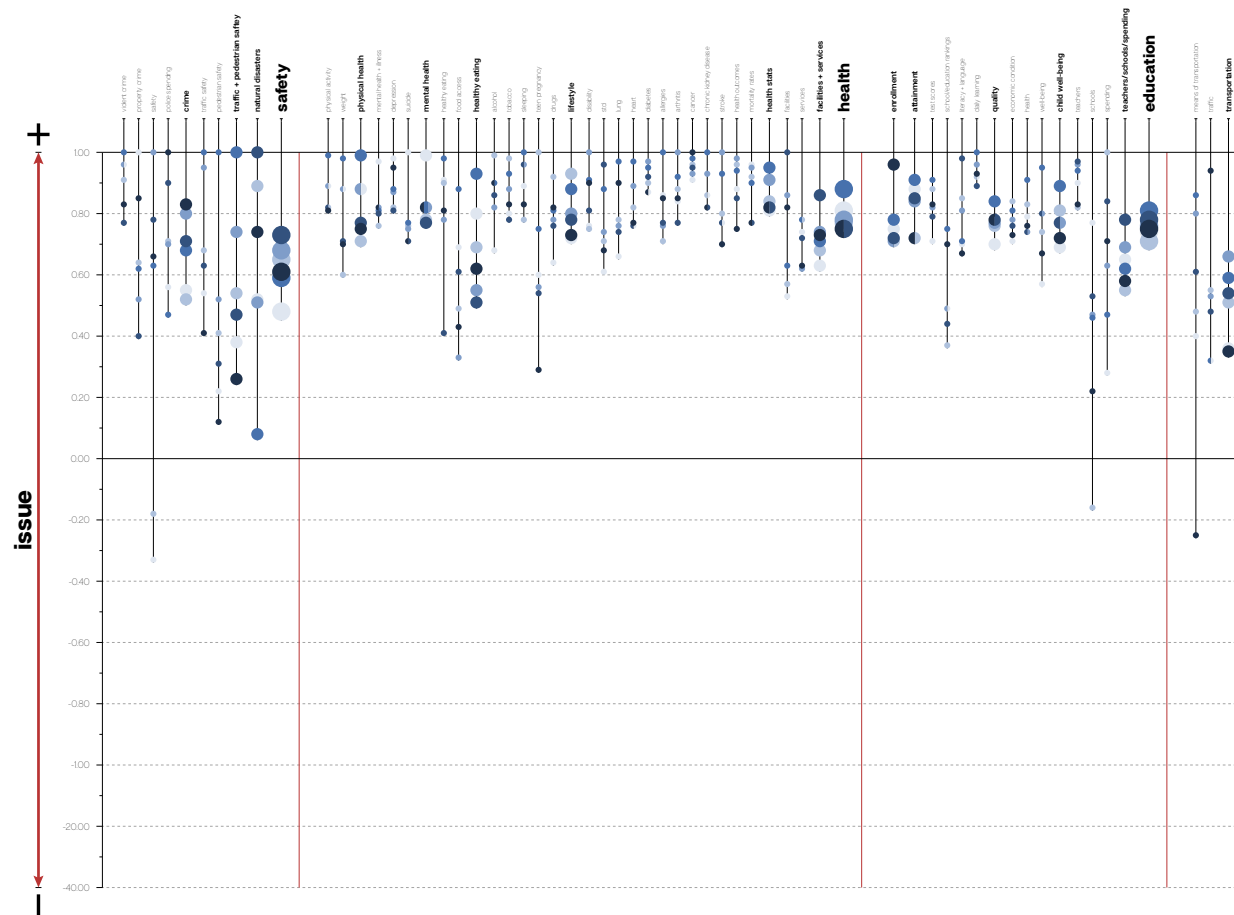
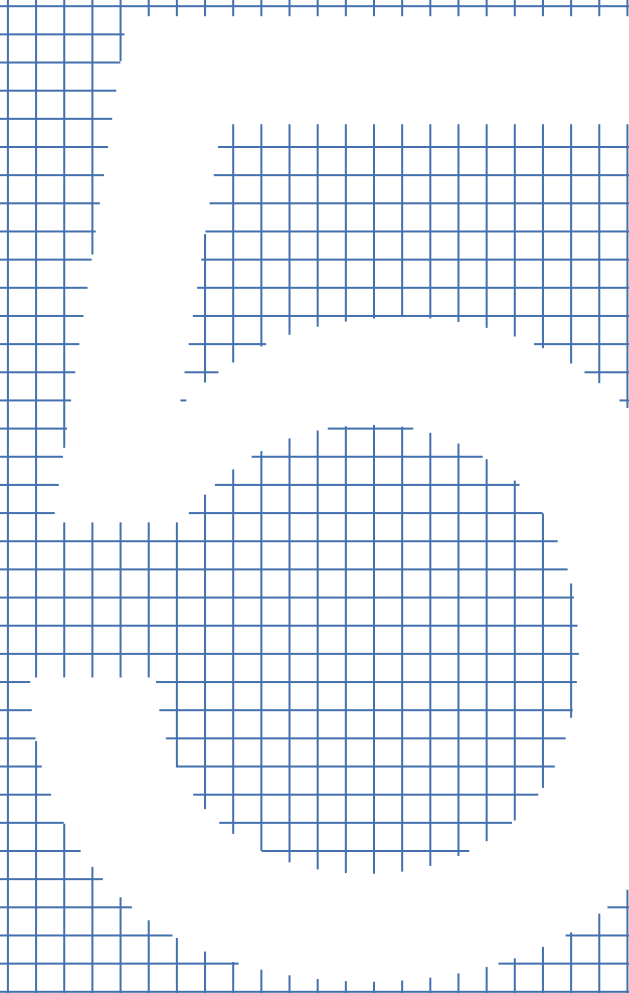


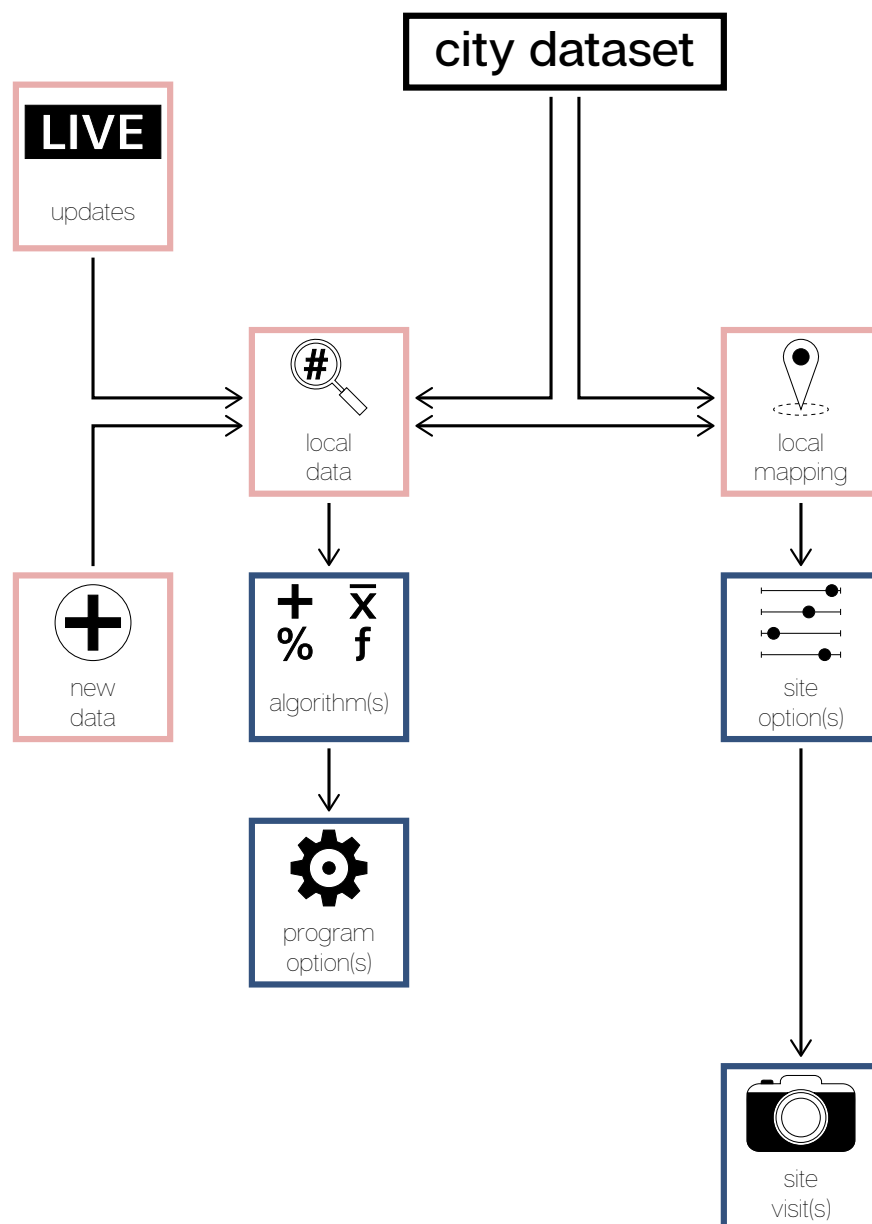
Figure 42: Visualization of subcategory frequency evaluative tool results





With Phoenix chosen as the study city, the next phase of the conceptual framework was used to directly identify site and program options. This was carried out through a close, neighborhood-level examination of the city. This portion of the methodology flowchart

(Figure 44) includes local mapping, used to determine site options. These potential sites are then examined in a local dataset. Evaluative tools and site visits were used to establish a clear understanding of program and site options.



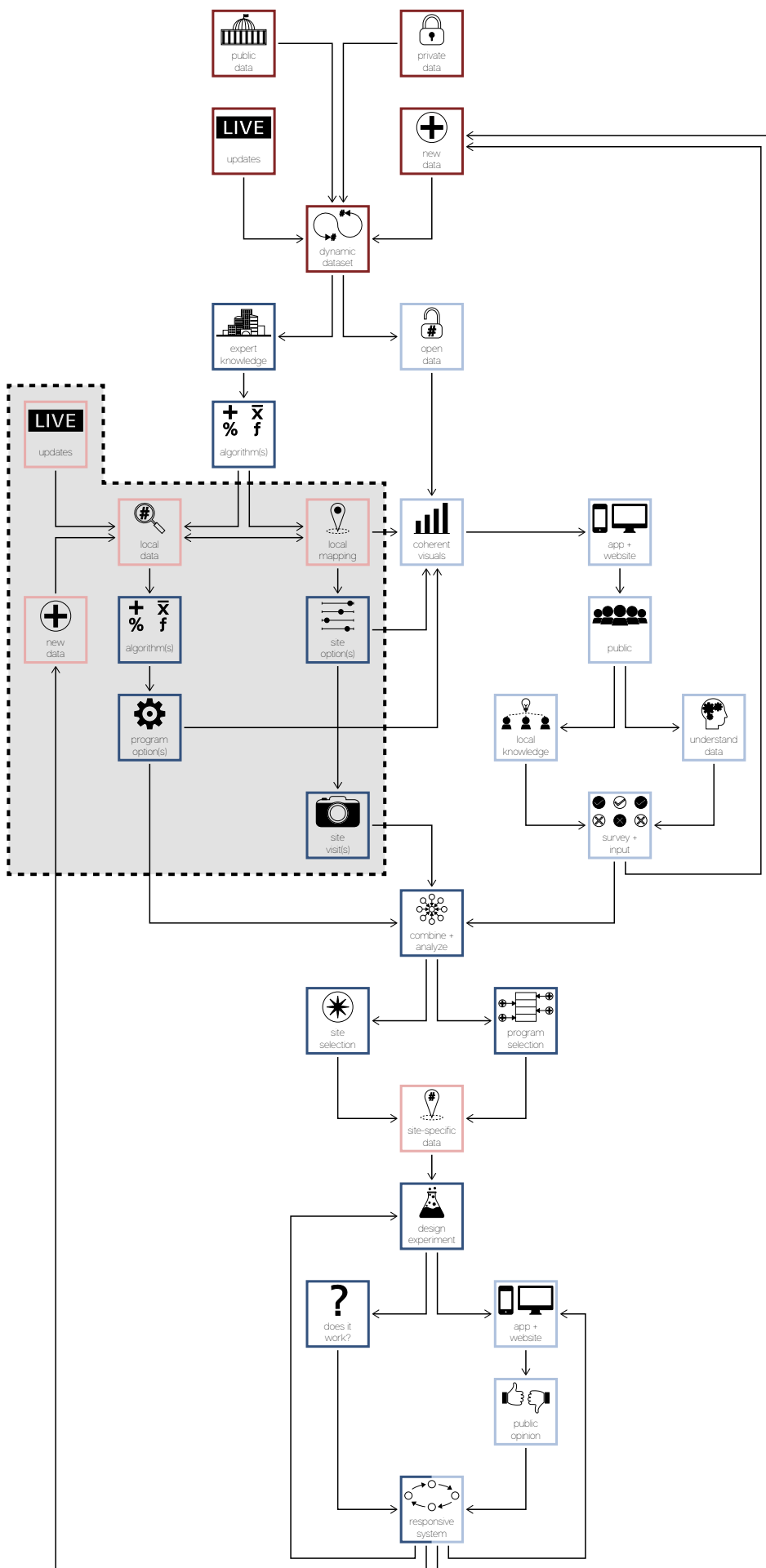


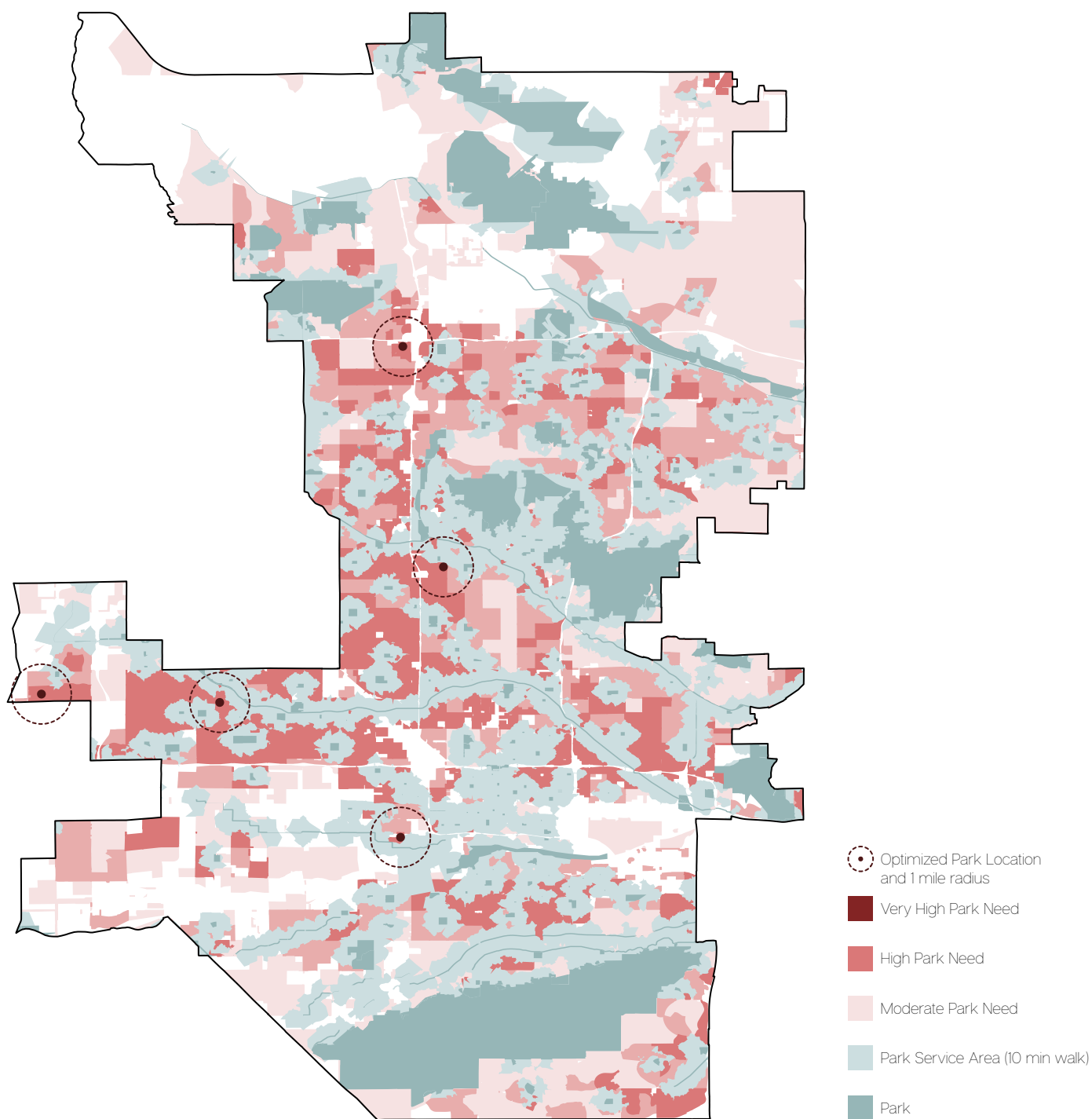
Figure 44: Site dataset portion of methodology

site options

The site selection process began by carefully choosing a series of site options for comparison using three strategies. First, data points that were identified as problematic in the city selection dataset were collected at a local scale and mapped using ArcMap. The vast majority of the quantitative information gathered for the second dataset was mapped, which helped to make the information spatial. Maps are an important tool because they “[simplify] the understanding of complex urban changes through visual means.”⁸⁸ These maps were examined to identify places that exhibit need or appear to have significant problems. A select set of these maps can be found in *Appendix B*. Site option selection took into consideration many of these maps. For example, an especially important source was The Trust for Public Land’s ParkServe® platform because access to parks and recreation facilities was identified as a major problem in Phoenix (*Figure 45*). ParkServe is used to help determine the location of future parks in order to “make sure our collective park resources are going into the places where parks are needed the most.”⁸⁹ ParkServe uses local GIS information, including demographics and existing park locations, to

mark areas of park need. This powerful tool was especially important for choosing site options that could then be compared in the site selection dataset.

Second, a major limiting factor in choosing potential sites across Phoenix was that they had to appear vacant. Undeveloped property, rather than demolishing and rebuilding existing structures, was chosen for selecting site options for two reasons. First, Phoenix can be characterized as “the poster child for sprawl: Before the housing crash, developers were building 60,000 new homes a year in the deserts at the edges of the city. But when the market fell apart and some of those new neighborhoods turned into instant ghost towns, the city learned its lesson and committed to moving in the other direction – walkable neighborhoods connected by public transit.”⁹⁰ If Phoenix is to transform, much of the open land that exists between the patchwork of suburban housing and commercial strip malls would need to be developed. While the city attempts to densify, demolishing existing buildings seemed counterproductive, especially considering the amount of open land that can be found



Park Need

The Trust for Public Land* | 2018
 This map was produced using data provided by The Trust for Public Land ParkServe®

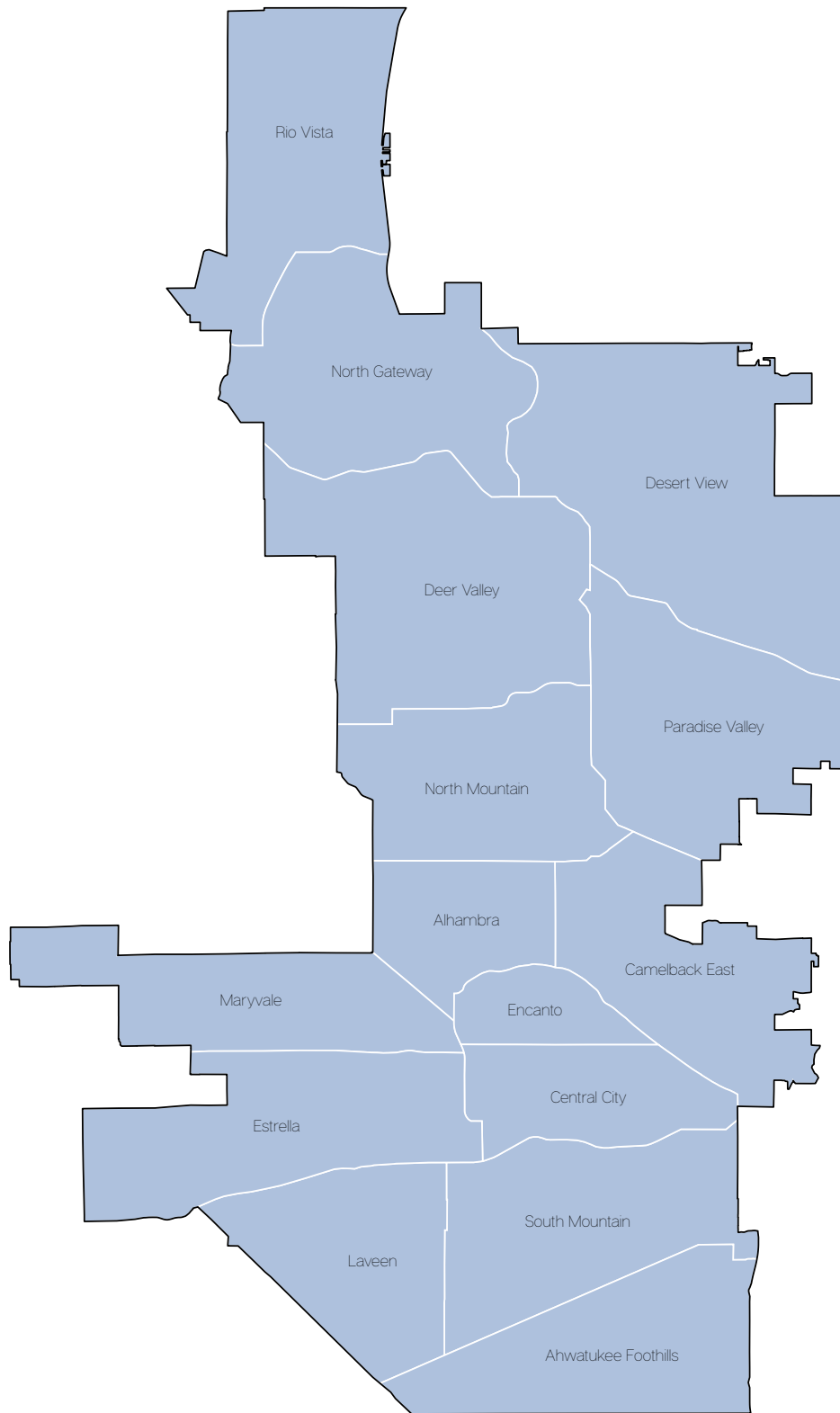
Figure 45: Phoenix is in need of park/recreation facilities

in even the densest parts of the city. Second, without having an intimate knowledge of the city and not being able to actively explore site options on the ground, choosing sites for demolishing and redeveloping could be considered presumptuous. How can you responsibly choose what is demolished without having any local knowledge? Vacant property was identified using Google Maps in both orthographic and street view. Street view was used to specifically note potential impediments to future site visits and developments. For example, fences, barbed wire, no trespass signs, private property signs, for sale signs, and evidence of development were noted. This was then cross referenced with a map called *Phoenix Crane Watch* produced by the Phoenix Business Journal.⁹¹ This map indicates construction projects that are in progress or in the planning stages. All of these steps were completed in an effort to limit the possibility that a study site was under development.

The final site option selection parameter was to spread the potential project sites across the city. Without knowing exactly what locations the dataset would identify as exhibiting great need, spreading out site options for comparison meant that areas of Phoenix

would not be overlooked. Using the urban village map created by the City of Phoenix (*Figure 46*), at least one site option was located in each village that contained a significant population.

These three parameters led to the selection of 22 different sites within Phoenix city limits (*Figure 47*). Site options were chosen without setting definitive size requirements, although none of the selected properties were under 124,000 sq. ft. In the end, the size of the site would be a design consideration of the arbiter(s), especially when considering the programmatic response to the issues identified.



Villages

City of Phoenix | 2017

Figure 46: Map of urban villages in Phoenix

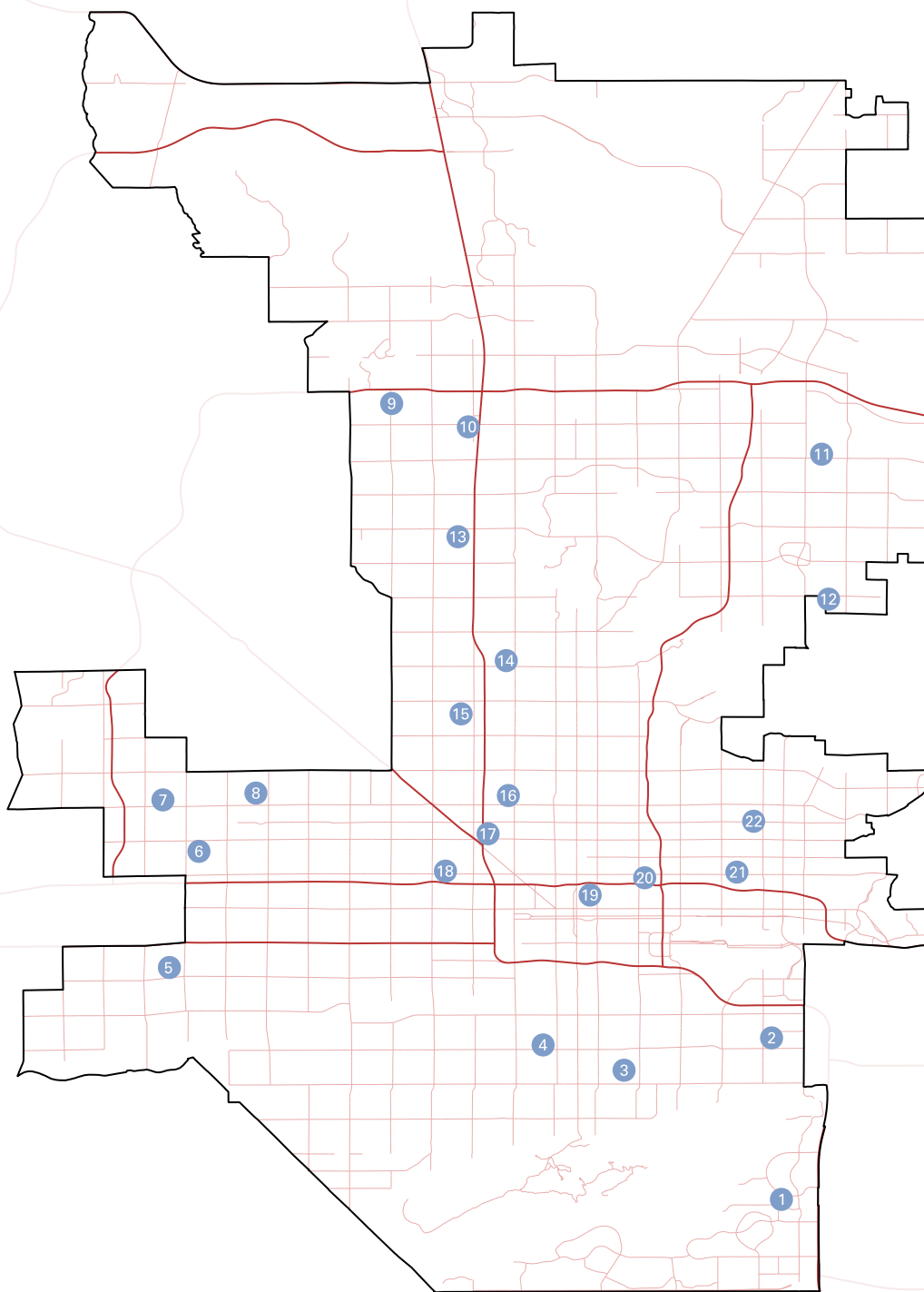


Figure 47: Map of 22 site options

sources, data points, + organization

The site selection dataset was used to compare the 22 site options to select a project site. The dataset is considerably leaner in comparison to the city dataset with only 15 sources (*Figure 48*) and 2,134 data points. This entire dataset can be examined in *Attachment 1*. There are three reasons for the smaller size. First, the site selection dataset is focused. It uses conclusions from the city selection dataset to determine those issues to examine at the local scale. The dataset is economical in that every data point included is important to Phoenix. Second, preference was given to data that could be mapped, which limited the scope of the dataset. Finally, available data becomes increasingly scarce when looking at a smaller scale. There is an apparent decline in useful quantitative information when moving from the city/metro level to the granular neighborhood. This was especially true in Phoenix because access to open city data is limited. Although this constrained the amount of information included in the site selection dataset, there was enough applicable information to test the system.

Sources for the site selection dataset were almost completely government based, as information was gathered from the City of Phoenix, Maricopa County, the American Community Survey (U.S. Census), Arizona Department of Health Services, Environmental Protection Agency, and the U.S. Department of Agriculture. Considerable consumer/opinion information was from Simmons Research, which is a consumer analytic firm. Most of the data collected, especially demographics, was from SimplyAnalytics, which is a web-based mapping and data-visualization application. Most of the remaining sources were included in an effort to fill holes in the dataset that were too important to ignore, although many of these sources were not mappable.

The scale of the data collected, much like the city dataset, varied. Information was mapped in census block groups, census tracts, urban villages (neighborhoods), and zip codes. Preference was given to census tracts as this scale was both granular enough to understand a site and its immediate context, but large enough to see when examining the city as

Arcmap | Google Maps | Phoenix Business Journal | City of Phoenix
United States Census - American Community Survey | Google Earth
Maricopa County | Niche | EASi | Simmons | Arizona Department of Health
Services | Walk Score | Environmental Protection Agency EnviroAtlas |
United States Department of Agriculture | The Trust For Public Land

15
sources

2,134
data points

Figure 48: The site selection dataset is smaller, but more focused

a whole. Much of the information was also location specific. For example, the location of a fire station, library, park, school etc. The data points associated with these points found across the city are proximity-based. For example, how far is site #2 from a park? This was used to understand where program that is addressing identified issues is located. Many of these point-based values were highly influential in program selection.

The data organization was similar to the city dataset in that it included data pods related to “Safety,” “Health,” “Education,” “Environment,” “Economy,” and “Existing Conditions”. The “Community” pod was not used in this example because Phoenix lacked problematic data points in that section. The site selection dataset added a “Site” pod that included the following information: city owned property, proximity to water, topographic challenges, and Niche’s zip code grade. Pods in this dataset only included categories and sub-categories because of the dataset’s smaller scope. A “General Data” pod included useful information related to site location; zip code, census tract, census block group, and neighborhood/village ID; estimated maximum and minimum site sizes, and population/race information. Each of the 22 different sites were

given an identifier name (for example site #14 was known as “pond and island”). This was necessary to keep track of the different sites and quickly place them on a map. Notes were also taken for each site related to context. For example, site #14 had an existing makeshift skate park, direct access to the light rail, and was located on an abandoned golf course. This information did not factor into site selection, but was useful to understand the different potential sites with their advantages, disadvantages, and complexities.

evaluative methods

+ totals

The site selection dataset used a similar set of evaluative tools, with a couple of key additions/changes that were used to identify problematic data points for each site. Additional methods were included in an effort to further separate the sites to make selection easier to identify. Local mean, sum, and percent normalization were applied in the same manner as the city dataset. Local frequency was expanded to consider each base data point (rather than subcategory) and examined the top (“1-4” base rankings) and bottom four (“19-22” or equivalent base rankings) in issue. The median value of the base rankings for each site was an additional statistical analysis used in the site selection dataset.

In all, the totals section applies nine different evaluative tools to determine which sites should be considered for a design project. Three evaluative methods; local mean, median, and sum; indicate issues for the different sites with lower values. Percent normalization demonstrates extreme issues with values closer to “1.00.” Local frequency

was comprised of four different evaluative tools. First, frequency of “19-22” or equivalent was used to indicate how often a site was rated as having comparatively few issues. “Or equivalent” in this case means ranked in the bottom four in issue. Second, frequency of “1,” identifies when a site rates as having the most extreme comparative issue on a given topic. Third, frequency of “1-4” encompasses those sites ranked in the top four in issue. Fourth, ratio of “1-4” to “19-22” or equivalent is used to give the ranking extremes perspective. The final evaluative measure required ranking of each of the totals outlined above and then averaging this ranking, with a lower value representing comparatively more issues.

In order to make sense of all the evaluative information, sites whose evaluative method results were ranked in the top four out of twenty-two were marked. These marks were then added together in order to understand how each site rated across evaluative tools. For example, site #8 (water temple) had four different evaluative tool results that were ranked in the top four: percent normalization

(2), frequency of “19-22” (3), frequency of “1” (3), and average ranking (4). This system was used to begin narrowing down the list of site options. Sites #1 (south mountain), #3 (large waterfront), #4 (downtown view), #11(massive northeast), and #19 (downtown) did not appear in the top four of any of the evaluative method results and were therefore removed as site options.

Any of the remaining sites could have been selected for the design project. The dataset would have identified issues that a program could address. In an effort to continue to follow the path drawn by the data itself, closer examination of those sites marked as being within the top four in evaluative method results allowed for further filtering. Site #5 (undeveloped park), #7 (dense west), #18 (warehouse adjacent) and #22 (cluster) (*Figure 49*) stood out as they had seven or eight instances (next closest was four) in which the evaluative tool result was in the top four. At this point, however, it proved difficult to select one of the sites without visiting.

SITE SELECTION

	#5	#7	#18	#22	issue (highest)	issue (lowest)
identifier name	undeveloped park	dense west	warehouse adjacent	cluster		
total mean	7.78	7.18	6.96	6.35	6.35	9.68
total mean rank	12	6	5	1		
total median	5.00	5.00	6.00	5.00	4.50	8.50
total median rank	2	2	4	2		
total sum	454	437	492	456	437	568
total sum rank	2	1	4	3		
total percent normalization	-0.78	-0.26	0.25	-1.08	0.25	-3.79
total percent normalization rank	10	5	1	13		
frequency of "5-18"	30	41	33	39		
frequency of "22"	8	7	13	6		
frequency of "21"	3	1	2	2		
frequency of "20"	5	1	1	2		
frequency of "19"	0	0	1	0	5	0
frequency of "19-22"	16	9	17	10	25.00	9.00
frequency of "19-22" rank	3	1	4	2		
frequency of "4"	0	2	1	3		
frequency of "3"	2	4	6	4		
frequency of "2"	3	5	4	5		
frequency of "1"	20	11	11	11	20	4
frequency of "1" rank	1	3	3	3		
frequency of "1-4"	25	22	22	23	25	15
frequency of "1-4" rank	1	3	3	2		
ratio of "1-4" to "19-22"	1.56	2.44	1.29	2.30		
ratio of "1-4" to "19-22" rank	3	1	4	2		
average totals ranking	4.25	2.75	3.50	3.50		
average totals ranking rank	3	1	2	2		
	7	7	8	8		

Figure 49: Site selection totals for the top four sites in issue

site visits

The four sites; #5 (undeveloped park), #7 (dense west), #18 (warehouse adjacent), and #22 (cluster); were visited over four days in late September 2018. The goal of these visits was to understand and document each of the sites, eliminate those that were inappropriate for development, and gain familiarity of the greater Phoenix area with an emphasis on significant architectural projects. In preparation for the visit, a site selection visit sites dataset was created. This included all of the data pertaining to each of the sites that were visited (*Attachment 1*). This was used during the site visits to gain familiarity and to point out advantages/disadvantages. The following represents a short description of the sites and some of the noteworthy details.

#22: cluster

This site (*Figure 50*) is made up of a series of smaller open parcels roughly 7 miles northeast of downtown Phoenix. Depending on program, the design could span several of the parcels or be contained within a single lot. The vacant land required for development is located within a residential neighborhood with a mix of developments, income levels, and densities. Most of the site options are fenced off, some of which appear to be close to or in various stages of development. There still are, however, adequate locations for a project. The

neighborhood does not have sidewalks and this presents a significant walkability problem. The narrow streets might also be a concern with increased traffic. The potential sites are located in close proximity to busier streets and public transit. The entire area is in close proximity to hills/mountains that provide views in an otherwise topographically consistent region. Many of the site options have existing trees. Monte Vista elementary school is located nearby, but elongated blocks increase the distance from the school to potential sites.



Figure 50: Site #22 conditions

#18: warehouse adjacent

This site (*Figure 51*) is located on city-owned property roughly 3.7 miles northwest of downtown Phoenix. A busy six lane road to the south is undesirable from a pedestrian traffic perspective, but there is a walking bridge not far from the site. Middle to low-income single-family homes are located to the north and east of the potential project location. A cluster

of warehouses defines the western edge of the site. There is an adjacent Boys & Girls Club and Middle School that have developed playing fields and facilities. This makes most of the program options outside of a park (clearly needed) less relevant. This site option has much of the program necessary to combat identified local problems already in place.



Figure 51: Site #18 conditions

#7: dense west

The site (*Figure 52*) is located roughly 11.5 miles northwest of downtown Phoenix on a parcel behind a large church. The site option is not far from, but off of, a six-lane road with public transportation. Site #7 is surrounded by middle to low-income single-family homes. This potential project site was quickly eliminated as an option because of a new single-family

tract housing development. Despite the several methods used to ensure the site was vacant, a new development was under construction. Overall, this proves the need to establish a means to check or confirm each set of data.



Figure 52: Site #7 conditions

#5: undeveloped park

This potential site (*Figure 53*) is located roughly 13 miles southwest of downtown Phoenix on a parcel that has been designated as both city-owned and as an undeveloped park. The site is located within a middle-income suburban neighborhood that has relatively new tract homes. The site option is adjacent to Dos Rios Elementary School with existing playfields. Site #5 is located off of a light traffic road that feeds into a busier four lane arterial. A series of small flood mitigation green spaces and parks are located throughout the adjacent neighborhood. Existing pathways allow for pedestrian traffic across several

neighborhoods. Several large farms and distribution warehouses can be found in the broader area. The general vicinity does not have access to public transportation. The nearby wastewater treatment plant causes the area to smell when the wind is coming from the west. The site has views of South Mountain Park beyond, providing a desirable backdrop. One small commercial strip mall serves the larger area with a single grocery store and other services. There is also an unfinished “phantom” housing development nearby that is probably the result of the recession.



Figure 53: Site #5 conditions

case studies

These Case study visits (*Figure 54*) were instrumental in understanding the architectural landscape in Phoenix. This was especially important when evaluating possible sustainable strategies and material selection. The moving parts of Chase Field (roof and walls) proved to be particularly influential to this project.

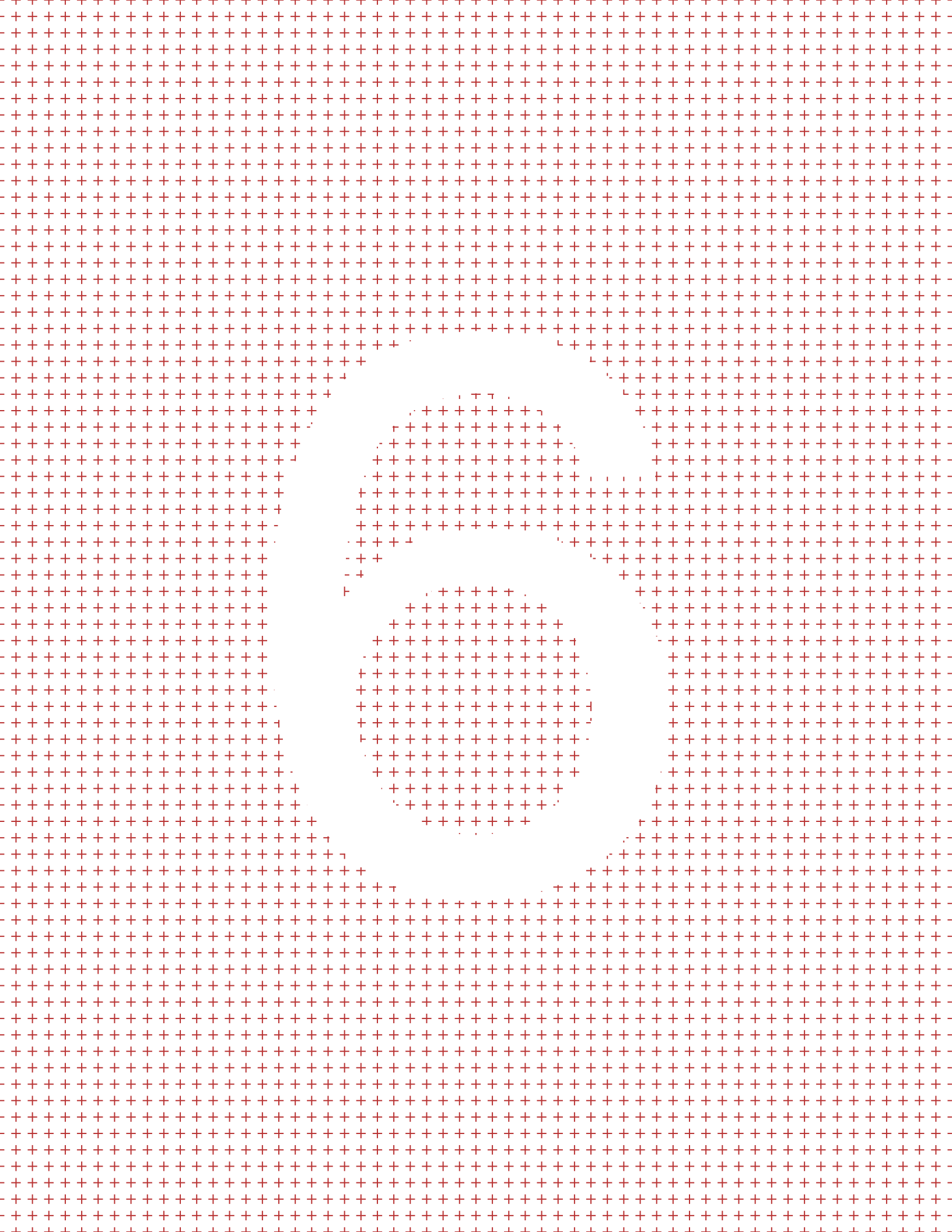
These site visits proved to be extremely helpful in the site selection process. Two (#18 and #7) of the four were eliminated as options because of a new development and adjacent program. At this point in the conceptual framework, the public is meant to interact with the system and the results of the city dataset, site selection dataset, and public input are then used to select site and program. Even though this project was not able to include local opinions, an understanding of how the general population could participate at a conceptual level will first be examined in order to continue following the methodology flowchart. Then the proceeding section will describe how site and program options were eventually chosen.

List of case studies visited:

- Shadow Play (Howeler + Yoon)
- Palo Verde Library and Maryvale Community Center (Gould Evans and Wendell Burnette Architects)
- The Prayer Chapel (debartolo architects)
- Taliesin West (Frank Lloyd Wright)
- Grady Grimmage Memorial Auditorium (Frank Lloyd Wright)
- Arabian Library (Richard +Bauer Architect)
- ASU Nelson Fine Art Center (Antoine Predock)
- Soleri Bridge (Paolo Soleri)
- Chase Field (Ellerbe Becket)
- Optima Camelview Village (David Hovey and Optima)
- Burton Barr Central Library (Will Bruder).



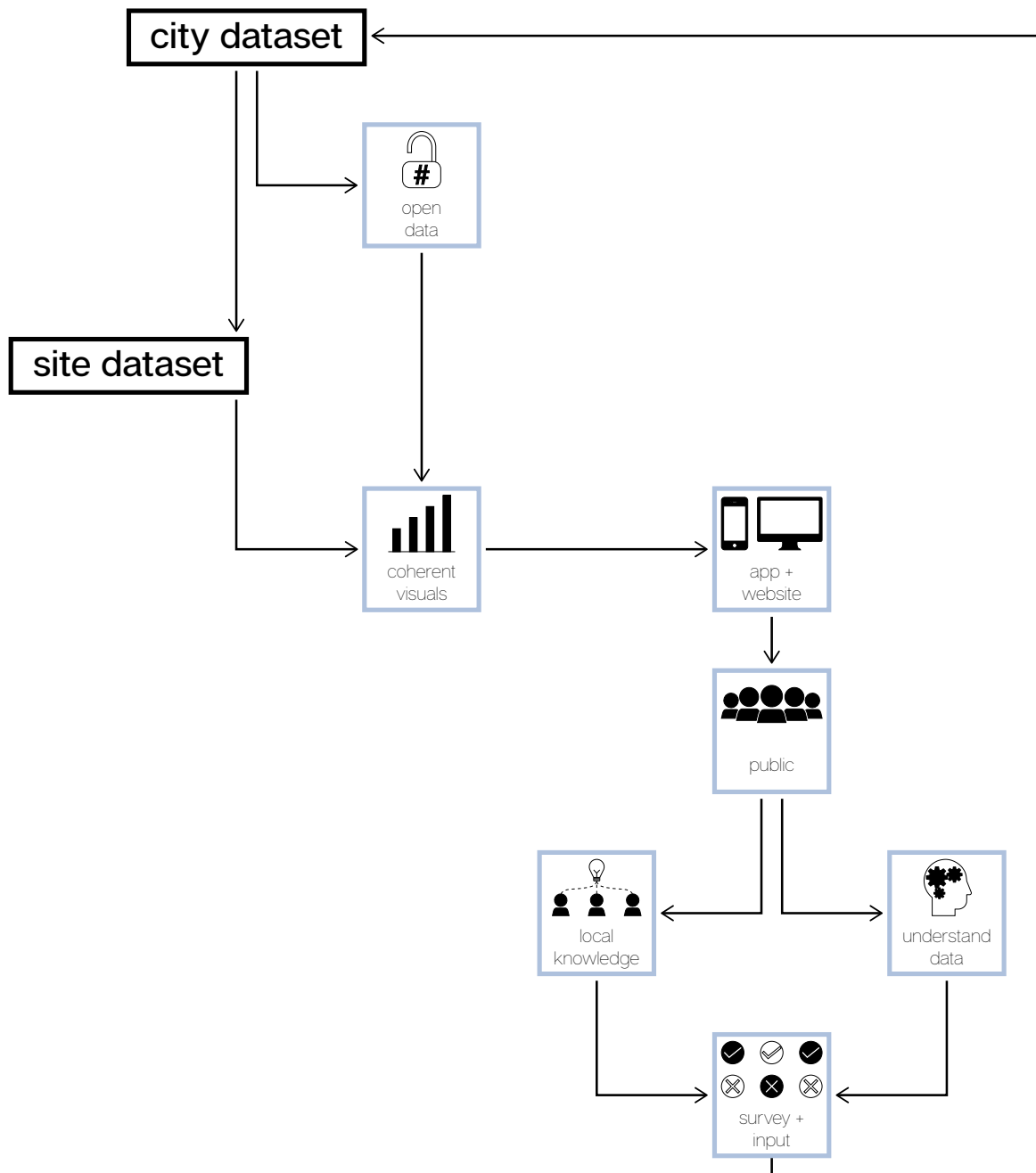
Figure 54: From top left to right - Arabian Library, Camelview Village, Chase Field, Prayer Chapel, Soleri Bridge, Taliesin West



publicly
augmented

The publicly augmented section of the methodology flowchart (Figure 55) was not completed as a part of this thesis. Time and resources meant it was unrealistic to fully integrate this into the project (this could be another thesis entirely). For this

reason, this section will outline a potential vision for public participation. Without having tested this portion of the project, the following should represent a preliminary set of ideas that will undoubtedly shift, clarify, and expand with further experimentation.



The city and site datasets are integrated within a website and mobile application. These web-based tools act as the interface for citizen engagement and input. Collecting opinions through online databases is a desirable alternative to public comment during community meetings and a powerful mechanism for wide-spread participation. The development of a website and mobile application could follow the example of several city government's 311 systems (ex: Boston, New York City) that are designed for citizens to report urban concerns (potholes, litter, graffiti).⁹² Then New York City mayor, Michael Bloomberg, wrote: "In 2003, we launched 311, a nonemergency government information and services hotline available to New Yorkers twenty-four hours a day, seven days a week. Not only did 311 make it easier for New Yorkers to get information from the city – and to file complaints – it also gave the government more information on what New Yorkers were concerned about and helped us keep track of how well we were doing at addressing those concerns."⁹³ The development of an application for this project could easily draw from the successes and failures of the various 311 projects in cities across the country.

From the beginning, this project's goal was to expand and support the Open Data Movement: "Open data refers to the concept that certain data should be freely available to everyone to use as they wish, without restrictions from copyright, patents, or other mechanisms of control."⁹⁴ Over time "access may come to be understood as a basic human right, what the philosopher Henri Lefebvre called 'le droit a la ville,' the right to the city."⁹⁵ Open data initiatives have broadened since the passage of the Freedom of Information Act, but the general population is still unable to access a considerable amount of useful information. Unrestricted access has allowed many to actively improve their quality of life. For example, open public transportation data has led to the development of smartphone applications that display live bus and train schedules.⁹⁶ This project fills an apparent void by providing a centralized location (website and mobile application) for the distribution and collection of a wide variety of open-source information. This data is a powerful tool in this methodology, but could have ramifications well beyond its original scope.

Full transparency would give the public the opportunity to provide feedback on the datasets. For example: indicating missing data

points, supplying alternative or new sources of information, and pointing out mistakes. If both datasets are continuously expanding, arbiter(s) could utilize the general population as a resource. A relevant example of this is the open-sourced operating system Linux where users can manipulate and improve code: “users have written fifteen million lines of code, which to develop by traditional proprietary (read: Microsoftian) methods would cost an estimated three billion dollars.”⁹⁷ The public could be an important source of labor by updating, enhancing, and expanding datasets. Citizen engagement would outperform the arbiters, but would also further define their roles. The general population would be “guided, moderated and nurtured by editors who can make decisions from the top down. This editorial role, more than that of a gardener, a middle-man or a programmer, has a broader orchestrating function. He will have qualities of each, but simultaneously take on an entirely new character, in the context of a digital and networked world. It is a plural figure that could be called ‘the choral architect.’”⁹⁸

A substantial portion of information could be translated into data graphics to greatly improve the public’s data literacy and increase the quality of reflection: “Information

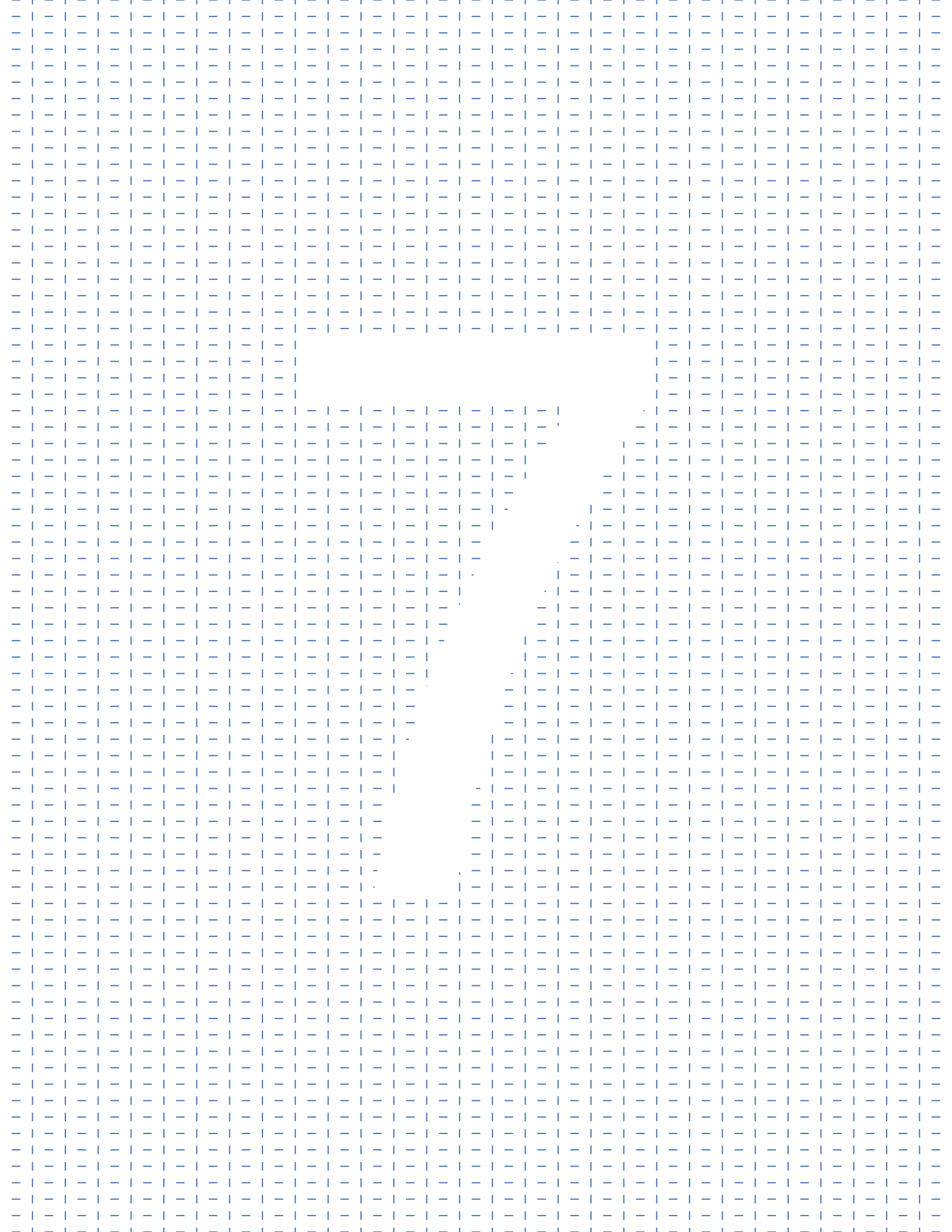
visualization is an interdisciplinary area that intersects graphic design, human-computer interaction, computer graphics, and data mining. Its objective is to synthesize large amounts of data for broad audiences, creating and clarifying messages from data.”⁹⁹ For a project that includes an extensive amount of information, coherent visualizations might be the only way for the public to quickly gain an understanding and formulate generalized conclusions. Graphics can be applied to limit what Richard Wurman calls “information anxiety,” which “is caused by the gaps between what we understand and what we think we should understand.”¹⁰⁰ The datasets for this project are found within Microsoft Excel sheets that are not appropriate for wide-spread consumption. Data visualizations (interactive graphics, charts, graphs, and maps) would be necessary in a website and mobile application.

The web-based tools would include open access to data, contain coherent visuals, and explain the methodology. This information could be examined by the local population in order to provide valuable input to the arbiter(s), which would be especially important when considering site and program decisions. Locals have an on-the-ground perspective that the

datasets and arbiter(s) often lack. For example, a proposed site could have undiscovered problematic features that would hinder a project's development or program options could not have the popularity necessary to warrant approval. A participatory community is an important ingredient in this conceptual framework because it acts as a check and balance on the datasets and works to fill gaps in information.

The mobile application and website would collect the vast majority of public input through surveys and questionnaires. These tools would allow the arbiter(s) to quickly gain valuable input to help make project-specific decisions. Surveys are an important apparatus for gathering information because the results are structured in a manner that make for straightforward analysis and interpretation. This system could follow the example of SurveyMonkey and other opinion polling firms who are well versed in gathering and deciphering public opinion. Survey questions would be tested and refined in order to collect the most useful information and maintain citizen engagement.

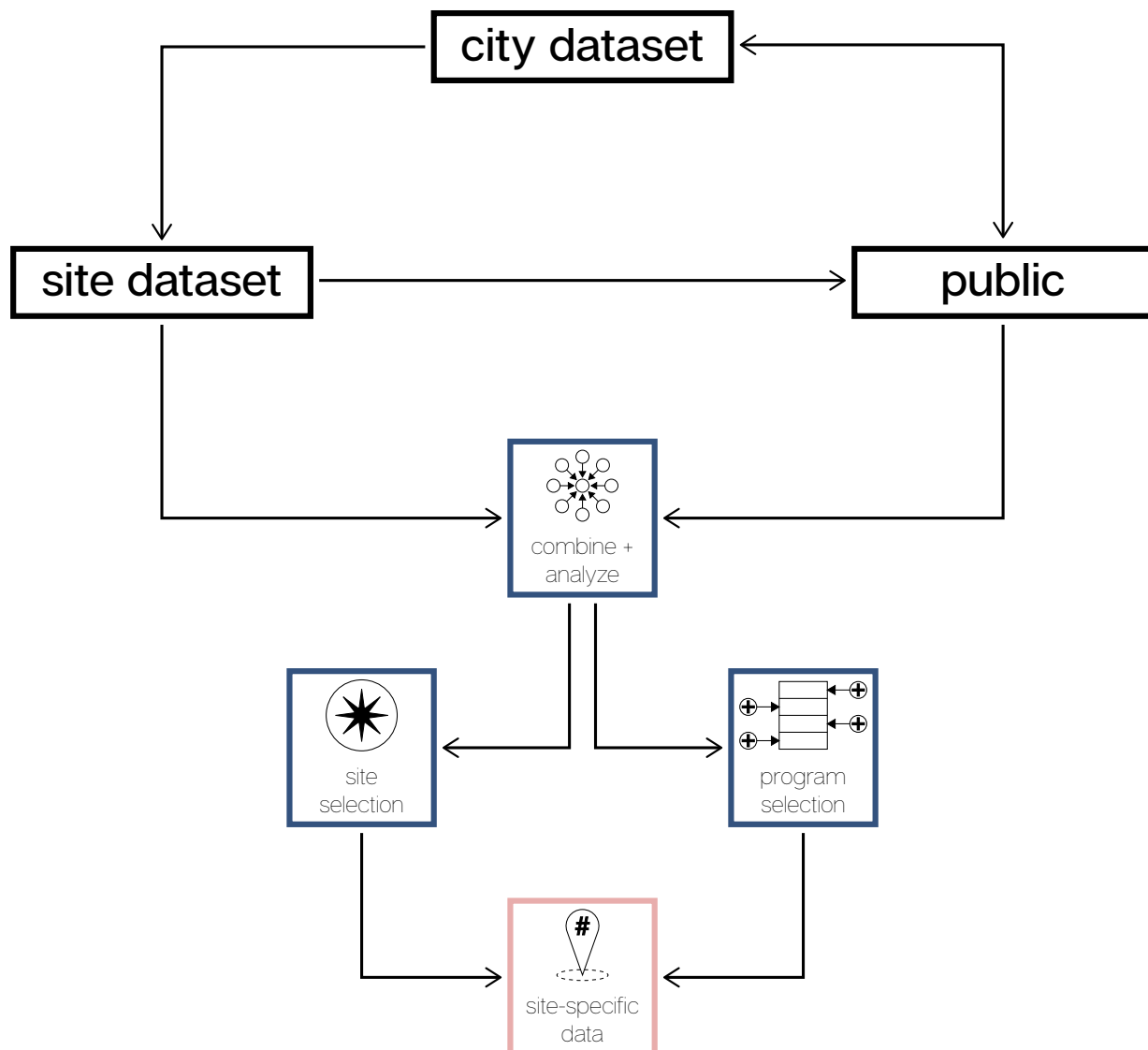
In the end, the goal for the public interface is to be easy to operate and to encourage widespread use. The general population, in turn, could utilize the website and mobile application to provide valuable information throughout the entire process. Public participation would be continuous. An engaged community would assist in management of the datasets, site and program selection, design considerations, and built project program alterations. The local residents, "by participating...feel they are bettering their community, building strong networks and creating change from the ground up."¹⁰¹ The methodology in this project is a collective effort, with the datasets, arbiter(s), and public participating in the decision-making process that ultimately contribute to site and program selection.



site + program
selection

In this portion of the methodology, inputs from the city dataset, site selection dataset, and public are considered in order to select site and program (Figure 56). Since this project was unable to be publicly augmented, this

section will outline how site and program was selected. In the end, the project continued to follow the data as it was the most powerful decision-making tool.



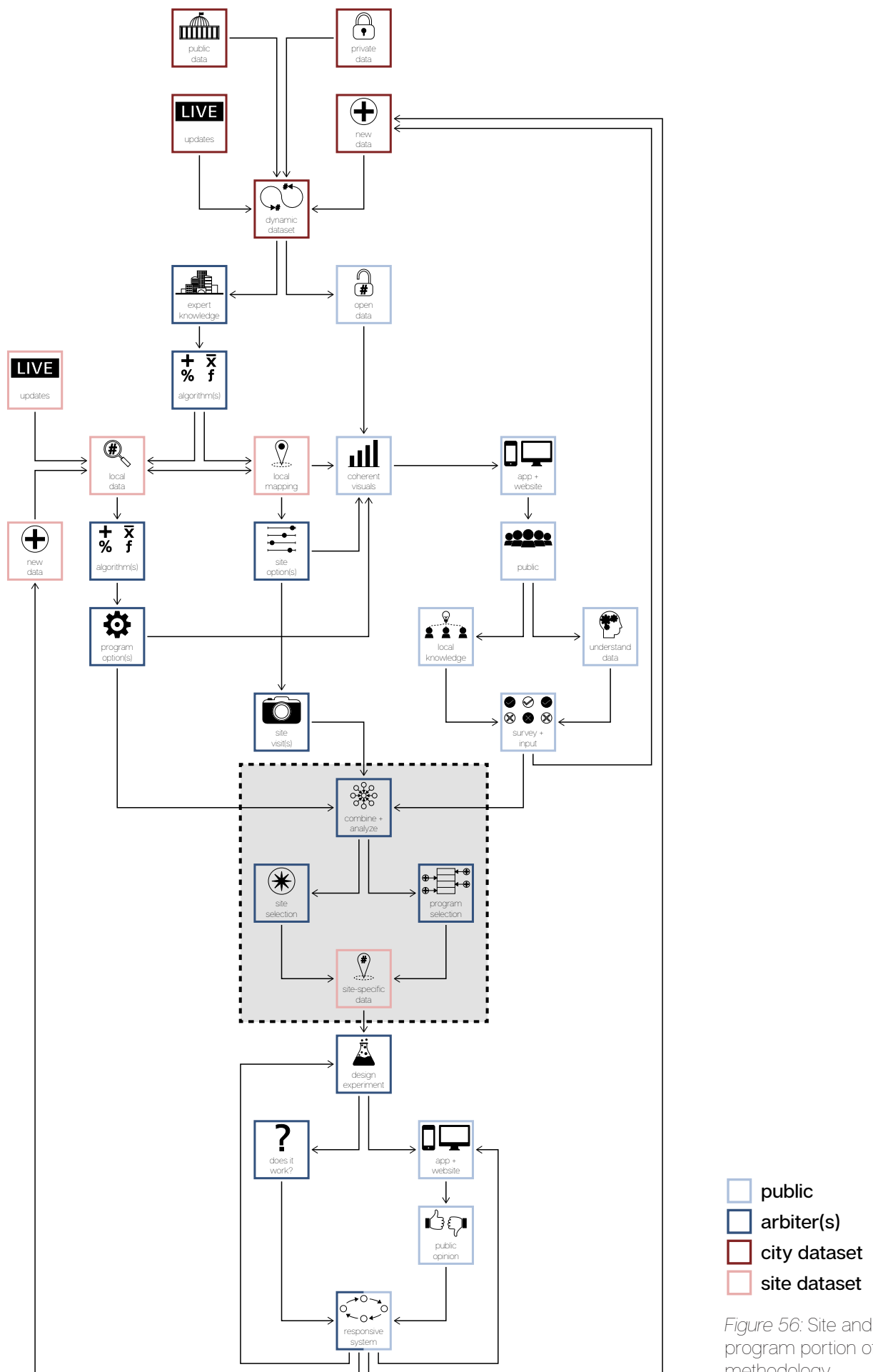


Figure 56: Site and program portion of methodology

site selection

The site selection dataset and subsequent site visits narrowed the possible project locations to two realistic options: #22 (cluster) and #5 (undeveloped park). At this juncture the arbiter(s) must utilize an applicable knowledge base to examine the data in order to choose a site. In the end, the goal of site selection is to determine the location with the greatest perceived need.

With advice from Bernease Herman at the University of Washington eScience Institute and considerable thought towards the advantages/disadvantages of the different evaluative methods, the local frequency statistical tool was given more weight in the decision-making process (*Figure 57*). This is because of its ability to identify extremes. The local frequency figure shown displays the data points rated as having the greatest comparative issue in red and the least in blue. Darker red indicates a “1” ranking and the lightest red represents a “4.” This means that if a specific site has considerably more red values, then it has comparatively more issues. And, if a site has more dark red values, then it has comparatively more extreme issues. For this project it was most important to

choose the site with the most identified and comparatively extreme issues. This would allow for a design intervention to have the greatest impact on a local community. Site #5 (undeveloped park) has not only the most values indicating issue (“1-4” rankings, red), but also the most values indicating the most extreme issues (“1” rankings, dark red) out of all the sites examined. For this reason, site #5 (undeveloped park) was selected for this design project as this location has the most perceived need (*Figure 58*).

As an affirmation that the methodology produced valuable results, site #5 (undeveloped park) was designated by the city as a location for a future park (*Figure 59*). The City of Phoenix Parks Department presumably applied a process and used local knowledge to determine that this location would be appropriate for a future park. The data-rich methodology of this project agreed.

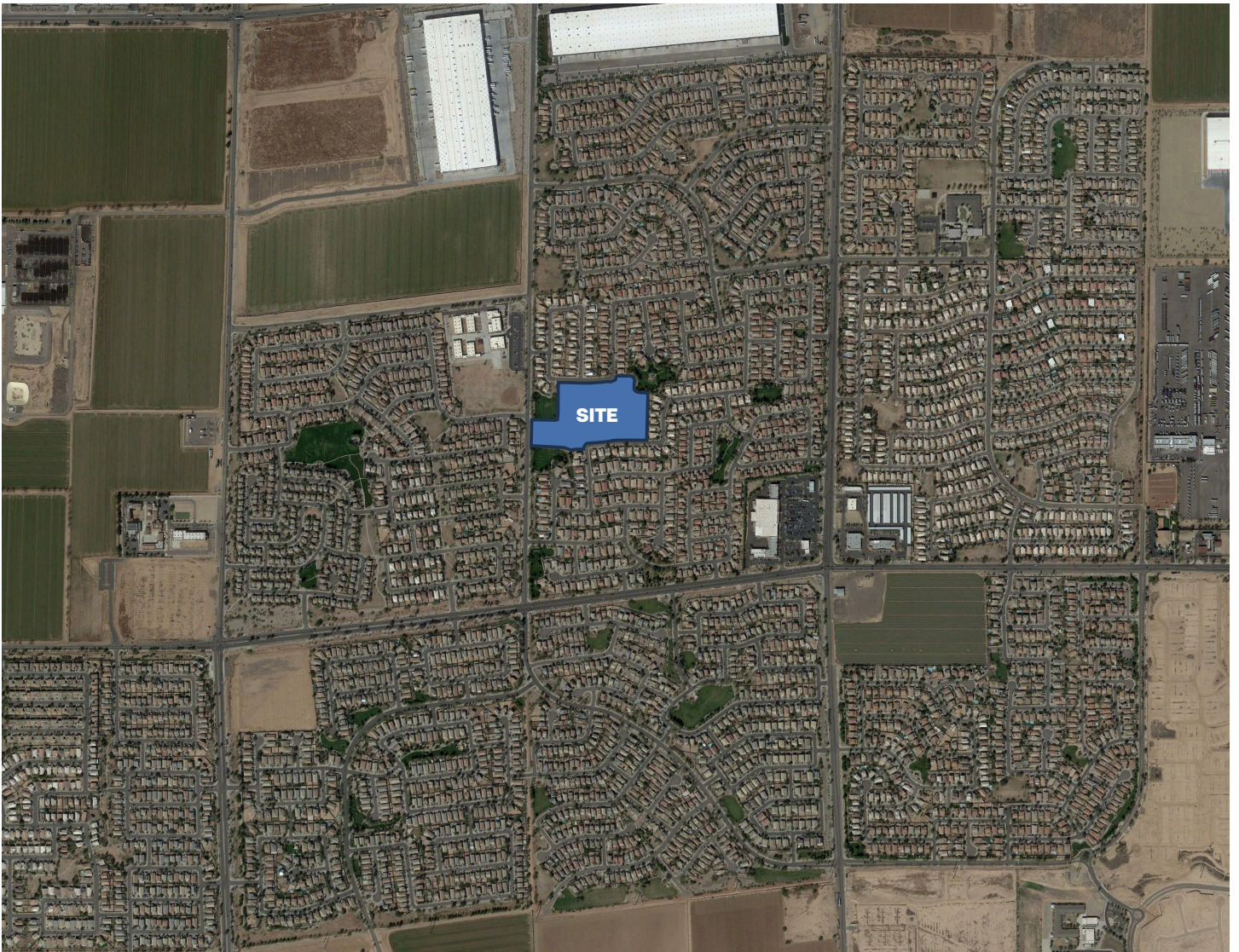


Figure 58: Suburban context of selected site #5 (undeveloped park)

+ issue -

site	1	2	3	4	5	6	7	8	9	10
	city-owned property	city-owned property	city-owned property	city-owned property	river/water	zip code	city owned property	city owned property	fire station	city owned property
	police station	crime index	hospital	hospital	zip code	exercise regularly	zip code	zip code	overweight	police station
	exercise regularly	fire station	light rail	public school	fire station	farmer's market	sport/exercise	college +	head start	healthy diet
	heart attack/stroke	hospital	bike score	light rail	overweight	cigarettes	overweight	public school	light rail	cigarettes
	head start	police station	highway	highway	farmer's market	public school	healthy diet	light rail	bus stop	head start
	light rail	sport/exercise	water use	water use	public school	public transit to work	cigarettes	highway	transit score	light rail
	ozone	exercise regularly	jobs	food desert	public transit to work	light rail	public school	jobs	bike score	bike score
	particulate (PM 2.5)	k-12 school	food desert	population	light rail	bike score	light rail	housing value	unemployed	career center
	particulate (PM 10)	light rail	TFPL park need	population forecast	bus stop	jobs	jobs	food desert	career center	food desert
	water use	walk score	within 500m of park	TFPL park need	walk score	poverty	housing value	population forecast	population forecast	TFPL optimal point
	career center	ozone	points of pride	broadband sub rate	transit score	household income	food desert	population density	park	TFPL park need
	population growth	particulate (PM 2.5)	broadband sub rate		bike score	food desert	TFPL park need	vacant units	swimming pool	within 500m of park
	TFPL park need	particulate (PM 10)			particulate (PM 10)	population	within 500m of park	TFPL optimal point	tree cover	park
	swimming pool	jobs			water use	vacant units	park	dog park	views of trees	arts/culture
	points of pride	TFPL park need			food desert	housing	trail	impervious area	arts/culture	historic property
	historic property	within 500m of park			TFPL park need	TFPL park need	dog park	arts/culture	points of pride	broadband sub rate
		points of pride			park	trail	impervious area	points of pride	historic property	
		broadband sub rate			recreation center	dog park	arts/culture	broadband sub rate	library	
					swimming pool	views of trees	points of pride			
					dog park	arts/culture	historic property			
					arts/culture	broadband sub rate	library			
					points of pride		broadband sub rates			
					historic property					
					library					
					broadband sub rate					

Figure 57: Local frequency comparing 22 potential sites



Figure 59: Phoenix Parks and Recreation future park designation

program selection

With the site selected, the final task before designing is to formulate a program. The program should be thought of as continuously evolving. This is reflected in both the city and site datasets as information is updated and added. These shifting data points will lead to a concomitant adjustment in conclusions related to the adjacent community to site #5 (undeveloped park) and the issues that the Community Machine's program should address. The following program represents a snapshot in time.

The program was developed using a synthesis of both datasets down to a list of items with spatial implications. This process was completed by isolating the information related to the chosen site. The entire site selection dataset was filtered to display site #5 (undeveloped park) and each of the data points that indicated the site was above average (compared to the 22 other sites) in issue. Then, using this information and combining it with the red portion of the local frequency chart, a list of data trends was made (see program element sections). The data trends are a list of issues that a project could address through program. At this

point, the statistician is no longer required in the process. The arbiter(s) now must make programmatic decisions. Using the list of data trends, a program is formulated by the arbiter(s) and her/his applicable knowledge base.

The arbiter established four major programmatic elements that were derived from the list of data trends: community farm; STEM programs and library; community center; and site and neighborhood improvements. The combination of this program is used to address the complete list of data trends in order to provide a new center to a community. The project itself is estimated to serve 1,607 homes, 5,749 people in the general vicinity, and 22,400 people in a 2-mile radius. A detailed program document can be found in *Appendix C*.

community farm

The community farm program (*Figure 60*) addresses issues related to health (overweight, healthy diet) and access to food (farmer's market, food desert) that were classified as major problems. The program follows the example of the existing "Spaces of Opportunity" urban farm project in South-Central Phoenix (*Figure 61*). This is a project undertaken by the architecture firm DSGN AGNC, Cultivate South Phoenix, and the Desert Botanical Garden. "Spaces of Opportunity" is located on an 18-acre site meant for farming, gardening, education, and community. The goal is to "develop a community-driven 'food hub' that will facilitate the sustainable production of fresh and healthy food and engineer broad and equitable local access to this food through distribution within a variety of settings: schools, businesses, the faith community, healthcare, and non-profit organizations."¹⁰² The goal of "Spaces of Opportunity" and the farming component of this project, is to address the food desert by providing nutrition to a community in need.

Water use was identified as a problem in the community adjacent to the design project and is a broader issue for Phoenix. Groundwater, Salt and Verde Rivers (Salt River Project), and Colorado River (Central Arizona Project) water make up the diverse water portfolio of the Phoenix area. Although this security allows the city to avoid restrictions, "the current drought is approaching 15 years in length and has surpassed the worst drought in more than 100 years."¹⁰³ The drought is so severe that there are concerns about Arizona's allotment of Colorado River water being reduced¹⁰⁴, which typically accounts for half of the city's water supply.¹⁰⁵ For this reason, the introduction of water-intensive farming must include a series of conservation strategies. First, water for irrigation across the entire vicinity (farming, parks, yards) is to be reclaimed from the adjacent Tolleson Wastewater Treatment Plant. This recycled municipal water is a unique conservation strategy used throughout Arizona in an attempt to save water. The reclaiming of treated wastewater is a relatively new practice and represents the only growing water source in the state. In total, roughly 4



Figure 60: Data trends the community farm addresses

percent of annual water use in Arizona is recycled water. Recycling water is energy intensive, but the proximity of the Tolleson Wastewater Treatment Plant to the site makes this an appropriate strategy.¹⁰⁶

Second, watering schedules are determined using data collected by The Arizona Meteorological Network (AZMET) (part of the University of Arizona Cooperative Extension). This system recommends when to water crops and how much is needed based on live climate data. This “Meteorological data is collected from a network of automated weather stations located in both rural and urban settings.” This data includes: air temperature, soil temperature, humidity, solar radiation, wind speed, wind direction, and precipitation. This information is “evaluated by a series of programs which processes the raw values into various user-friendly reports.” This includes information related to evapotranspiration, which can help determine when to water crops without losing significant amounts of water to the arid desert air.¹⁰⁷

Third, crops will be watered using an efficient underground watering system. Underground drip irrigation has the potential to use about

1/3 less water. It also avoids the local heating of plants that is the result of evaporation.¹⁰⁸

Finally, all farming activities proposed in this design project are to be located in existing flood mitigation areas located throughout the neighborhood (*Figure 62*). Monsoons occur during the summer months in Phoenix. These weather events bring increased humidity, wind storms, dust storms, heavy rain, and flash flooding. The National Weather Service has defined the official monsoon season as June 15th to September 30th. The community adjacent to the site was designed to protect homes from flash flooding through a series of depressions. The neighborhood currently uses these flood mitigation areas as small parks and grassy playfields. It is here that the proposed community gardens are to be located. In an effort to save water and maintain the flood mitigation ability of these areas, each community farm will include a large reservoir that will collect and store this water underground for later irrigation.

The community farm consists of two major components: community gardens and incubator farm. The community gardens are spread across the neighborhoods adjacent to the site in existing flood mitigation spaces.

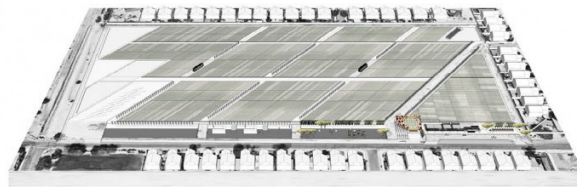
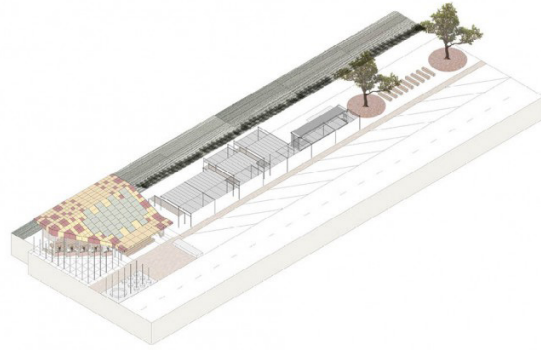


Figure 61: Renderings of plans for future
"Spaces of Opportunity"

Residents can reserve an allotment (see examples in British Allotment Gardens¹⁰⁹ and German Schrebergarten¹¹⁰) of various sizes (10-1,500 sq. ft.) for personal food production. The overall size and number of community gardens can expand/contract depending on use by the community. Those areas that are unused, will be xeriscaped. Each community garden will be fitted with an equipment storage shed and provide shaded eating/gathering space.

The incubator farm is made up of a series of larger farming plots directly adjacent to the Community Machine. These fields act as the base for all farming operations. Farmer(s) work this land and provide training to those participating in the community gardens. Crops grown on the incubator farm are sold at a farmer's market located in the Community Machine that serves the broader southwestern phoenix region. The incubator farm is made up of four different fields with three different types of plots: production (2x), orchard, and crop experiments. The incubator farm has additional program including: washing/cleaning station, cold/dry storage, administration, equipment storage, and greenhouses.

Finally, the community farm program includes a learning and eating component located in the Community Machine. This encompasses a shaded farmer's market, healthy cooking classroom, and a farm café.



Figure 62: Existing flood mitigation spaces

STEM programs + library

The datasets identified education as an issue in the community surrounding the site, with a relatively small population graduating college and low scoring adjacent public schools. The population in the area has and will continue to expand and this could only exacerbate the problems with education. Therefore, the project proposes the introduction of a science, technology, engineering, and math (STEM) focused after school and summer camp for several reasons (*Figure 63*). First, it would complement the existing farming program and sustainable goals of the project. Second, it could address or spread awareness of the air pollution and water use issues identified on the data trends list. Finally, a more detailed examination of the local schools using Public School Review did not uncover a specific topic area that local students struggle with (*Figure 64*), but instead showed a generally poor performance by all adjacent schools.

The STEM programs could utilize the farms, sustainable practices of the community, and green technology of the Community Machine as a laboratory for learning. Students in k-8th grade could take a shuttle or walk to the community center after school to

work on homework, participate in farm-related activities, STEM-focused projects, and sports/exercise. Students from Sun Canyon Elementary, Dos Rios Elementary, Arts Academy at Estrella Mountain, Hurley Ranch Elementary, and Santa Maria Middle School would be eligible to participate. This program would act as an extension of the existing Phoenix Parks and Recreation Department's Phoenix After school Center (PAC). There are PAC locations at Dos Rios and Hurley Ranch Elementary, which this new program could augment or replace. The specific STEM program proposed for the Community Machine includes a makerspace/tech lab, science lab, classroom, computer lab, offices and storage. The STEM after school/summer programs represent a series of spaces that could easily see expansion as the Community Machine shifts over time.

The design also includes a public library for STEM and community use. The library acts as a hub for learning, provides access to computers/broadband, and furnishes space for meeting. The dataset indicated that the nearest library (Desert Sage) was 4.8 miles or about a 14-minute drive away. This was

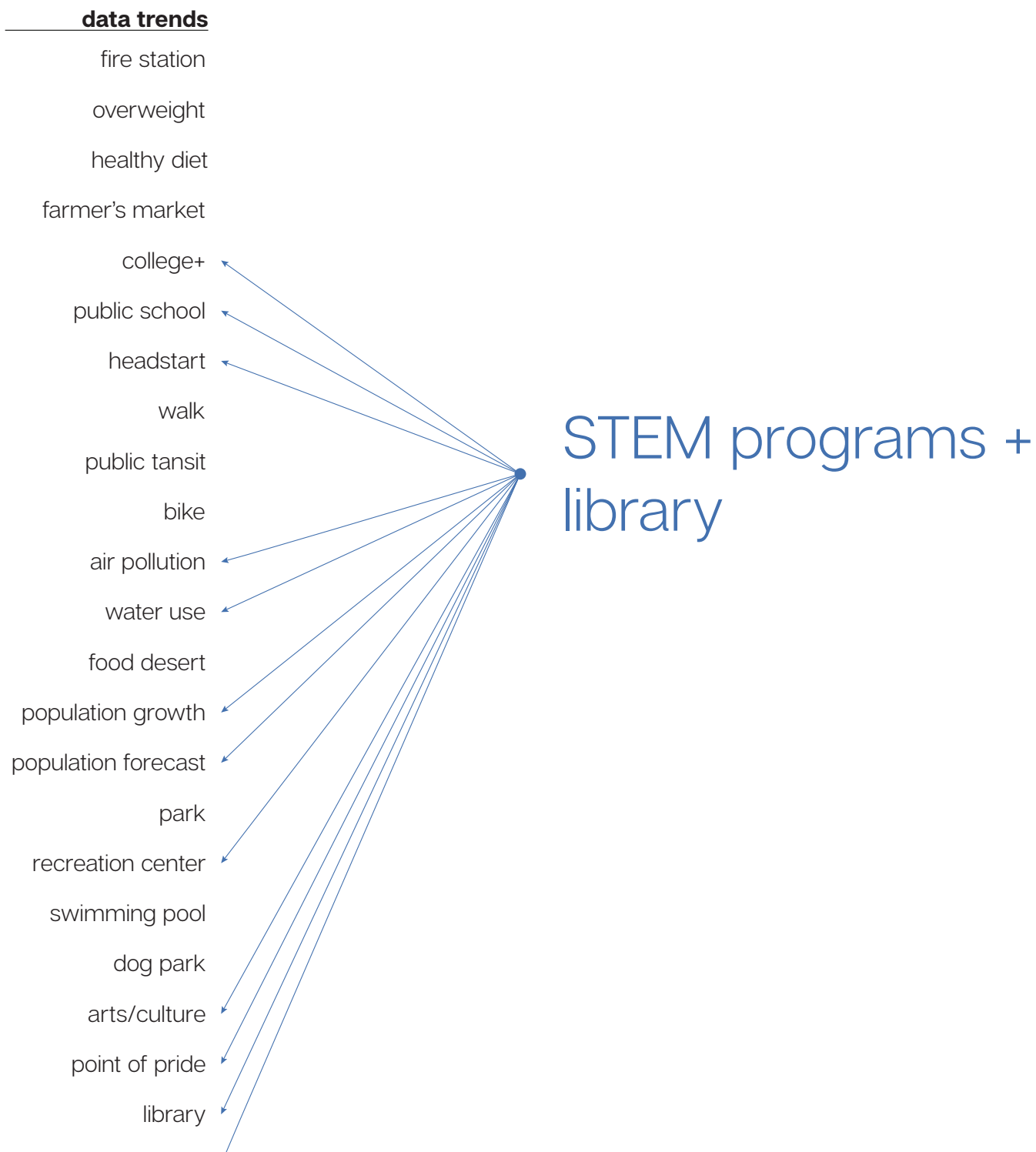


Figure 63: Data trends the STEM programs and library addresses

the farthest of any of the 22 different sites compared in the site selection dataset. This dataset, however, did not take into consideration the possibility that a library outside of Phoenix city limits could be closer. Upon further research, the Tolleson Public Library is located only 2.9 miles or about an 8-minute drive from the project site. This is

much too close to necessitate the construction of a new library, but the facilities were deemed to be inadequate and outdated. Therefore, a library was included in the program. The library includes adult, children, and teen stacks, computers, lounge/reading space, classroom, meeting room, private study rooms, and staff/administration.

SCHOOL DATA

Public School Review | 2018

name	Sun Canyon	Dos Rios	Arts Academy at Estrella Mountain	Santa Maria	Sierra Linda	Tolleson Union	State Average
district	Fowler	Union	P.I.C.	Fowler	Tolleson Union	Tolleson Union	
type	elementary	elementary+	elementary+	middle	high	high	
grades	k to 5	k to 8	k to 8	6 to 8	9 to 12	9 to 12	
students	615	841	1,149	540	1,896	2,025	
student to teacher ratio	21 to 1	22 to 1	27 to 1	15 to 1	24 to 1	23 to 1	20 to 1
minority enrollment (%)	94	92	93	88	95	94	61
diversity score (%)	0.36 (bottom 50%)	0.44 (bottom 50%)	0.39 (bottom 50%)	0.37 (bottom 50%)	0.29 (bottom 50%)	0.33 (bottom 50%)	0.65
graduation rate (%)	n/a	n/a	n/a	n/a	94	88	80
overall school rank (out of 1842 AZ schools)	bottom 50%	bottom 50%	top 50%	bottom 50%	bottom 50%	bottom 50%	1842 schools
math proficiency (%)	39 (top 50%)	24 (bottom 50%)	31 (bottom 50%)	31 (bottom 50%)	3 (bottom 50%)	3 (bottom 50%)	39
reading proficiency (%)	27 (bottom 50%)	27 (bottom 50%)	41 (top 50%)	28 (bottom 50%)	6 (bottom 50%)	7 (bottom 50%)	40
eligible for free lunch	74	3	70	73	58	54	33
eligible for reduced lunch	10		13	10	8	8	11

Figure 64: Public School Review displays local schools perform poorly

community center

The entire project will be anchored by a community center (*Figure 65*). The data collected suggests the neighborhood has a significant need for park/recreation facilities. The Trust for Public Land rates the area as having very high park need, the nearest city park is 2.5 miles away (farthest of the 22 sites), the nearest recreation center is 6.4 miles away (farthest of the 22 sites), the nearest swimming pool is 5.2 miles away (farthest of the 22 sites), and the nearest dog park is 12.1 miles away (second farthest of the 22 sites). In the end, if this community needs any program it is a recreation center in some form. The community center will have a direct connection to the neighboring Dos Rios Elementary, as facilities (baseball, soccer, outdoor basketball, shaded play structures) will be shared. The community center will be in partnership with the Arts Academy at Estrella Mountain, which will use the spaces for performances and as a gallery for student artwork from all 7 local schools.

The community center will provide a space for outdoor/indoor activities that act as a respite from the heat. According to the National Oceanic and Atmospheric Administration

(NOAA), the Phoenix area experiences extremely hot temperatures as the city averages 169 days a year that are 90+ °F; experiences 4,607 cooling degree days; and had a record high of 122 °F. The community center includes shaded tennis courts and two outdoor swimming pools. The swimming pools are counterintuitive to the projects water conservation goals, but act as a measure to limit future private pool development in the local community.

The proposed community center contains active program (gym, dance studios, weight/exercise room, yoga/Pilates/spin studios), support spaces (administration/staff, locker rooms, storage), pools (8-lane NCAA regulation lap pool, kids pool), and pool house (lifeguard spaces, mechanical, storage).



Figure 65: Data trends the community center addresses

site + neighborhood

The design proposal's program includes site and neighborhood improvements (*Figure 66*). The local community would have the option of opting into the project's broader sustainability goals outside of farming participation. This would include installation of solar panels, demolishing existing private backyard pools, capturing rainwater for community garden use, and adopting turf-less xeriscaping. The greater Phoenix area was built on marketing the region as a green oasis in the desert, but water usage in the area has exploded to the point that seven different valley cities are paying residents to remove their lawns. Xeriscaping requires little or no irrigation, which is becoming increasingly popular in the southwest.¹¹¹ Homes could also install zero mass solar collectors that extract roughly 5L of water from the desert air for drinking. This would limit water use, while also providing clean drinking water (Phoenix drinking water has cleanliness, source, and drought problems).

All landscaping will be xeriscaped across the site, including those areas that are not designated to be used as community farms. Turf will remain on existing playing fields

and select neighborhood greenspace/parks. Trees/plants will be selected based on carbon sequestration, air purification, water use, desert durability, and spring/fall allergens. Trees are important because they increase local shading and help mitigate the urban heat island effect. This problem is so severe in Phoenix that the city council passed a measure to expand the tree canopy to cover 25 percent of the city by 2030.¹¹²

Existing soccer (seating, storage), baseball diamond (fences, dugouts, seating, storage), basketball courts (shade structure), and school buildings/parking (solar panels) at Dos Rios Elementary (adjacent to site) will be enhanced/improved as a part of the larger community center.

All community center buildings will be fitted with solar panels, cisterns for storm water collection, and zero mass solar collectors. A network of partially shaded pathways (solar panels, fabric shades, and trees) will connect existing green spaces, new community gardens, incubator farm, Dos Rios Elementary, and the Community Machine. This also is a means for walking and biking with relief from



Figure 66: Data trends the site and neighborhood improvements addresses

the heat. A parking lot with limited spaces (108 spaces) will be provided in order to support a walking culture in the area.

According to the dataset, the nearest fire station to the site is 3.5 miles away, which is the farthest of the 22 sites. Upon further research, there is an additional fire station outside of Phoenix city limits (Tolleson Fire Department Station 161) that is 2.3 miles away. This value would still make the site the farthest from a fire station. In February 2012, Management Partners Incorporated completed a study that examined the local fire department's innovation and efficiency. This included a series of maps that indicate response times that are outside of the desired range (10-15 minutes). The broader project site had many instances of this being the case.¹¹³ Considering the expected growth in the area and the troublesome response times, this project selected a site for a local fire station.

Finally, the public transit terminates over a mile from the broader community (1.7 miles from the site). This project proposes the addition of two bus stops. One stop in front of the local strip mall and the other at the

Community Machine. Use of public transit throughout Phoenix could also act as a major component in alleviating air pollution concerns. In the American Lung Association's 2018 *State of the Air* report, Phoenix was ranked as the 8th most polluted metro area, 8th for high ozone days (out of 227 metros), 20th for 24-hour particle pollution (out of 201 metros) and 50th for annual particle pollution (out of 187 metros).¹¹⁴ According to Environment America Research and Policy Center's report *Trouble in the Air*, Phoenix experienced 110 days in 2016 with half or more monitoring locations reporting elevated ozone or fine particulate matter (PM 2.5). The site itself rated above average in ozone and fine particulate matter (PM 2.5) and first in large particulate matter (PM 10) compared to the 22 other site options.¹¹⁵ Access to transit, tree-rich xeriscaping, use of solar panels, increased walkability, and overall sustainable design work to address the air pollution issues in the area.

site-specific data

The goal of the project was to collect data at a finer and finer scale, but as research became more granular, access to valuable information decreased. Much of the information outlined above related to air pollution, water use, xeriscaping, local schools, fire stations, climate, farming, and after school programs was an attempt to dig deeper.

This information was gathered to enhance an understanding of program options and to reaffirm conclusions made by the dataset.

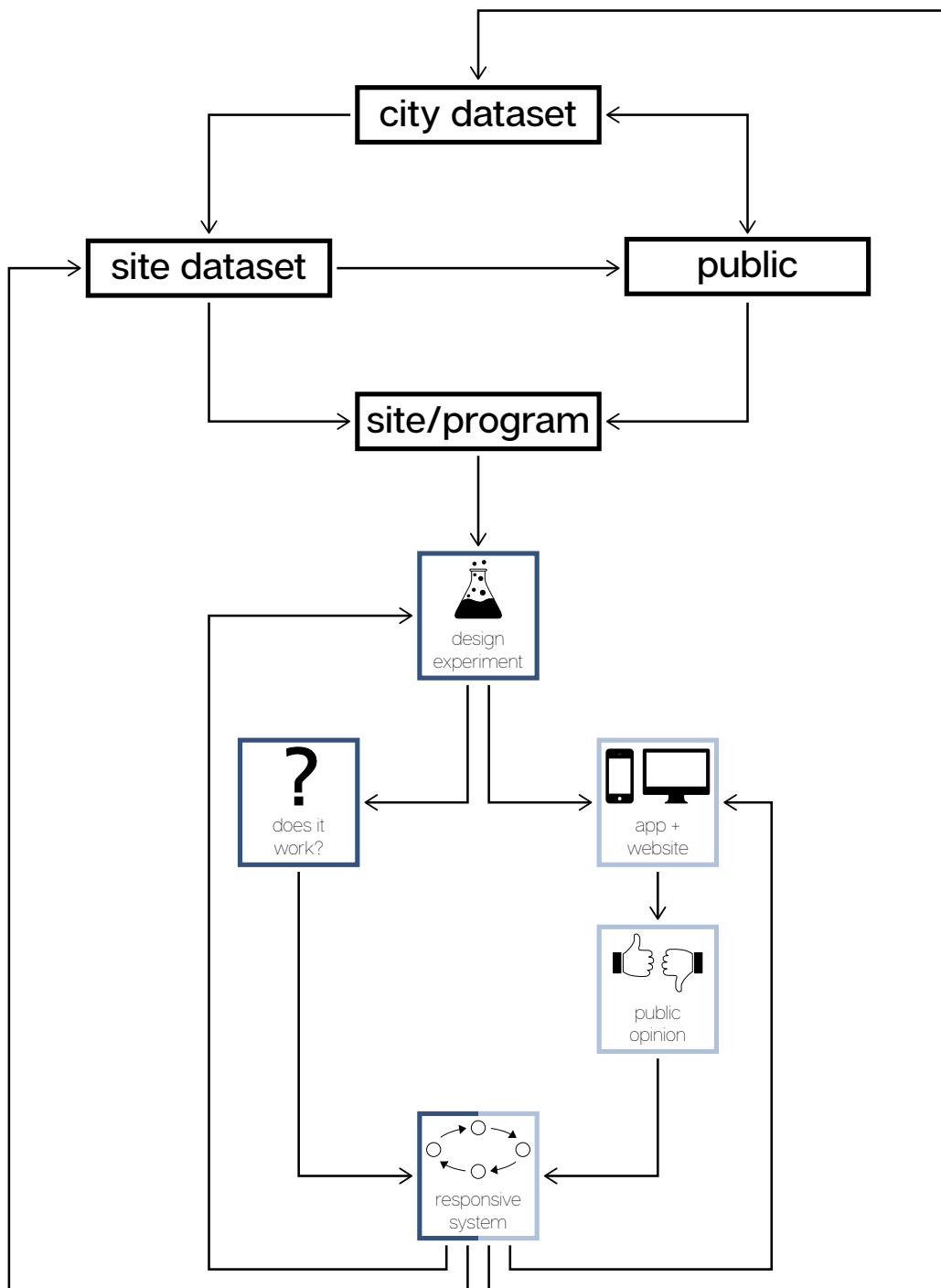
Although this information was helpful in formulating a program and design, there is an entire layer of data that could be gathered specifically related to the site. For example, studying pedestrian and automobile traffic patterns could have important implications on building siting. Shadow and solar radiation studies were undertaken, but significantly more performance related studies could have had a large impact on the design. This more specific data could be applied as a series of measures to make informed design decisions.

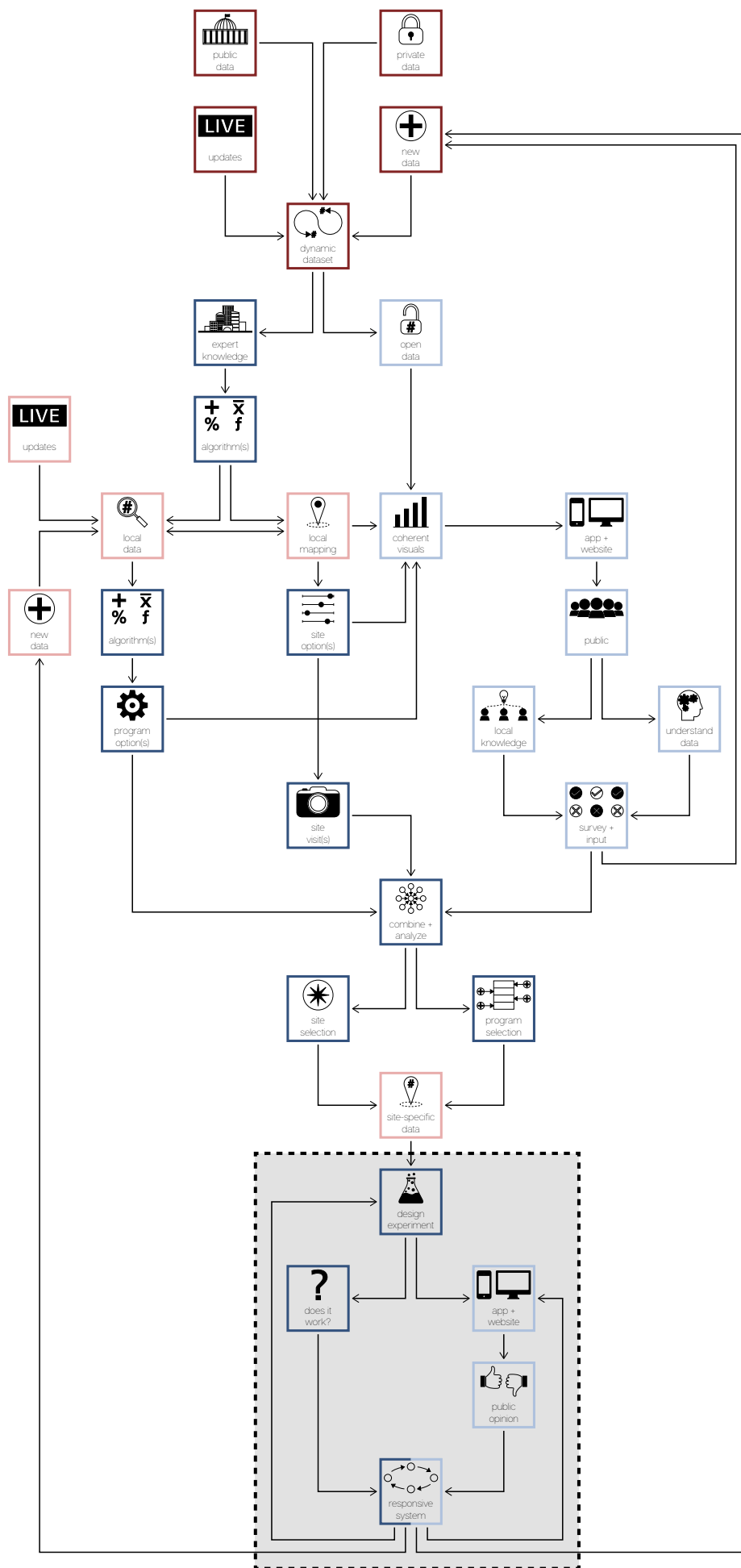
The sensing technology that is important in many of Carlo Ratti's projects could be instrumental in gathering the next level of information. With more time and access to resources this project could have expanded

to include this information. The conceptual framework outlined above selects a city, site, and program, but a more granular set of data points could have been influential in the design process.



community
machine





public
 arbiter(s)
 city dataset
 site dataset

Figure 67: Community Machine portion of methodology

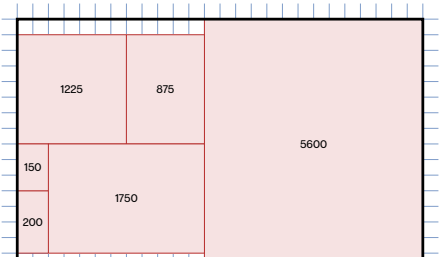
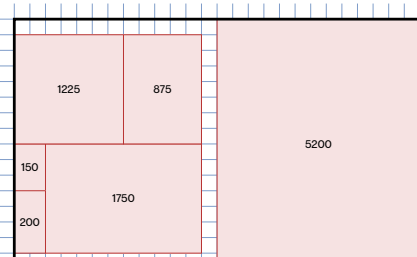
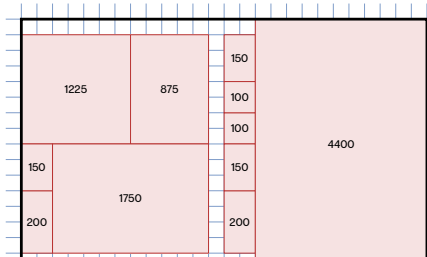
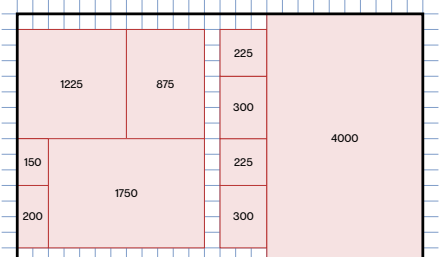
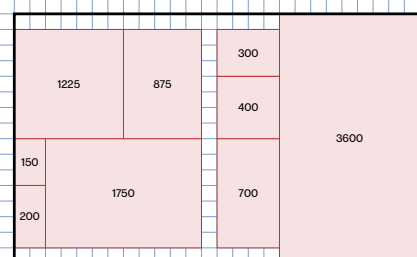
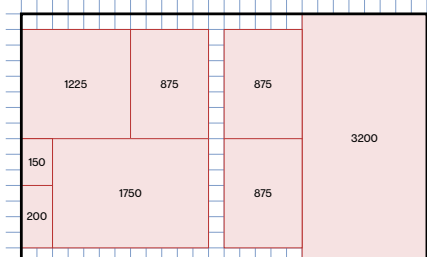
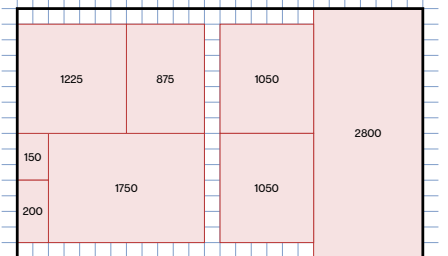
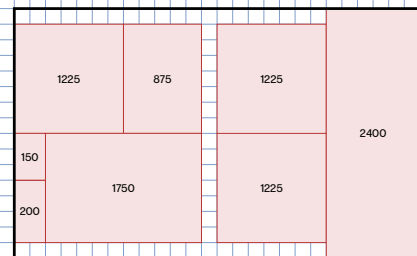
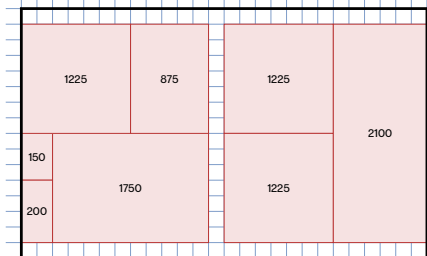
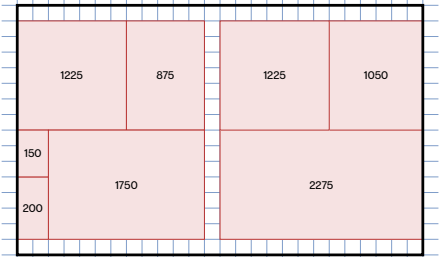
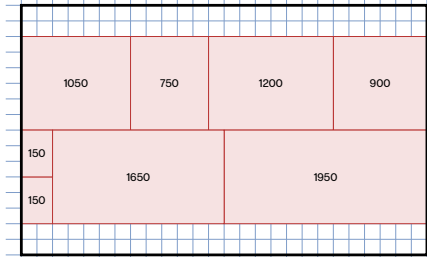
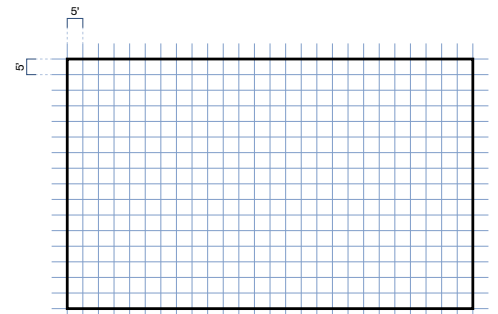
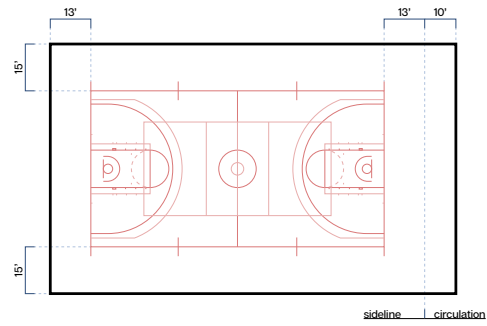
“ In an information-feedback system, conditions are converted to information that is a basis for decisions that control action to alter the surrounding conditions. The cycle is continuous. We cannot properly speak of any beginning or end of the chain. It is a closed loop. ”

– Jay Forrester¹¹⁶

The bottom section of the methodology flowchart is made up of the Community Machine (*Figure 67*).

This is the design portion of the project that should be considered “proof of concept.” The following section does not represent a final design, rather an example that displays how this methodology could translate into form. The Community Machine is an experimental public building that is able to adapt/change with the data in order to reflect the needs of a specific community (full plans/section/section perspective *Figure 69–73*). The continually updating quantitative information used in this project will vary and therefore the design response should not follow traditional patterns with a static design. As a neighborhood's issues, needs, and desires shift, so will the Community Machine. The system allows a city to intelligently invest in a neighborhood and the Community Machine ensures the contribution is able to address/fulfill/meet needs well into the future. The system arbiter monitors shifts in the datasets to determine the success/failure of programmatic decisions. The public uses web-based tools as a means to convey opinion. All of this information feeds into a responsive system in which datasets, program, and building are capable of reaction.

The Community Machine designed for this project is composed of a series of moving parts that make up an adaptive sustainable design. The entire building is located under a space frame truss roof (710' 2.5" x 120' 2.5") held up by columns (10' o.c.) following the roof's boundary. This construction acts as a framework for the building and provides an immense amount of open space for flexibility. The design begins with a module (80'x130') that is the size of a regulation basketball court with adequate sideline and circulation space. This was chosen because it represents the largest possible space a community center would require. From this module, the spatial configuration of the Community Machine can become more granular to meet varying programmatic needs. If this module is then broken down by a 5' by 5' grid it can then be reconfigured to meet virtually any desired square footage. This system would allow for larger or smaller corridors, walkways spanning from one side to the other, spaces reaching from one side to the other, double or single loaded corridors, many small spaces, a few large spaces, or a mix of both (*Figure 68*). How does a building exhibit such flexibility? Through a series of moving parts working together to allow for dramatic change by utilizing a simple set of existing technologies.



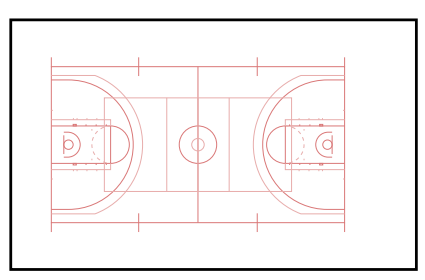
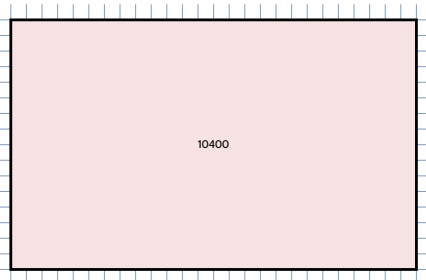
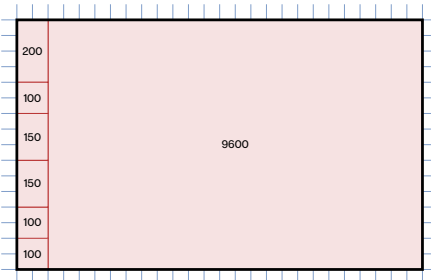
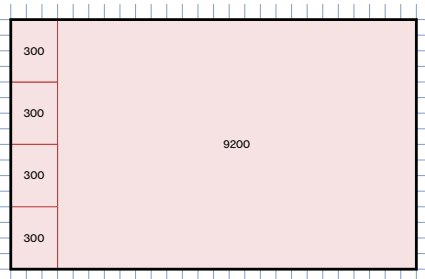
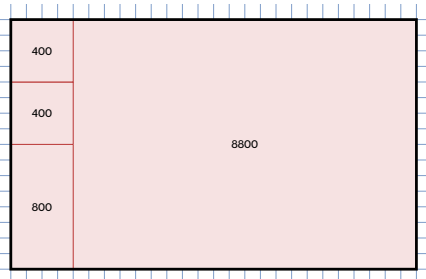
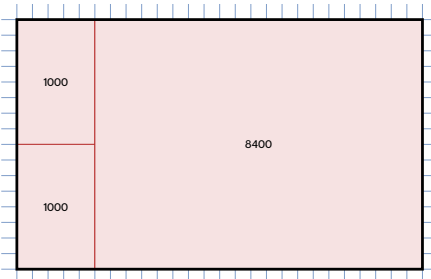
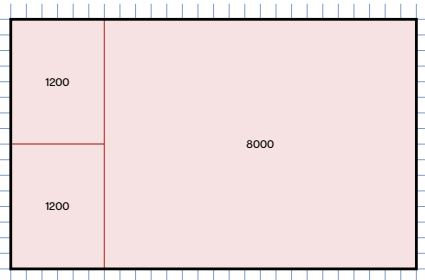
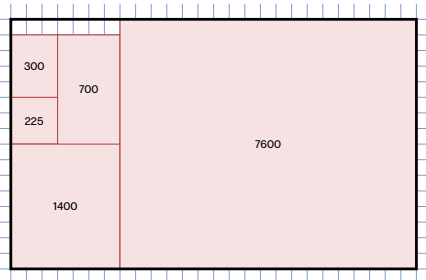
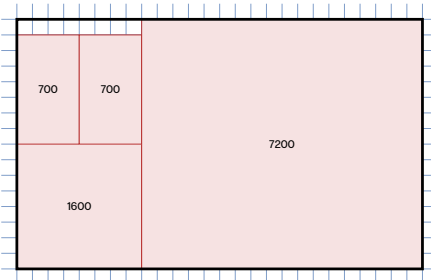
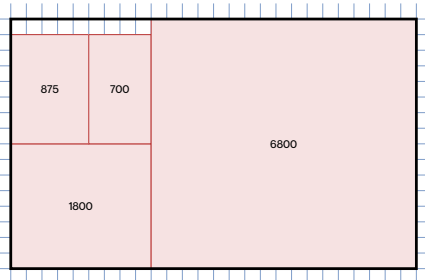
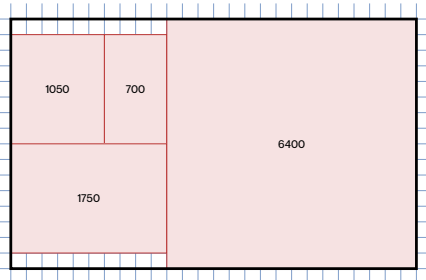
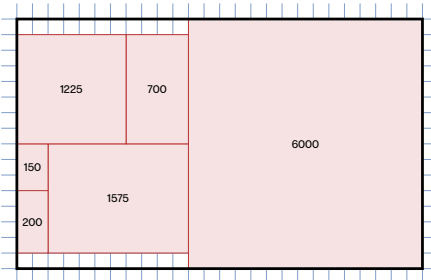
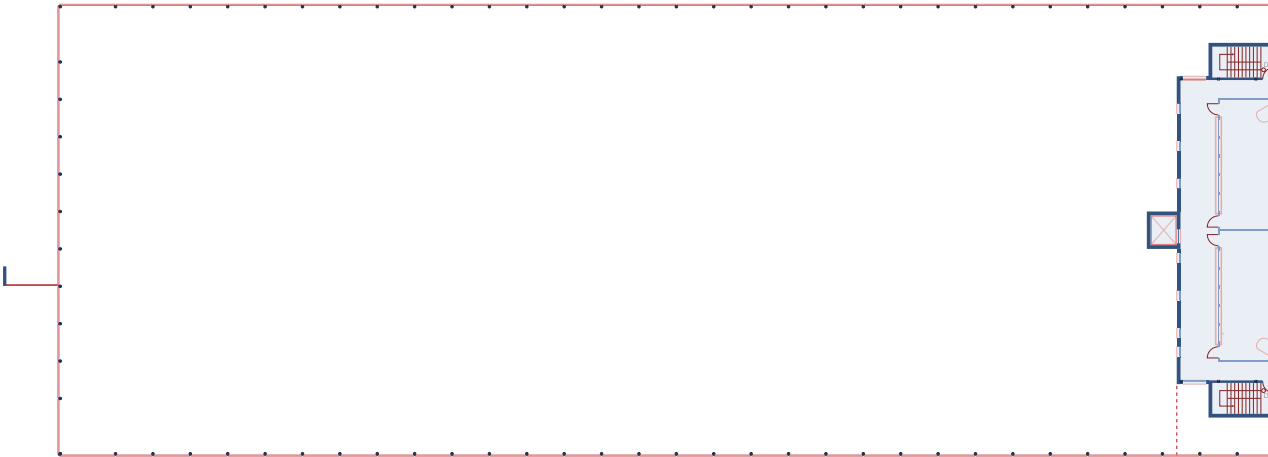
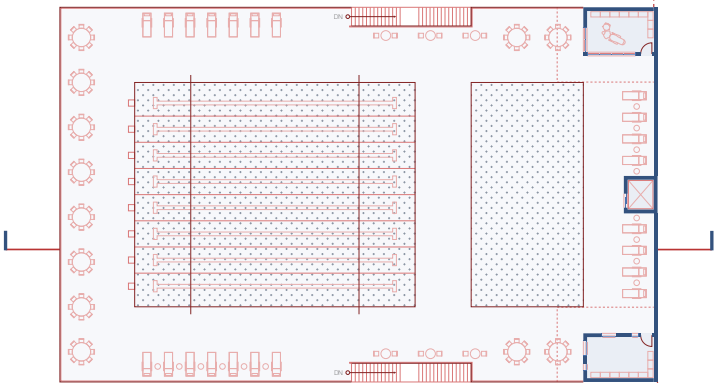


Figure 68: Module provides endless layout combinations

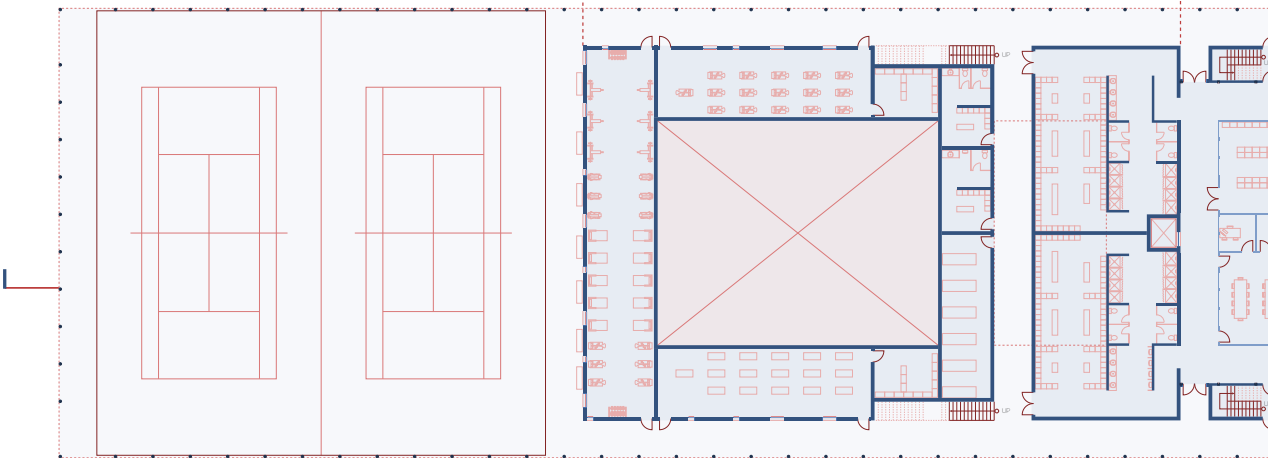
level 2



pool deck



level 1



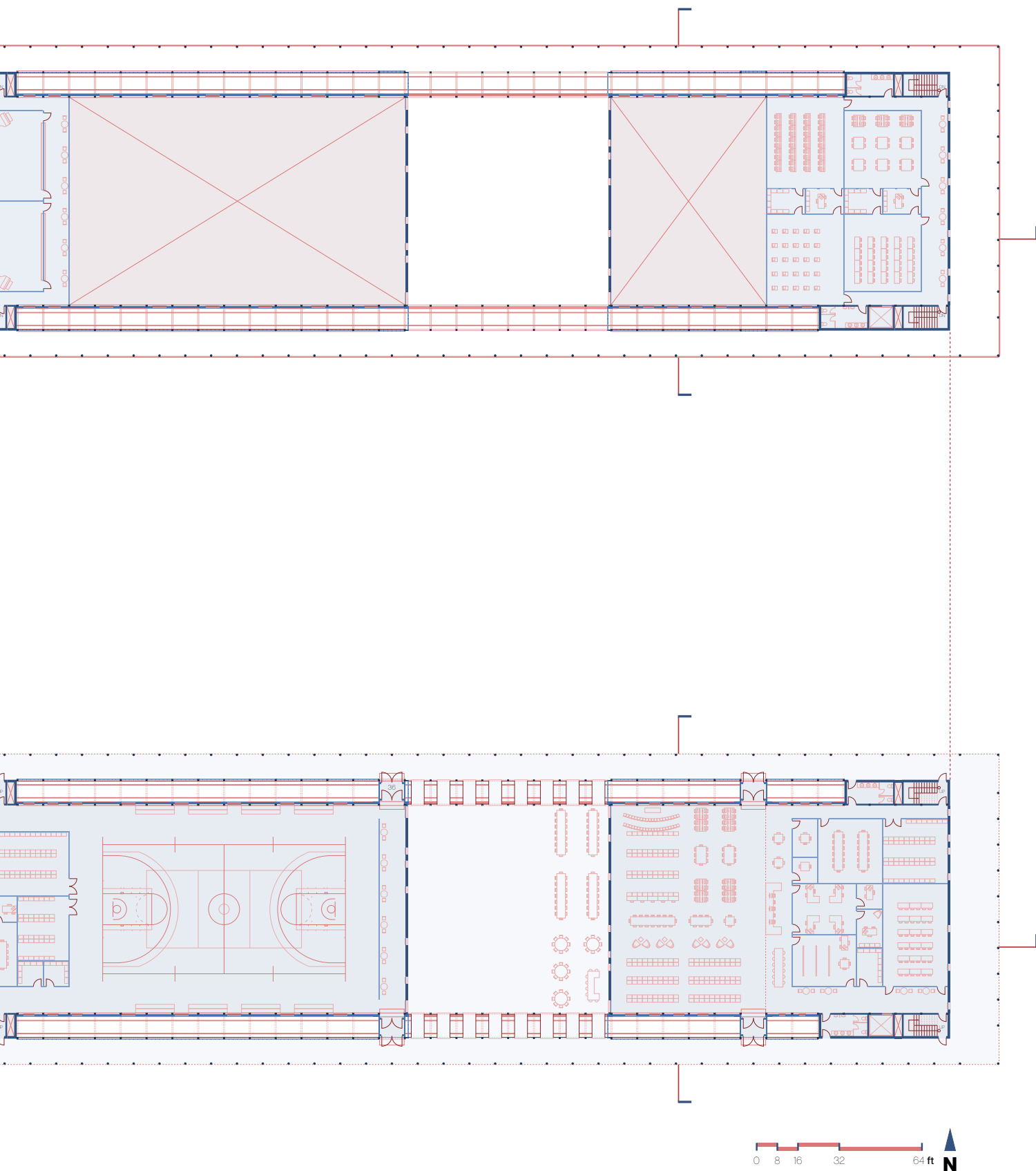
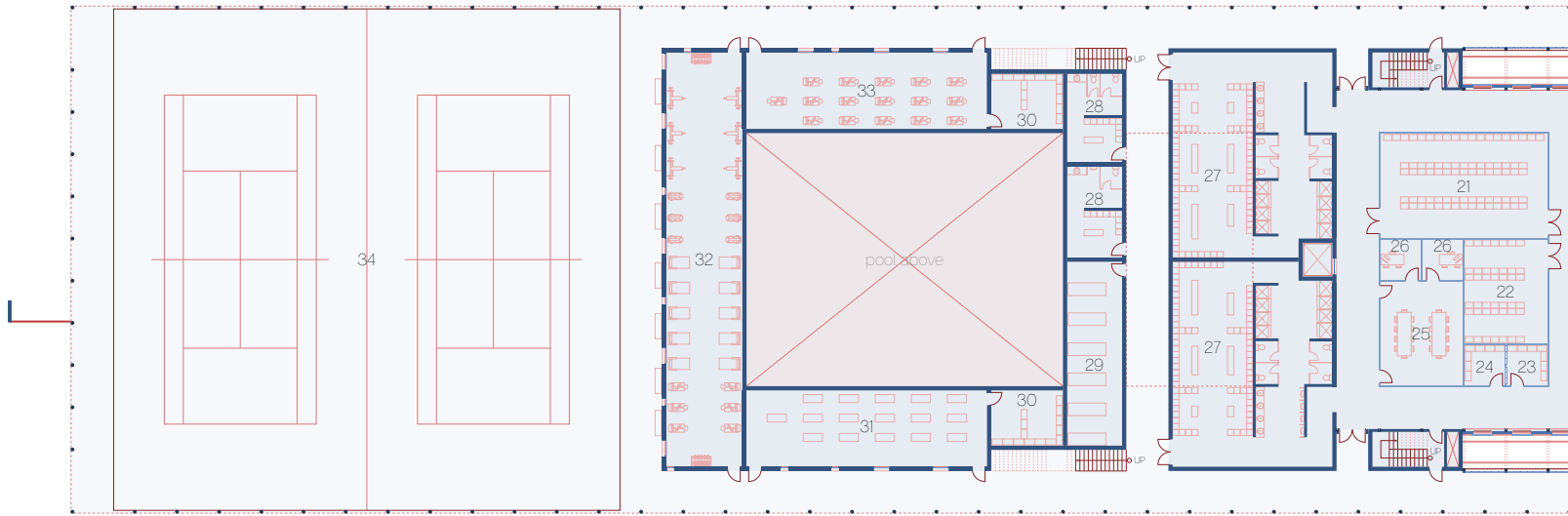


Figure 69: Community Machine plans



level 1

library

- 1 story telling
- 2 children stacks
- 3 teen stacks
- 4 reading
- 5 adult stacks
- 6 computers
- 7 circulation/checkout desk
- 8 private study
- 9 meeting
- 10 multi-use storage
- 11 classroom/large meeting
- 12 data outreach
- 13 staff
- 14 administration
- 15 custodian
- 16 restroom

shaded outdoor

- 17 farm cafe
- 18 farm classroom
- 19 farmer's market/multi-use outdoor

community center

- 20 gym
- 21 multi-use storage
- 22 equipment storage
- 23 custodian
- 24 receiving/recycle
- 25 staff
- 26 administration
- 27 locker room
- 28 lifeguard locker room
- 29 pool mechanical
- 30 storage
- 31 yoga/pilates
- 32 exercise/weights
- 33 spin classroom
- 34 tennis courts

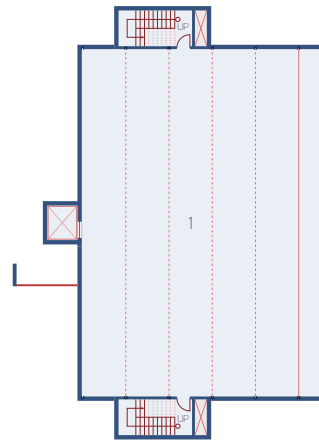
building systems

- 35 poche tracks
- 36 moving entry

basement

building systems

- 1 temporary storage
- 2 floor storage
- 3 mechanical



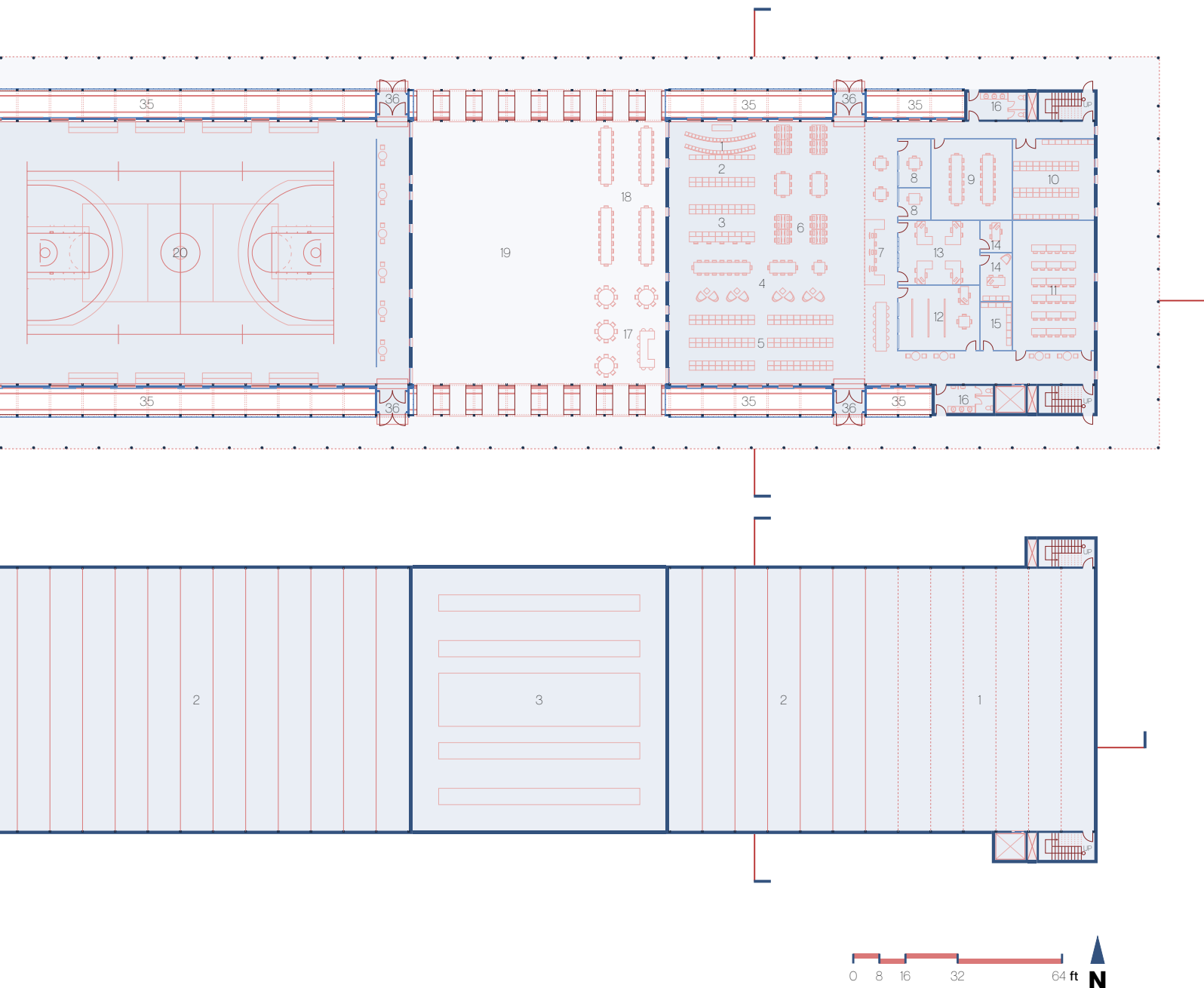
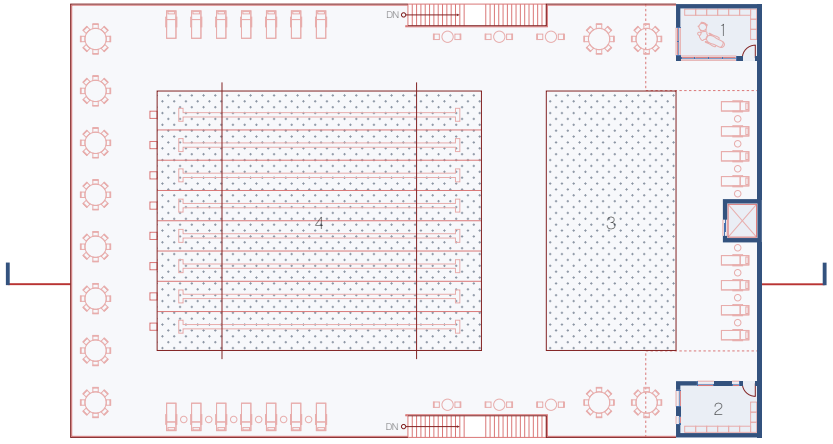
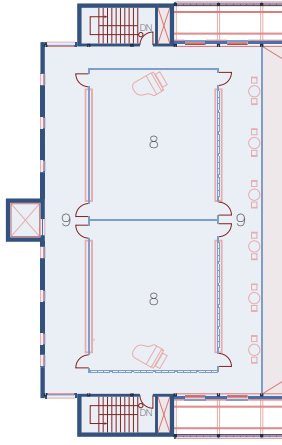
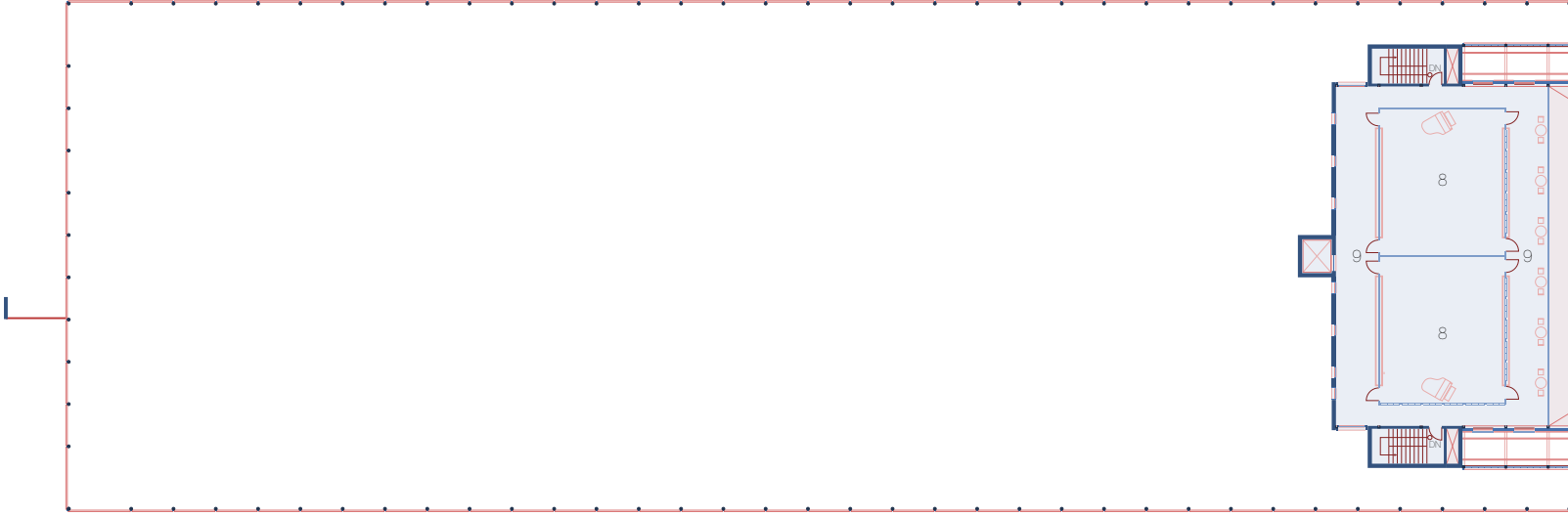
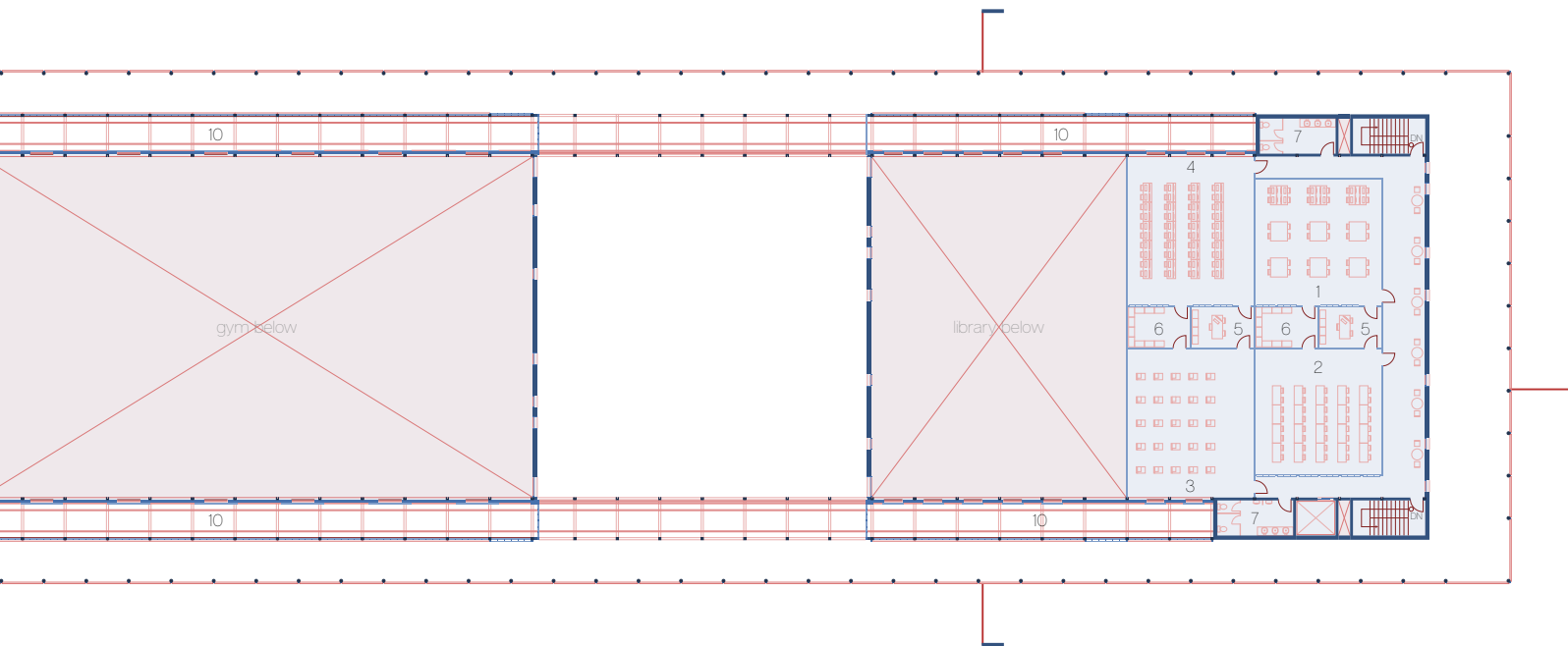


Figure 70: Community Machine plans, basement (bottom) and level 1 (top)





level 2

STEM learning center

- 1 maker space/tech lab
- 2 science lab
- 3 classroom
- 4 computer lab
- 5 office
- 6 storage
- 7 restroom

community center

- 8 dance studio
- 9 warm-up

building systems

- 10 poche tracks

pool deck

community center

- 1 lifeguard
- 2 pool storage
- 3 kid pool
- 4 lap pool

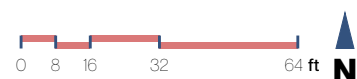
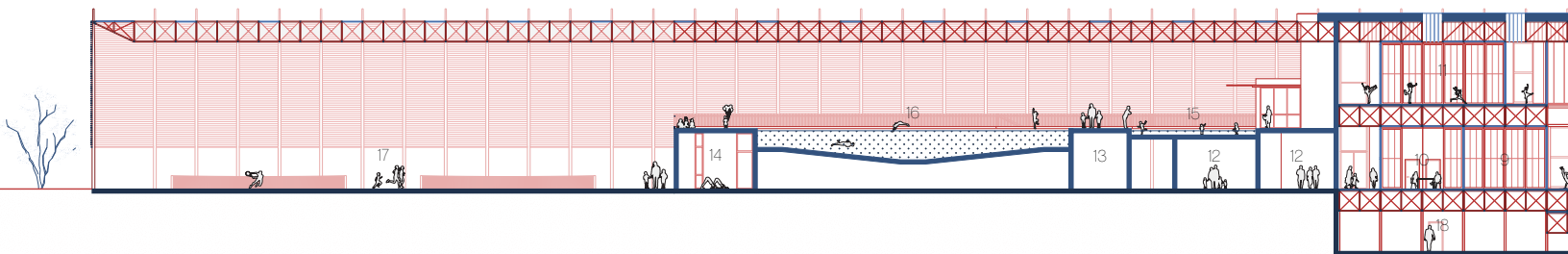


Figure 71: Community Machine plans, pool deck (bottom) and level 2 (top)



section

library

- 1 classroom/large meeting
- 2 administration
- 3 data outreach
- 4 stacks/computers

STEM learning center

- 5 classroom
- 6 science lab

shaded outdoor

- 7 farmer's market/multi-use outdoor

community center

- 8 gym
- 9 equipment storage
- 10 staff
- 11 dance studio
- 12 locker room
- 13 pool mechanical
- 14 exercise/weights
- 15 kid pool
- 16 lap pool
- 17 tennis courts

building systems

- 18 temporary storage
- 19 floor storage
- 19 mechanical

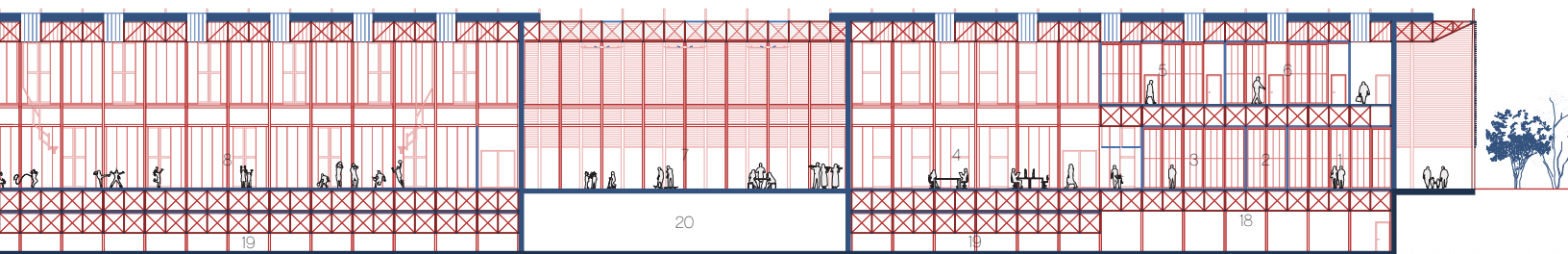
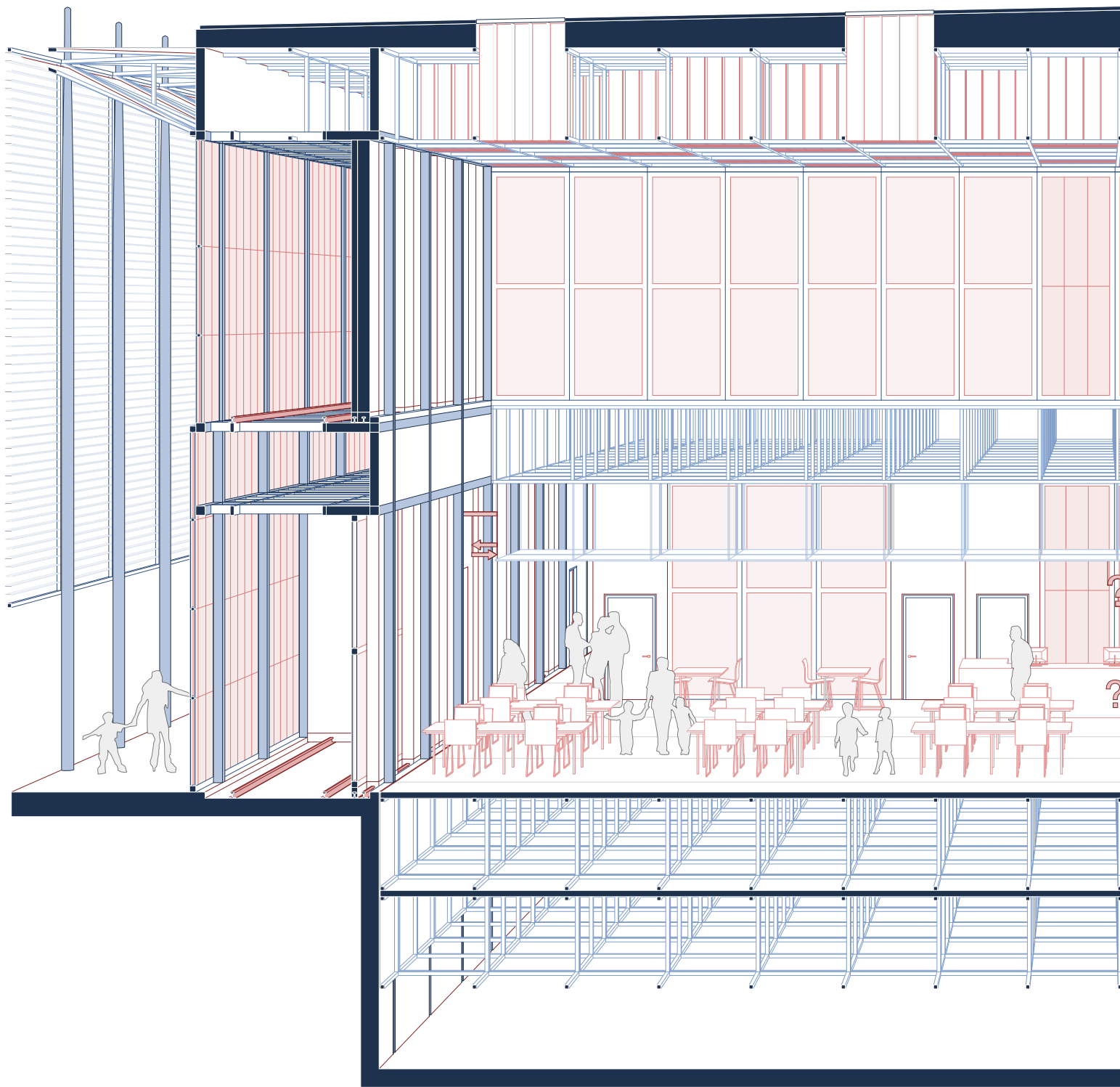


Figure 72: Community Machine section



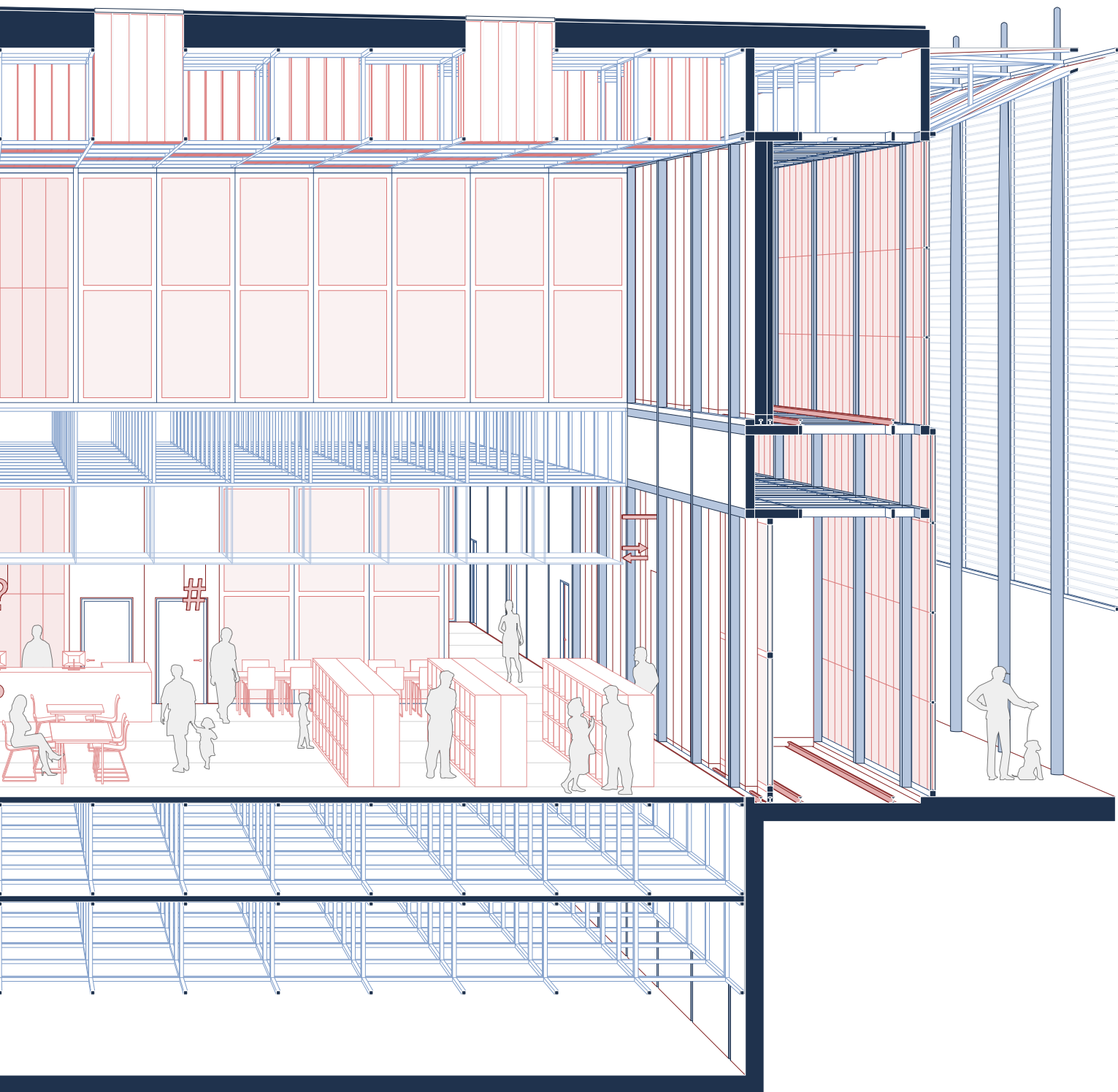


Figure 73: Community Machine section perspective of library

poche tracks

The highly flexible portion of the building's design (all enclosed non-pool related program) is composed of the following parts from east to west: 80'x130' module (library and STEM programs); 80'x80' shaded outdoor space (farmer's market); and finally, 80'x130' module with additional 80'x50' enclosed space (community center). The dynamism of the Community Machine starts with two elongated elements that span the length of this organization (10'x390') and bookend the massing to the north and south (*Figure 74*). This section of the design is known as the "poche" or "service tracks". The program located in these tracks include: restrooms, vertical HVAC distribution, elevators, stairs, and entry/exits. The eastern and western extremities of both poche tracks have stationary service components. Railroad-like tracks span between these fixed elements. Entry/exit modules (10.5'x8') use these tracks to allow the location of entryways to change. Entry/exit units can also be added or subtracted depending on programmatic requirements. This dynamic system allows for the entire interior layout of the building to change without being restricted by a fixed building enclosure.

This relatively simple concept is established by a more complex collection of moving parts. This begins with the outermost layer of the Community Machine, which is composed of dynamic shading devices that span between the columns supporting the prodigious roof (*Figure 75*). This is the first layer that controls the amount of light entering the building. This is especially important because it works to protect the building from the harsh Phoenix climate. This layer also shapes and shades a pedestrian walkway that follows the entire outer portion of the building (except tennis court).

Next, is the outer layer of the poche tracks, that consists of a wall of polycarbonate panels, with only an entryway breaking up the continuous surface (*Figure 76*). The polycarbonate panels are the second layer of defense from the intense sun rays. These panels are broken down by a series of bays that reflect the structural grid of the poche tracks. The lower section of these bays act as vertical-moving doors. The entryway module is marked by a small ramp and overhang. The polycarbonate panel in the entry bay meets this overhang instead of the ground

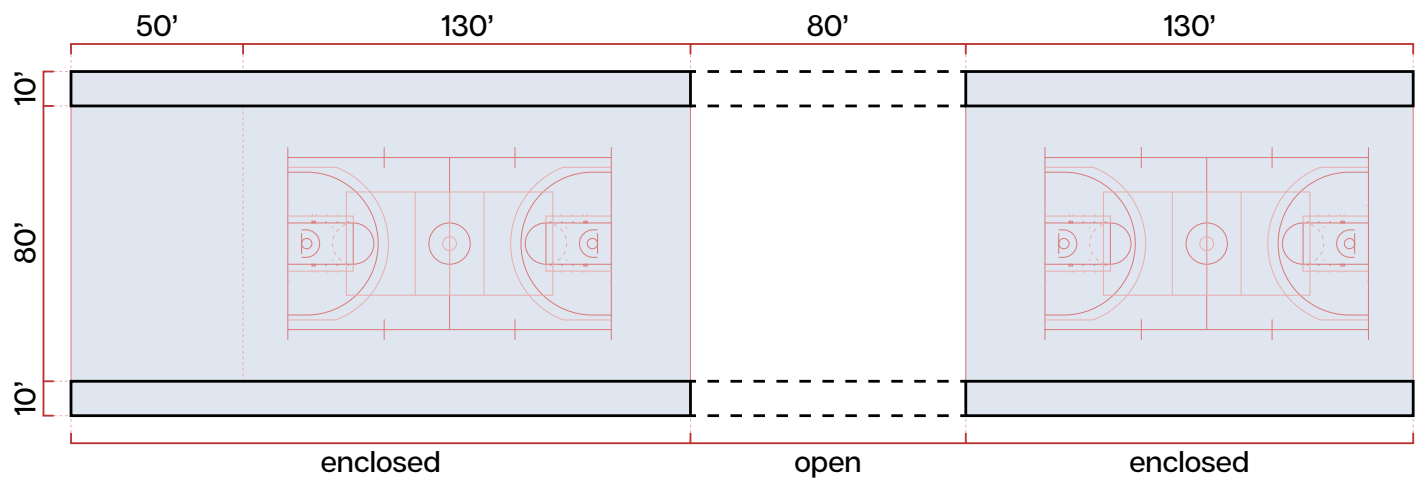


Figure 74: Building layout, poche tracks to the north and south

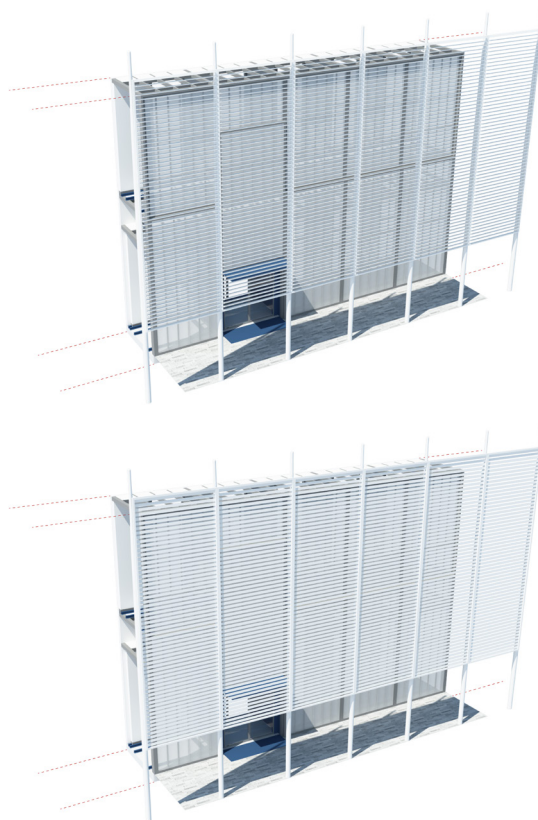


Figure 75: Dynamic shading devices

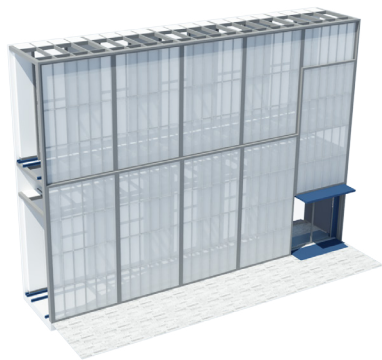
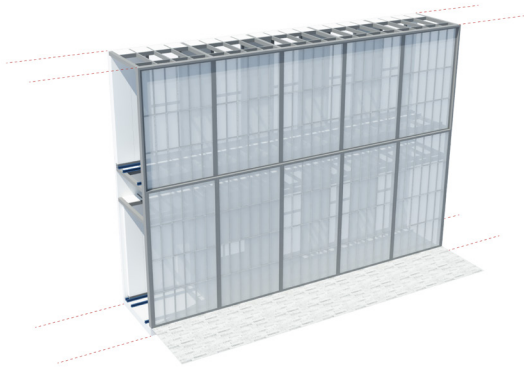
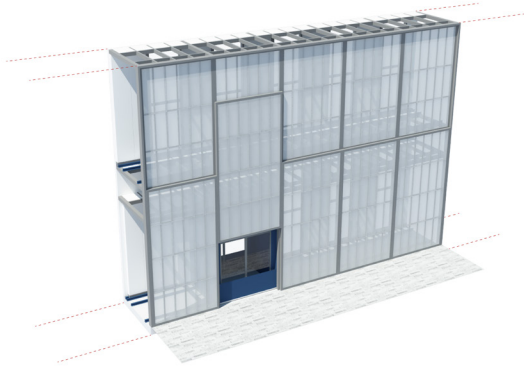
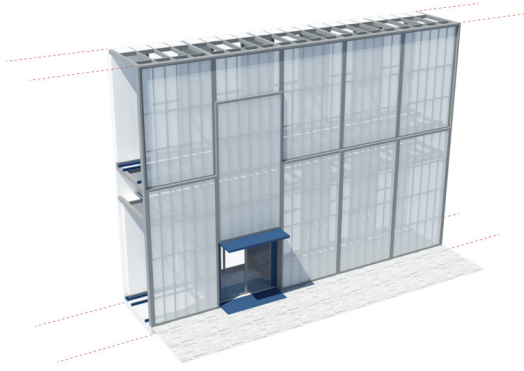


Figure 76: Dynamic facade and entry module

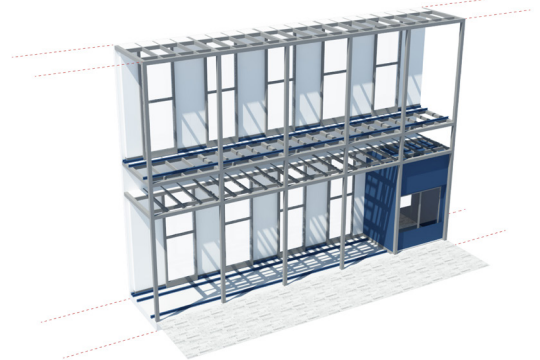
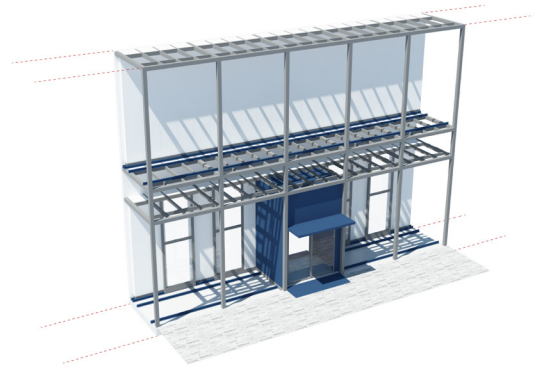
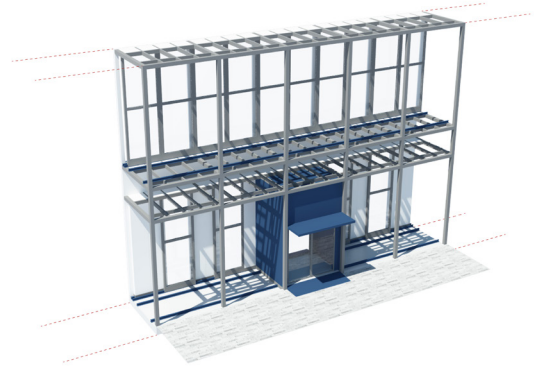
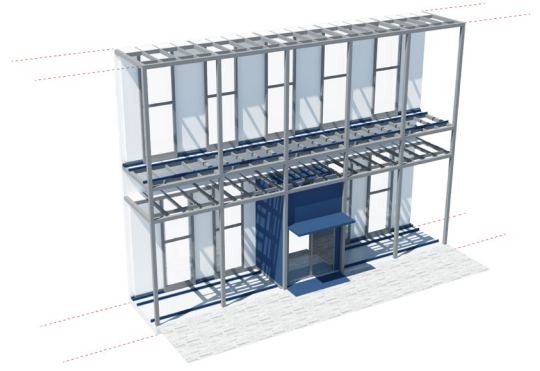


Figure 77: Poche tracks interior

and is therefore in the open position. When an entryway needs to shift location, the ramp and overhang folds into the module. Next the polycarbonate panel over the entryway drops. Then the entryway module moves on the tracks to a new location, polycarbonate bay slides open, and ramp/overhang are deployed.

Removing the polycarbonate reveals the poche tracks. This elongated boundary to the Community Machine is shaped by a structural grid that meets the roof and forms 10'x10' bays. Inside of the structure are a series of four tracks on two levels (*Figure 77*). The two outermost tracks are used by the entryway modules. These tracks are also found on the second floor as this is where entryway modules could be stored and/or used as small spaces. A window and wall layer comprise the inner two tracks, which are imperative for three reasons. First, these layers separate conditioned interior from the enclosed, but unconditioned, poche tracks. Second, as the entryway moves this layer of enclosure must also adjust. Finally, the window/wall tracks can be used as a final measure to control the amount of light entering the interior spaces.

The poche tracks extend from enclosed space (library/STEM programs) through shaded

exterior (farmer's market) to enclosed space (community center). At the shaded exterior space, the polycarbonate panels, windows, and walls are removed to leave an open frame. Elements can move between the two enclosed masses through large sliding doors.

Overall, this system allows for the extremities of the building to be highly operable. Many flexible buildings that exist today are limited by a rigid exterior. This system works to prevent this constraint to allow for change. The many layers of the poche tracks are a highly sustainable solution to the design problem. Considering the climate conditions in Phoenix, having several layers of enclosure and systems to block the harsh sun's rays allows this building to be uniquely suited for the desert. For a full understanding of the moving parts of the poche tracks see *Appendix D* which presents a series of moving diagrams.

walls

All interior walls are operable (except the stationary components of the poche tracks). This allows for an adaptable layout that meets the square footage requirements of an array of program. This system uses the bottom of the 5'x5' structural grid of the space frame truss roof and floors as a track for movement. Walls are able to slide, rotate, and connect anywhere along these tracks. The structural grid of the space frame truss extends into the poche tracks. The window/wall layers of the poche tracks can slide open to allow interior walls to be stored within this space for future use (*Figure 78*). There are five different interior wall types that make up this system: single door, double door, glass, polycarbonate (5') and polycarbonate (4'8"). The polycarbonate interior walls use their translucent qualities to allow for natural light to enter the space with privacy intact. This was especially important because many of the layouts of the Community Machine include circulation space towards the exterior, which leaves greater separation from natural light. The 4'8" panel is important because it allows for any configuration to be made without unwanted gaps in the walls. Sound isolation between spaces is established by filling in the structural grid with fibrous

panels. Drop ceilings can be added to make more intimate spatial experiences (*Figure 79*).

The operable interior wall system is the heart of the Community Machine's dynamism because it allows the expansive interior space afforded by the space frame truss roof to quickly adapt and change. In most contemporary examples, flexibility is derived by a single moving wall or design for disassembly. In many cases this type of flexibility can become practically fixed because of the considerable effort required to change layouts. This system is designed for ease of movement as all interior parts are quickly movable and interchangeable. For full understanding of the moving parts see *Appendix D's* moving diagrams.

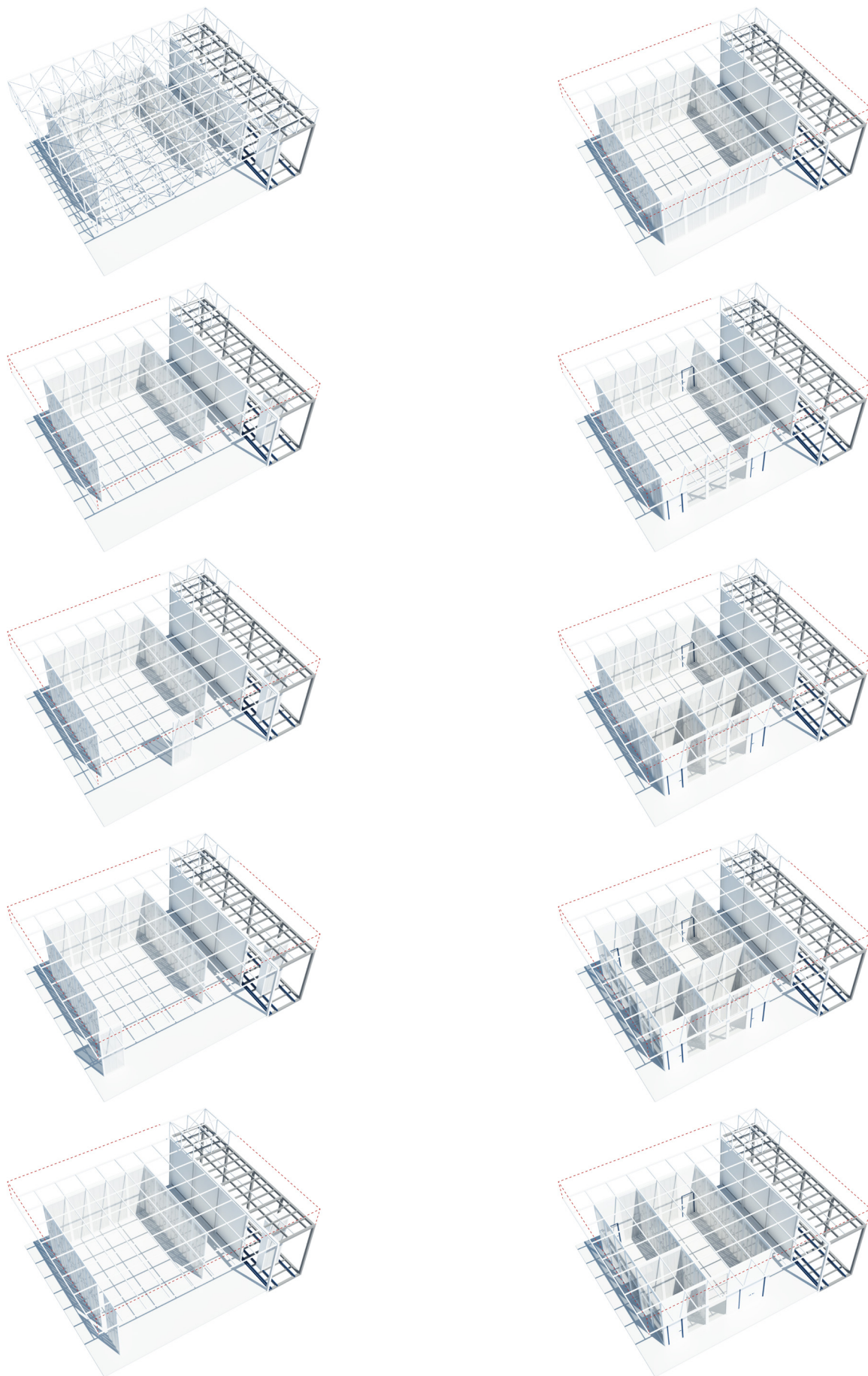


Figure 78: Dynamic walls have endless configurations

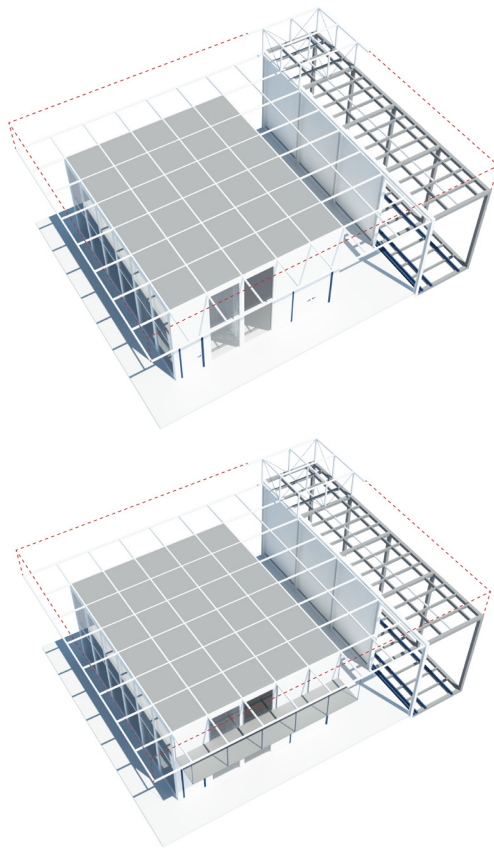


Figure 79: Drop ceiling and panels make spaces soundproof/intimate

floors

The pliability of the interior extends to the floors, which are composed of a series of 10'x80' panels that use the same space frame truss construction as the roofs. Each panel connects to the interior structural frame of the poche tracks. This provides a means for floors to dynamically move up and down (*Figure 80*). The length of the highly operable portion of the Community Machine (all non-pool related program) has two layers of floor panels. The top layer can move up 15' to create a second level, while the bottom layer acts as the ground floor. For a double-height configuration, the top panel becomes the ground floor and the bottom panel is stored in the basement. These dynamic floors allow for a space to quickly transition from a large open gymnasium to two levels of community program. When considering the operability of the floors and walls, the interior configurations are virtually limitless. For full understanding of moving parts see *Appendix D*.

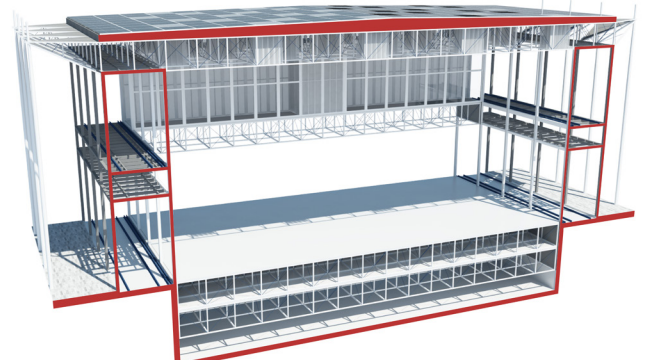
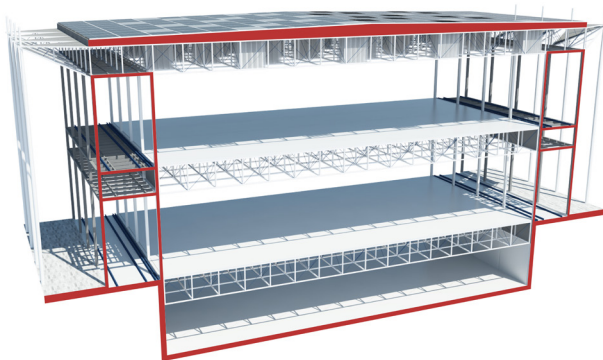
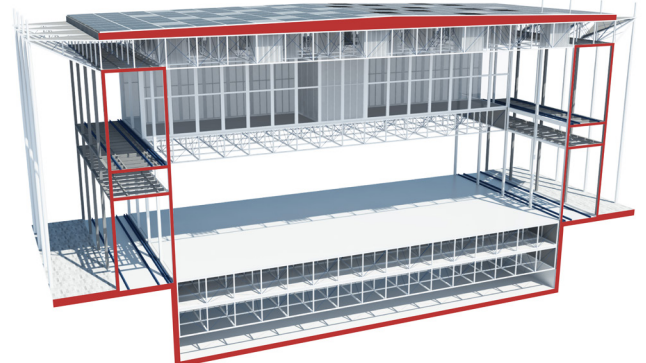
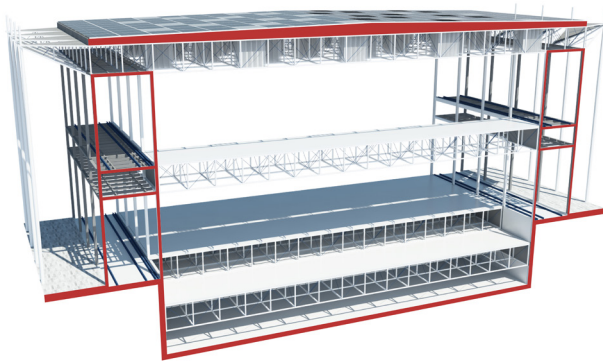
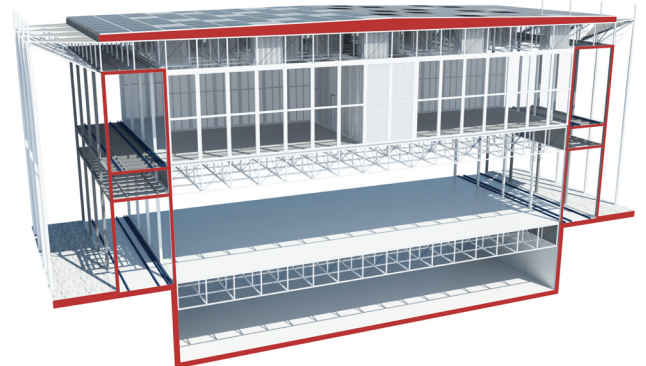
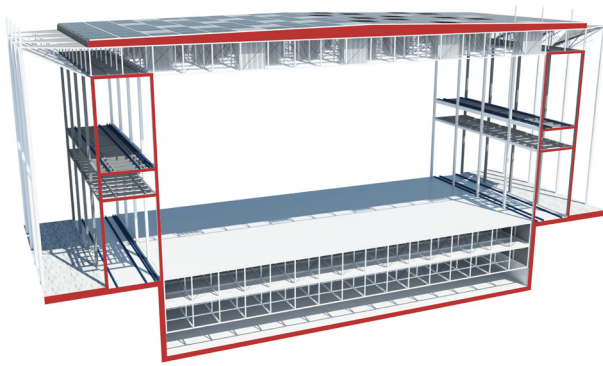


Figure 80: Dynamic floors allow for one or two occupiable levels

roof

The vast space frame truss roof, although stationary, is flexible in composition. The roof spans an immense 80' and therefore requires a 5'x5'x5' structural bay. This bay can be adapted to meet a wide variety of configurations: open frame, fabric shade, solar frame, solar roof, and skylight. (*Figure 81*) The open frame is the base structural element, which allows for passage of light and air. Fabric shades can be attached to tension wires of the structural frame. The solar frame is simply a solar panel inserted into the space frame, while the solar roof includes water protection and insulation for conditioned spaces. Finally, skylights can be fitted into the solar frame. These skylights are made up of a grate of translucent panels that are specifically sized to limit direct sunlight penetration into interior spaces. This sizing calculation was undertaken using a grasshopper script that creates a solar fan based on a building's location. This fan was used to determine the necessary sizing to block the sun. Avoiding direct solar penetration was important because it allows for unlimited program typologies (not all spaces can have direct sunlight).

The design of the roof for the Community Machine as it currently stands uses all five roof systems depending on the program found within. The tennis courts are covered by fabric shades and solar frames. The outdoor pools are covered by open frames and solar frames. The entire enclosed portion of the Community Machine uses a solar roof or skylight as space frame infill. Finally, the shaded outdoor space between the community center and library is enclosed by fabric shades and solar frames. In the end, the Community Machine's roof includes a large 33,500+ sq. ft. solar array. This will significantly offset the energy-demanding systems of the building.

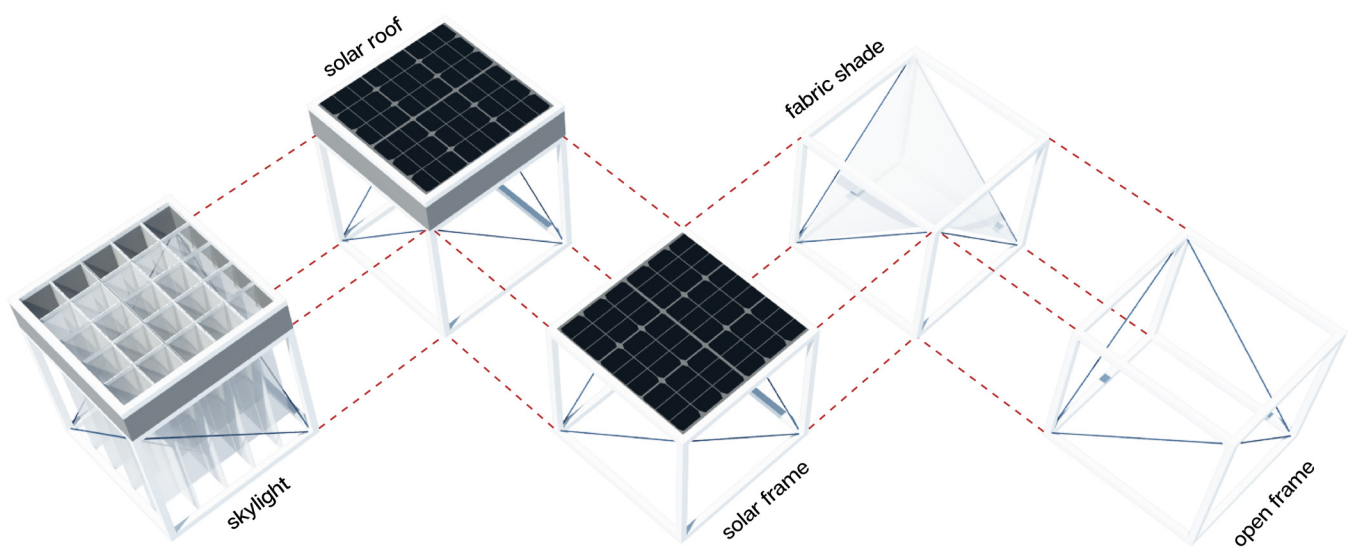


Figure 81: Roof kit of parts

disassembly + expansion

Other sections of the Community Machine are designed for adaptability. The methodology identified a swimming pool as appropriate program for the site. Pools are typically permanent program built into the ground. Although it is difficult to envision a scenario where a community center in Phoenix does not need a pool, the lap and kid pools were built above ground and designed for later disassembly. Another advantage of designing the pools above ground is that it allowed for additional program to be located underneath.

Additionally, the highly adaptable community center and library are enclosed to the east and west by solid/stationary walls. These walls are solid in order to provide the necessary thermal mass benefits to protect the conditioned interior from the elements. In order to design for later expansion/adaptability, large windows were strategically placed at the northern and southern ends of these stationary walls. This was done for future expansion as these windows could be removed to allow for circulation from the existing structures to new additions.

Finally, the shaded outdoor space located between the community center and library contains the poche tracks. This would allow for the building to easily expand by simply filling in the existing frame. The advantage of this is that a highly flexible (movable walls, floors, and entryways) addition could efficiently be installed in the future.

community machine program

The Community Machine is a unique building typology that would require a set of uncommon program elements. First, the building includes a space for data outreach. This would be home to a small group of experts (arbiters) that help to maintain public involvement/input on-site by actively maintaining the application/website and promoting its use. The data outreach center would also provide an opportunity to display relevant community data points through an interactive exhibit. For this reason, the program has a prominent location in the library. This space would also act as the command center that monitors data shifts, adjusts the building layout, and maintains the building's mechanical systems. The Community Machine would require continuous arbiter participation beyond the initial site, program, and building design phases. Although this program could be located off-site, its inclusion in the Community Machine works to enhance citizen engagement. Second, the mechanically-operated parts (windows, walls, floors, entryways, shading devices) necessitate an oversized mechanical room

and an active building engineer presence. The building is cooled using an extensive system of heat pumps that would also be located in the mechanical room. Building maintenance would be continuous and highly technical in nature. Third, floor storage located in the basement is needed for all unused operable floors. Finally, a series of large storage spaces would be required to allow for quick program transitions as the building adjusts. A substantial amount of temporary storage space is located in the floor storage portion of the building. When both floors are engaged (two levels), the basement provides a large amount of storage space.

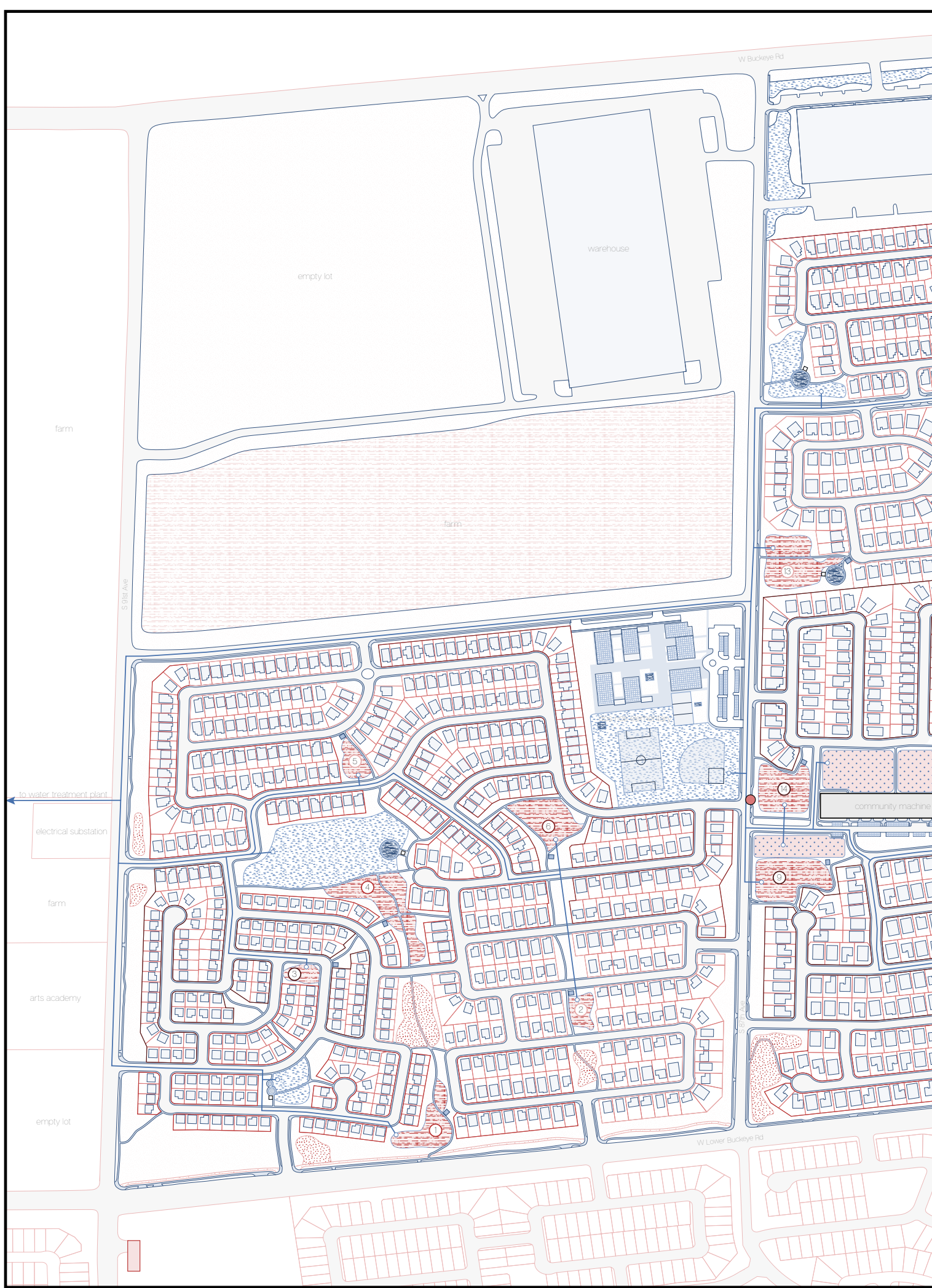
adaptive site plan

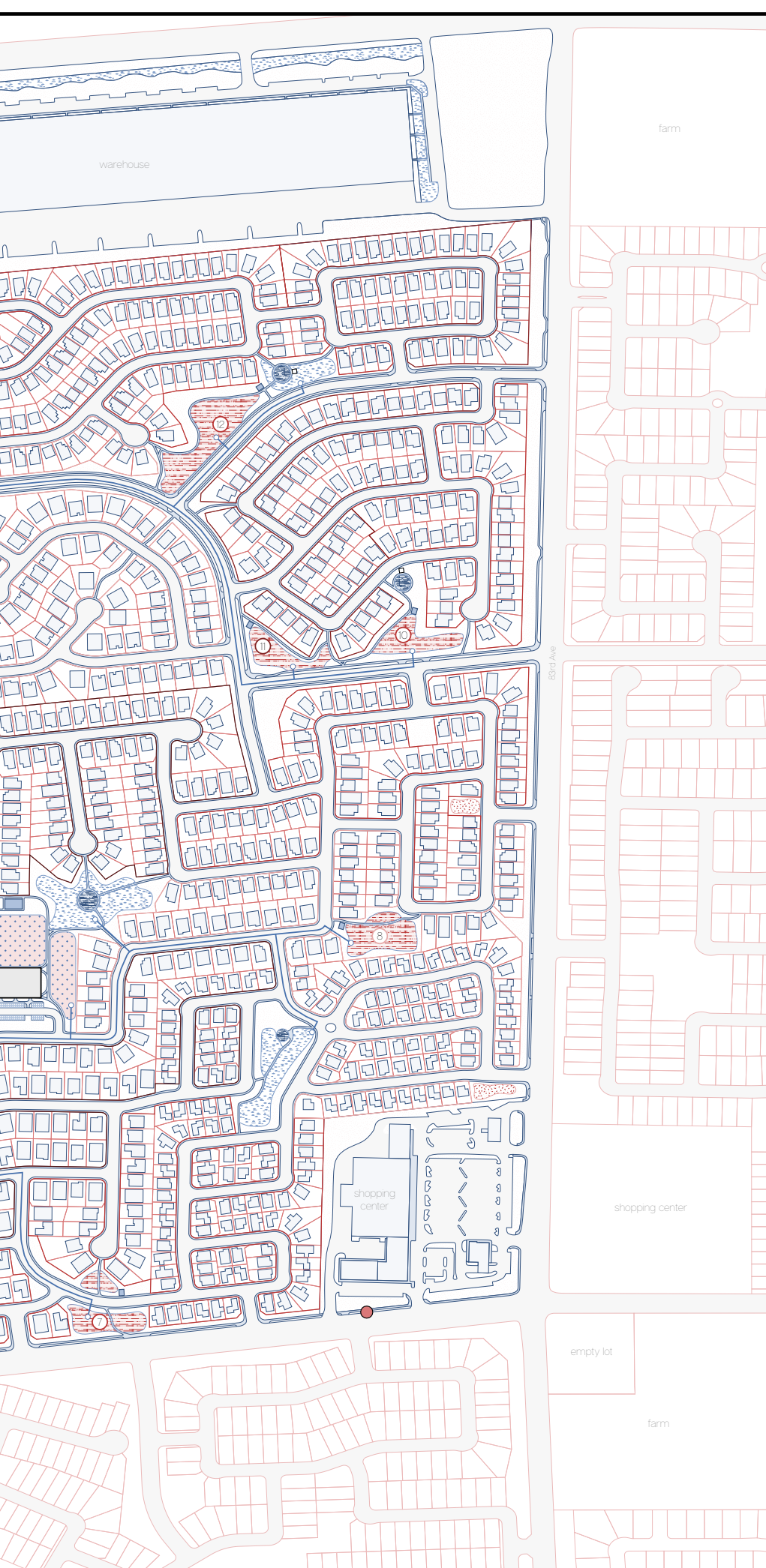
The concept of the Community Machine extends beyond the building itself to a site plan capable of adapting to change. The site and vicinity plans (*Figure 82-83*) represent a snapshot in time and tell a story of a suburban community very different from existing conditions. In this scenario, the broader site community garden intervention is adopted and therefore spreads to flood mitigation sites across the neighborhood. The site plan displays 14 different community gardens or 12.93 acres of farmland. This provides roughly 300 sq. ft. of garden space per home. The incubator farm located on the project site itself tests crop varieties and watering strategies on a series of smaller experimental plots (1.59 acres). This knowledge is used by community gardens and local farmers alike. Incubator production fields (2.37 acres) and orchard (1.07 acres) produce various fruits and vegetables for a Saturday farmer's market serving the broader southwestern Phoenix region. These farming practices lead to a healthier community (eating habits, weight). Each farm is linked to an irrigation system of recycled water from the Tolleson Wastewater Treatment Plant. Existing grass areas are either maintained for needed parkland or removed for low-water

demand xeriscaping. All farming and parkland across the community are linked by a series of partially shaded walkways that increases pedestrian activity, even during the hottest summer months. Dos Rios Elementary facilities are enhanced. Local city soccer and baseball leagues are established and enhance the Community Machine as a center for activity. Solar panels installed on the school provide a respite from the heat (parking lot) while also cutting into energy grid demand. The development of the Community Machine convinces the city to extend bus lines to reach the community and increases public transit use from zero. Development of the Community Machine leads to completion of a phantom housing development nearby that was left for dead after the recession.

The narrative of the site and vicinity plans represent one path that displays the successful adoption of programmatic elements outlined above. This design, however, does not require successful enactment because this is also an experiment that can morph to meet a community's needs and desires. Community gardens could have limited use and lead to only a fraction of those

depicted in the site plan. This could lead to a wide array of site possibilities: an increased level of xeriscaping, a more extensive system of covered pathways for walking/biking, or a series of unique developed parks. The design depicted in the site/vicinity plans could also expand to morph the traditional suburban housing typology from home and private yard to clusters of homes and large shared space. The site plan must also react to the success or failure of interventions and shifts in data trends. As the community changes so should the site and building.





site plan

community farms

- ① 0.96 acres | 106 homes
- ② 0.40 acres | 96 homes
- ③ 0.31 acres | 91 homes
- ④ 1.54 acres | 115 homes
- ⑤ 0.42 acres | 77 homes
- ⑥ 1.15 acres | 115 homes
- ⑦ 0.73 acres | 126 homes
- ⑧ 0.82 acres | 125 homes
- ⑨ 1.42 acres | 118 homes
- ⑩ 0.65 acres | 124 homes
- ⑪ 0.57 acres | 128 homes
- ⑫ 1.29 acres | 133 homes
- ⑬ 1.47 acres | 137 homes
- ⑭ 1.20 acres | 124 homes

Key

- xeriscape/desert
- existing grass
- grass removed
- community garden
- incubator farm
- play structure
- fire station
- farm structure
- shaded picnic
- solar array
- community machine
- proposed bus stop
- reclaimed water treatment irrigation

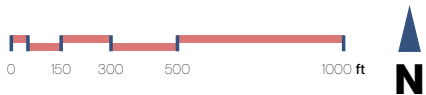
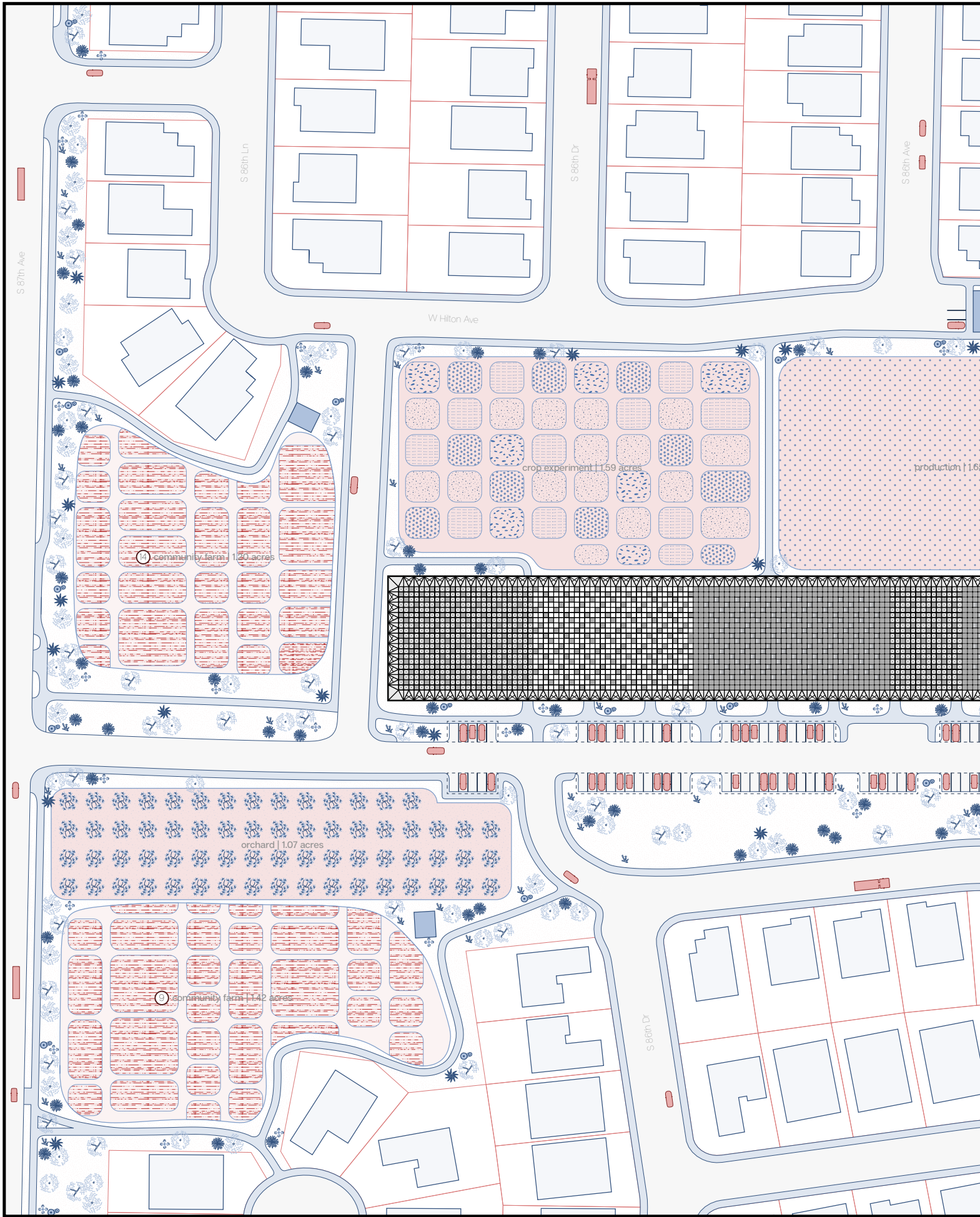


Figure 82: Site plan



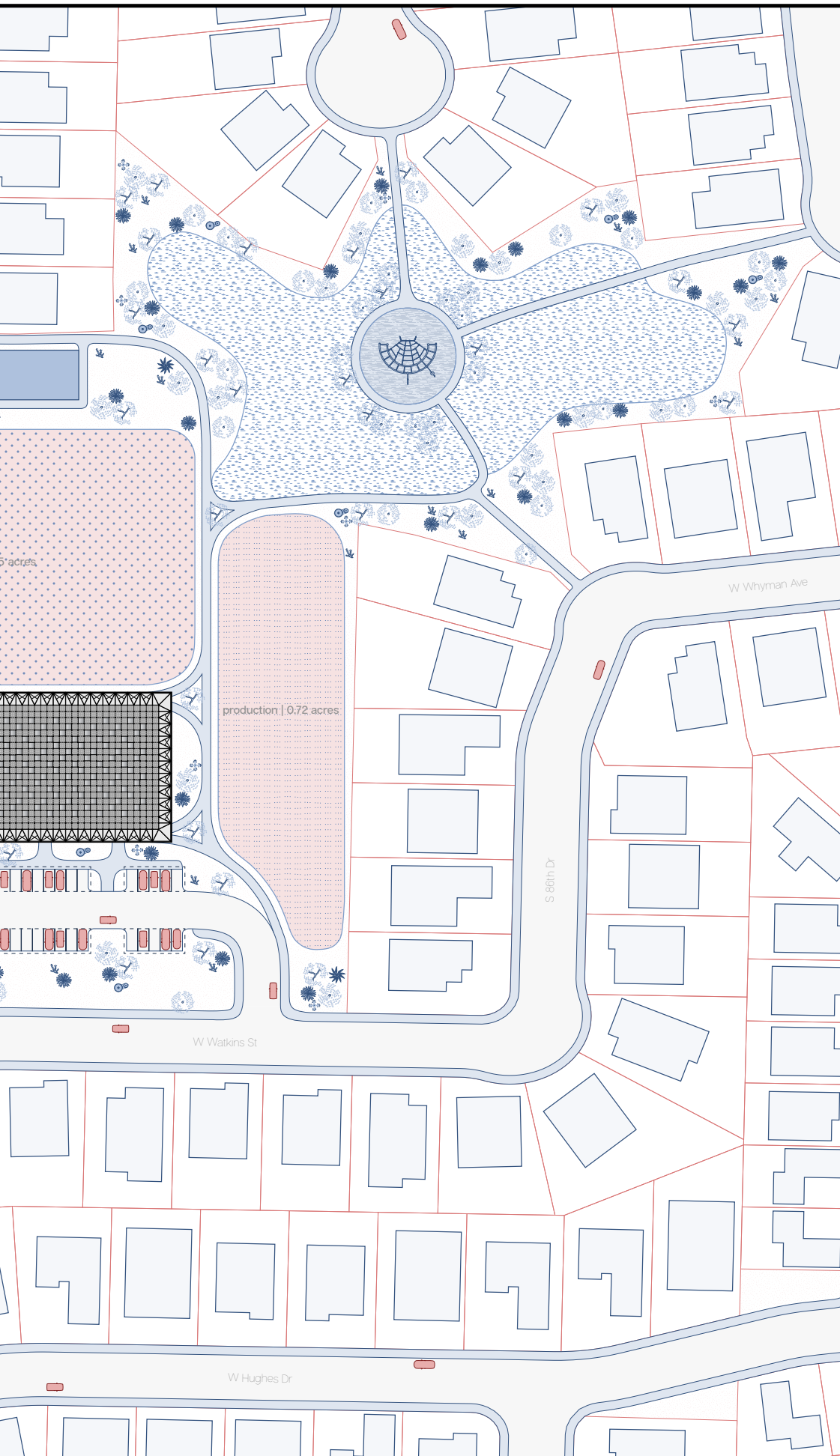
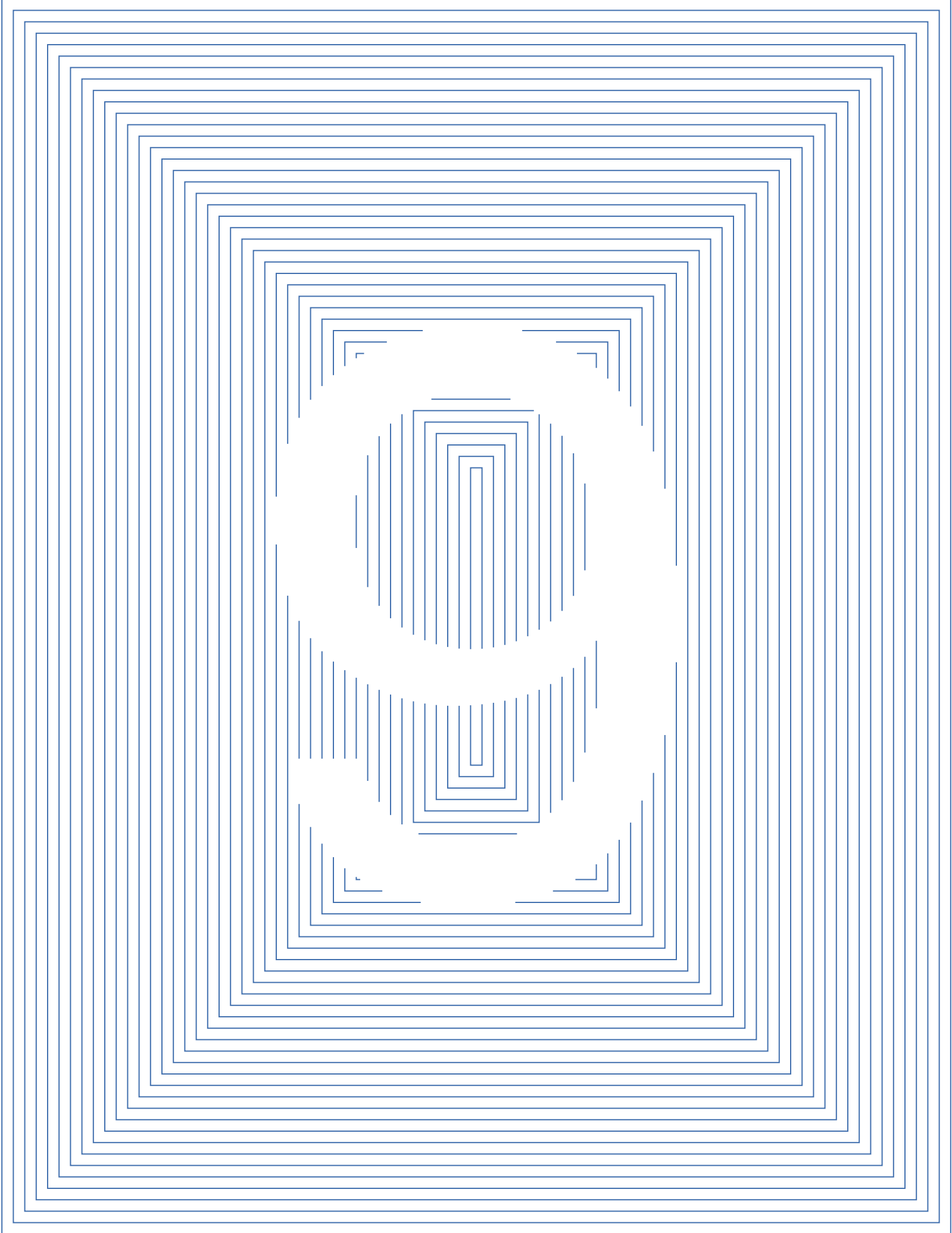


Figure 83: Vicinity plan, see site plan for key



The data-rich methodology outlined above was an experiment that needs careful reflection regarding the process's successes and failures. The following outlines a compilation of positives, negatives, and questions about the system in its entirety.

positives

Data can be useful in the design process. This project started as a curiosity with a heavy amount of skepticism. Overall, two datasets were successfully utilized to chose a city, site, and program. There were many encouraging affirmations throughout the process that made it only more convincing. The project started with nothing, used data as an ever-present driving factor, and ended with a detailed design.

The methodology is scalable and could be adopted for many other purposes. This project represents a single iteration in what could be an endless series of data-driven experiments. The design of the Community Machine is also highly scalable. The community examined and site selected allowed/necessitated a large building. The Community Machine system, however could be smaller and more specific.

The process can improve and change. The method outlined is not meant to be finalized and fully polished, but instead the system requires constant adjustment. In the end, the conceptual framework is designed to be as flexible as the Community Machine.

negatives

The methodology has a true and tested ability to uncover unknowns. The purpose of undertaking such a time-consuming process is not to confirm existing understandings, but to expose urban invisibles. The dataset has a predictive quality in that it could identify issues a city or site experiences before they are fully realized by the public or decision makers.

Using data as the ultimate decision-maker represents a democratizing agent in a process that is traditionally top heavy. Designers, city officials, urban planners, and developers often have a disproportionate say in shaping the built environment. Although training and past experiences makes these individuals experts, this data-driven process allows decision-makers to be more informed. This leads experts to guide rather than dictate.

The process outlined challenges traditional models. Site and program selection are often taken for granted. Context research usually follows similar patterns. Traditional approaches scratch the surface with respect to the use of data. This process challenges typical pedagogies by rethinking many aspects of the design process.

The process is time consuming. Collecting and evaluating the data points is a significant task. A data scientist or a programmer could potentially increase the speed of the process. Regardless, this system is most likely inappropriate for small to medium sized architecture firms. For this methodology to work, the city government would most likely need to buy into and support the data collection and evaluation.

The current methods for evaluation might have lacked the sophistication of tools developed by a statistician. The evaluative tools applied are elementary. Although they produced valuable results, the vast quantity of information collected was not used as effectively as possible. FiveThirtyEight, for example, uses complex statistical models that provide more predictive results/outcomes.

Similarly, the project used Microsoft Excel as the data management and evaluation program. Although this is not inappropriate for this type of work, it lacks the sophistication that would be expected from an innovative process. In some ways, this is like putting

propellers on a new passenger plane; it works, but there are better options.

Much of the data included in this project is not real-time. This means that the information collected and analyzed might not directly correspond to the present condition. While these delays “do not necessarily have a negative effect, rather a stabilizing one, the feasibility of shorter delays increases the flexibility and can help to use resources and energy in a more effective way.”¹¹⁷

Data could be used as a crutch. In the end, data probably should not be the ultimate decision-maker, but a useful tool for designers and builders alike. There is always the possibility that individuals might hide behind the process. The methodology should be continuously evaluated and blindly trusting the system could inhibit/limit future improvements. Improper use is a legitimate concern. Using and manipulating the datasets to bring about certain outputs is something that must be carefully monitored. The dataset provides legitimacy to decisions and when this process is tampered with results could go uncontested. Data is a powerful tool that can have a

dramatic impact on people's lives, therefore usage of this information should not be taken lightly.

Data collection is inherently selective because it is impossible to have all available relevant information in a single dataset. James Corner makes a similar point when speaking of map making when he wrote: “I would argue that no matter how scientific, objective and analytical the map, there is always a choice as to what is included and what is not. Maps can not depict everything; they are inevitably partial and abstract.”¹¹⁸

questions

From the beginning, it was not necessarily evident who would create and maintain the dataset. A city could use this information to more intelligently determine how to spend tax payer's money on public projects. Architects could adopt this process to have more say in site and program selection and therefore expand existing roles. Developers could use this information to increase the bottom line. Although this information is useful to many parties, the time and effort required makes the individual(s) who create and maintain the process unclear.

I am not a data scientist. For this reason, it is not necessarily clear what a statistician would say about the entire process. Data Science Fellow Bernease Herman was very helpful and made it clear that the methodology, especially the evaluative tools, were not outside of traditional practices. In the end, this thesis proposes that architects gain the necessary statistical knowledge or work closely with an expert for data management and evaluation: "Instead of remaining in our tidy discipline, we now maneuver within manifold worlds to simultaneously consider functional, political, financial, social, aesthetic, and ecological

issues. Working alongside consultants, analysts, political bodies, and the like, we collectively develop the capacity to respond to today's heterogeneous urban realities."¹¹⁹

The arbiter(s) provide essential input throughout the methodology, but who exactly is/are the arbiter(s)? Can a single architect fulfill this role or does it need to be a compilation of voices to work effectively? Experimentation with this would most likely be required. In some respects, the process might be enhanced by a group of voices to further democratize outcomes. On the other hand, if the data is the ultimate decision-maker a plethora of opinions might overcomplicate.

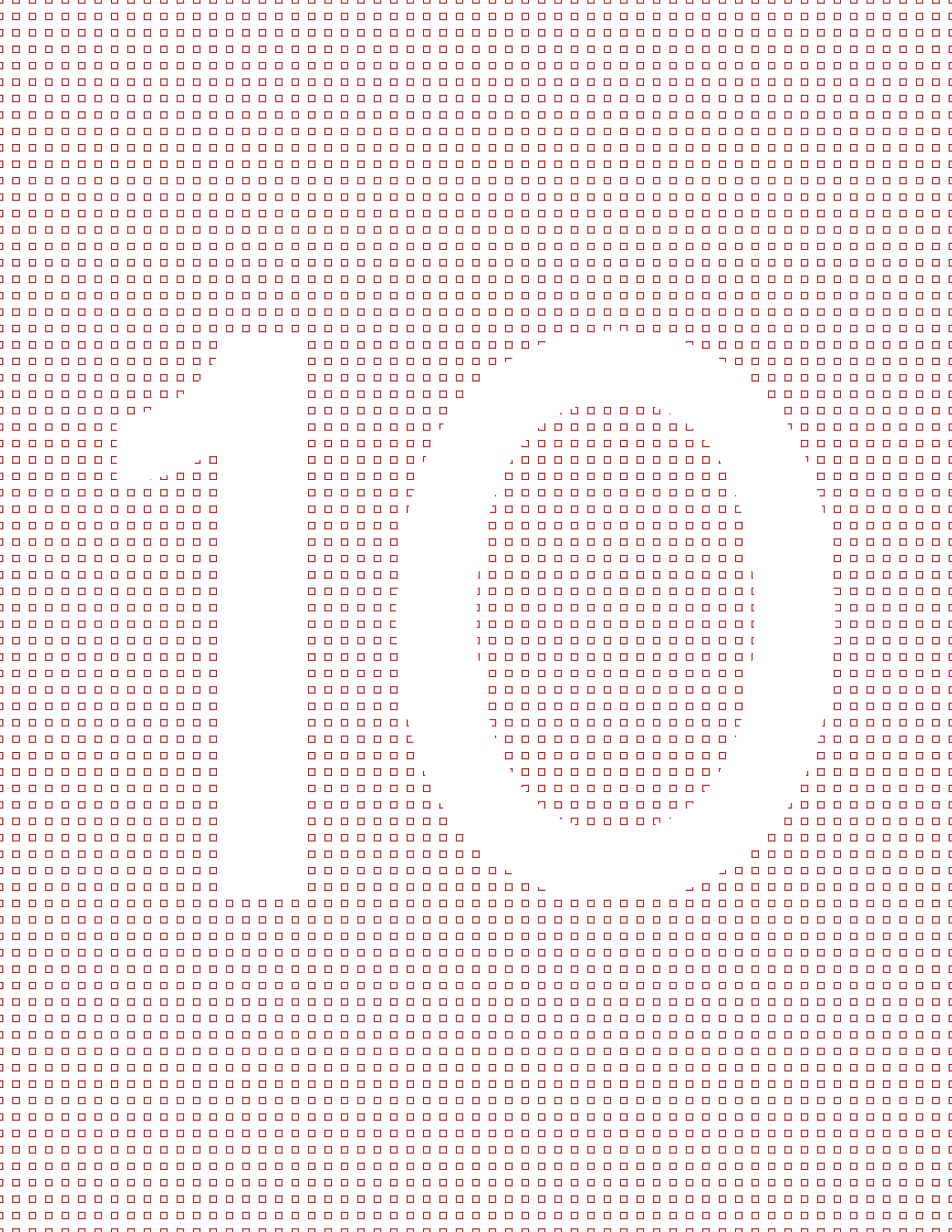
How much data is enough? Statisticians might have an answer, but the methodology seems to require an endless flow of inputs. Is there a point where there is too much information and decisions become nearly impossible?

This does not seem like a far-fetched scenario, but with a refined set of evaluative tools and proper organization an endless flow of data could also work to strengthen the system.

What would an actual Community Machine look like? Is this a system that should be perpetually repeated? Community Machines could be mass produced and adapted to different communities. The flexibility of the design could mean the building has longer utility than average public buildings. Data related to the resources expended modifying or replacing existing community centers could help to clarify the viability of reproduction.

data futures

This project is not an argument for data as the solution to all our problems, an artificially intelligent future, or a design process without a need for architects. Instead, this is an effort to rethink the design process in an attempt to integrate information into architecture. Data has value, which is why its collection has only expanded with time. The design fields use data, but in a limited capacity. Should we continue to practice without using all the tools available? The use of quantitative information could be endlessly valuable and only expand the scope of the architect. Nate Silver at the onset of FiveThirtyEight stated; “It’s time for us to start making the news a little nerdier”¹²⁰; maybe it is time for architecture to do the same.



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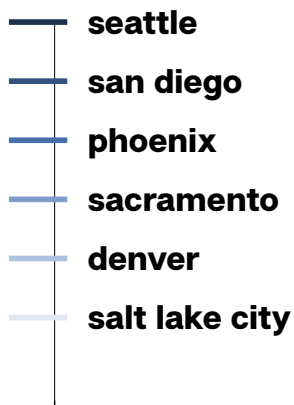
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Appendix A

detailed data graphics

X
mean

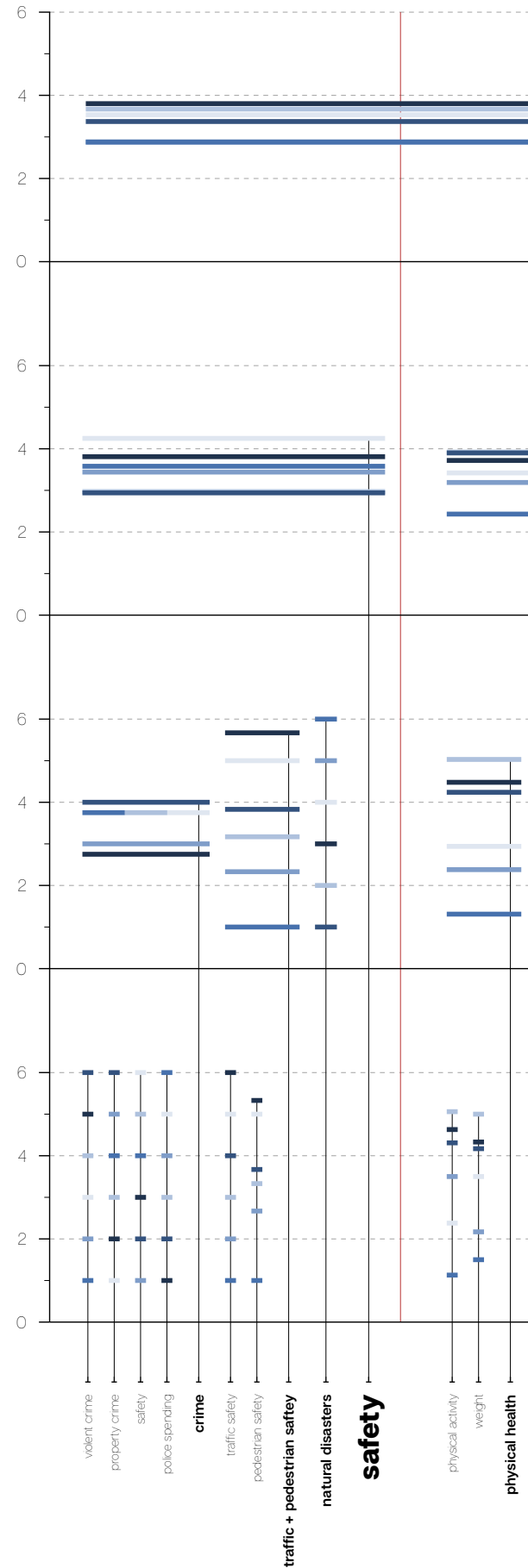


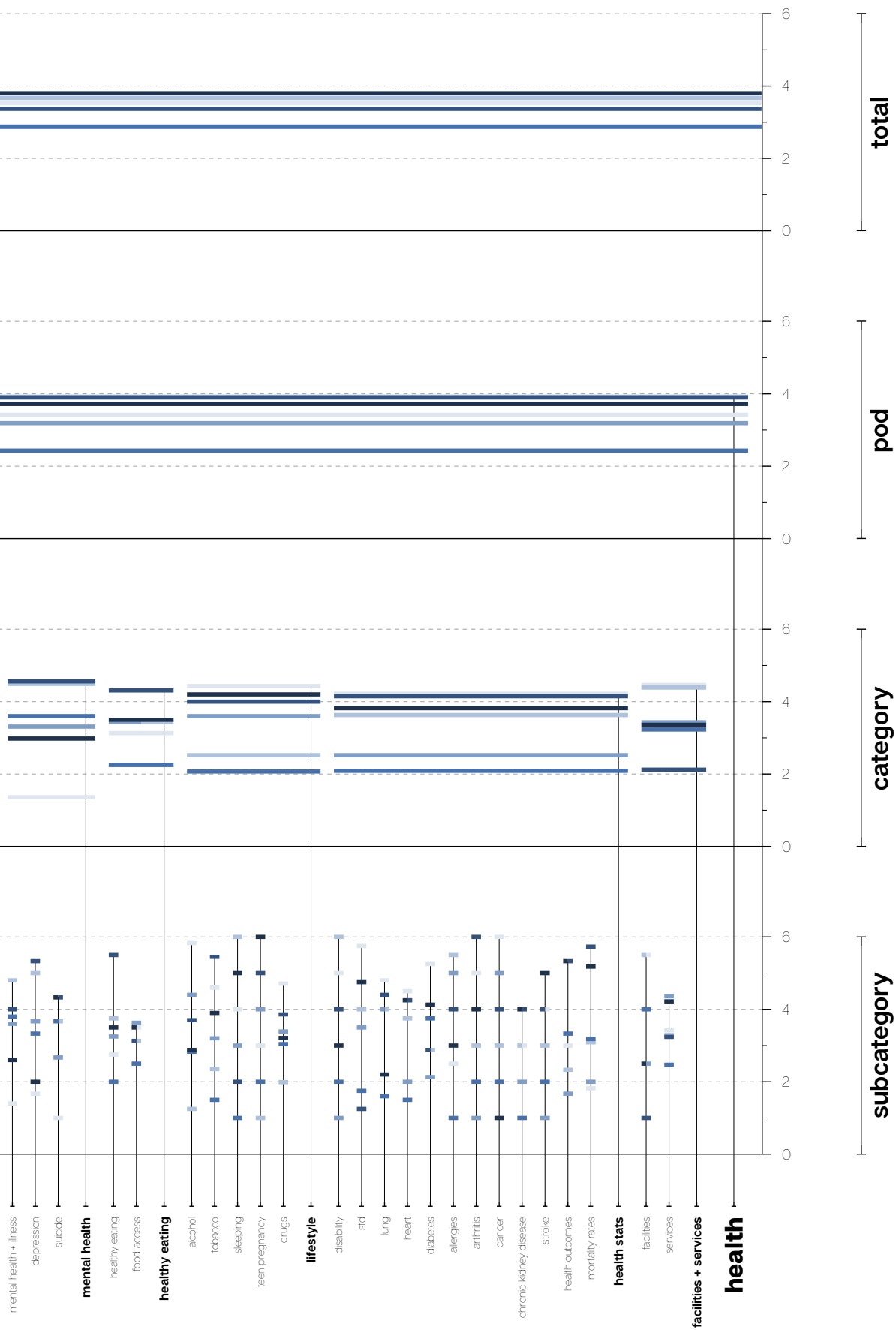
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X

mean

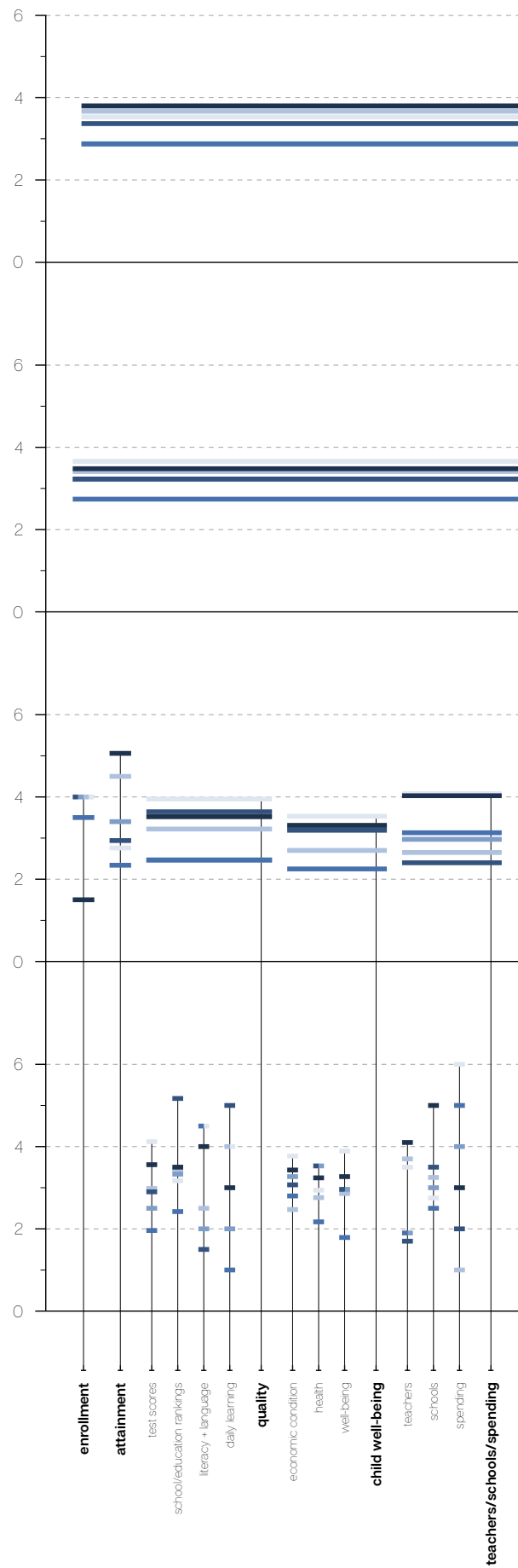
City	Percentage of White Population
seattle	85%
san diego	80%
phoenix	75%
sacramento	70%
denver	65%
salt lake city	60%

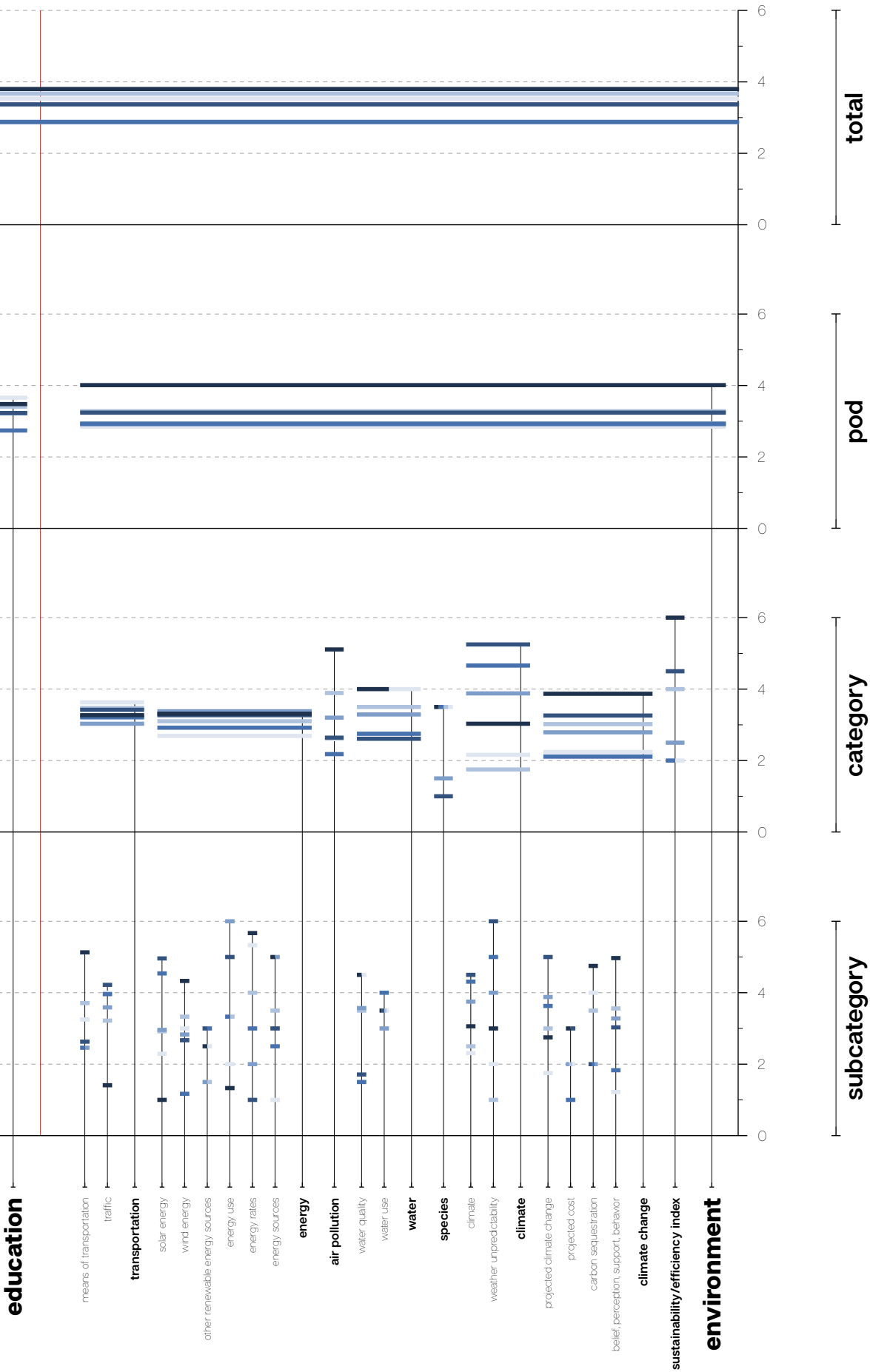
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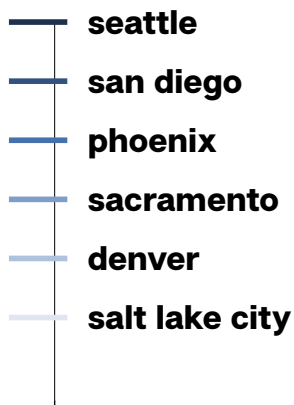
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X
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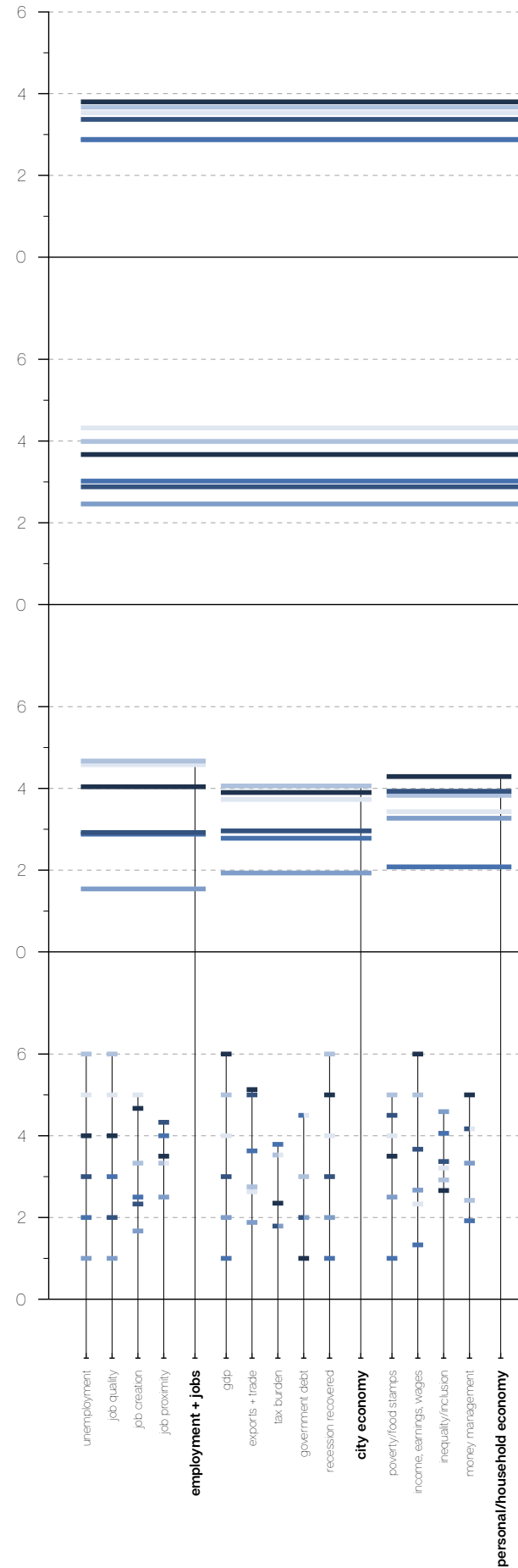


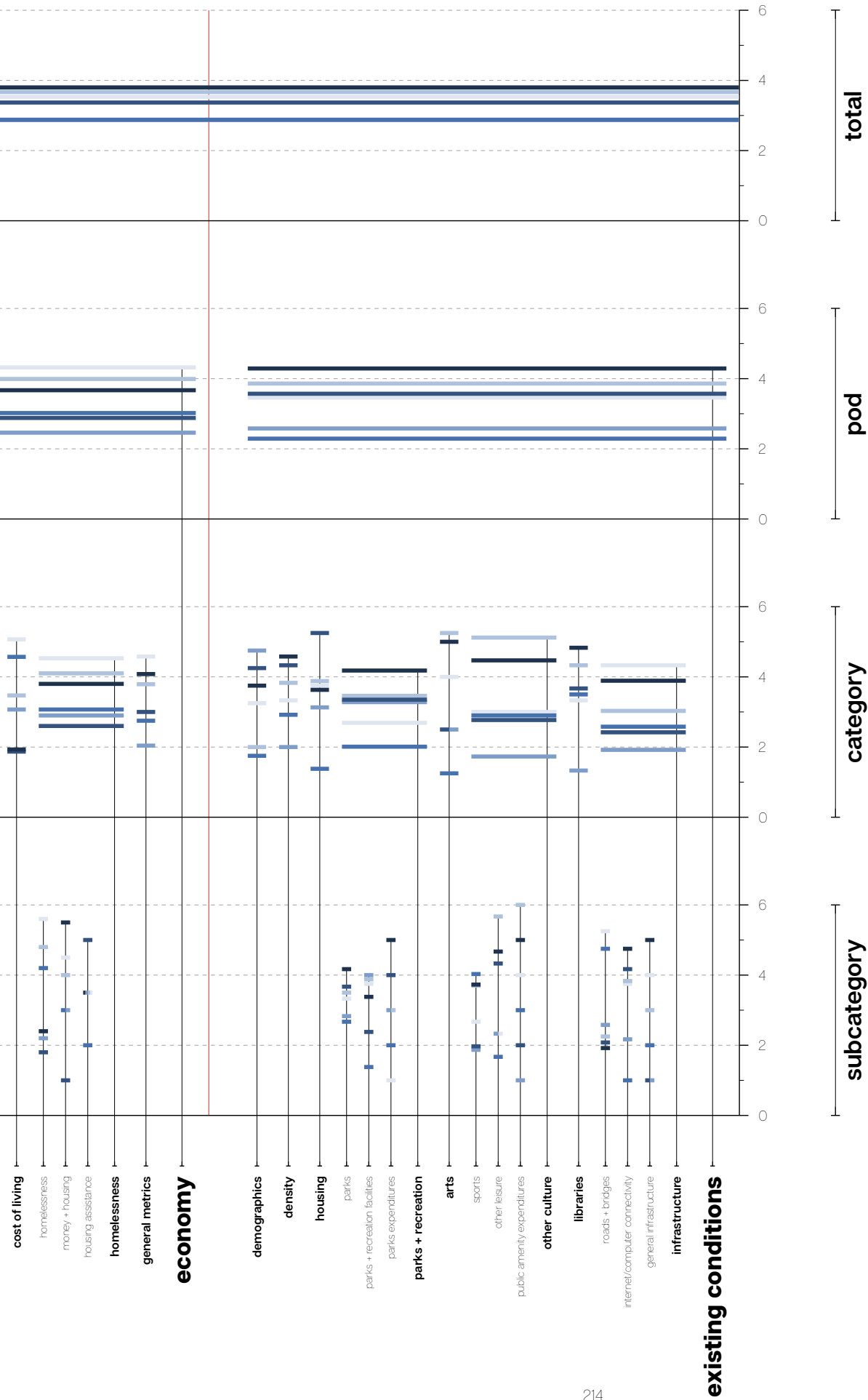
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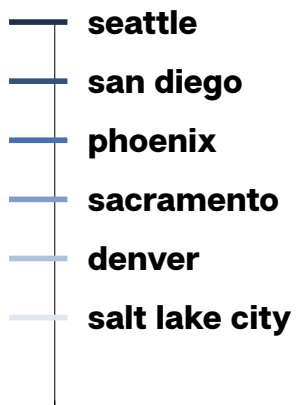
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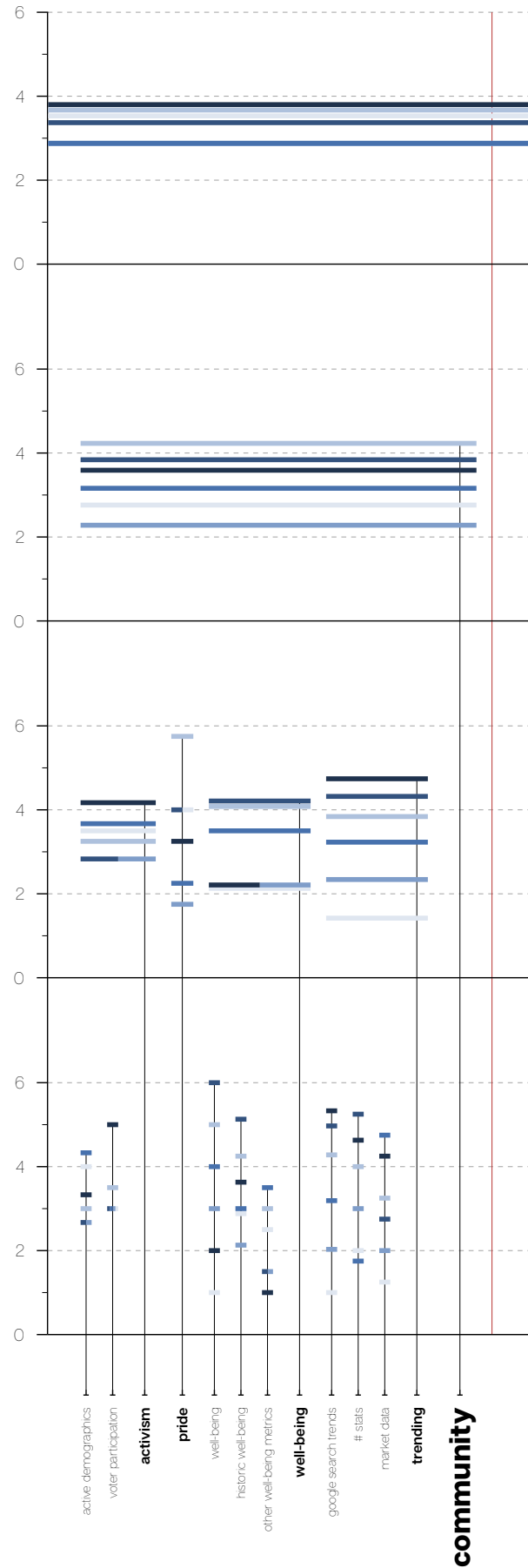


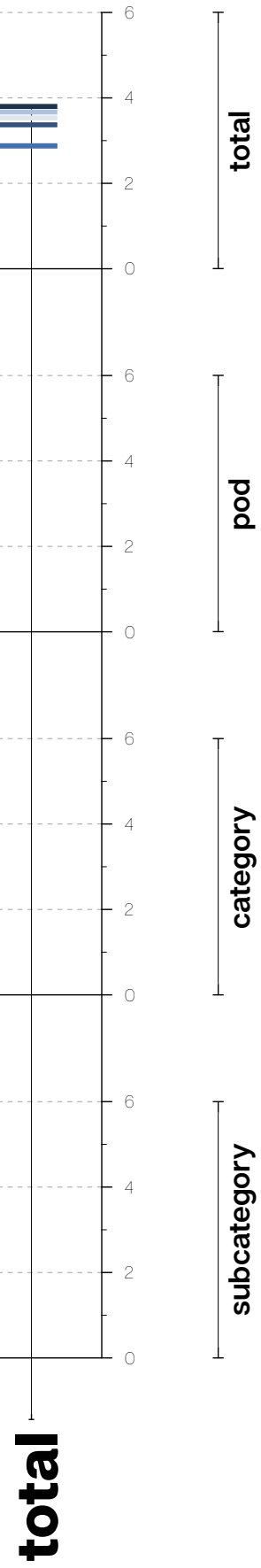


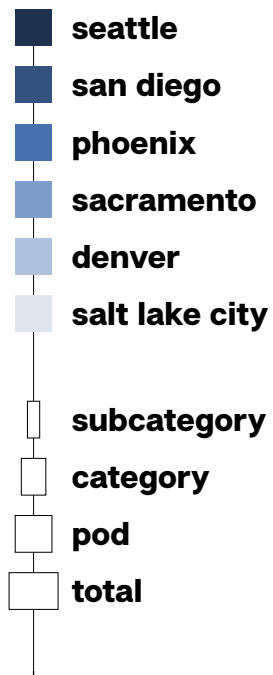
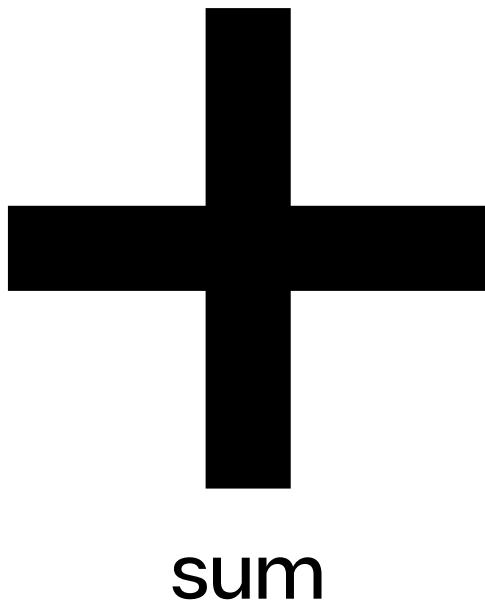
X
mean



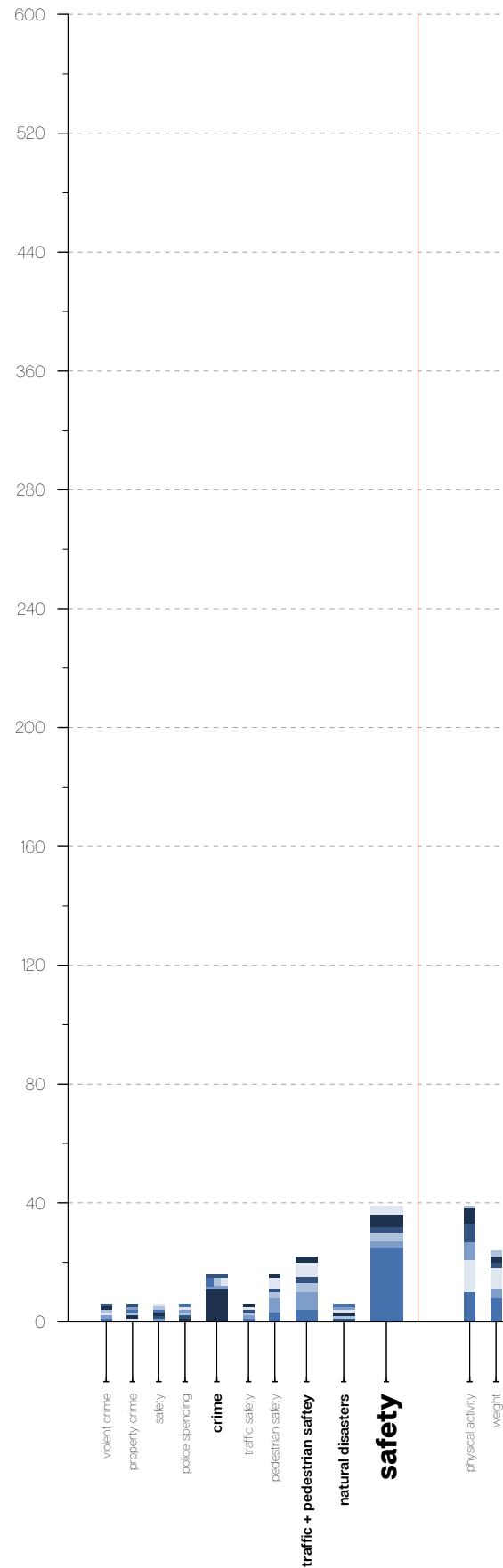
issue
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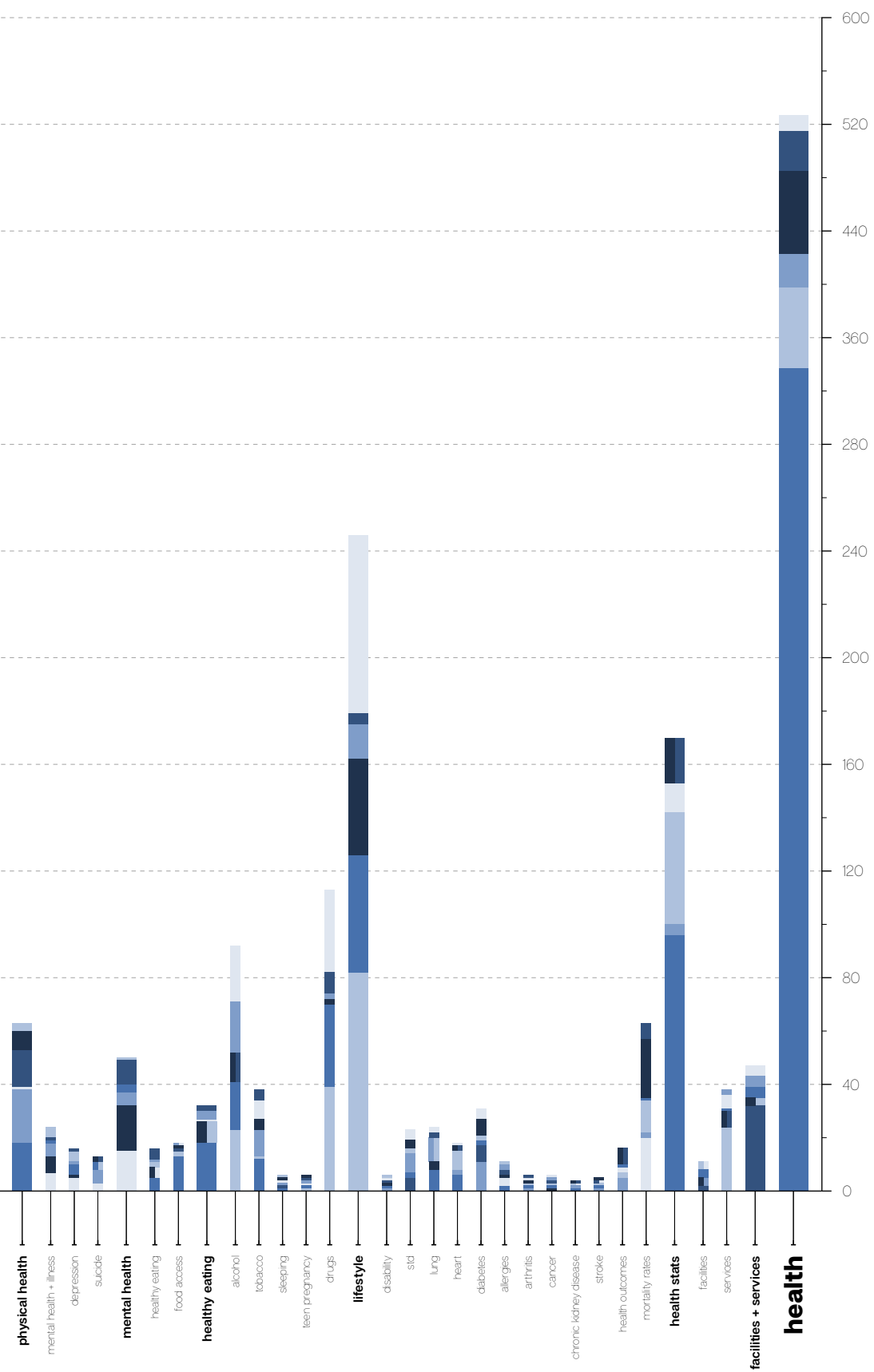


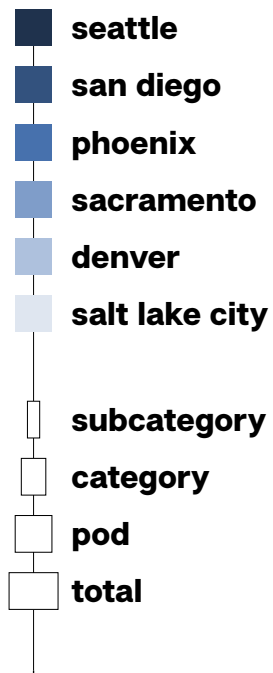
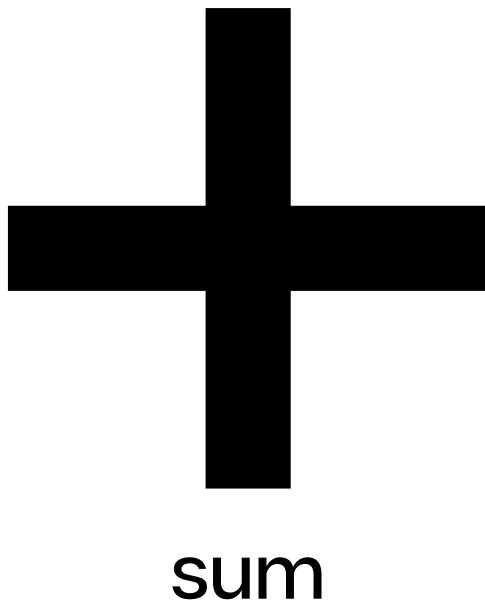




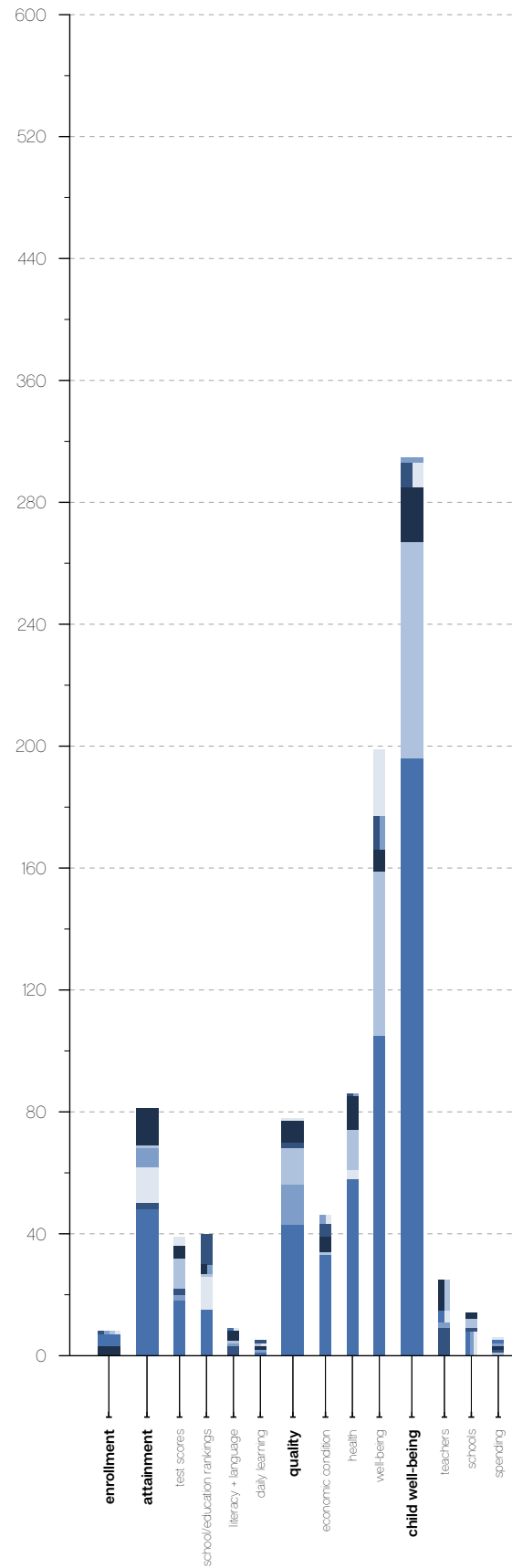
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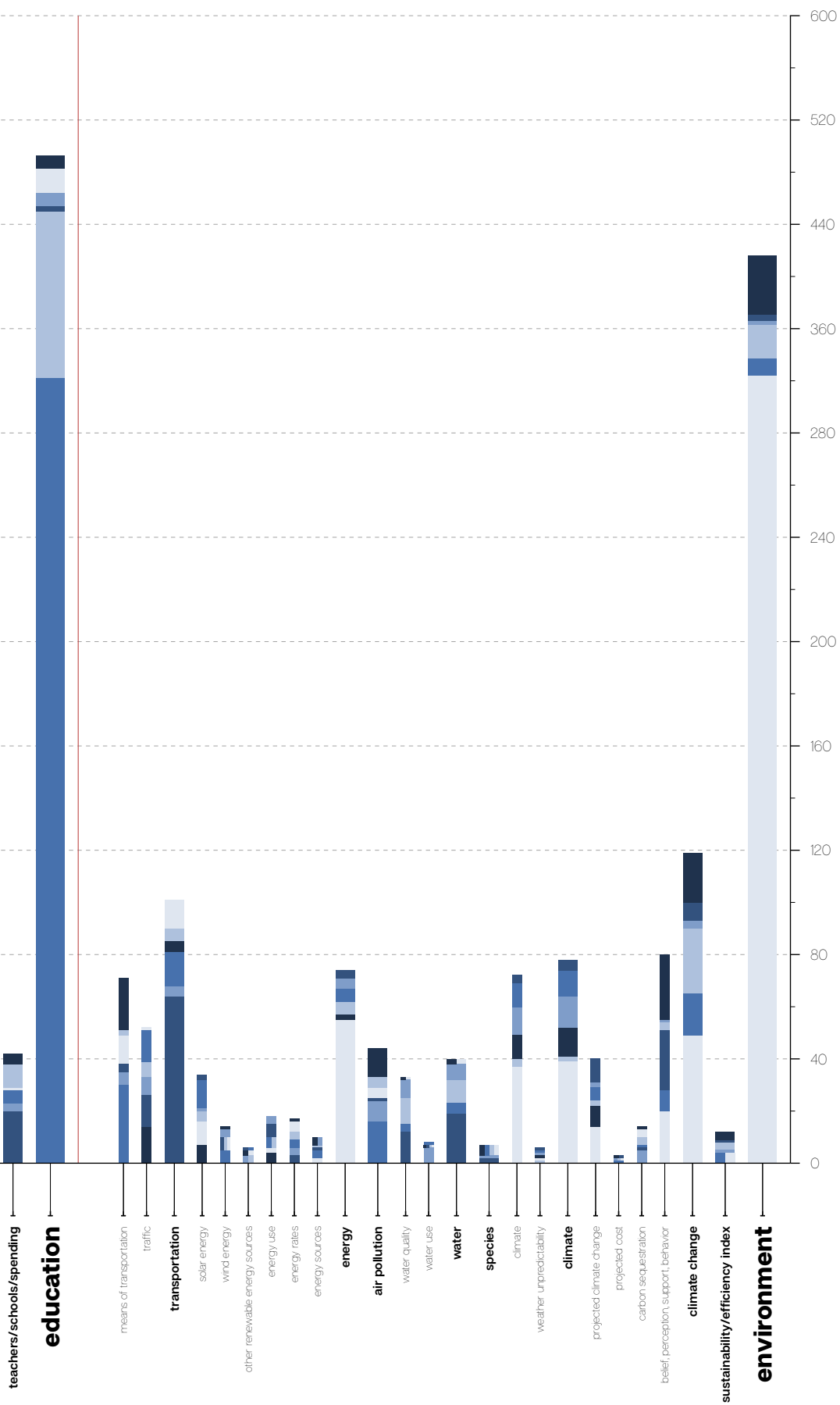


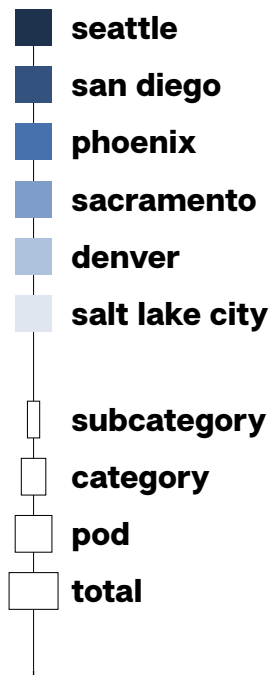
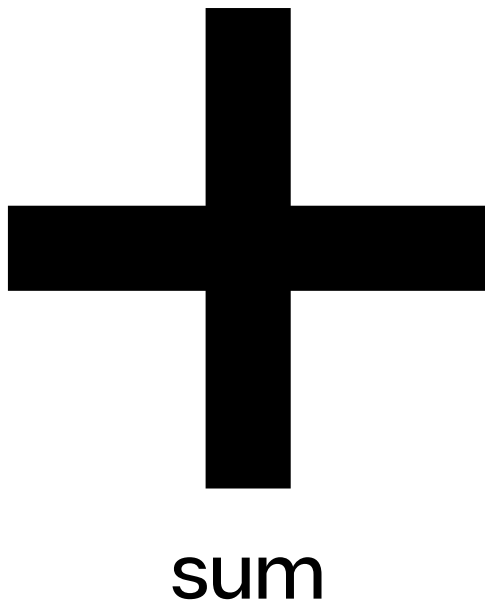




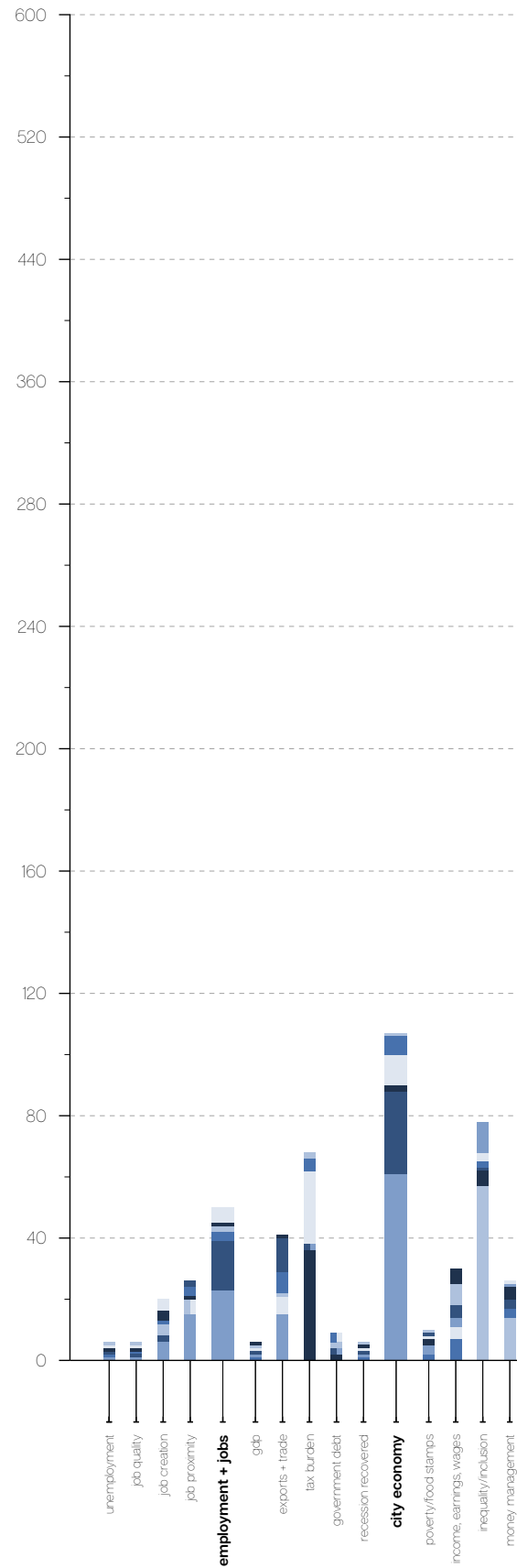
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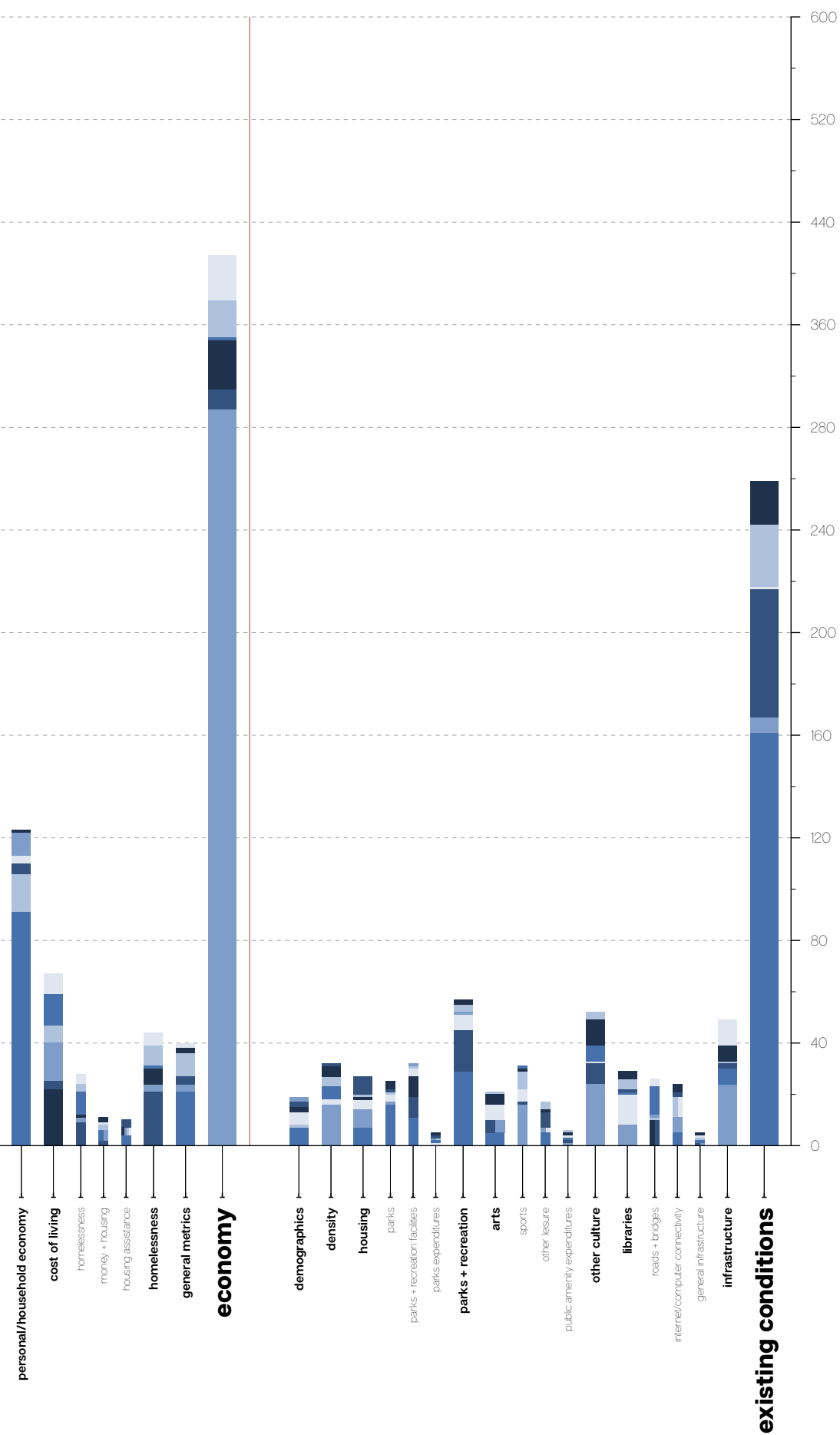


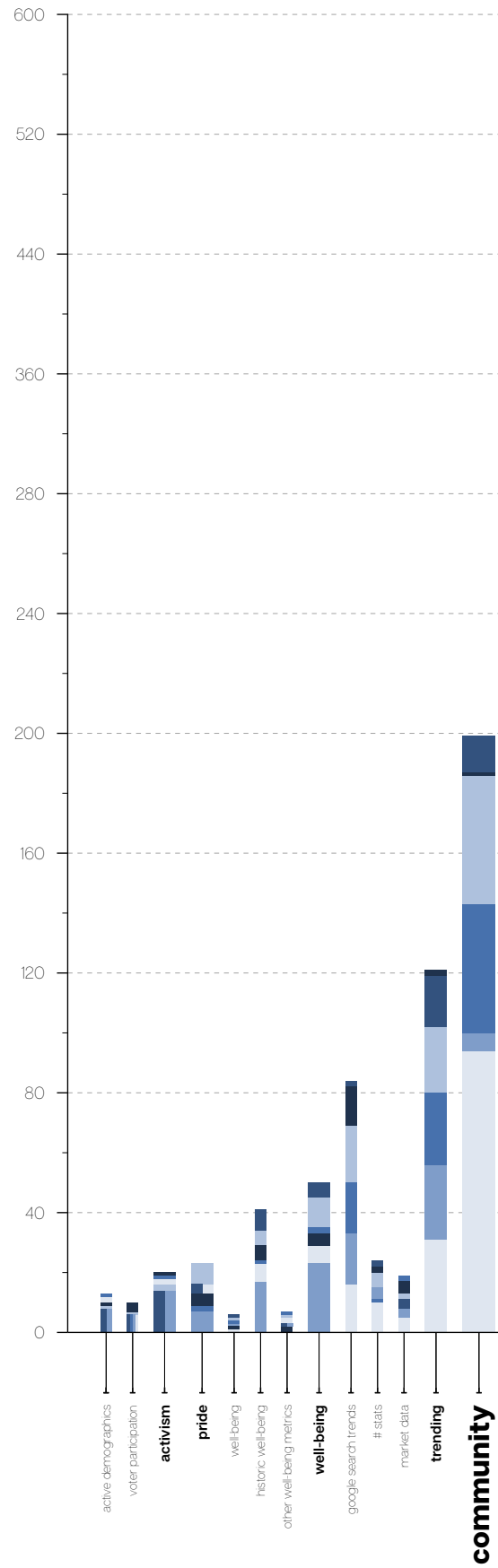
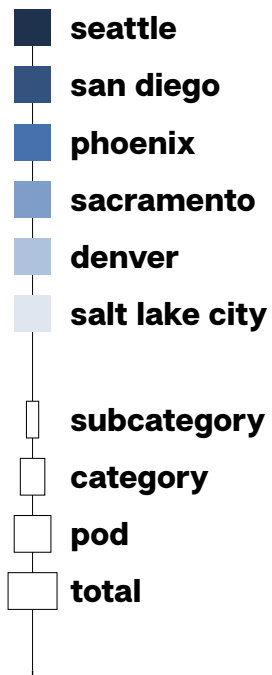
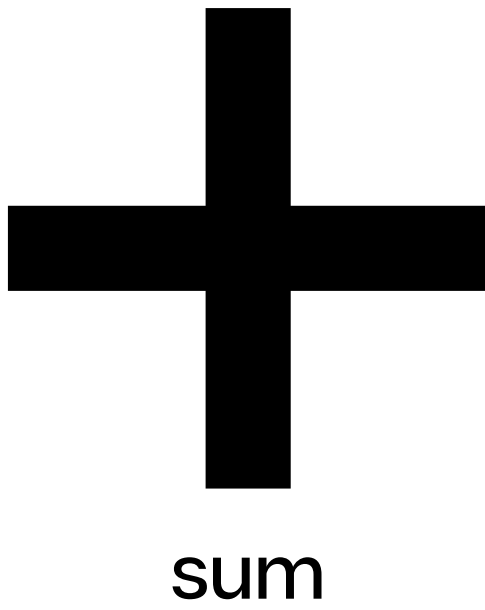


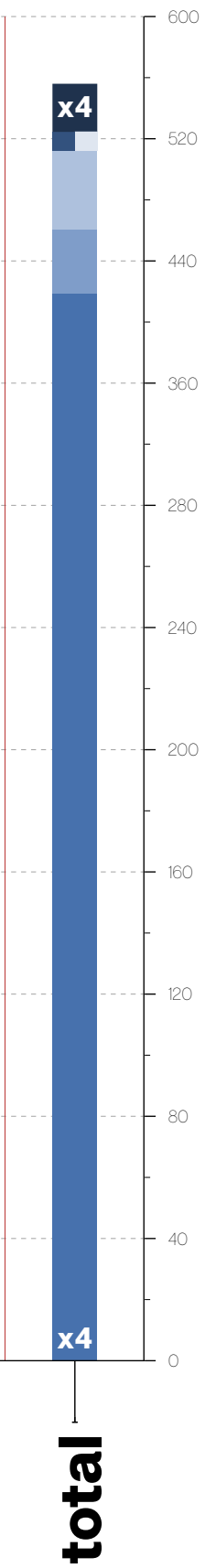


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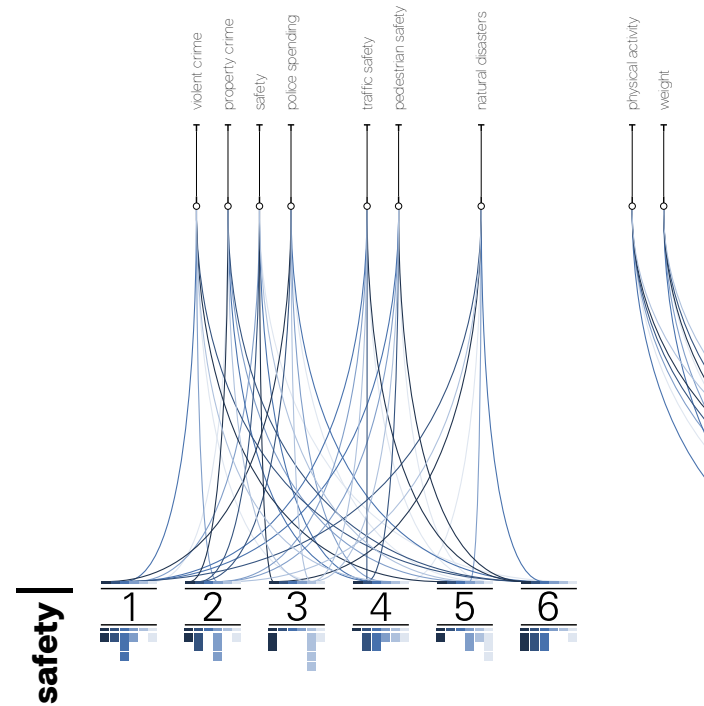
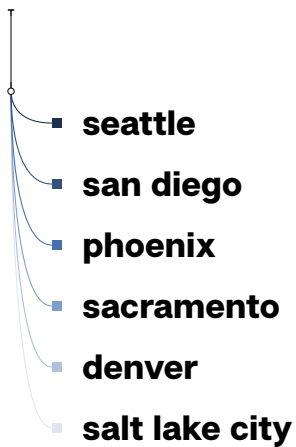


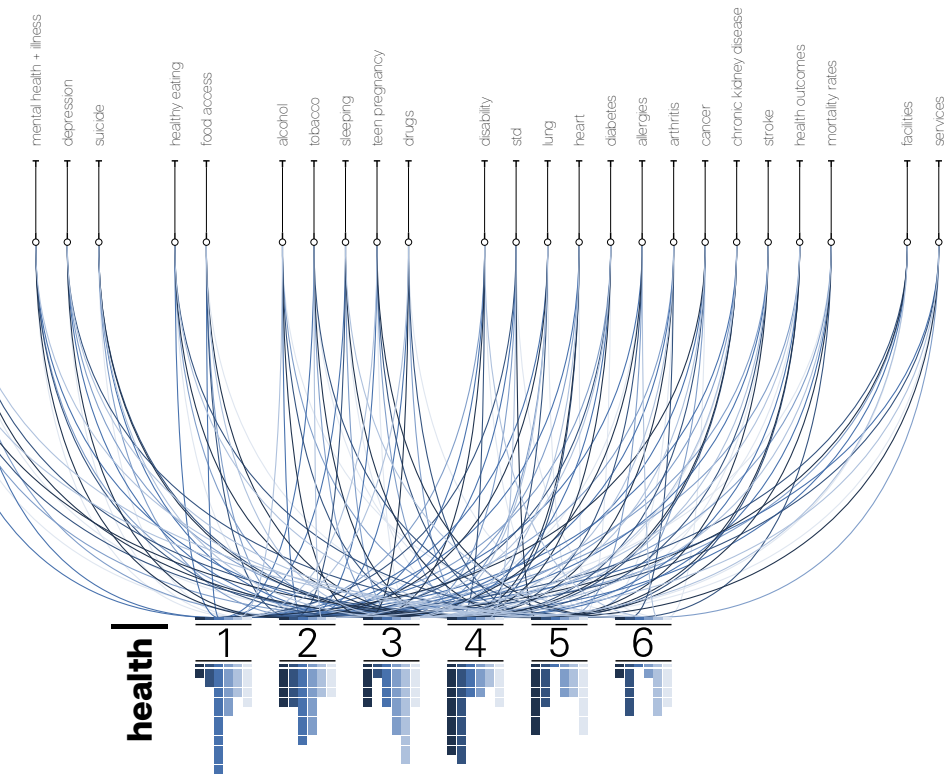




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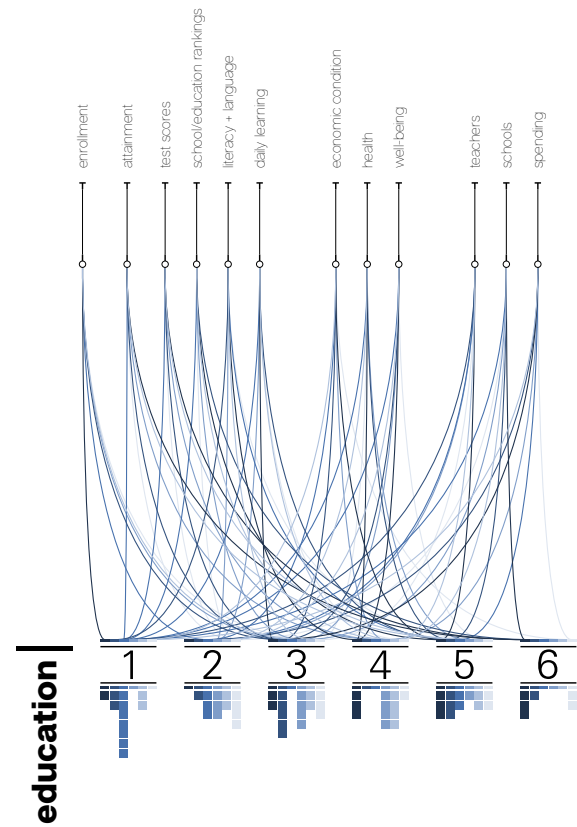
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frequency

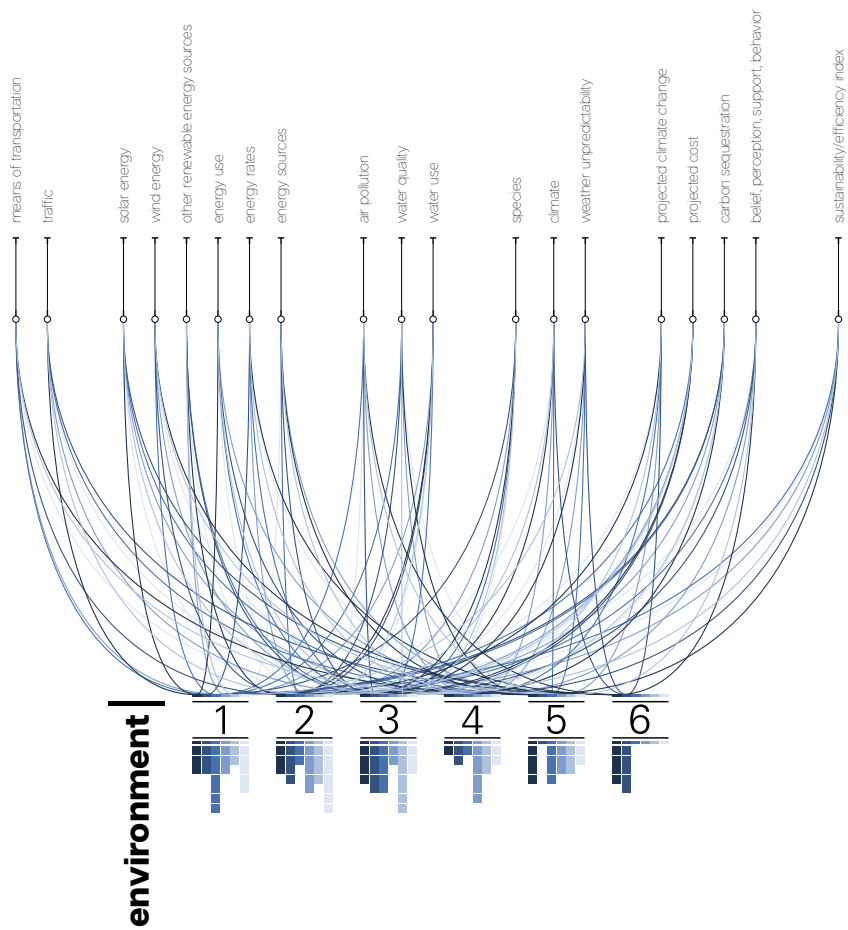




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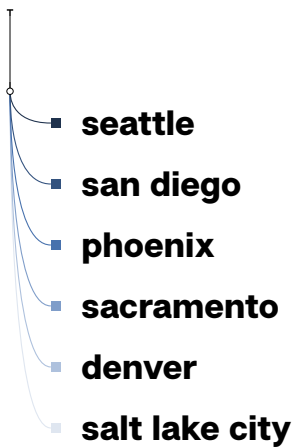
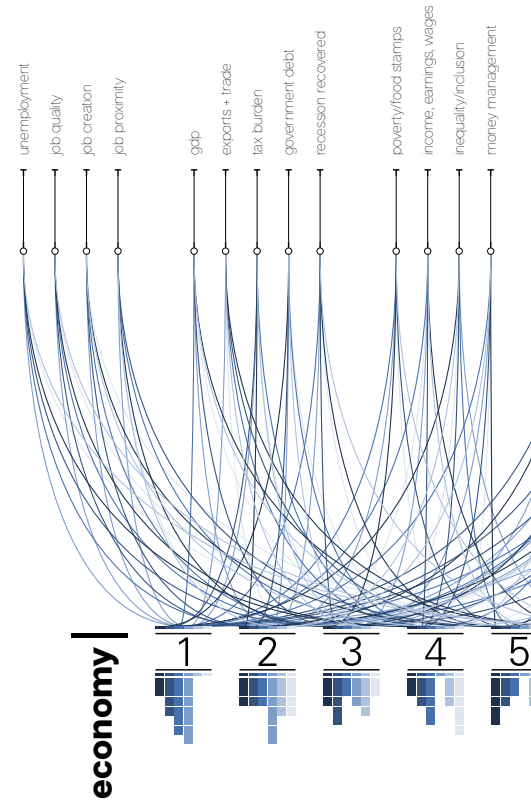
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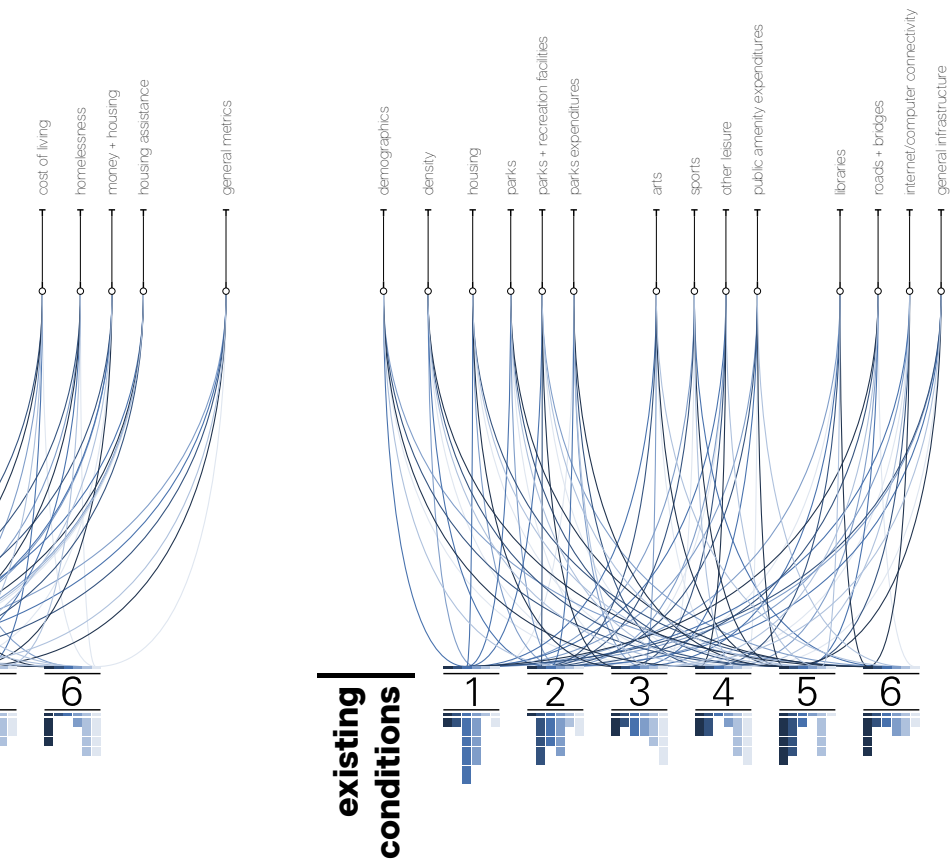




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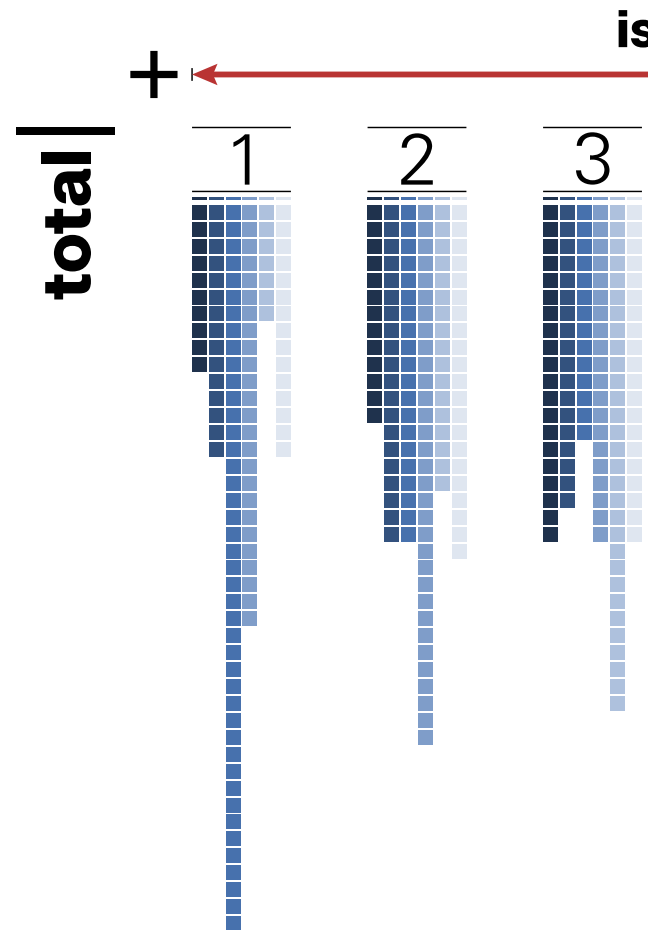
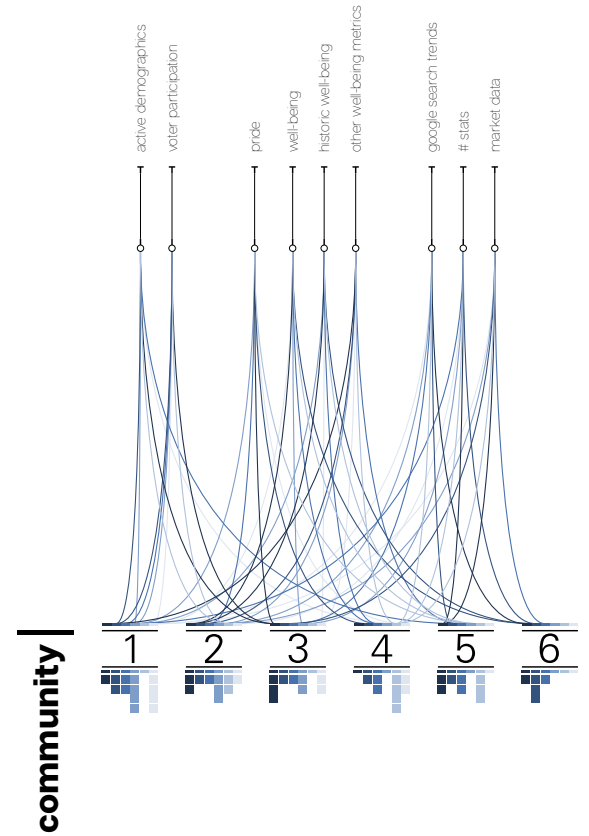
subcategory
frequency



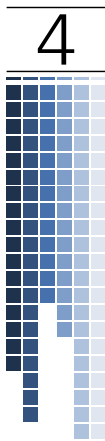


f

subcategory
frequency

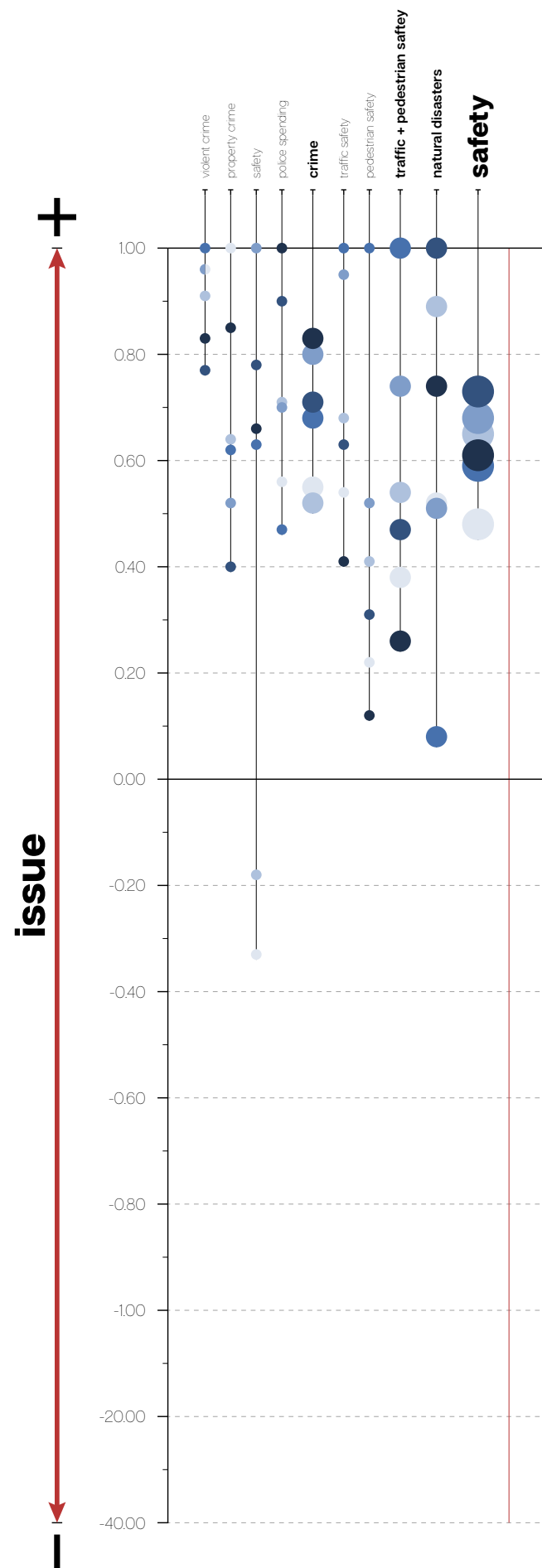
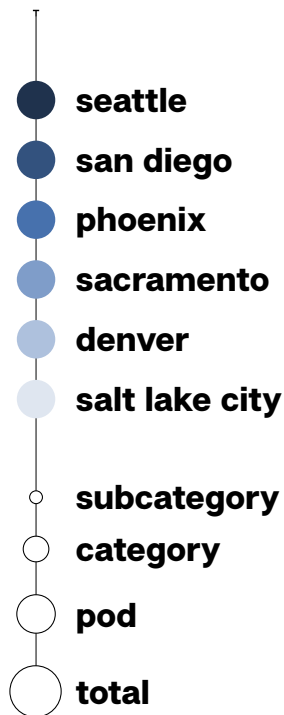


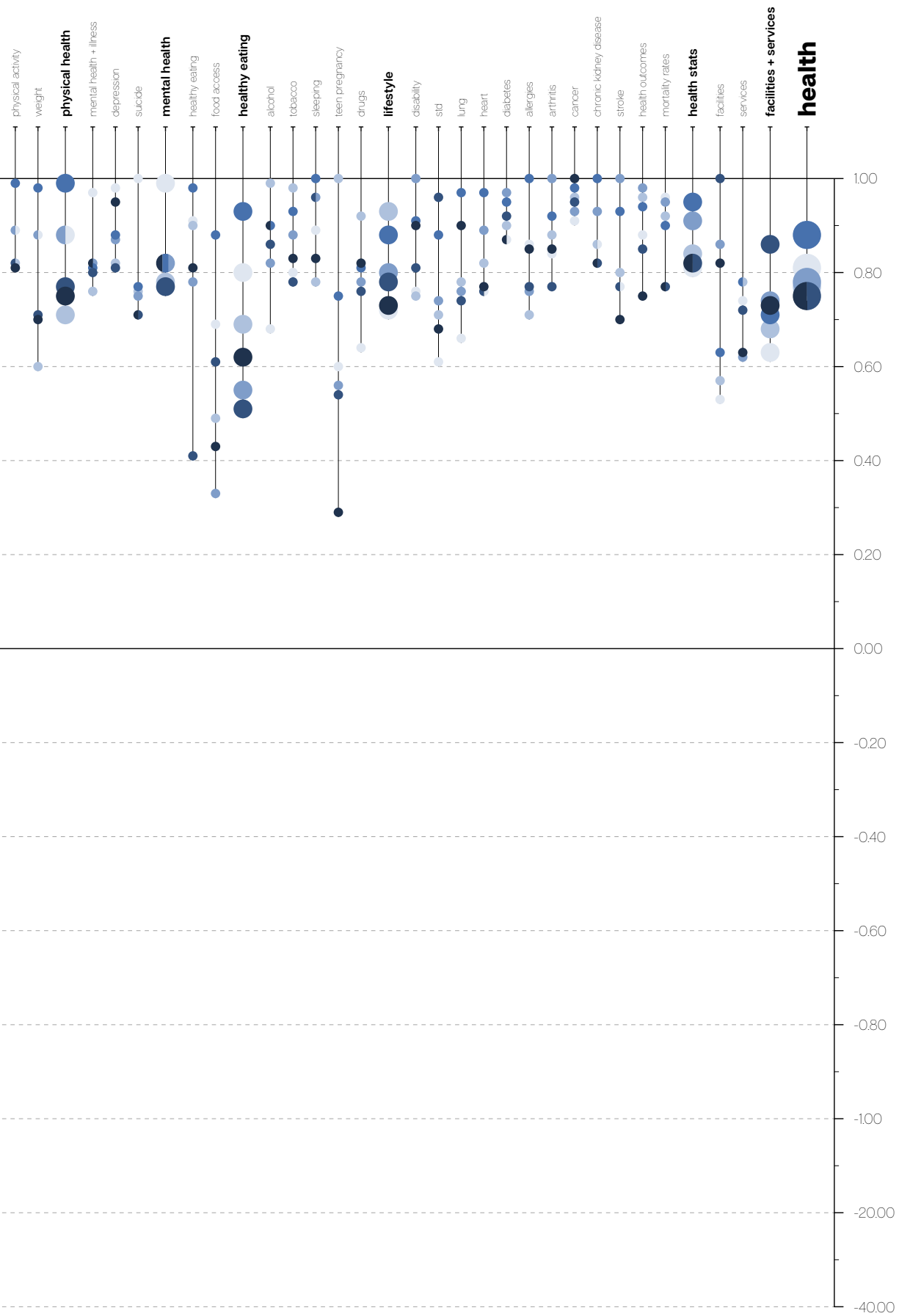
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%

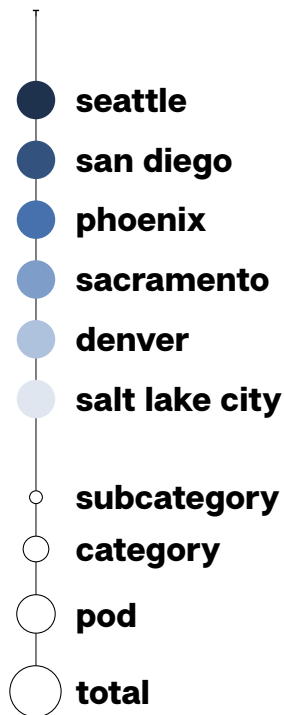
percent normalization



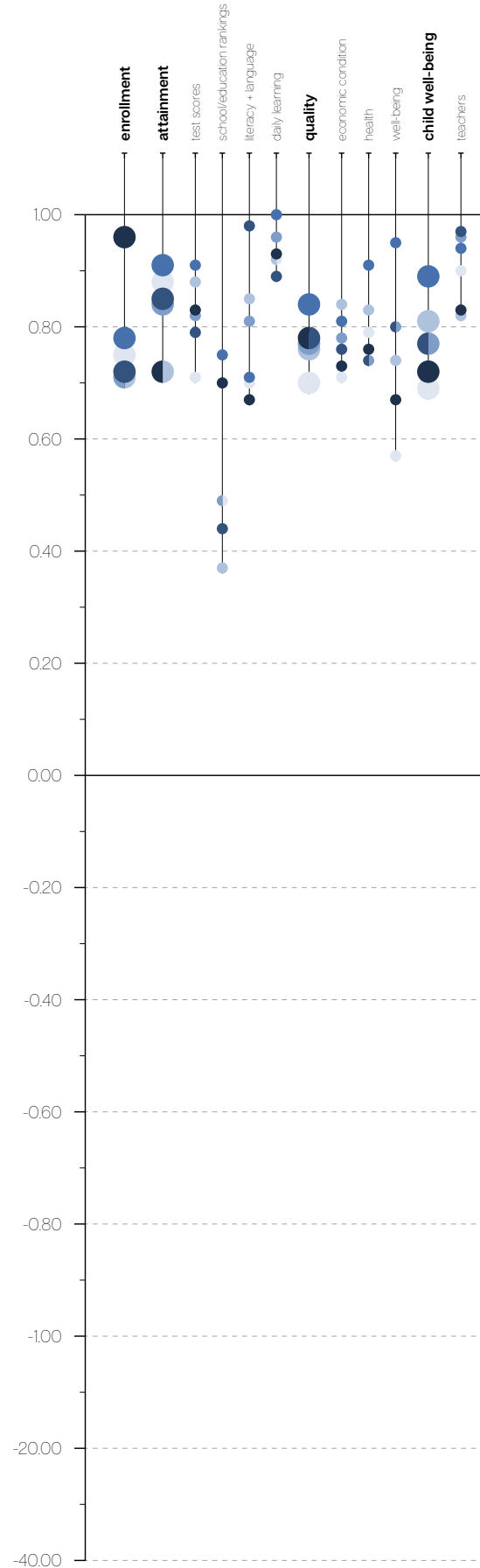


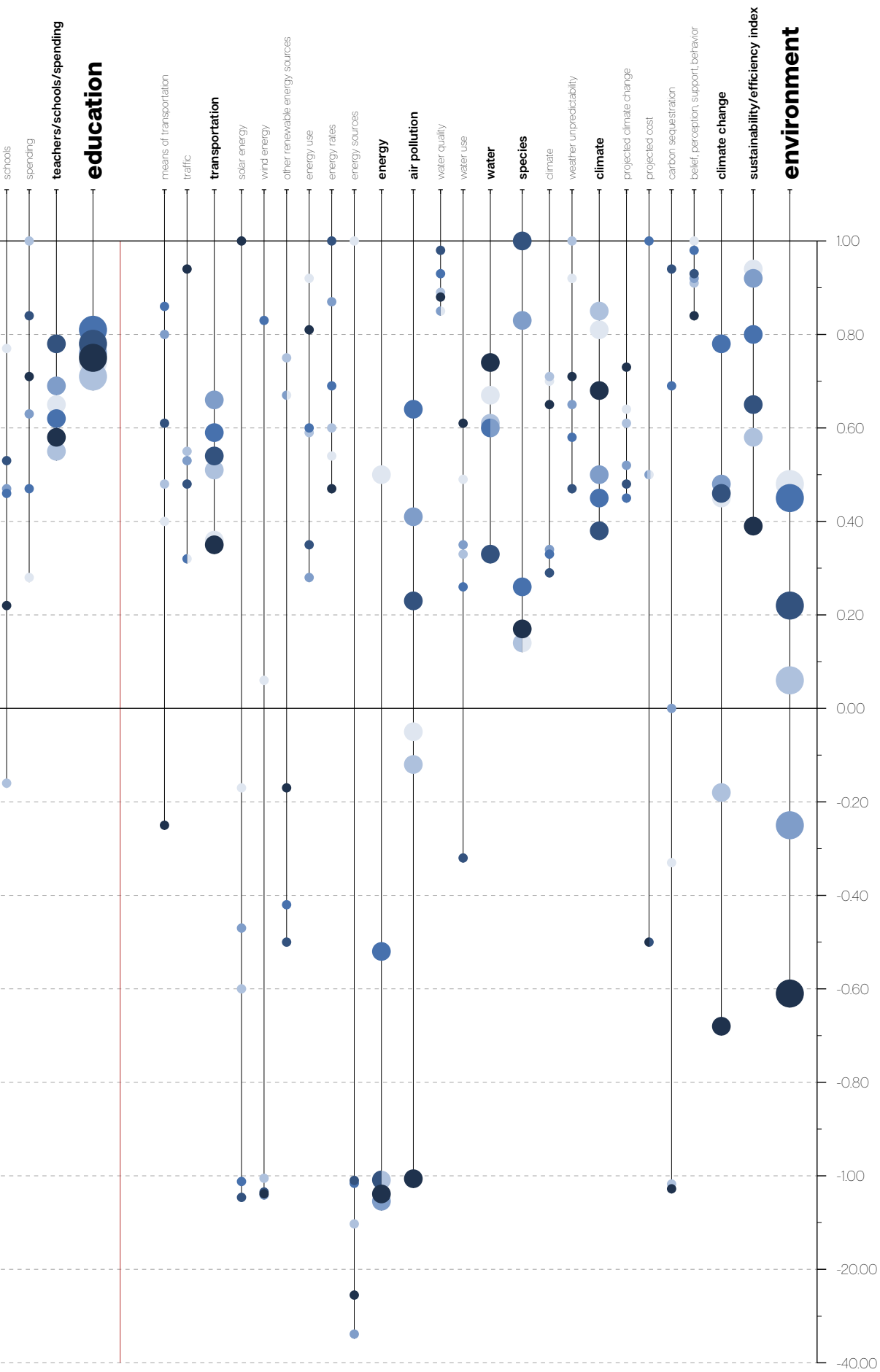
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percent normalization



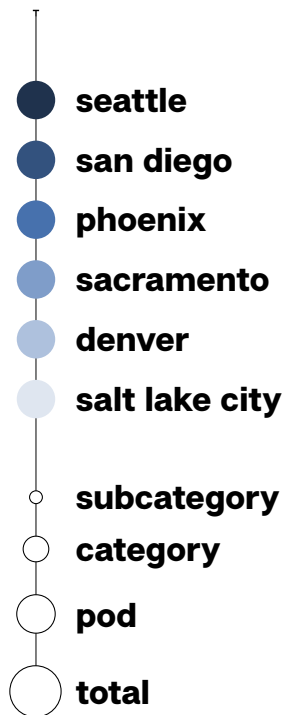
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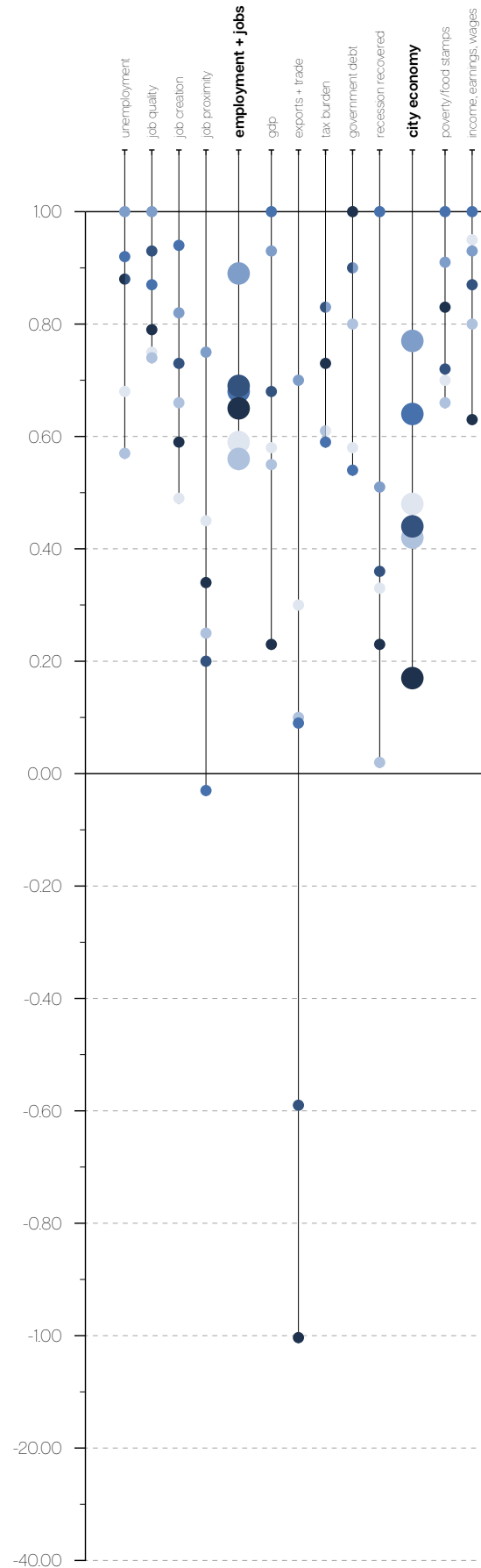


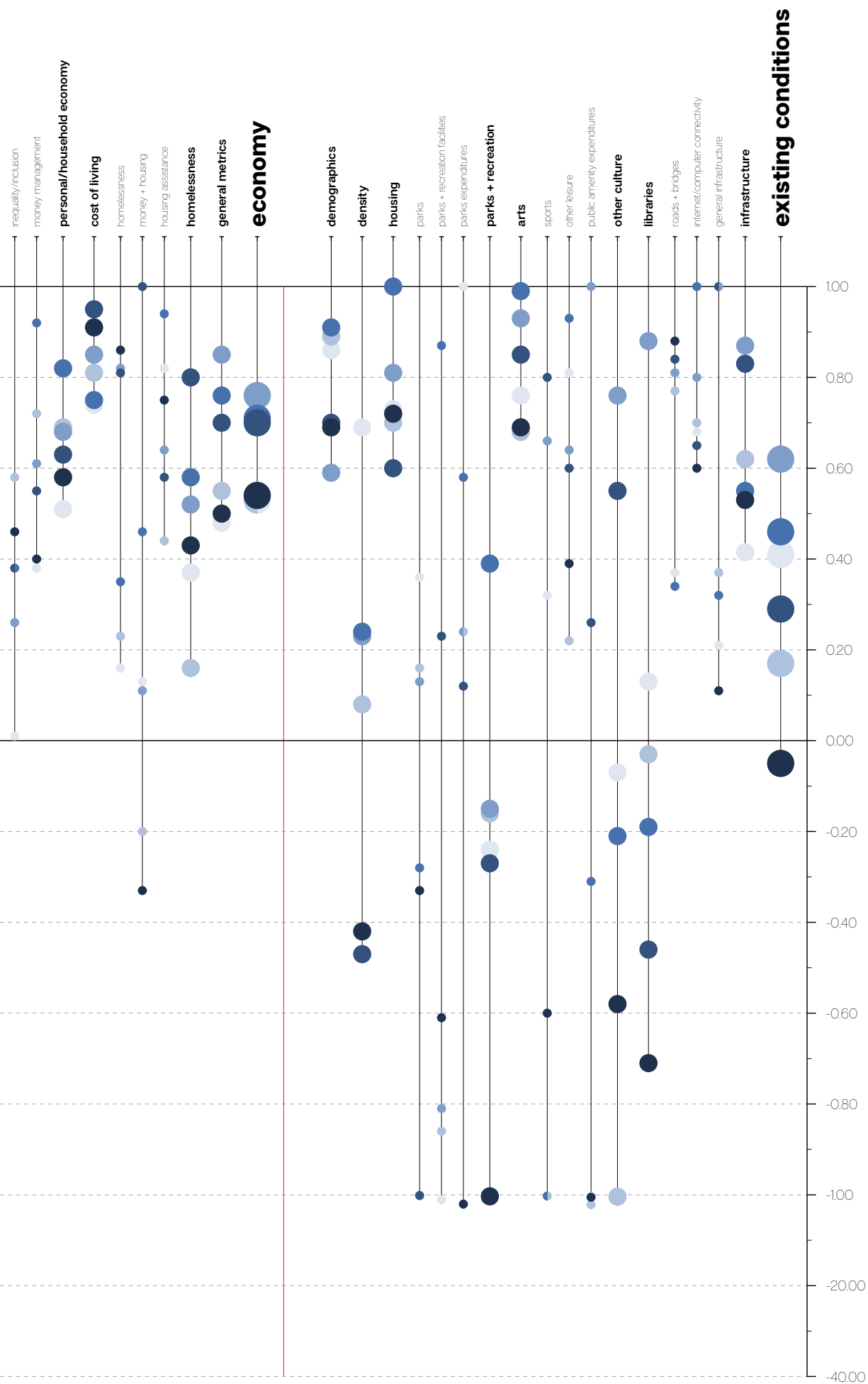
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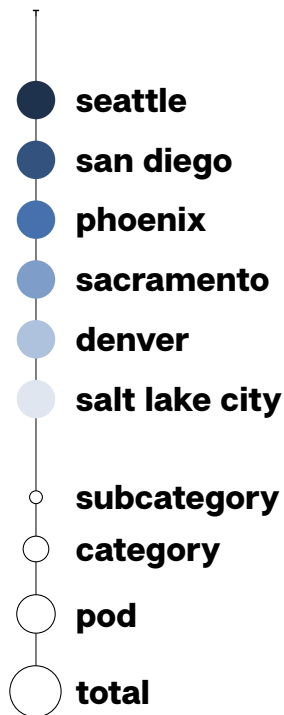
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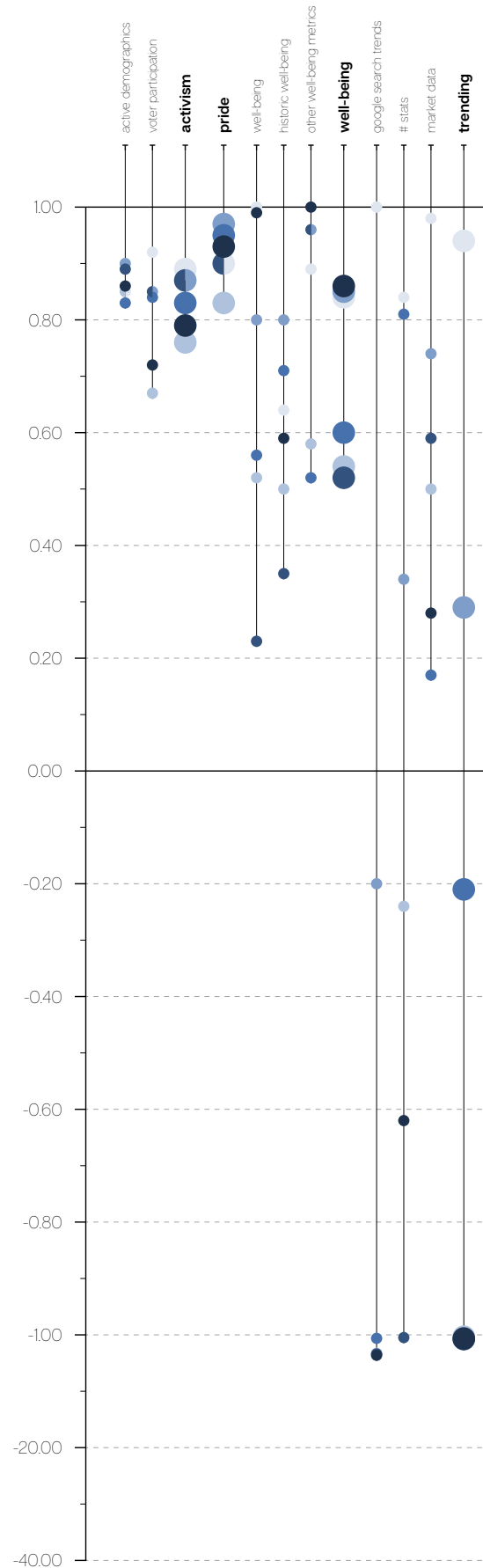


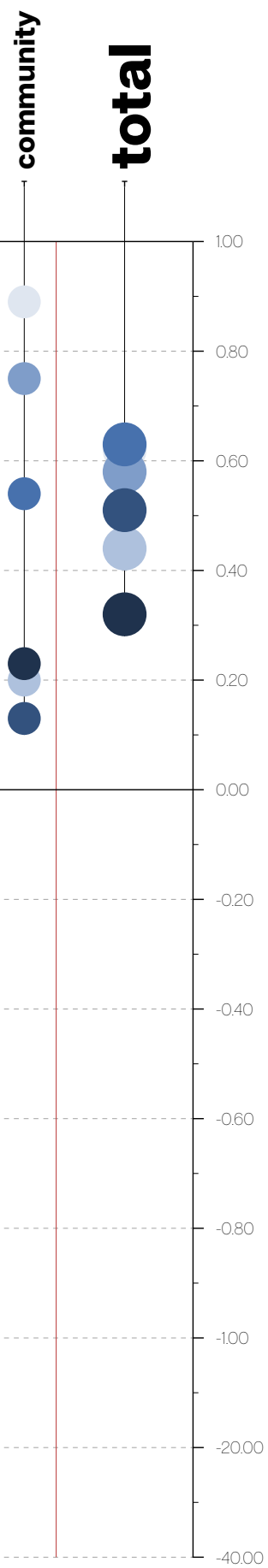
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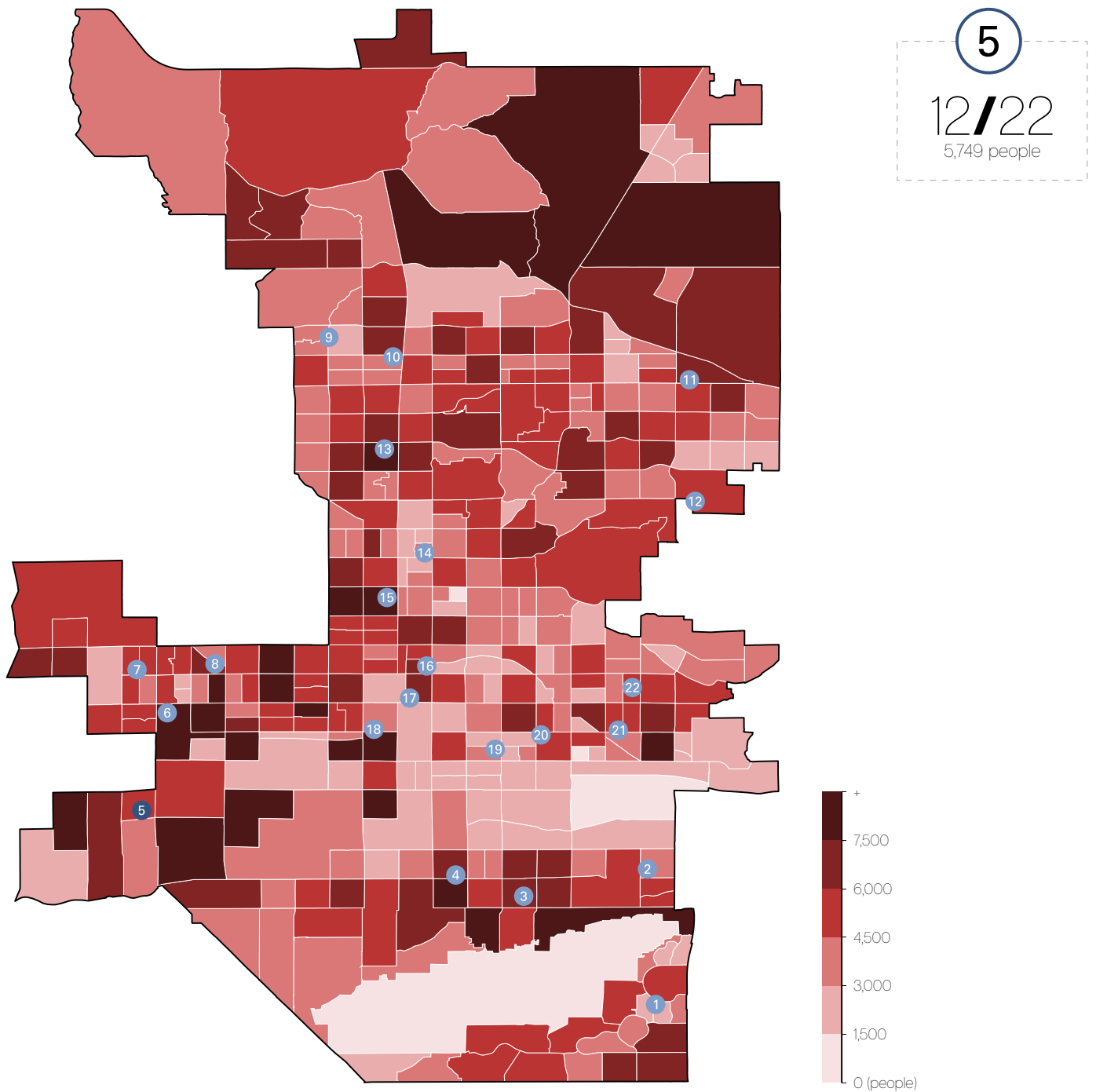
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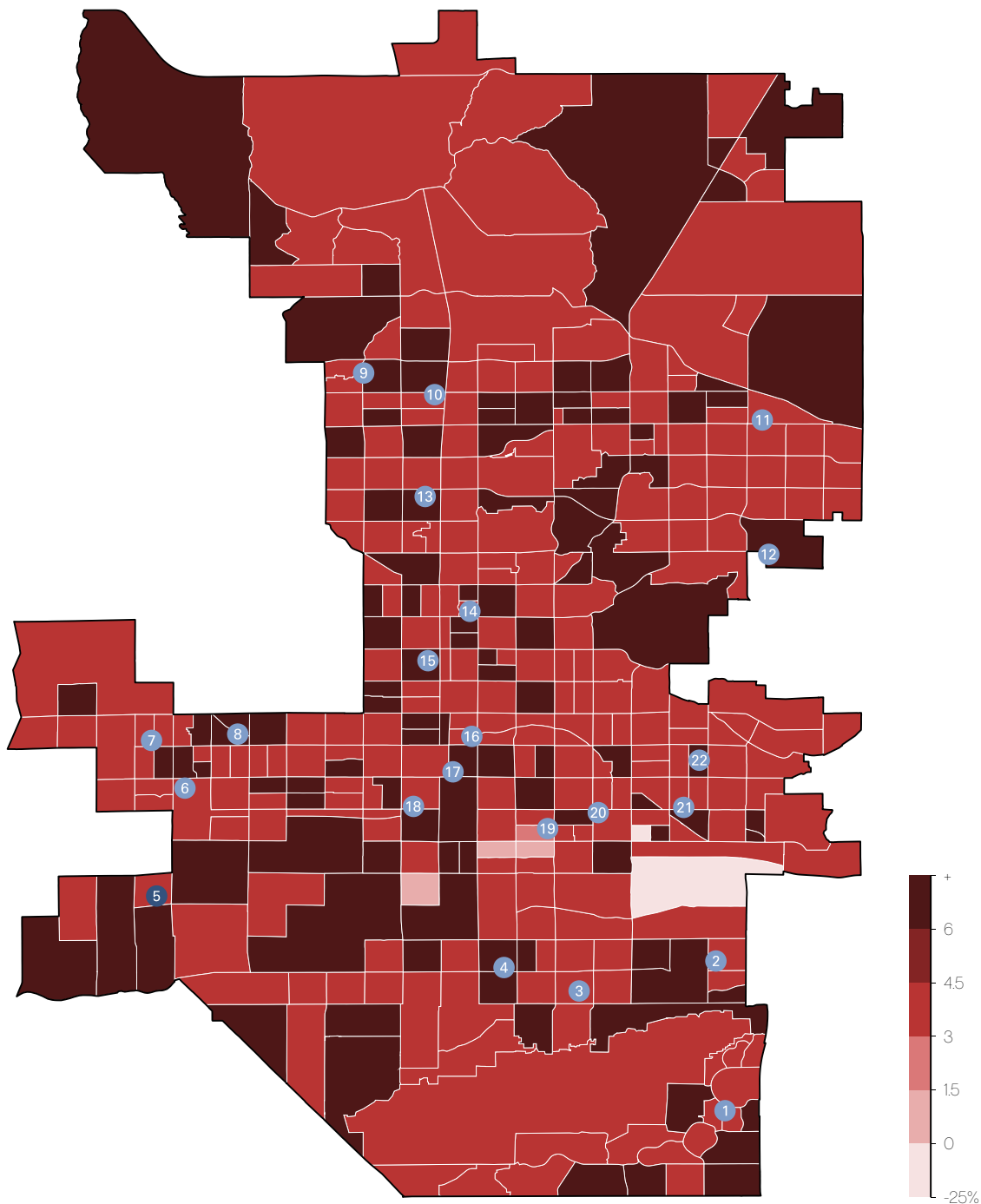
Appendix B

data maps



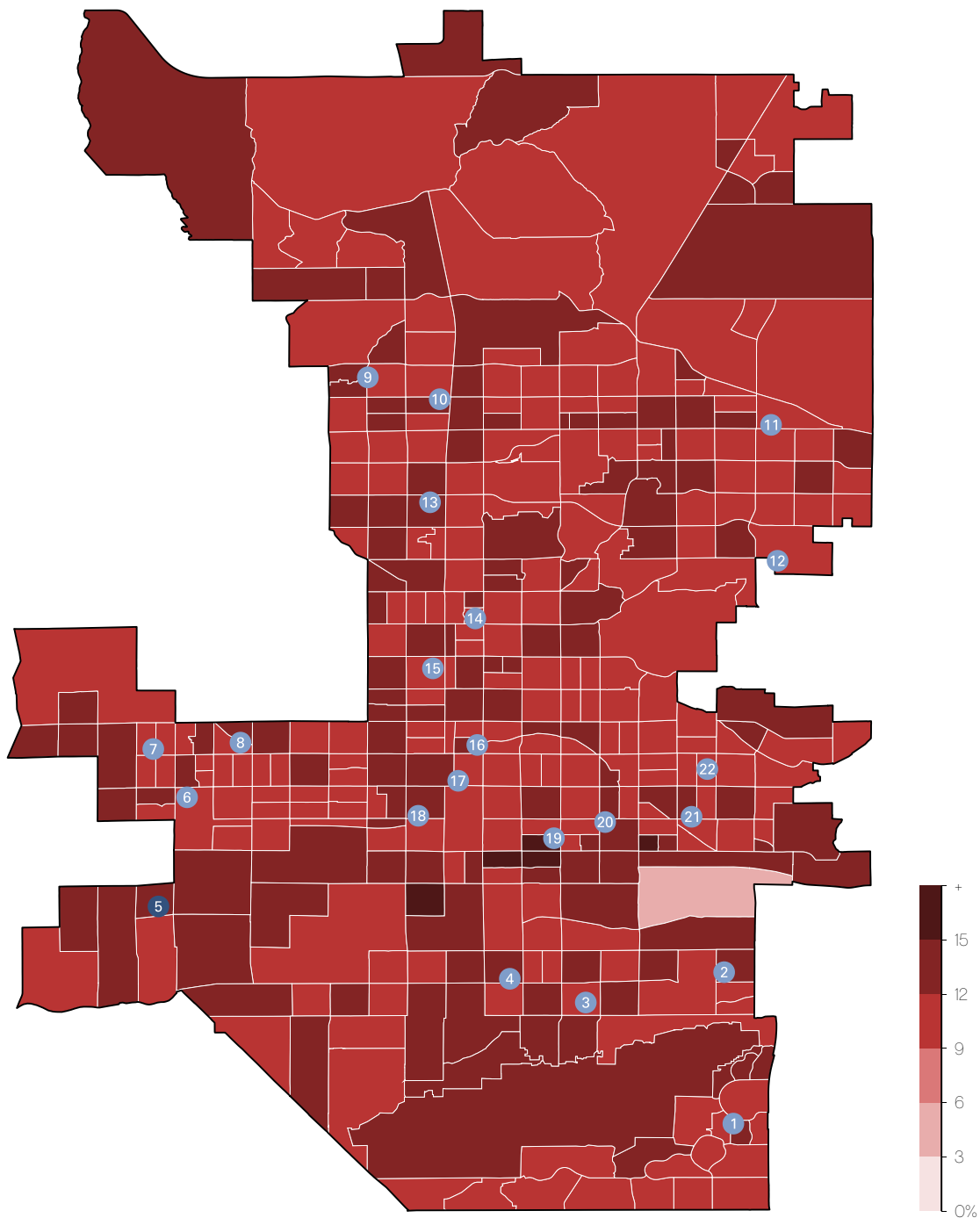
Population

American Community Survey | 2017



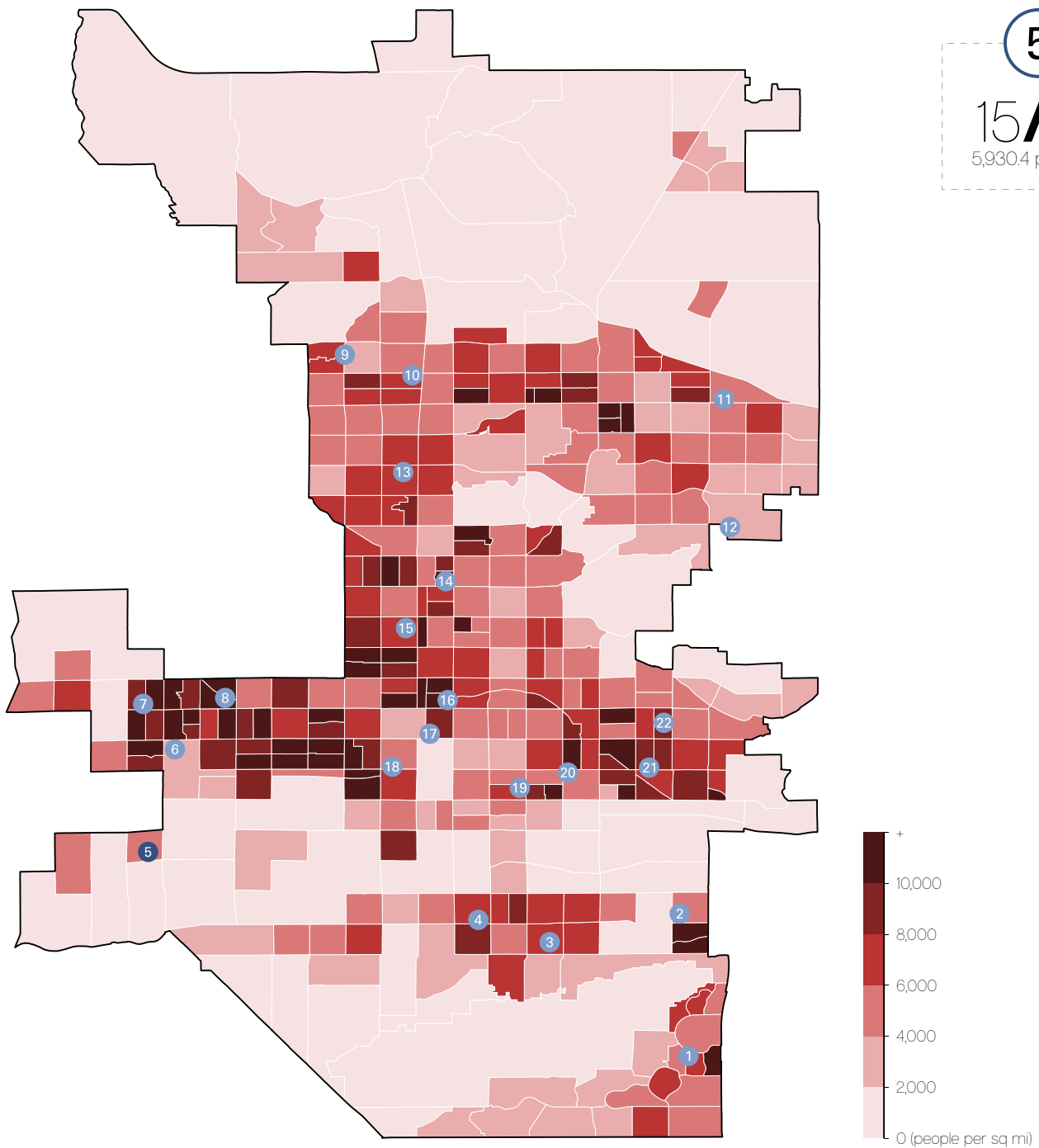
2017-22 Population Forecast

American Community Survey | 2017



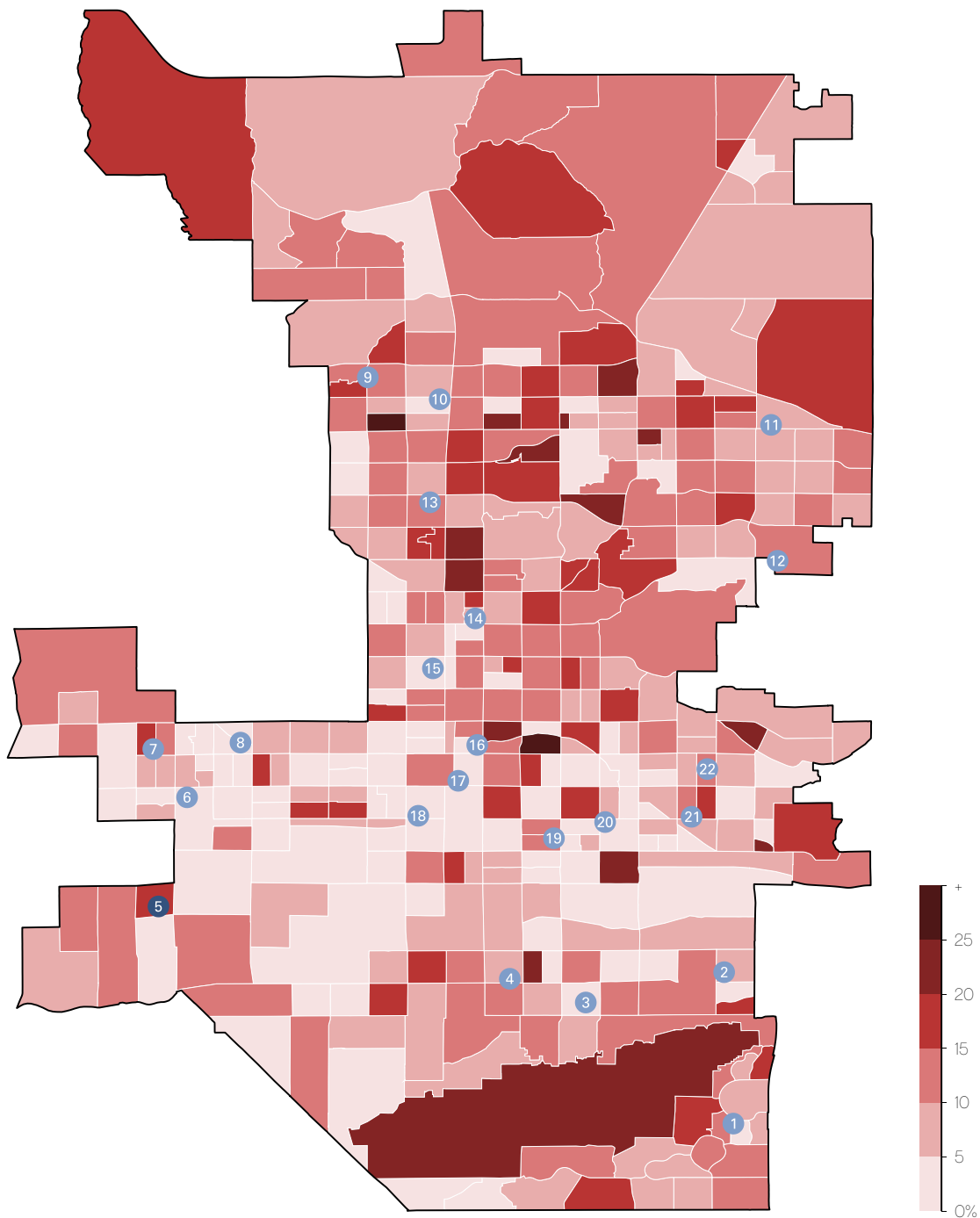
2010-17 Population Growth

American Community Survey | 2017



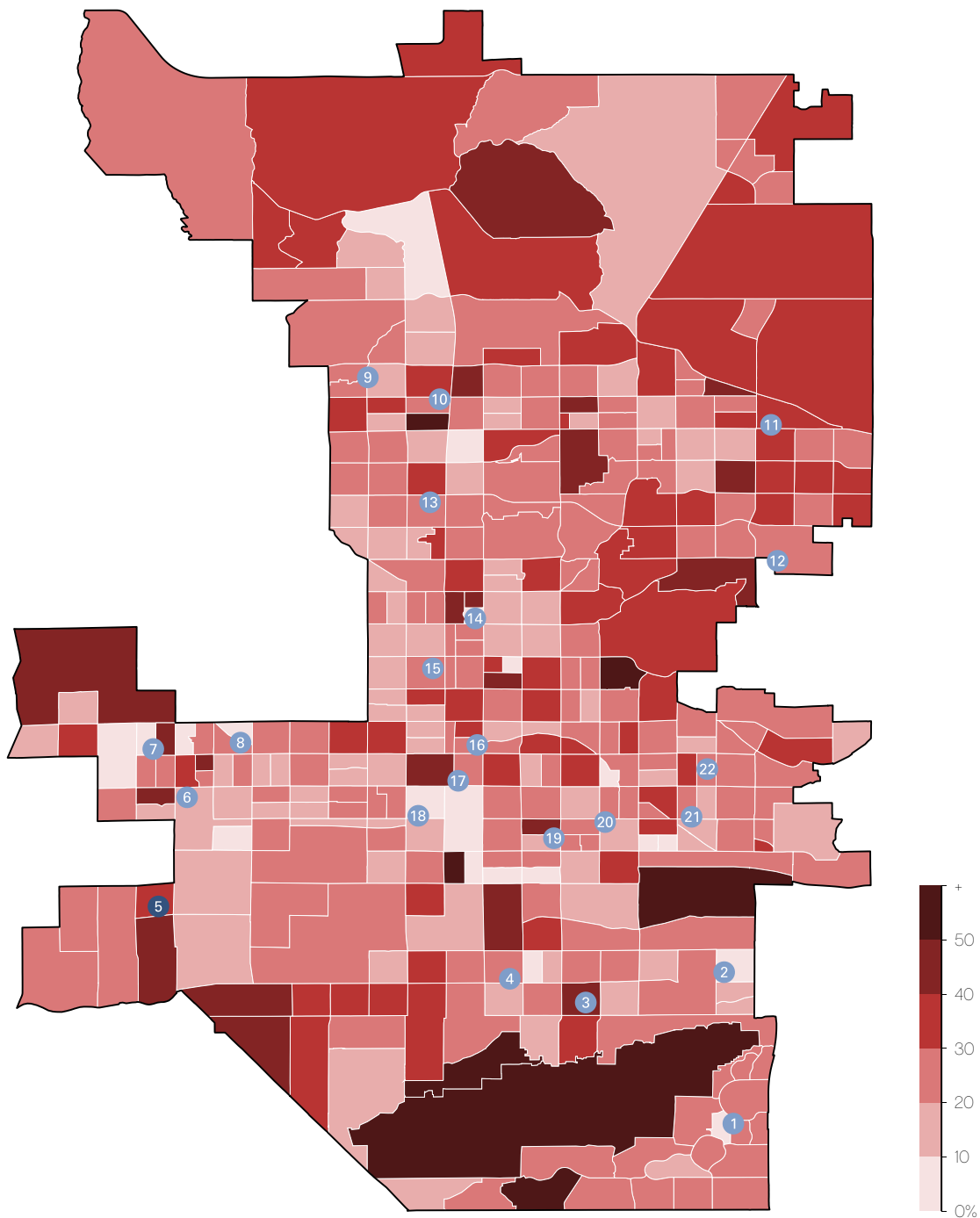
Density

American Community Survey | 2017



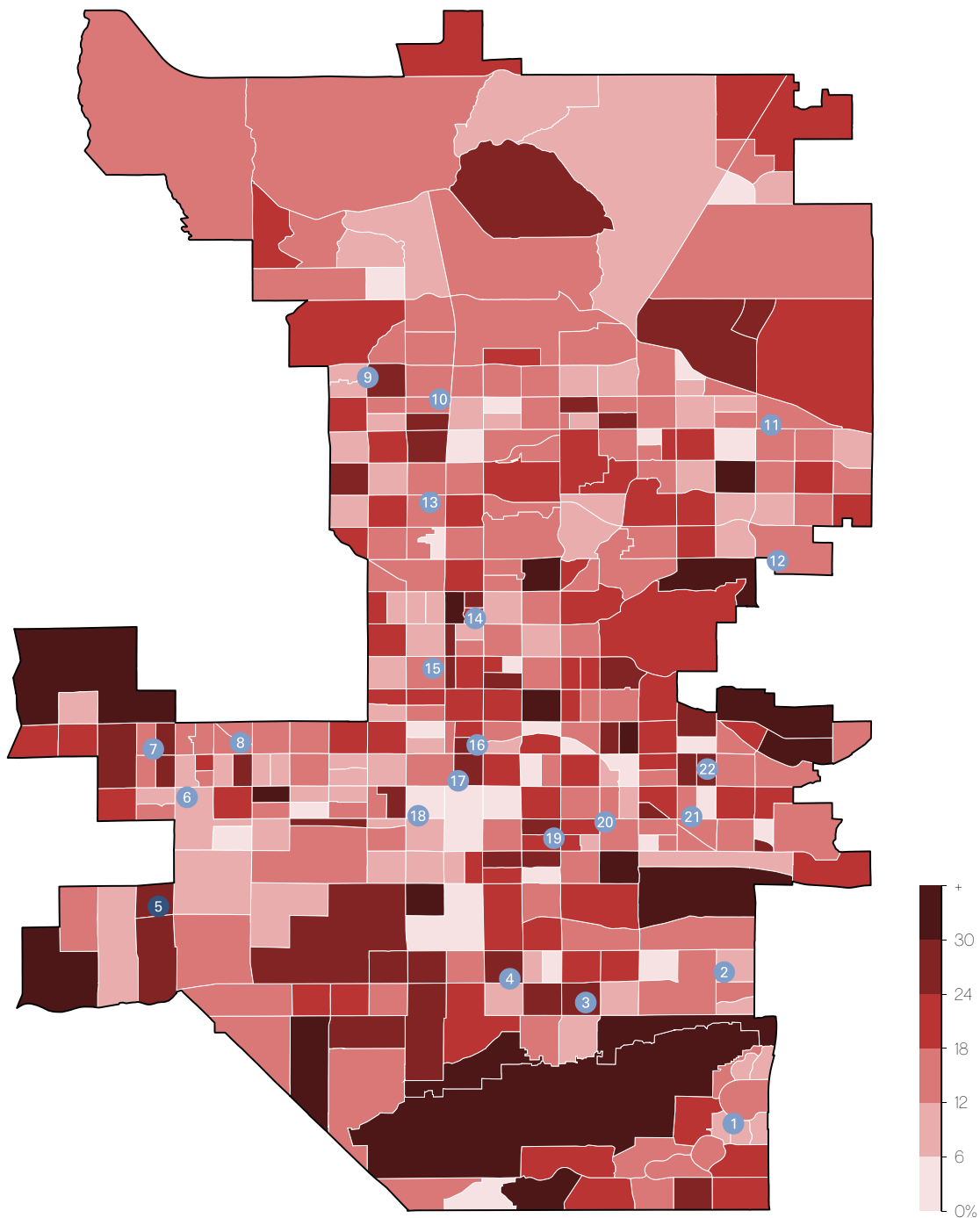
30+ Lbs Overweight

Simmons | 2016



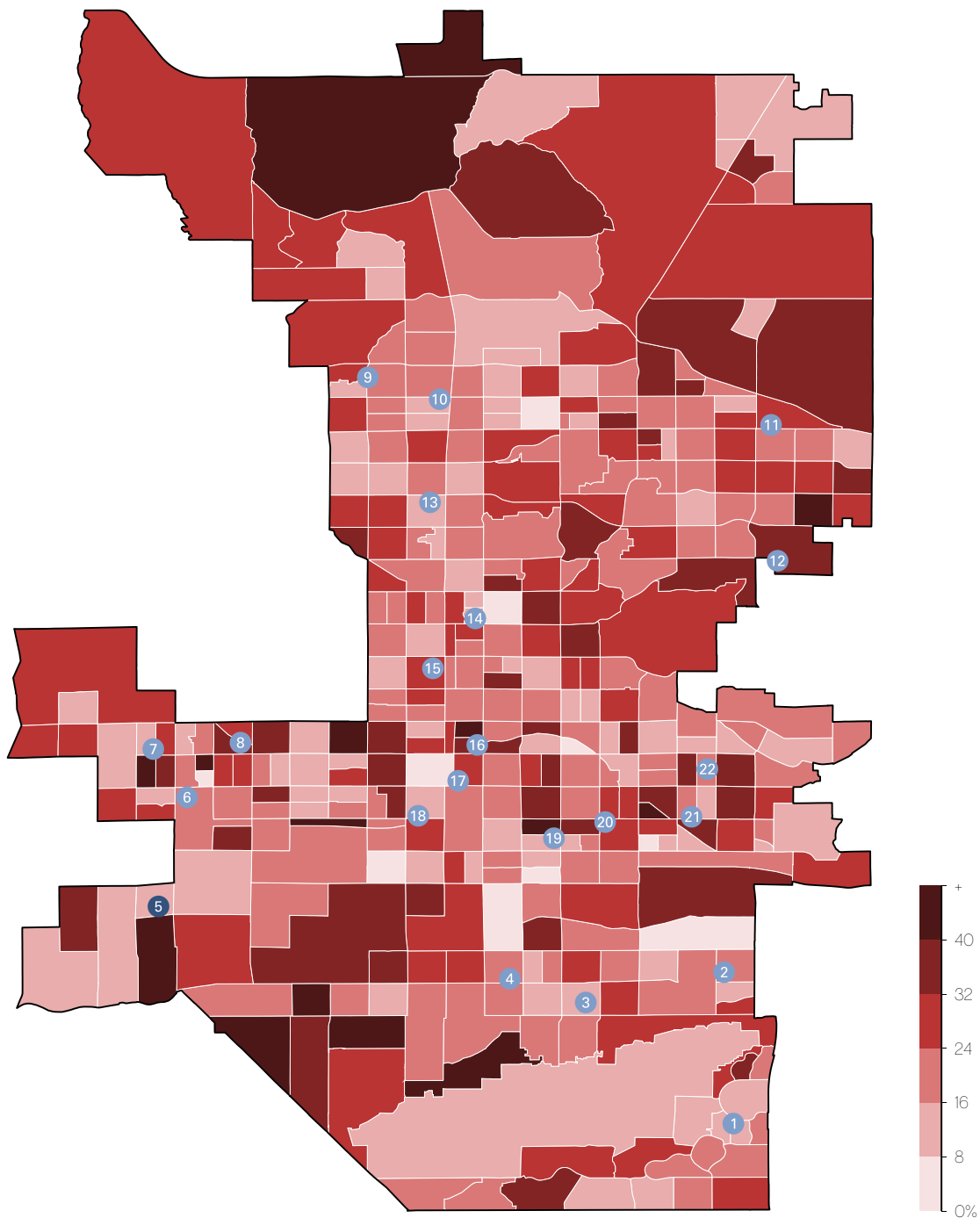
Some Sport/Exercise Weekly

Simmons | 2016



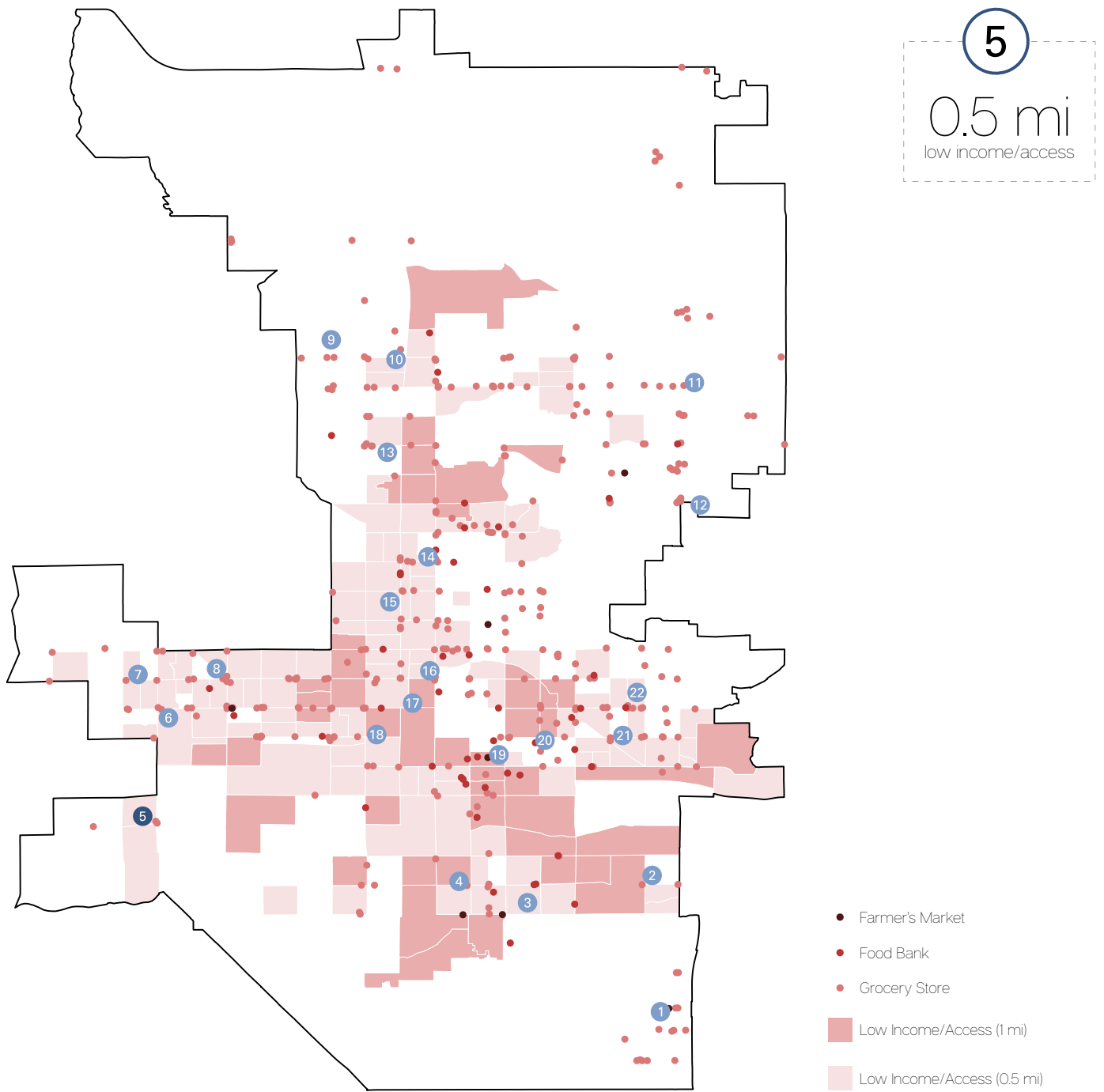
Exercise Regularly

Simmons | 2016



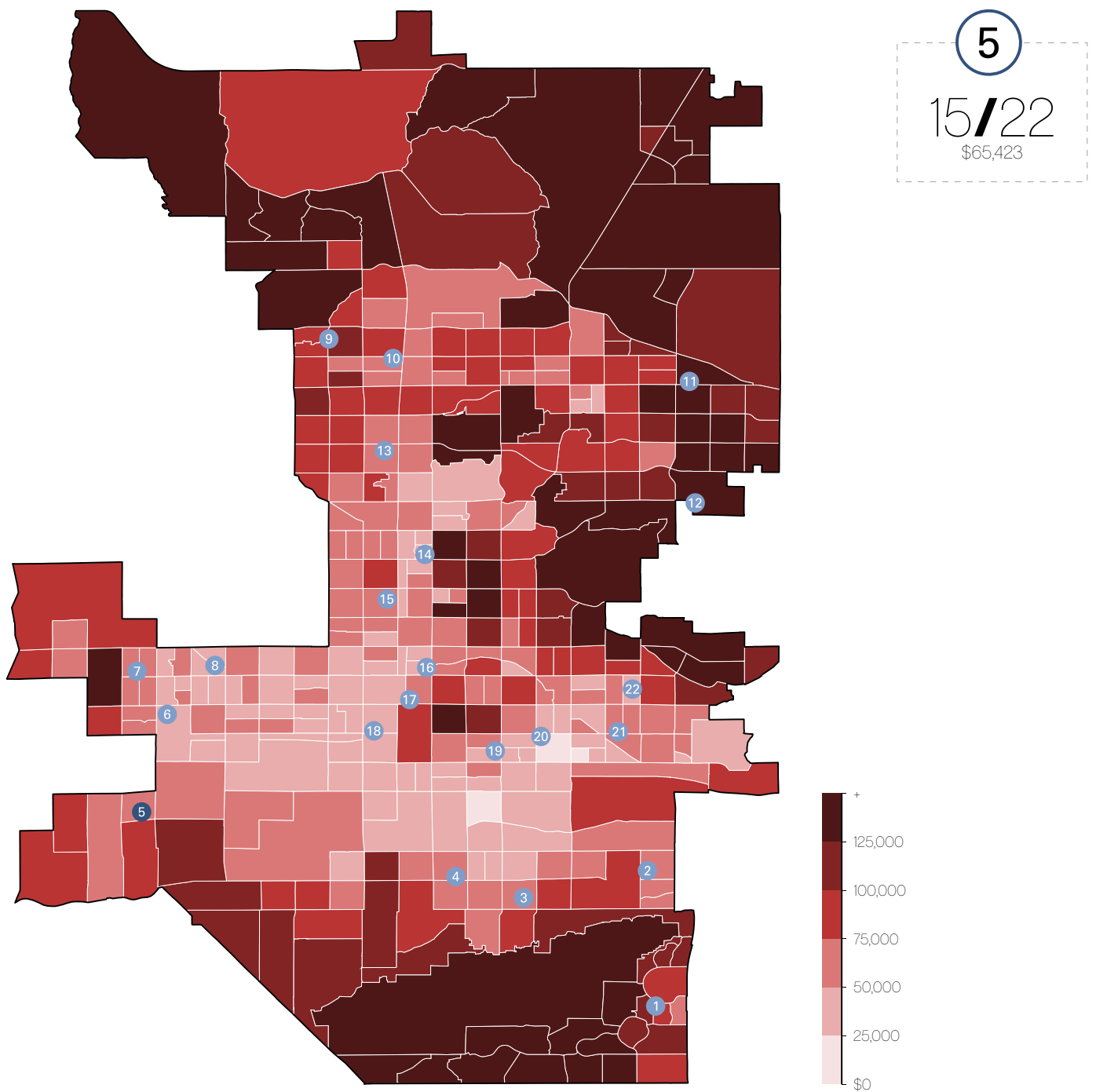
Healthy/Balanced Diet

Simmons | 2016



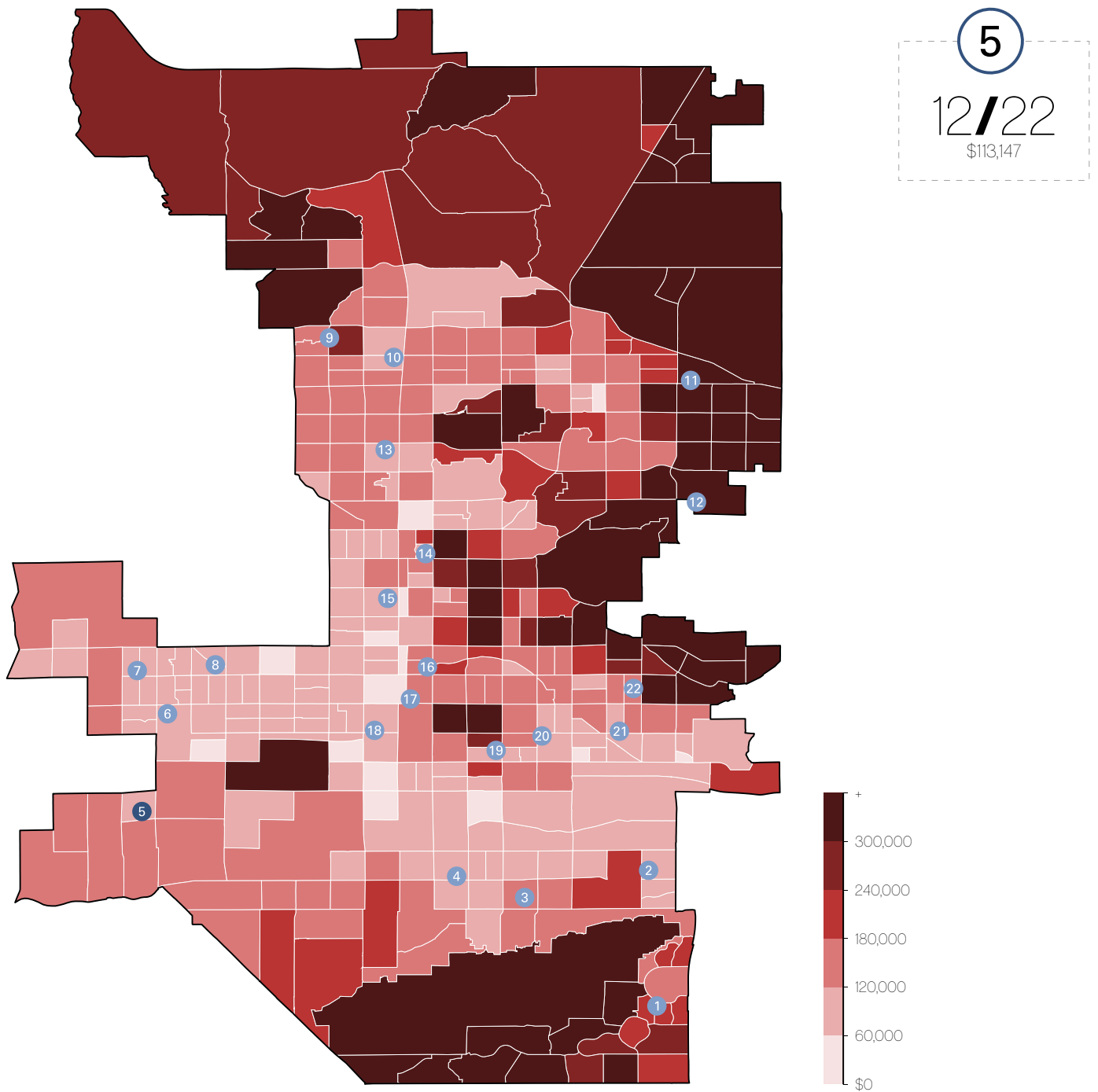
Food Access

USDA | 2015

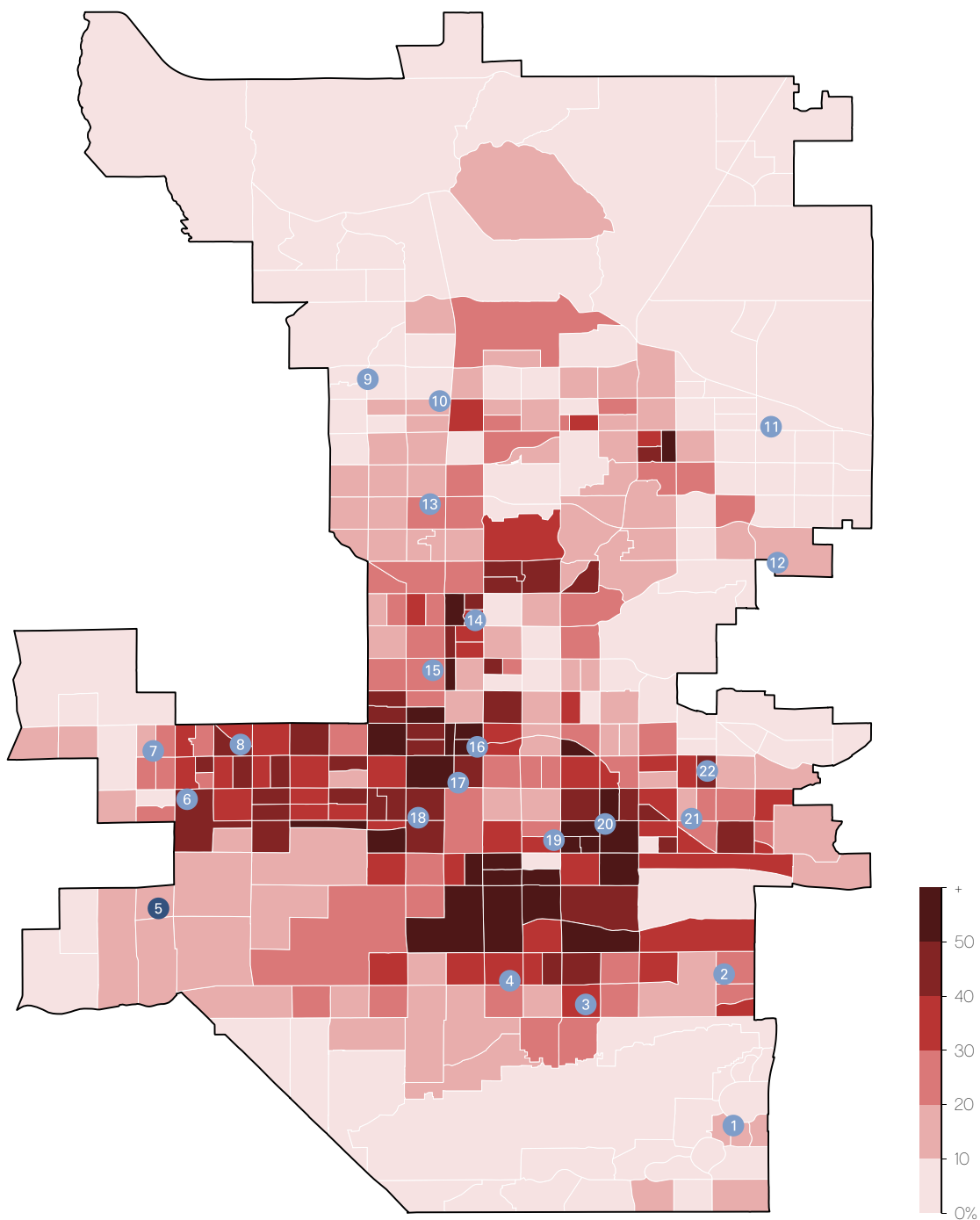


Average Household Income

American Community Survey | 2017

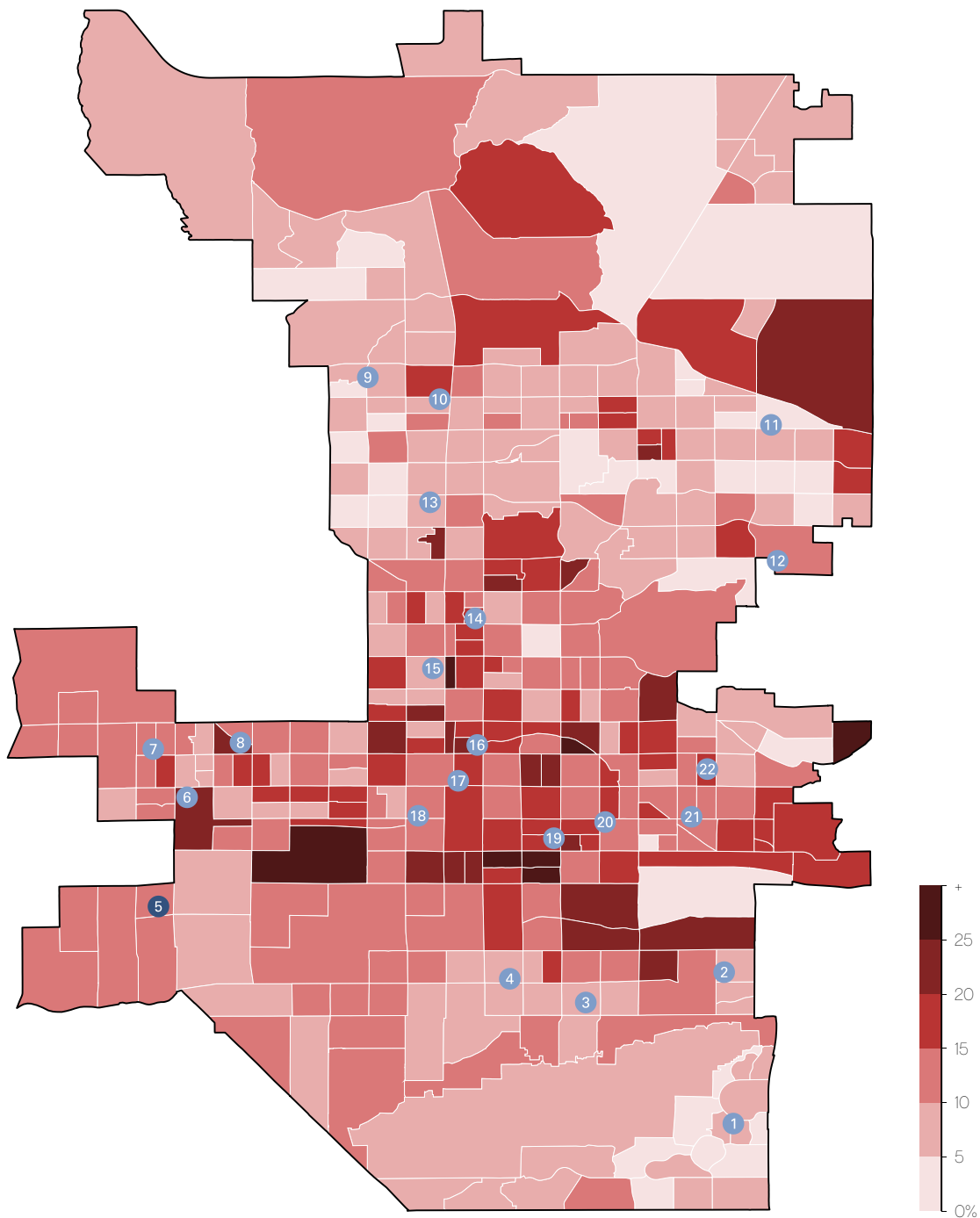


Median Housing Value
American Community Survey | 2017



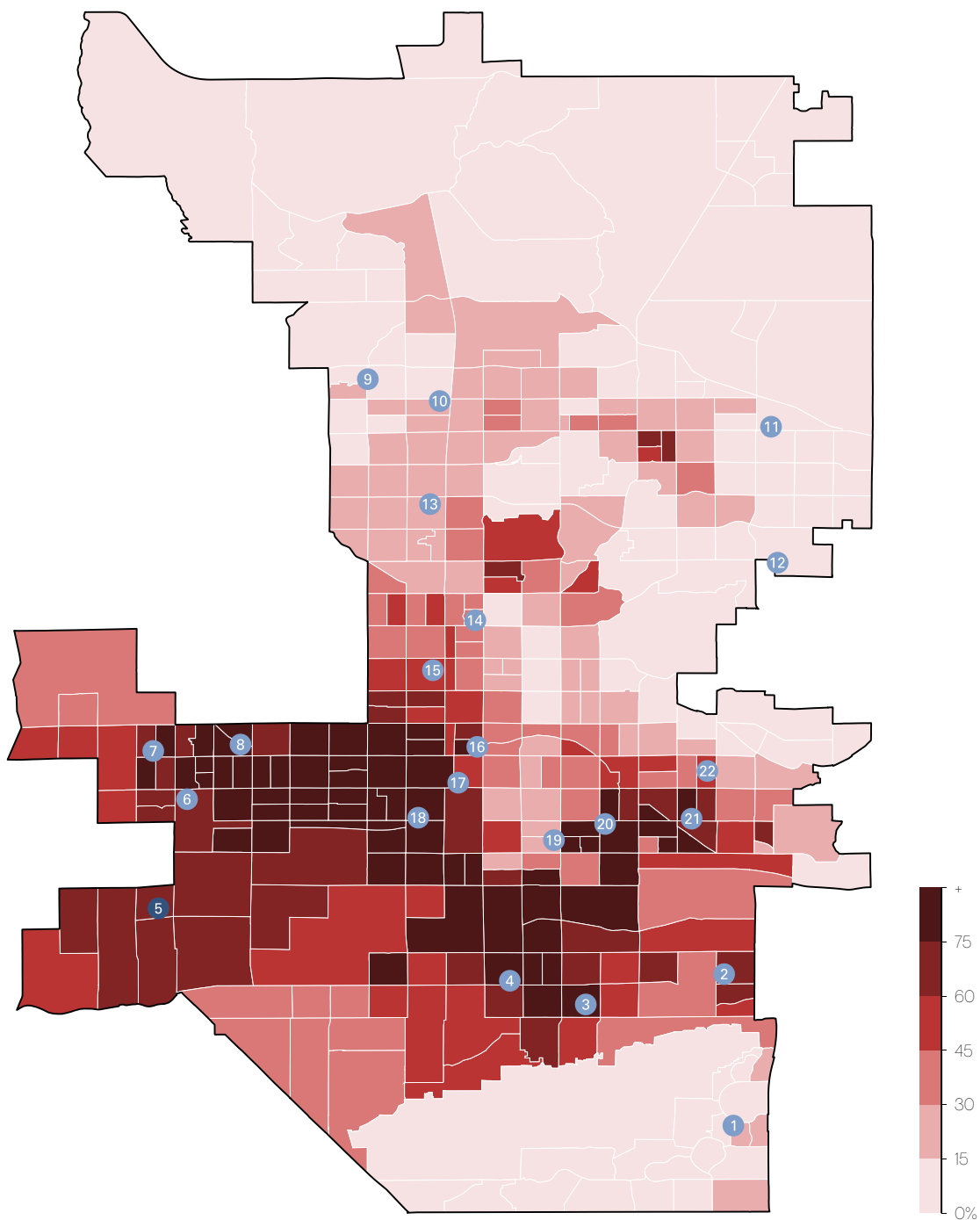
Poverty

American Community Survey | 2017



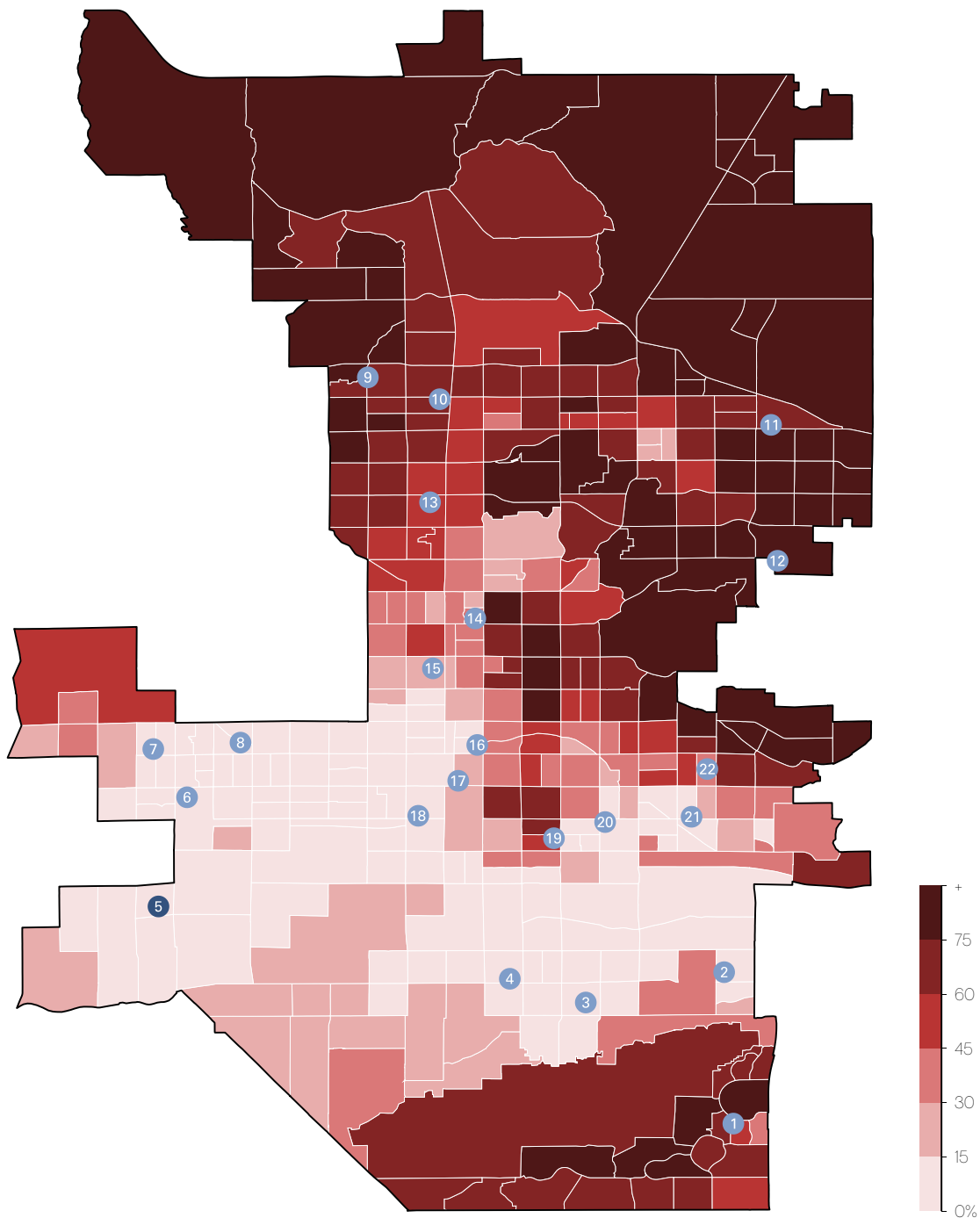
Vacant Units

American Community Survey | 2017



Hispanic/Latino

American Community Survey | 2017



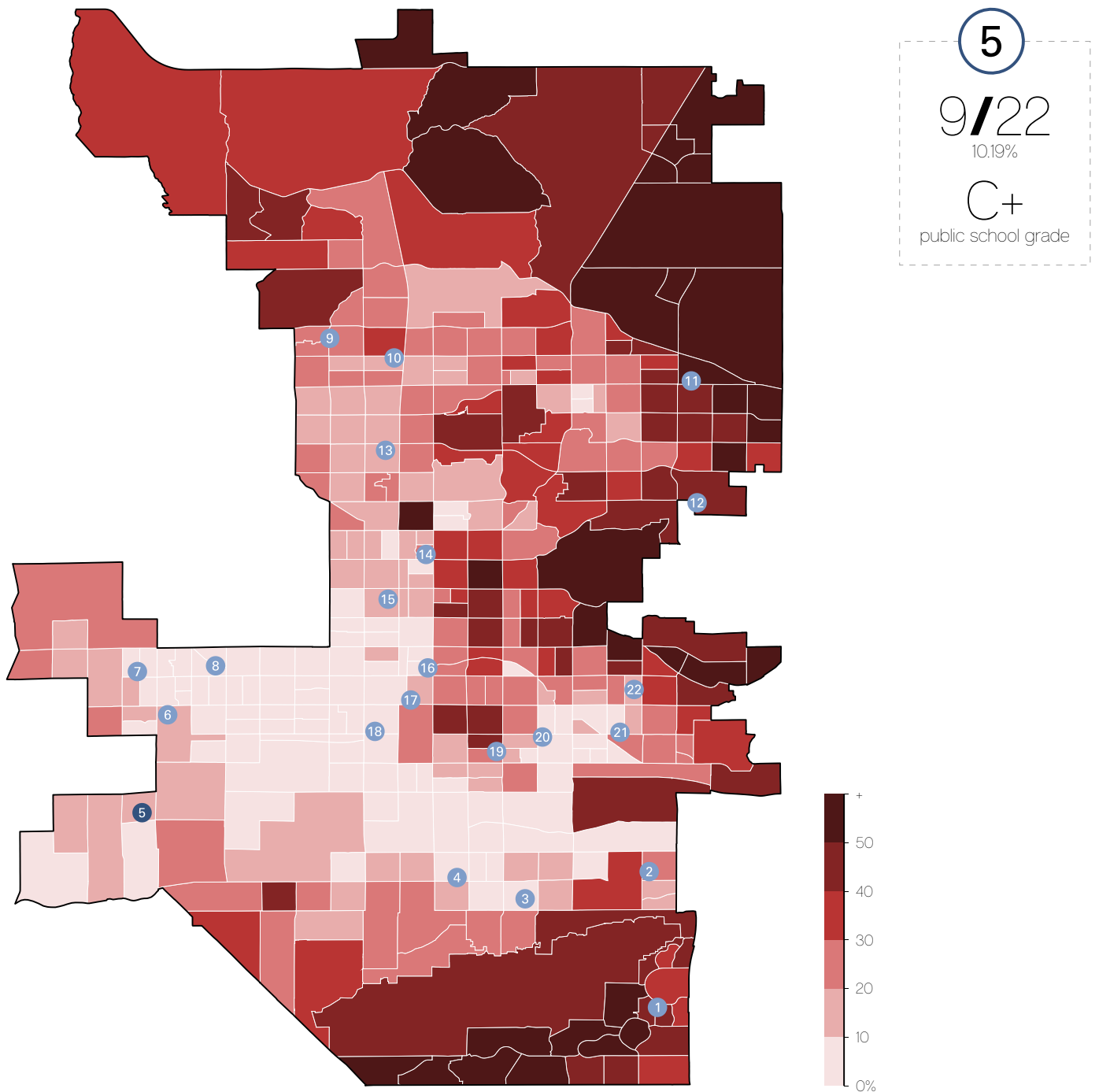
5

45.1%

white

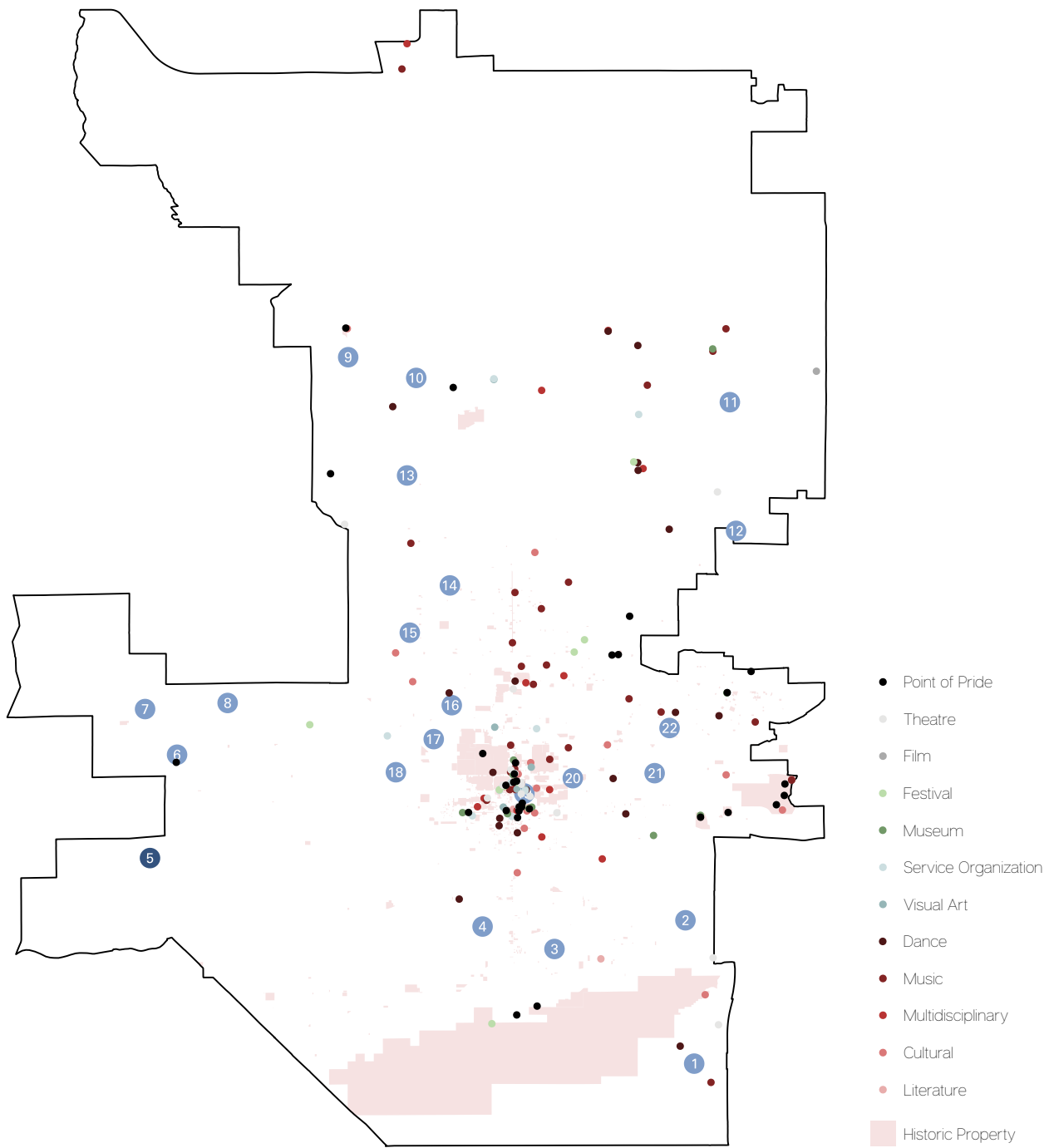
White

American Community Survey | 2017



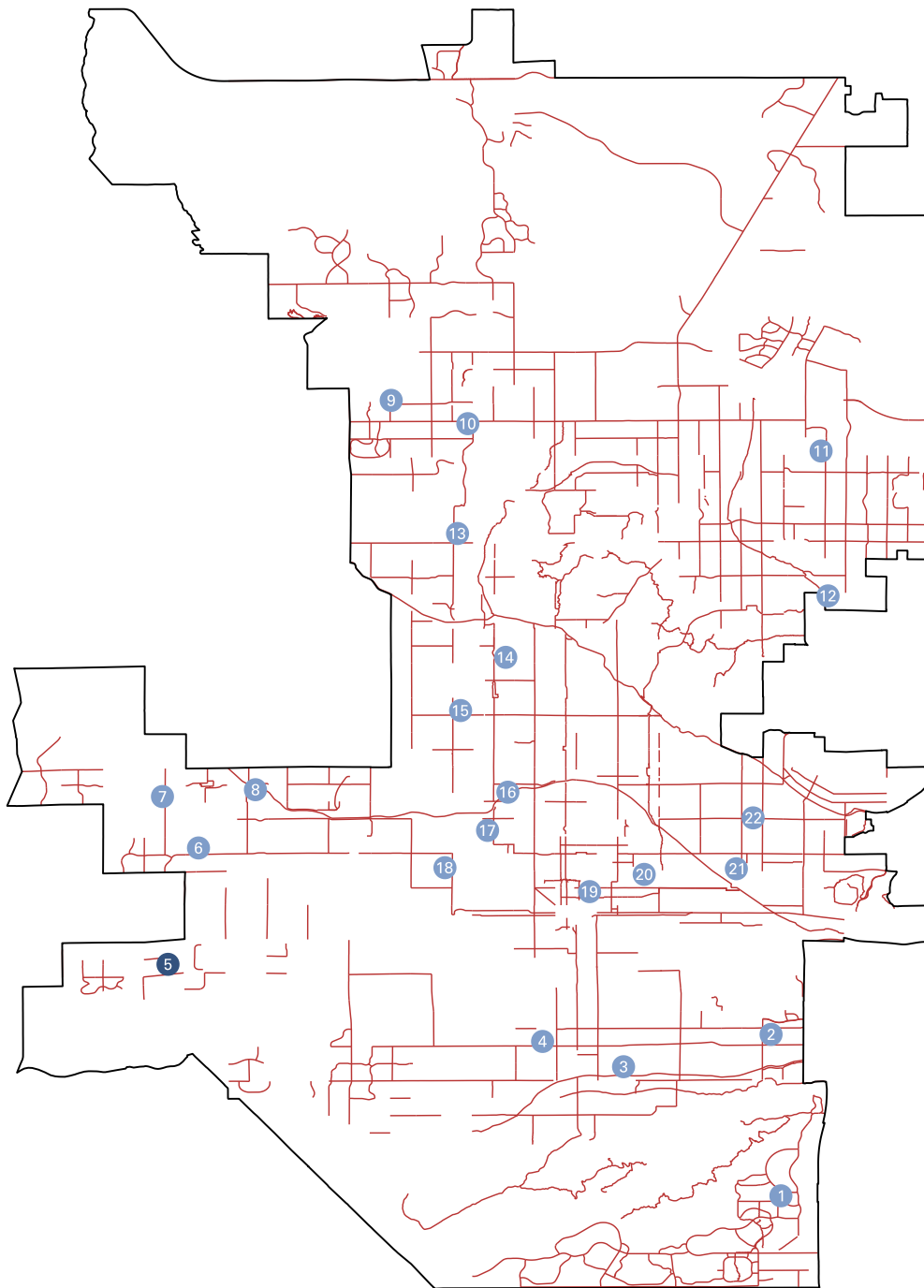
College/Masters/Doctorate

American Community Survey | 2017



Culture

City of Phoenix | 2018



5

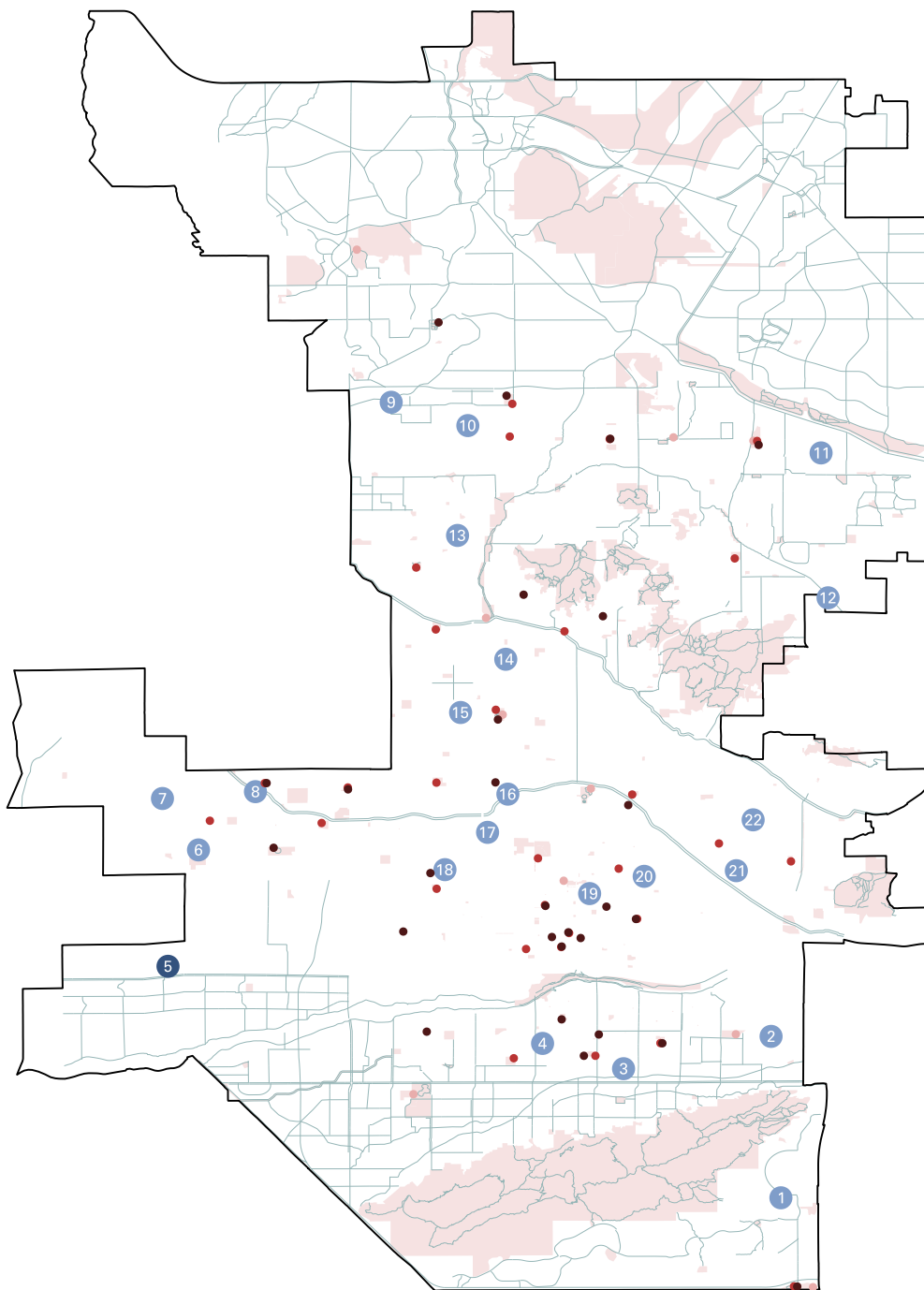
1/16

46 bike score

— Bike Path

Bike Paths

City of Phoenix | 2018

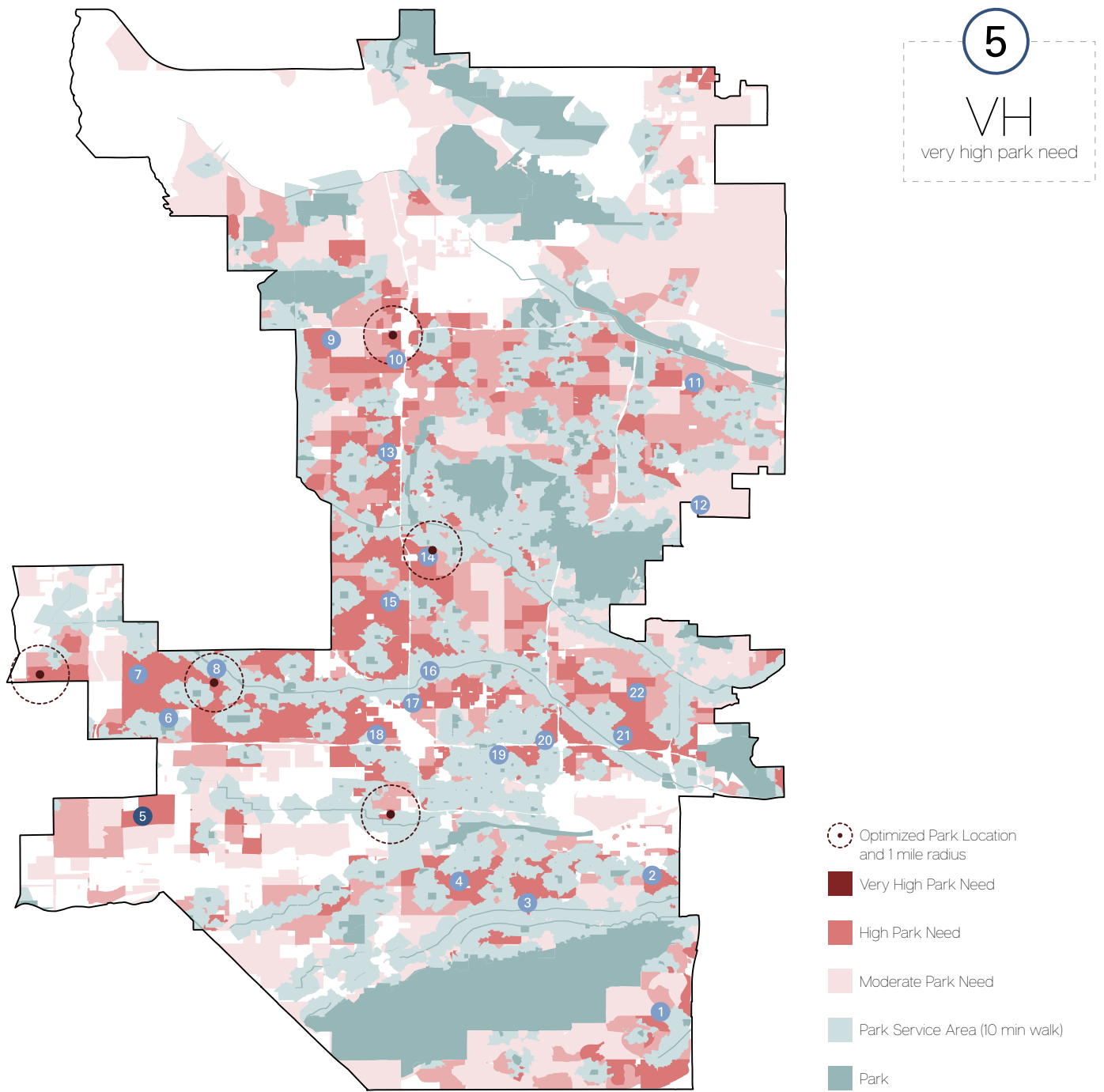


5
 2.5 mi
 to park
 6.5 mi
 to rec center
 5.2 mi
 to swimming pool

- Trail
- Recreation Center
- Swimming Pool
- Dog Park
- Park (developed)

Recreation

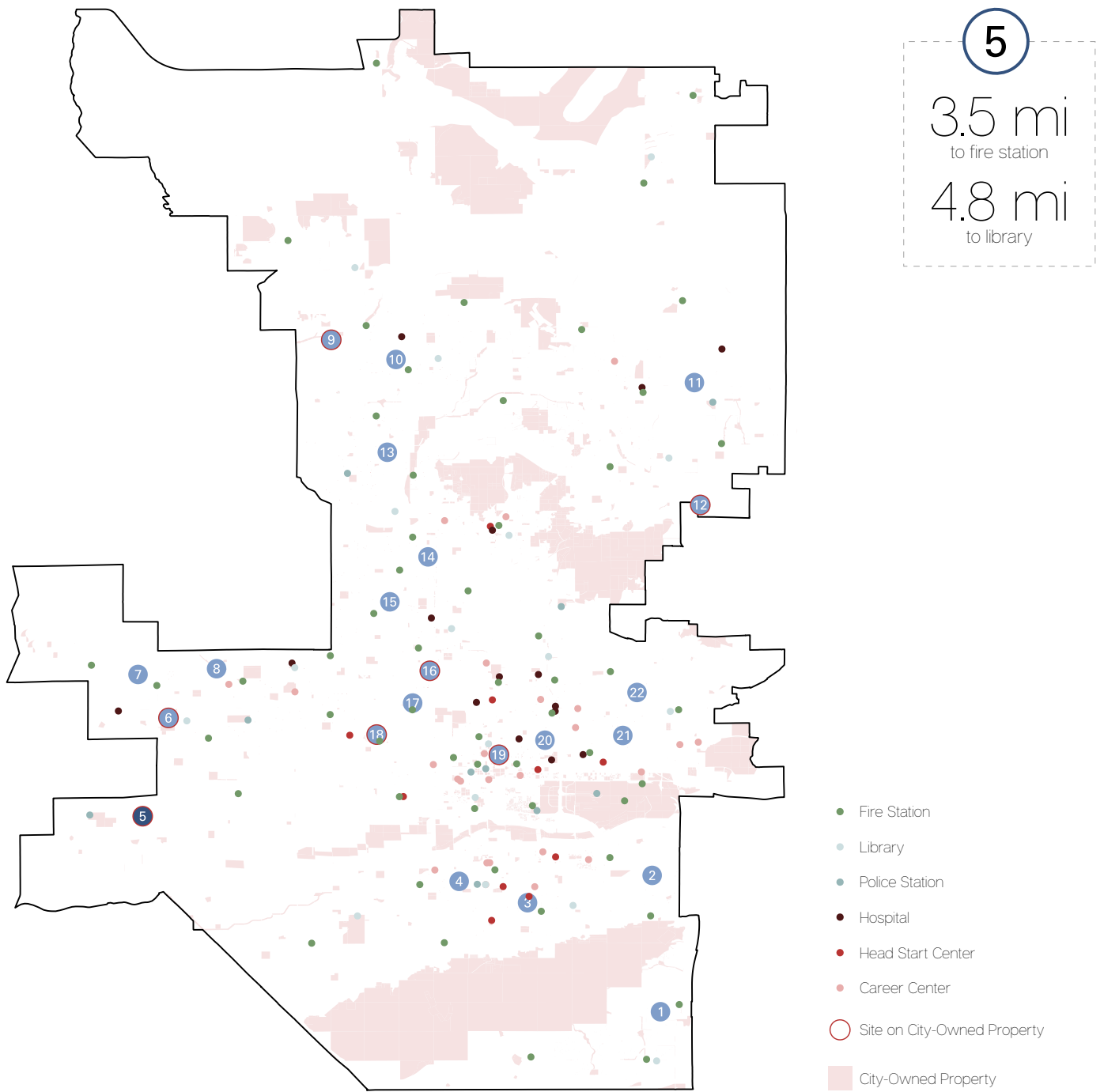
City of Phoenix | 2018



Park Need

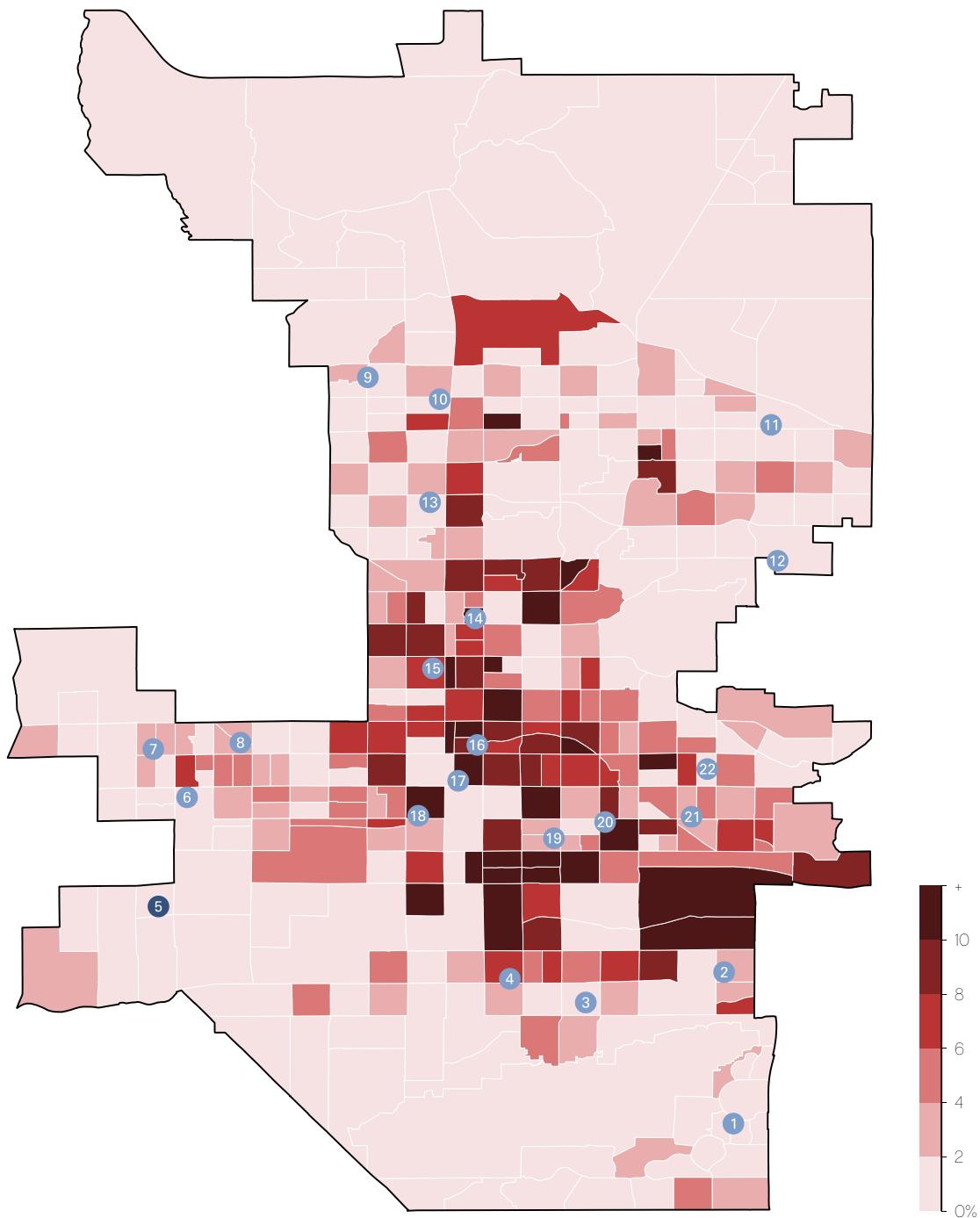
The Trust for Public Land* | 2018

This map was produced using data provided by The Trust for Public Land ParkServe®



Services

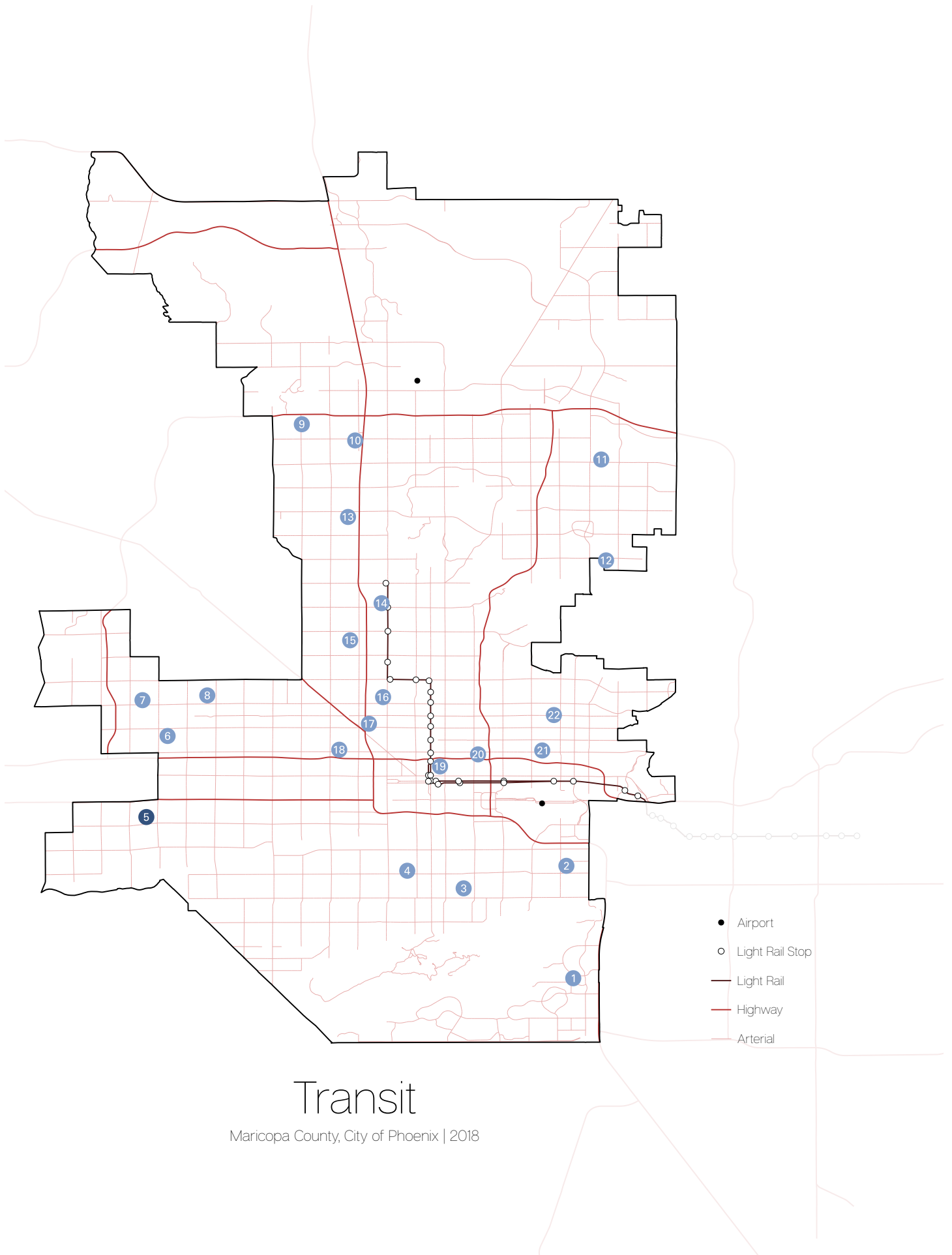
City of Phoenix | 2018

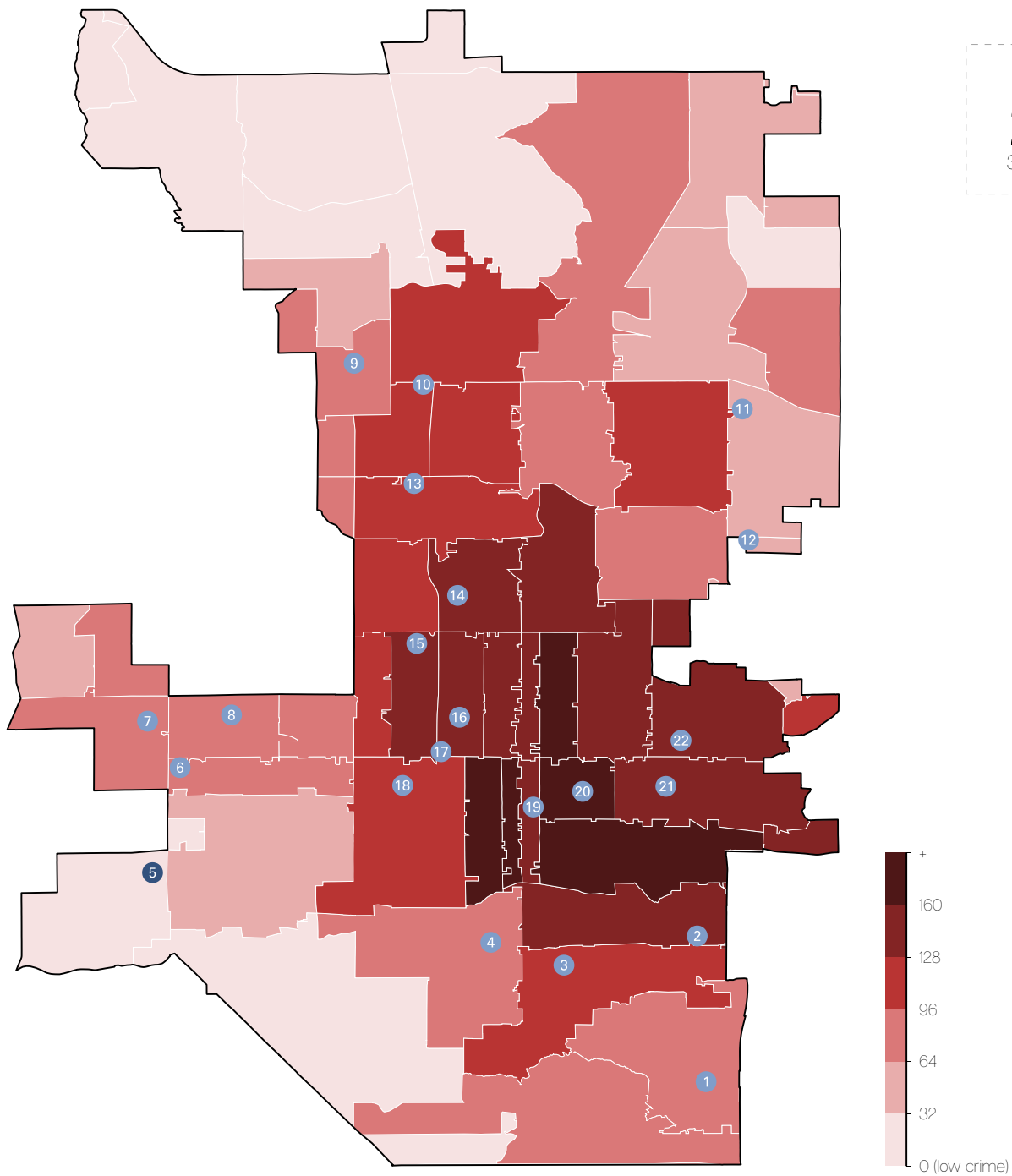


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Public Transit to Work

American Community Survey | 2017





Crime Index

EASi | 2017

Appendix C

program document

PROGRAM

SITE

Location:

2041 S 86th Dr.

Phoenix, AZ

112°14'42.065"W; 33°25'35.774"N

Size:

523,120.2 sq. ft. or 12 acres (not including adjacent neighborhood community gardens)

Service Area:

Homes – 1,607

Farming Community Population - 5,749

2-Mile Radius Population - 22,400

Data collection/analysis of phoenix on a city-wide and neighborhood scale has identified a series of issues associated with the community adjacent to the site. Extrapolation of this data suggests the community is strongly influenced by the local climate and recent economic recession. Extreme heat conditions make for an inhospitable environment for outdoor exercise and increases local water consumption. The recession has left the relatively new community without access to goods/services. The public transit terminating over a mile (1.7 miles from the site) from the community and a nearby abandoned/unfinished housing development act as evidence of this concept. The program and design response are grounded in sustainability, especially with respect to water conservation/use and shade/protection from the sun (including urban heat island, urban forest, and solar collection). The following document is comprised of data-driven program included in the first design experiment for a building that can adjust to address shifting needs and data trends of the community adjacent to the site.

COMMUNITY FARM

Farming provides the community with access to healthy food and increases community well-being. The program follows the example of the existing “Spaces of Opportunity” urban farm project in southern Phoenix. Water for all irrigation throughout the site (not only the farm) is reclaimed from the adjacent Tolleson Wastewater Treatment Plant. Watering schedules are determined using data collected by The Arizona Metrological Network (AZMET; University of Arizona), which recommends when to water crops and how much water is needed based on live climate data. AZMET acts as a water-saving strategy, despite the introduction of water-intensive program. Crops will be watered using an efficient underground watering system. Community gardens are connected by shaded pathways (solar panels + fabric) on a pervious surface that connects existing green spaces, new community gardens, incubator farm, community center, and Dos Rios Elementary. This also is a means for walking and biking with relief from the heat. Crops will be shaded by orchard trees surrounding plots.

Community Gardens: The community gardens are found throughout the adjacent neighborhoods in existing green flood mitigation spaces. Each plot has an underground reservoir that collects flood waters for later irrigation use. Residents can reserve an allotment ranging in size (10-1,500 sq. ft). The overall size of the community gardens can expand/contract depending on use (unused areas will be xeriscaped).

Incubator Farm: Larger farm plot(s) located on the site itself that acts as the base for all farming operations. Farmer(s) work this land and oversee and train those participating in the community gardens. Crops grown on the incubator plot are sold at a farmer's market serving the broader southwestern Phoenix region. Crop and equipment storage are found adjacent to the incubator farm.

Community Gardens | 14 Gardens | 12.93 acres | 7,000 sq. ft. built

Equipment Storage - 14x200 sq. ft.

Eating/Gathering (Shaded) - 14x300 sq. ft.

Incubator Farm | 4.73 acres farming | 4,700 sq. ft. built

Farming - 2,800 sq. ft.

Washing/Cleaning Station - 225 sq. ft.

Cold Storage - 225 sq. ft.

Dry Storage - 225 sq. ft.

Farm Administration/Office - 225 sq. ft.

Equipment Storage - 1,200 sq. ft.

Greenhouses - 2x350 sq. ft.

Learning/Eating - 1,900 sq. ft.

Farmer's Market (see multi-use shaded space)

Healthy Cooking Classroom - 1,100 sq. ft.

Farm Café - 800 sq. ft.

Data-Identified Issues Addressed: food desert/insecurity, weight/obesity, healthy diet, farmer's market, walking, biking, air pollution, water use, point of pride, climate change, recession recovered, food stamps, sport/exercise, pedestrian traffic/safety, child/community well-being, climate change, carbon sequestration, playgrounds, parks

STEM AFTERSCHOOL PROGRAM + SUMMER CAMP

Science, technology, engineering, and math (STEM) focused afterschool program and summer camp use the farms, sustainable practices of the community, and green technology throughout as a laboratory for learning. Students in k-8th grade could take a shuttle or walk to the community center after school to work on homework, participate in farm-related activities, STEM-focused projects, and sports/exercise activities. Students from Sun Canyon Elementary, Dos Rios Elementary, Arts Academy at Estrella Mountain, Hurley Ranch Elementary, and Santa Maria Middle School are eligible to participate. This program is part of the existing Phoenix Parks and Recreation Department's Phoenix Afterschool Center

(PAC). The STEM program includes a public library for both public and STEM program use. The library acts as a community hub for learning, provides access to computers/broadband, and furnishes space for meeting.

STEM | 4,900 sq. ft.

Learning - 3,900 sq. ft.

Makerspace/Tech Lab - 900 sq. ft.

Science Lab - 900 sq. ft.

Classroom/Project Room - 1,050 sq. ft.

Computer Lab - 1,050 sq. ft.

Support - 1,000 sq. ft.

STEM offices - 2x150 sq. ft.

STEM Restrooms - 2x200 sq. ft.

Storage – 2x150 sq. ft.

Public Library | 8,550 sq. ft.

Public Interface - 600 sq. ft.

Entry/Exhibit - 2x200 sq. ft.

Circulation/Info - 200 sq. ft.

Collections - 3,500 sq. ft.

Adult Stacks - 1,200 sq. ft.

Teen Stacks - 500 sq. ft.

Lounge/Reading - 1,200 sq. ft.

Children Stacks - 350 sq. ft.

Storytelling - 250 sq. ft.

Technology - 1,800 sq. ft.

Computers - 800 sq. ft.

Classroom/Large Meeting - 1,000 sq. ft.

Private Rooms - 875 sq. ft.

Meeting - 625 sq. ft.

Private Study – 100; 150 sq. ft.

Support - 1,775 sq. ft.

Staff Workroom - 500 sq. ft.

Administration Office – 100;150 sq. ft.

Public Restrooms – 2x200 sq. ft.

Storage - 625 sq. ft.

Data-Identified Issues Addressed: college+, public school, point of pride, library, broadband, point of pride, healthy diet, farmer’s market, weight/obesity, park/recreation center, swimming pool, art/culture child/community well-being, education quality, exercise/sports, poverty, belief in climate change, jobs,

COMMUNITY CENTER

The entire project will be anchored by a community center. The data collected suggests the neighborhood has a significant need for park/recreation facilities. This program will further connect the community to farming activities and will be used by the STEM afterschool program and summer camp. The community center will have a direct connection to the neighboring Dos Rios Elementary, as facilities will be shared. The community center will be in partnership with the Arts Academy at Estrella Mountain, who will use the spaces for performances and as a gallery for student artwork from all 7 local schools. The community center will also provide space for outdoor/indoor activities that are a respite from the heat. The swimming pools (ozone), although counterintuitive to the projects water conservation goals, acts as a means to limit future private pool development in the local community. Both pools are built above ground for easy deconstruction and future flexibility.

Gymnasium | 22,300 sq. ft.

Active - 16,000 sq. ft.

Gymnasium/Assembly - 9,600 sq. ft. (94’x50’ court, 120’x75’)

Workout/Dance - 2x1,050 sq. ft.

Exercise/Weights - 2,000 sq. ft.

Yoga/Pilates - 1,150 sq. ft.

Spin Classroom - 1,150 sq. ft.

Support - 6,300 sq. ft.

Entry/Check-In - 2x200 sq. ft.

Exercise Room Storage - 2x250 sq. ft.

Locker Room/Restrooms (shared with pool) - 2x1,950 sq. ft.

Equipment Storage/Rental - 500 sq. ft.

Workout/Dance Storage - 300 sq. ft.

Community Center Staff - 500 sq. ft.

Community Center Administration - 2x100 sq. ft.

Outdoor Swimming Pool | 2 Pools | 1,810 sq. ft. built | 8,700 sq. ft. Deck

Pools

Lap/Free Swim Pool - 4,500 sq. ft., 8 lanes; 75’x60’

Kid's Pool - 1,800 sq. ft.; 30'x60'

Pool House - 1,810 sq. ft.

Pool Storage - 250 sq. ft.

Pool Mechanical - 650 sq. ft.

Lifeguard Locker Room - 2x 330 sq. ft.

Lifeguard - 250 sq. ft.

Shaded Tennis Court | 2 Courts | 2x7,200 sq. ft.; 60'x120'; 36'x78' court

Data-Identified Issues Addressed: park, recreation center, swimming pool, arts/culture, point of pride, weight/obesity, population growth, population forecast, library, sport/exercise, child/community well-being, baseball diamond, playgrounds, tennis court, lung/heart health

BUILDING SYSTEMS, DATA MANAGEMENT, AND BUILDING OPERATIONS

The building is designed to respond to trends/shifts in data overtime. Different programmatic experiments occur in order to test their impact on identified issues. This requires a flexible design that can expand/contract/adjust. The building, therefore, has installed a system of mechanically-operated walls, floors, shading devices, and windows. These building systems (including a solar array, zero mass solar panels, heat recovery ventilation, and heat pump) require a large mechanical room(s). A data outreach space maintains public involvement/input onsite and provides opportunity to publicly display relevant community datapoints. This also acts as a command center that monitors data shifts, adjusts the building layout, and maintains the mechanical systems. Large storage spaces are required in order to furnish the spaces as they shift overtime. The multi-use shaded space is for various outdoor activities and the farmer's market, but also represents a space in which the building could expand.

Building Systems + Data Management | 33,315 sq. ft.

Data Outreach - 500 sq. ft.

Multi-Use Storage - 1,625 sq. ft.

Temporary Storage/Floor Storage - 24,950 sq. ft.

Mechanical – 6,240 sq. ft.

Building Operations | 350 sq. ft.

Custodian - 100 sq. ft.; 150 sq. ft.

Receiving/Recycle - 100 sq. ft.

Multi-Use Shaded Space | 6,200 sq. ft.

SITE + NEIGHBORHOOD

The local community would have the option of opting into the project's broader sustainability goals outside of farming participation. This would include installation of solar panels, demolishing existing

private backyard pools, and adopting a turf-less xeriscaping. This would also include zero mass solar collectors, which extract water from the arid desert air for drinking. This would limit public water use, while also providing clean drinking water (Phoenix drinking water has cleanliness, source, and drought issues). All community center buildings will be fitted with solar panels, cisterns for stormwater collection, and zero mass solar collectors. All landscaping will be xeriscaped, except for turf playing fields. Trees/plants will be selected based on carbon sequestration, air purification, water use, desert durability, and spring/fall allergens. Heat pumps will provide localized cooling in specific indoor/outdoor spaces. Space will be provided for murals, which will continuously change over time. Existing soccer (seating, storage), baseball diamond (fences, dugouts, seating, storage), basketball courts (shade structure), and school buildings (solar panels) at Dos Rios Elementary will be enhanced/improved as a part of the larger community center. Site will be selected for local fire station, as the broader locale is outside of adequate response range. Parking lot(s) with limited spaces will be provided. Built project will bring about the expansion of public transit to the neighborhood. Site will act as a hot spot for the entire surrounding community, providing internet access to those in need.

Site Program | 10,000 sq. ft.

Fire Station - 9,000 sq. ft. (not designed)

Parking Lots - 108 spaces total

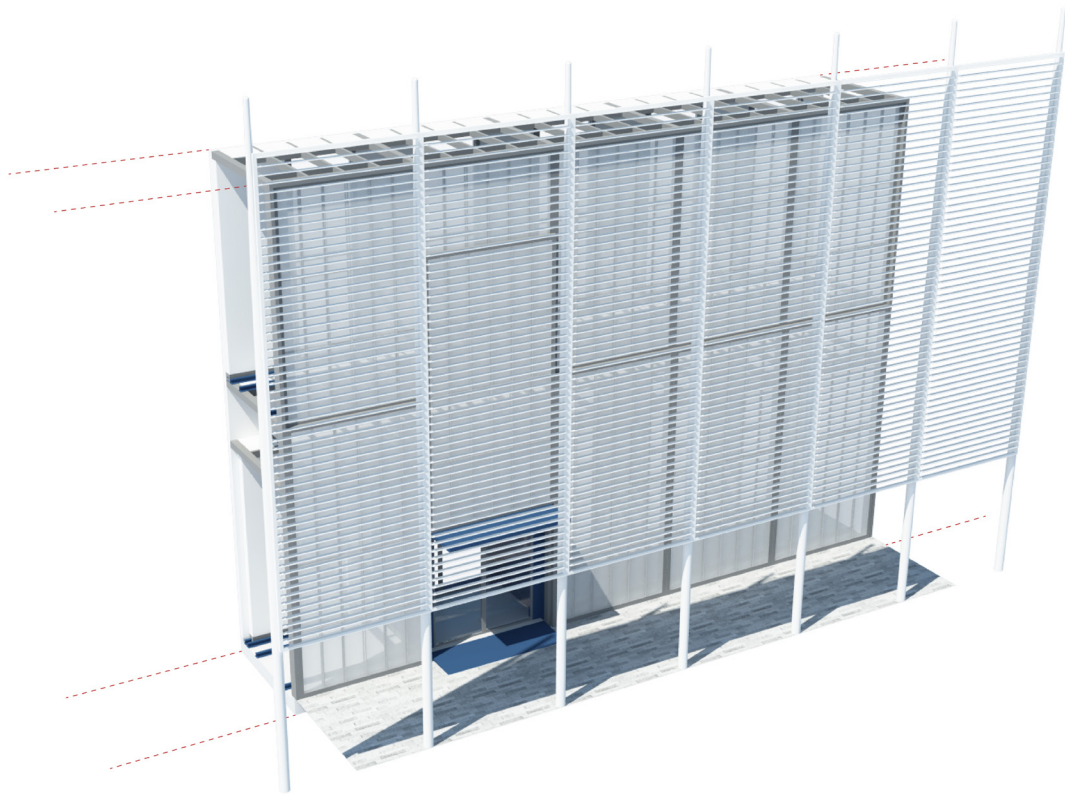
Data-Identified Issues Addressed: fire station, public transit, air pollution, water use, park/recreation center, point of pride, broadband, pedestrian/traffic safety, child/community well-being, climate change, access to clean/safe water, sprawl, allergies

Appendix D

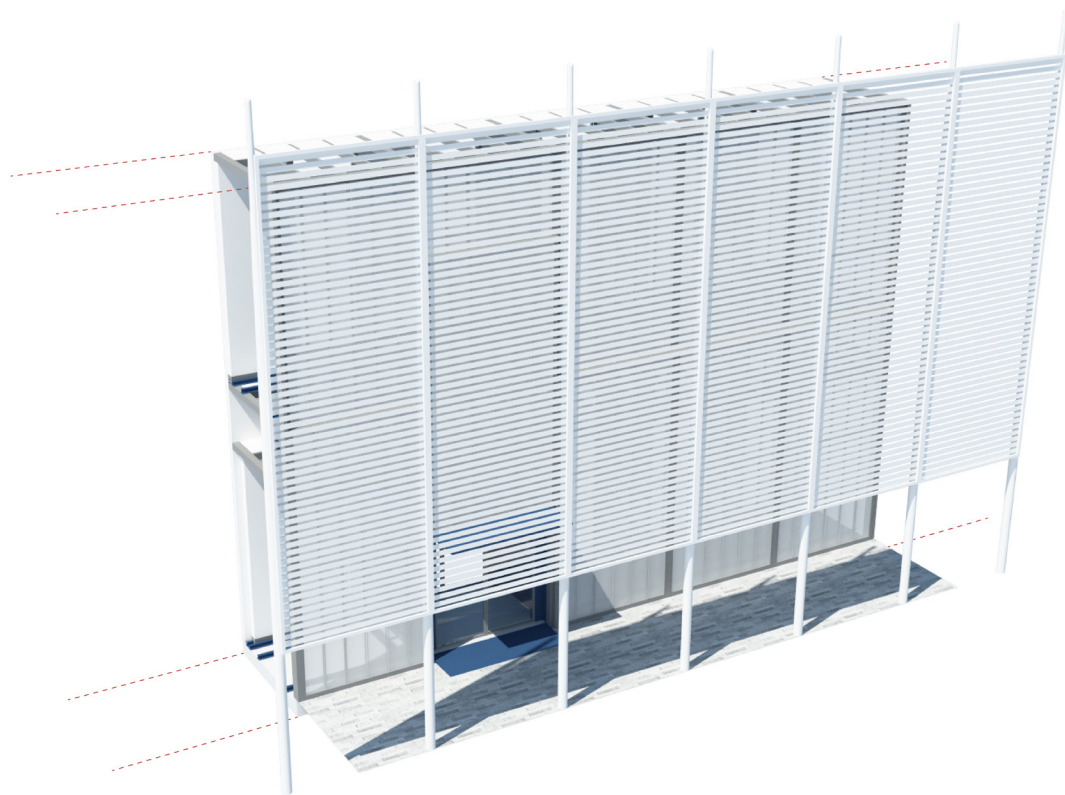
moving diagrams

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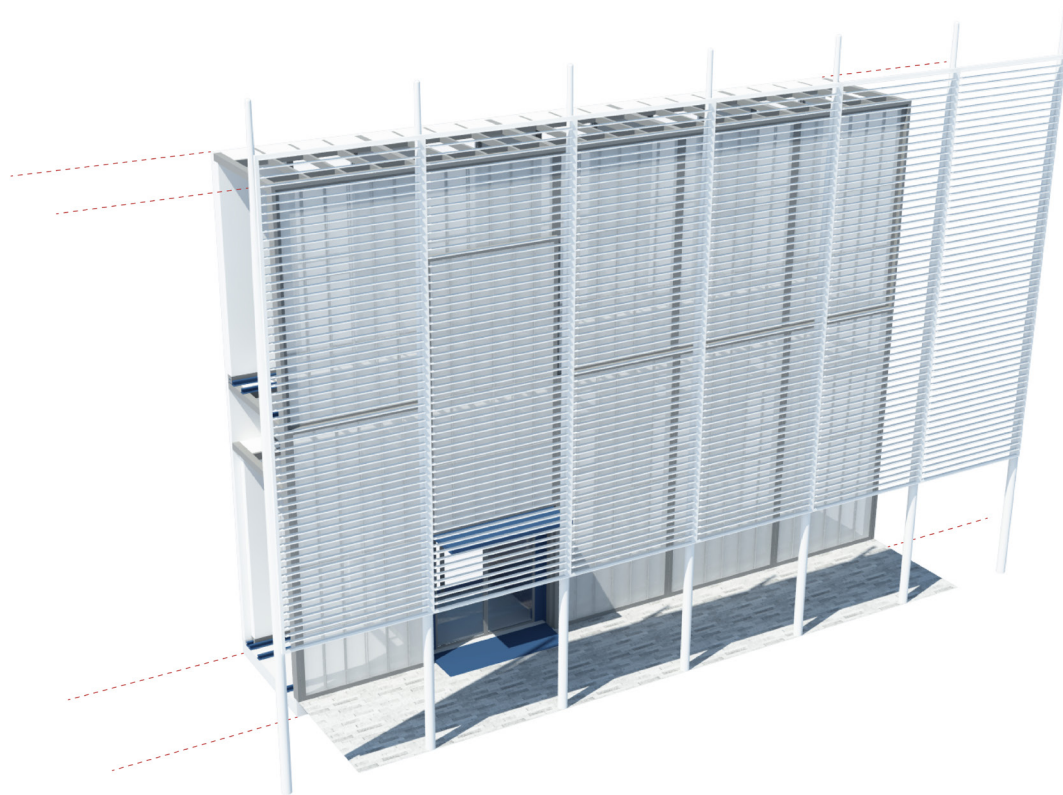
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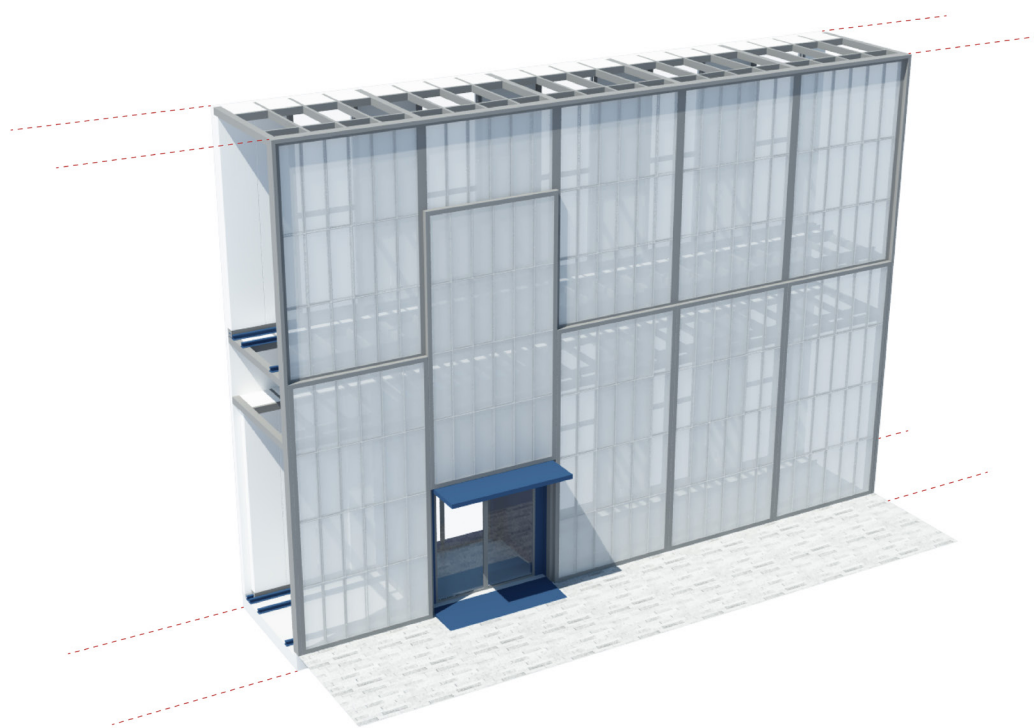
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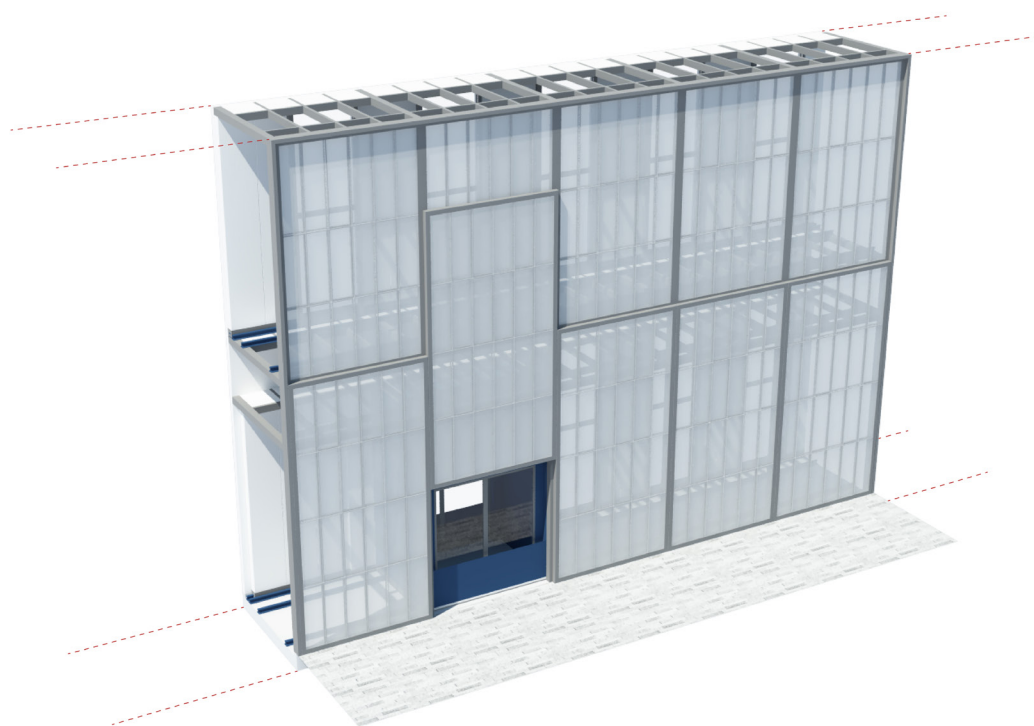
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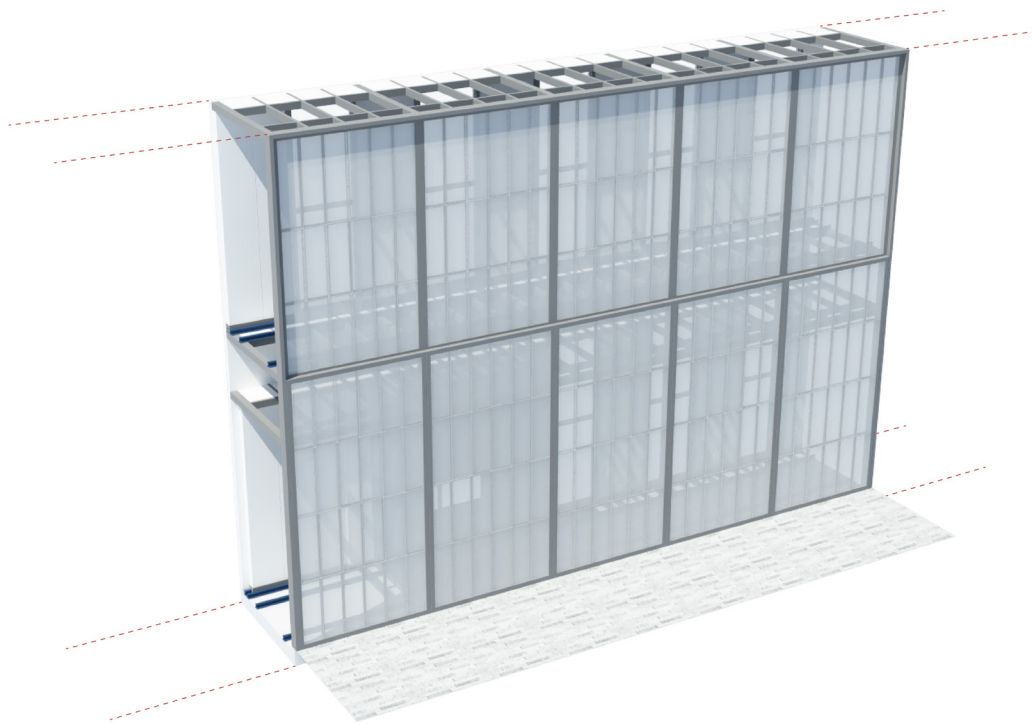
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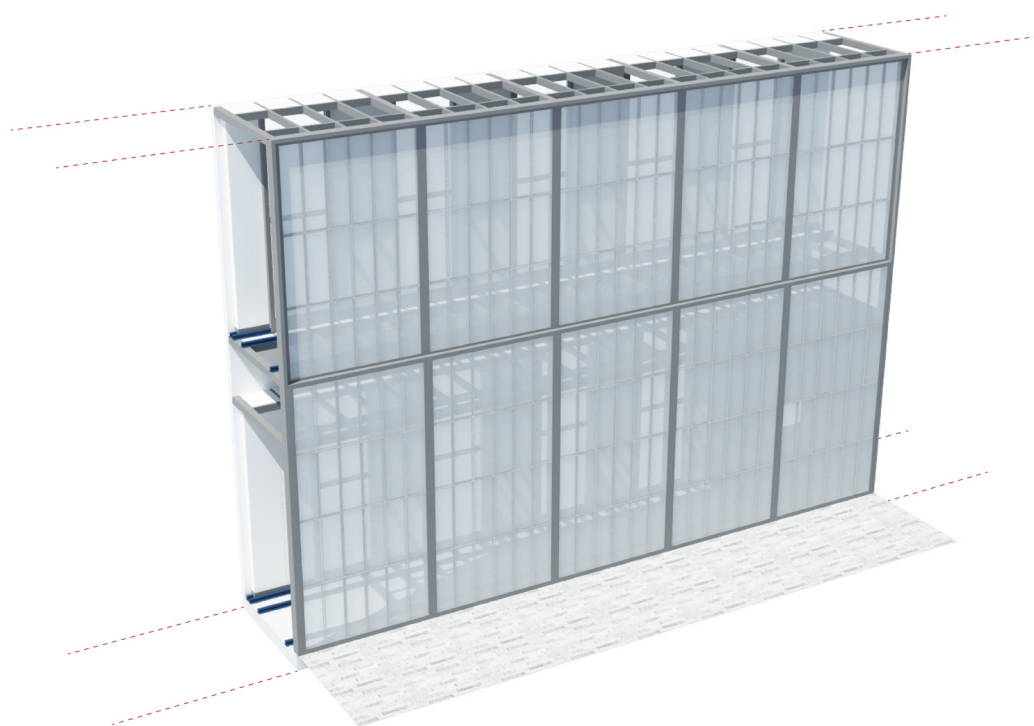
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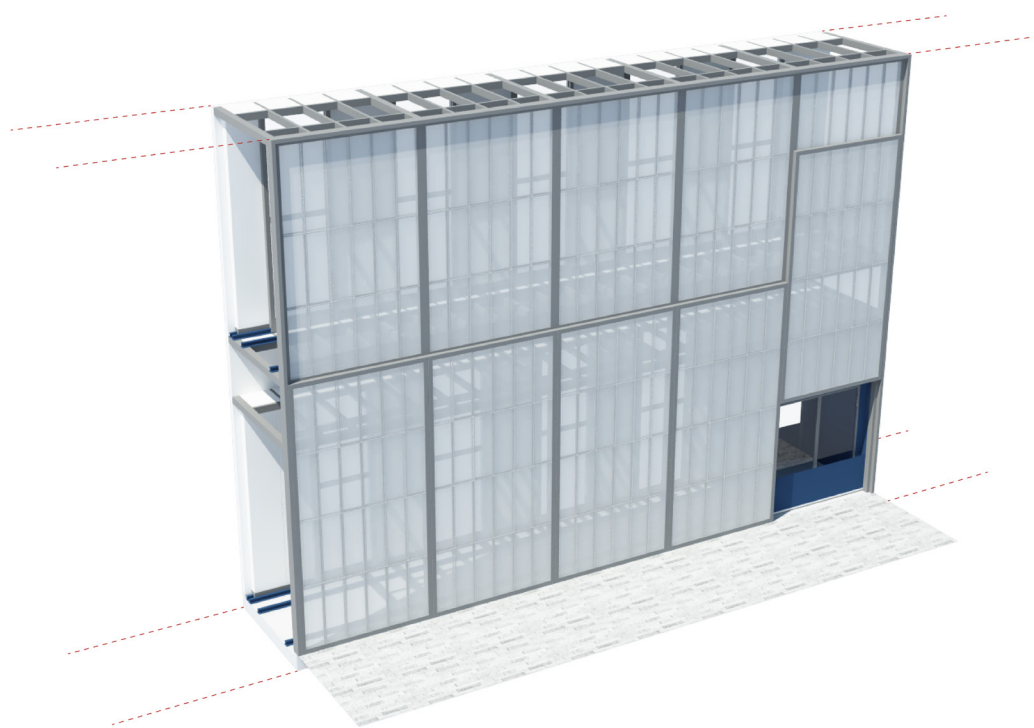
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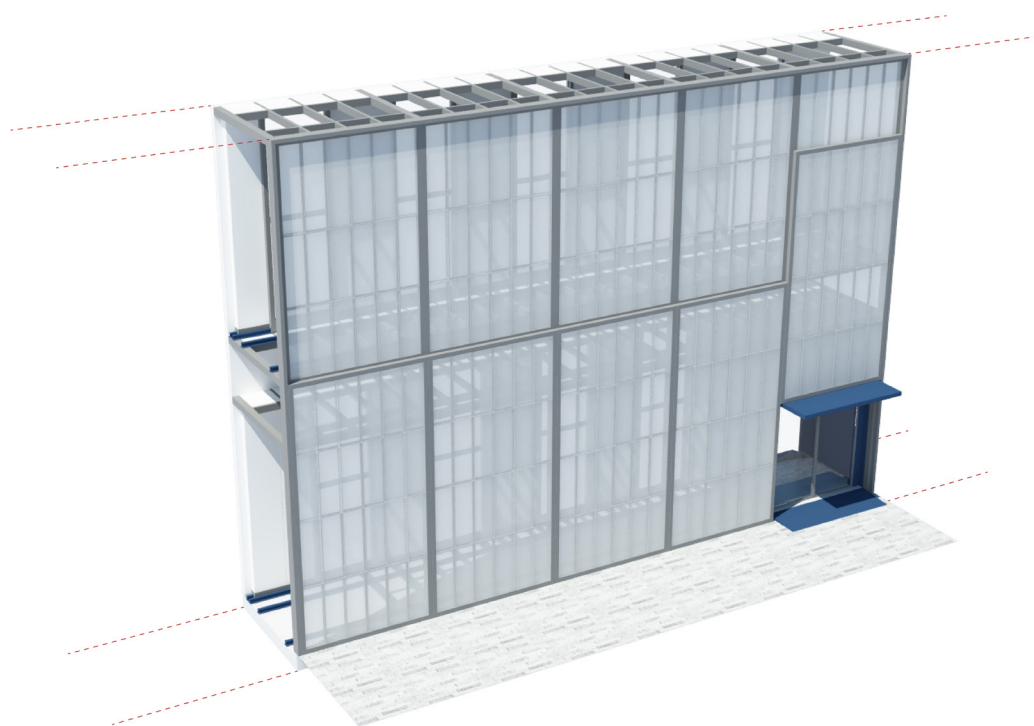
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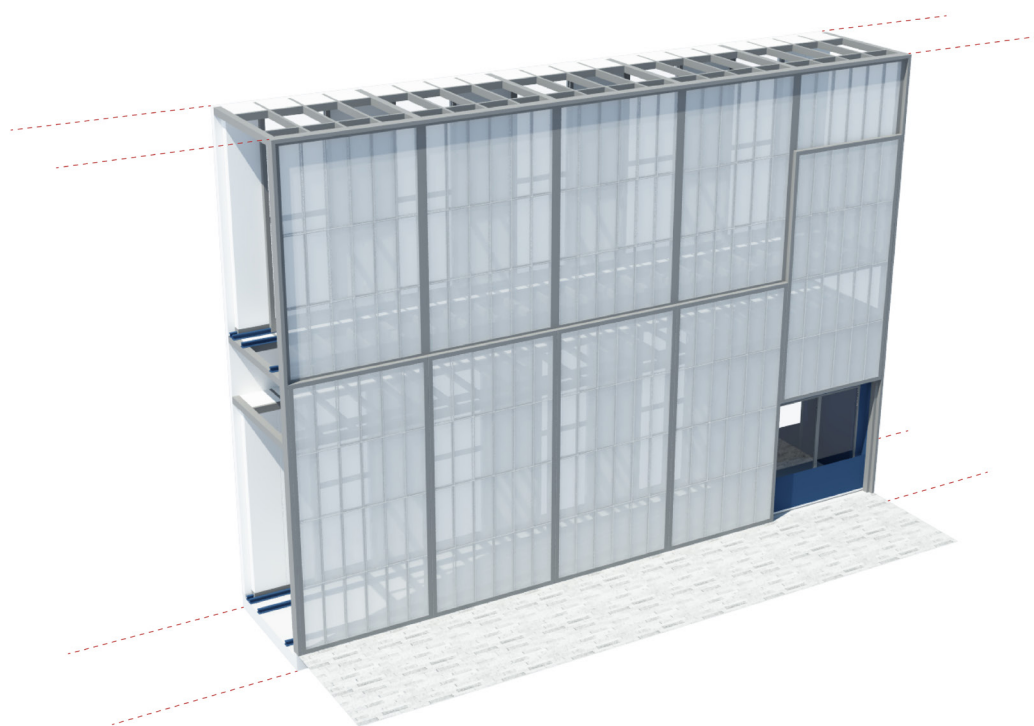
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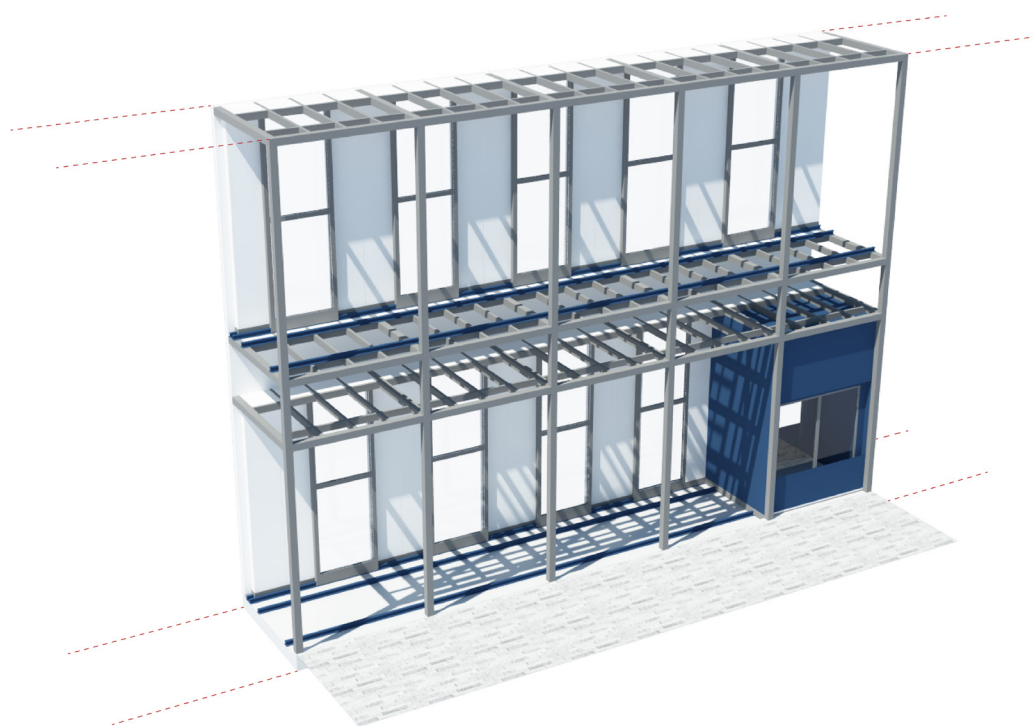
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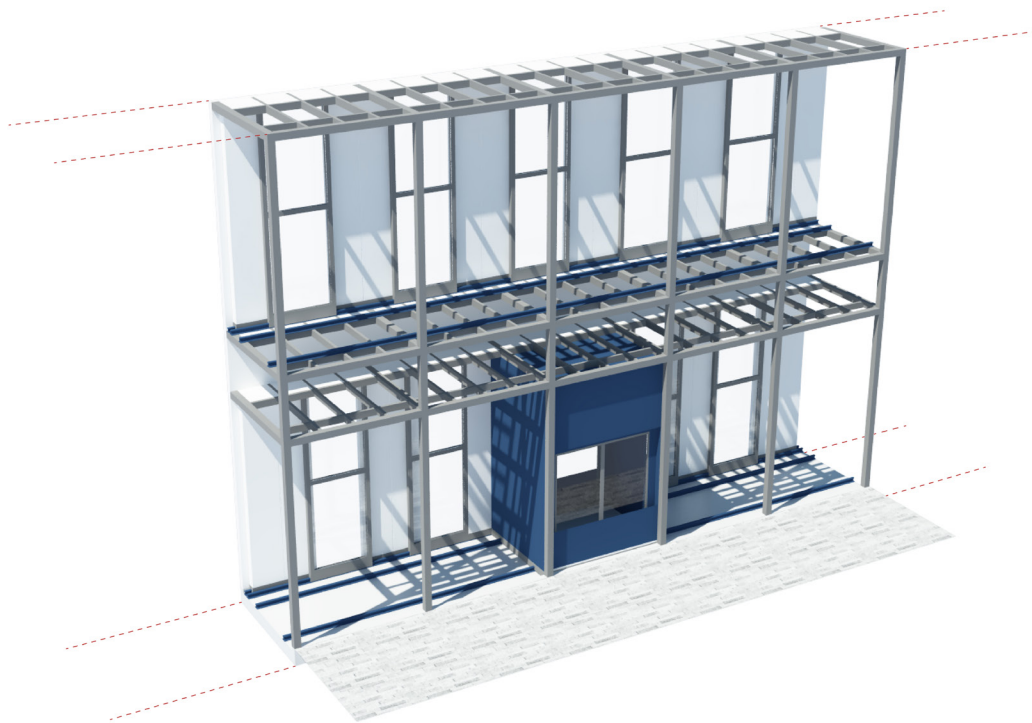
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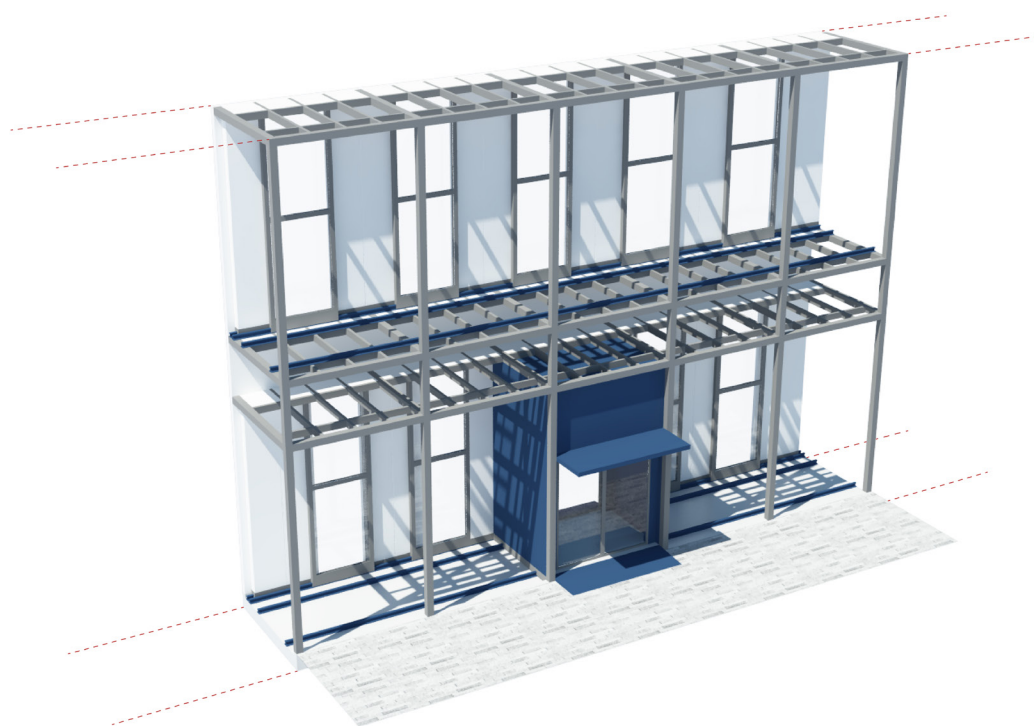
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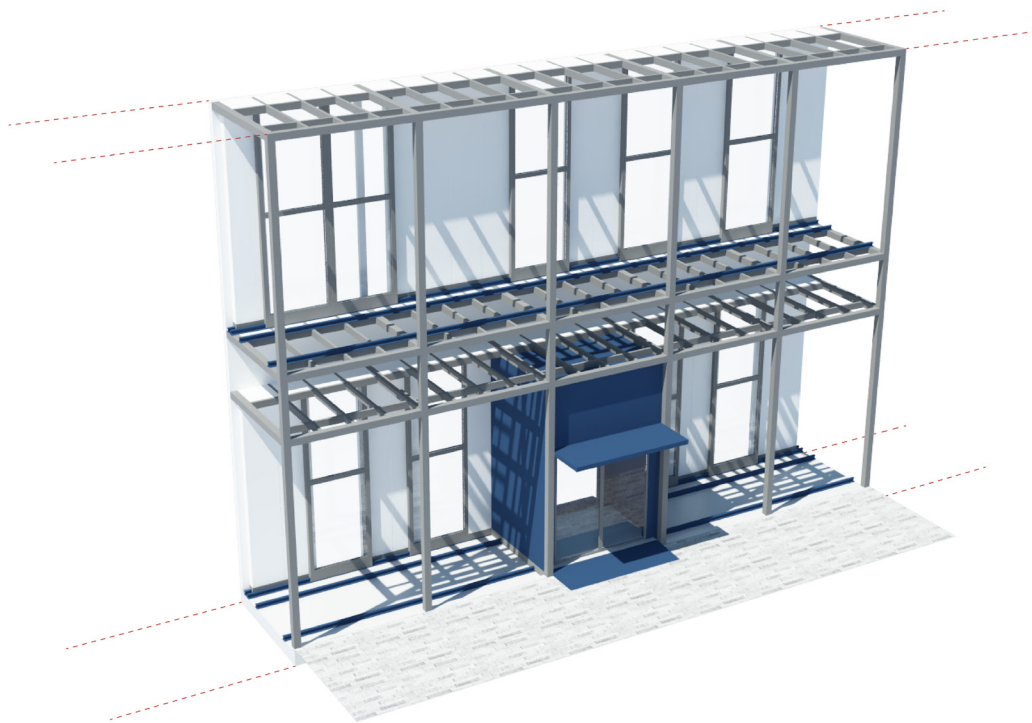
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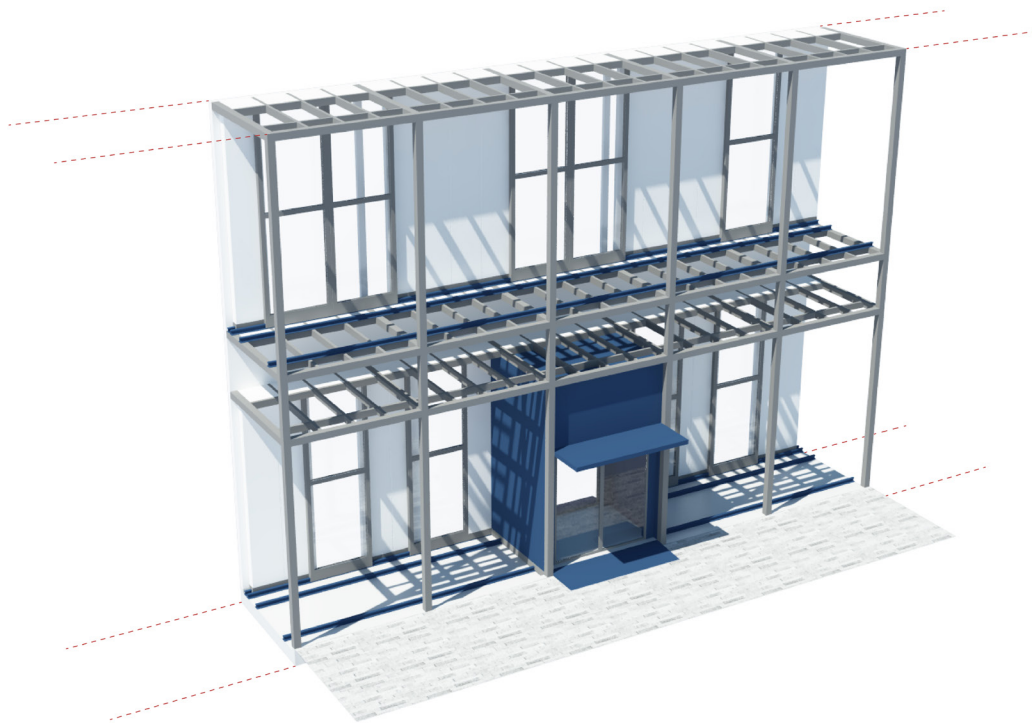
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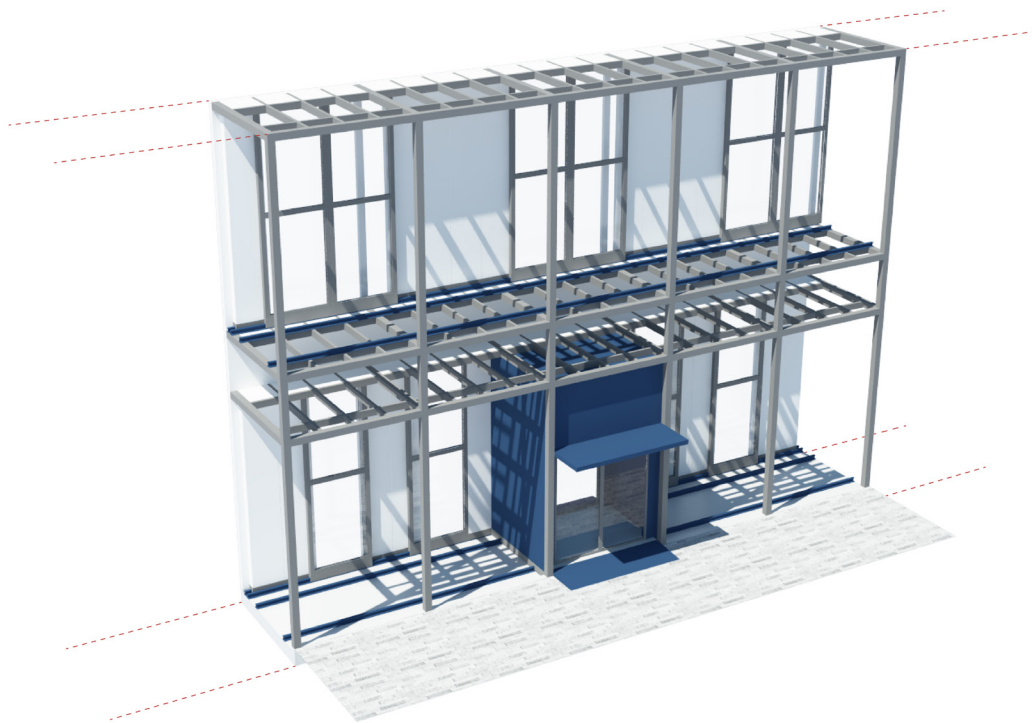
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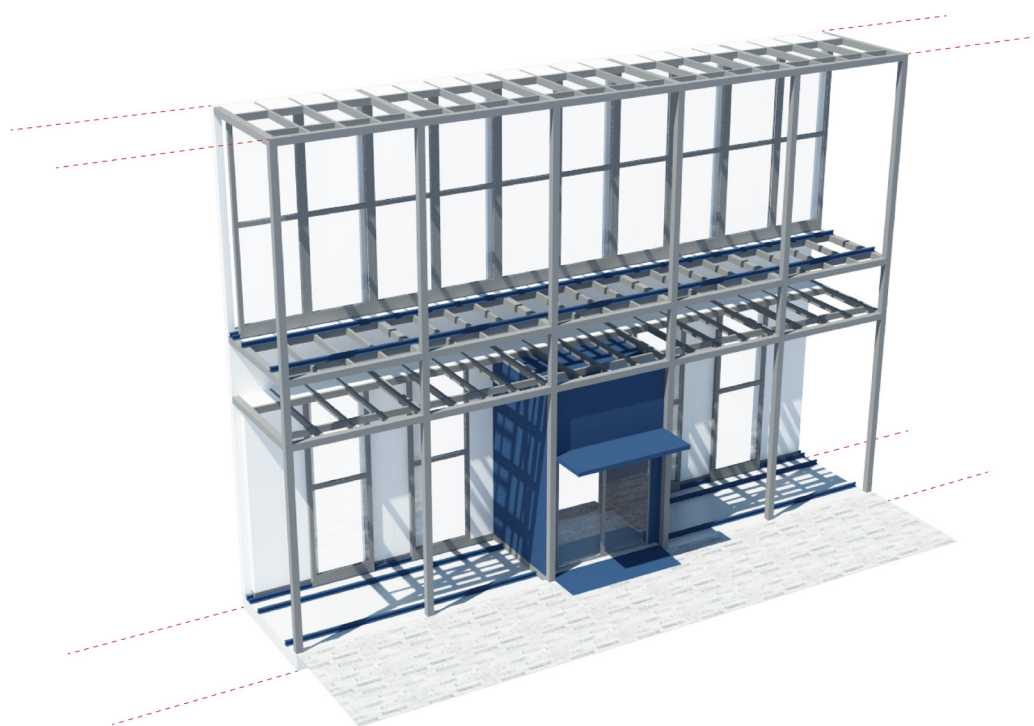
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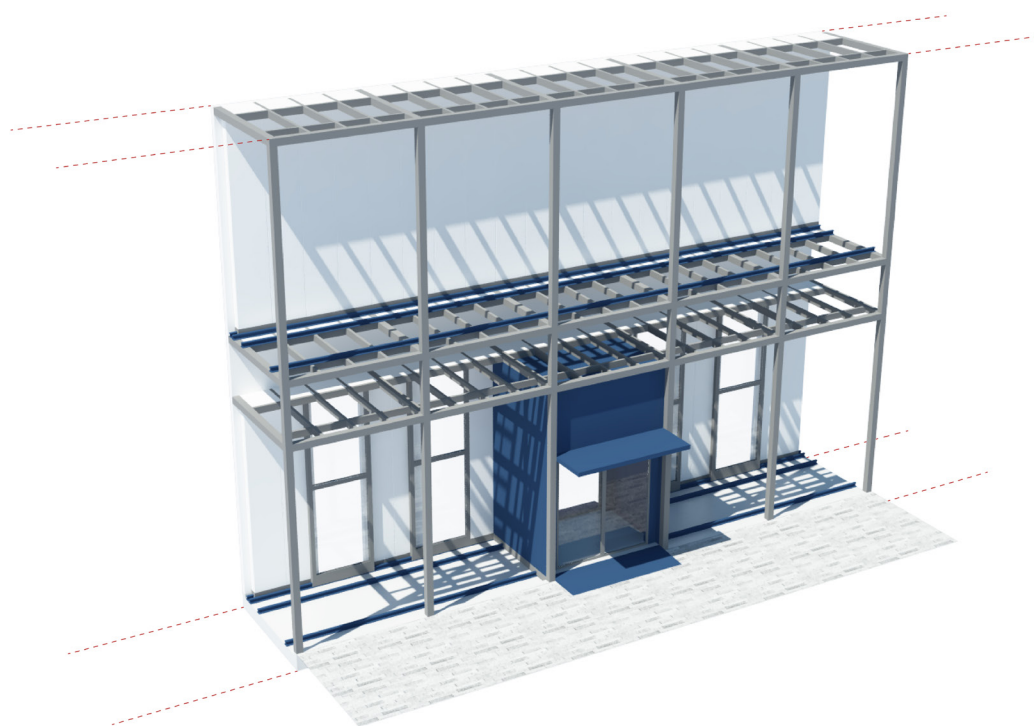
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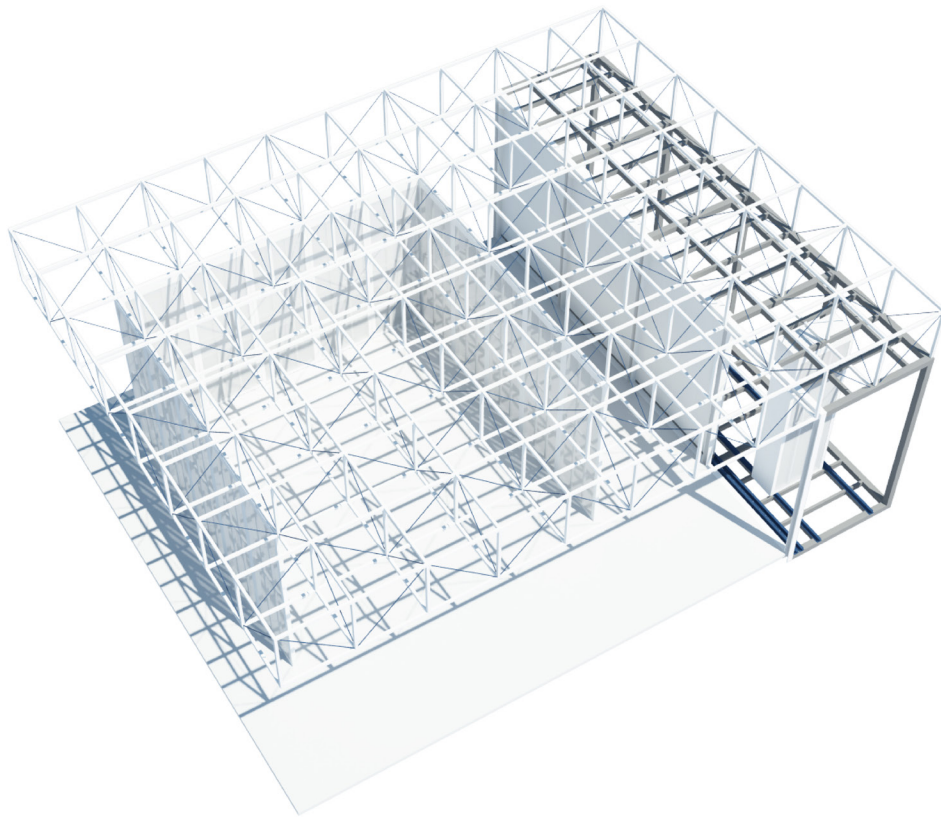
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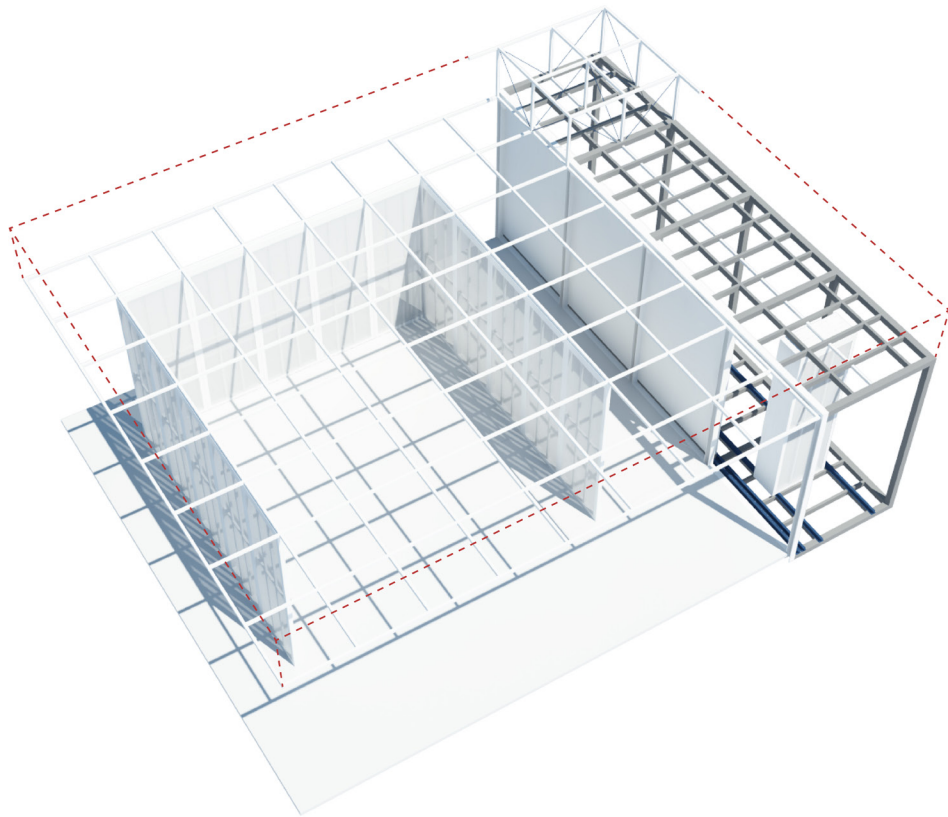
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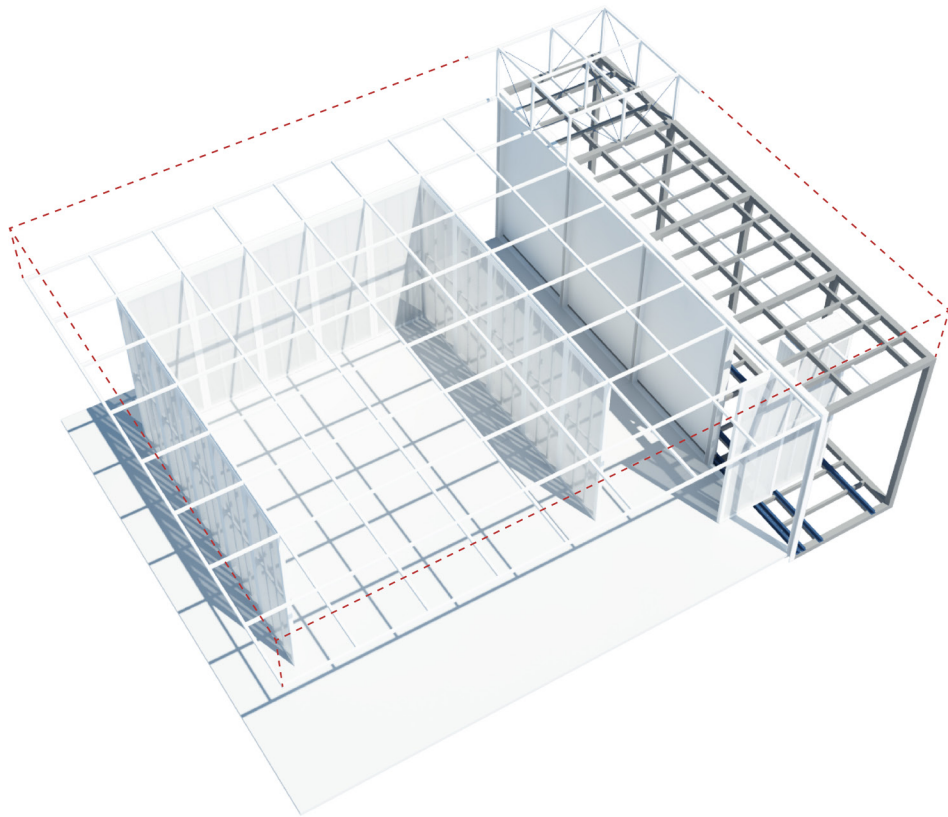
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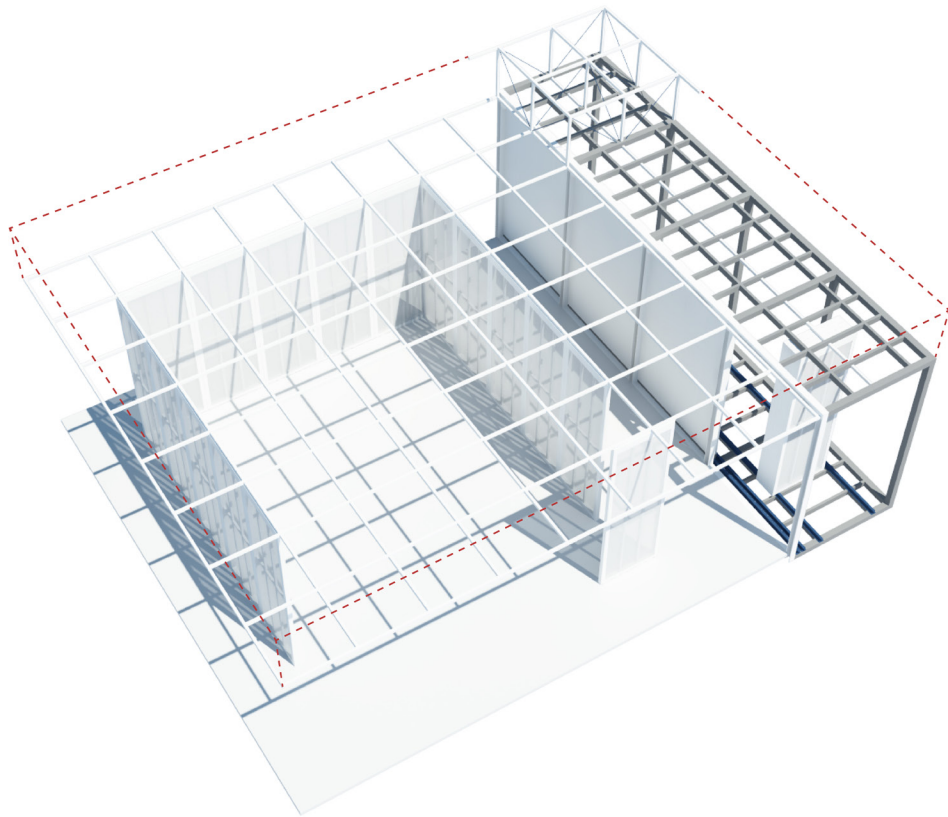
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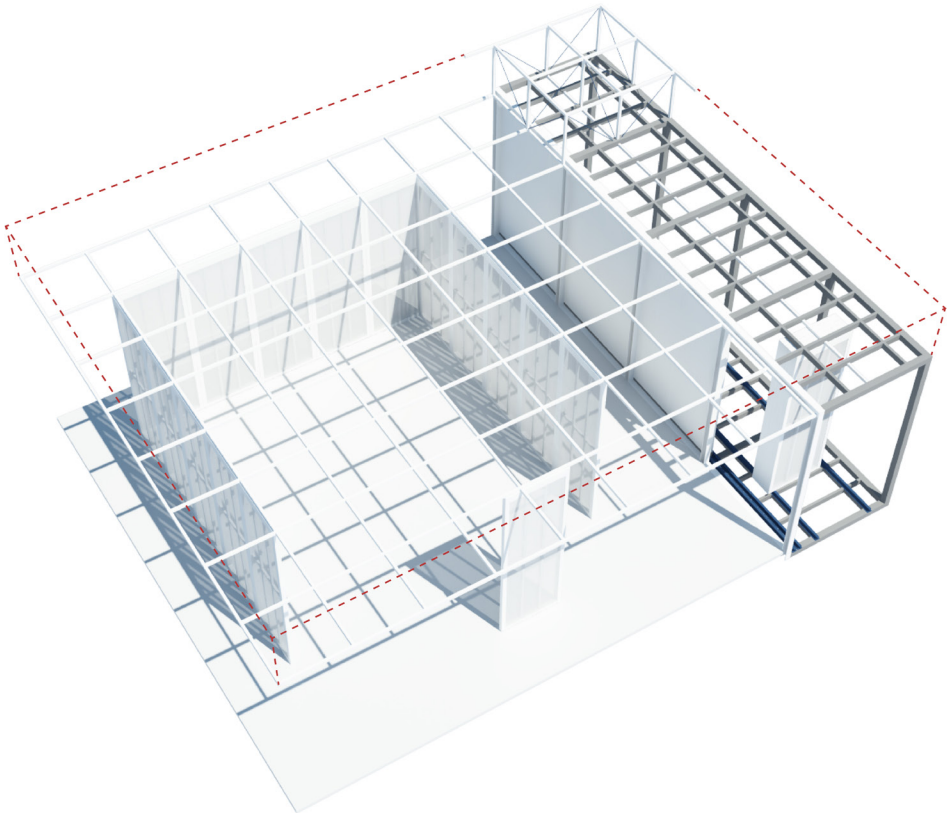
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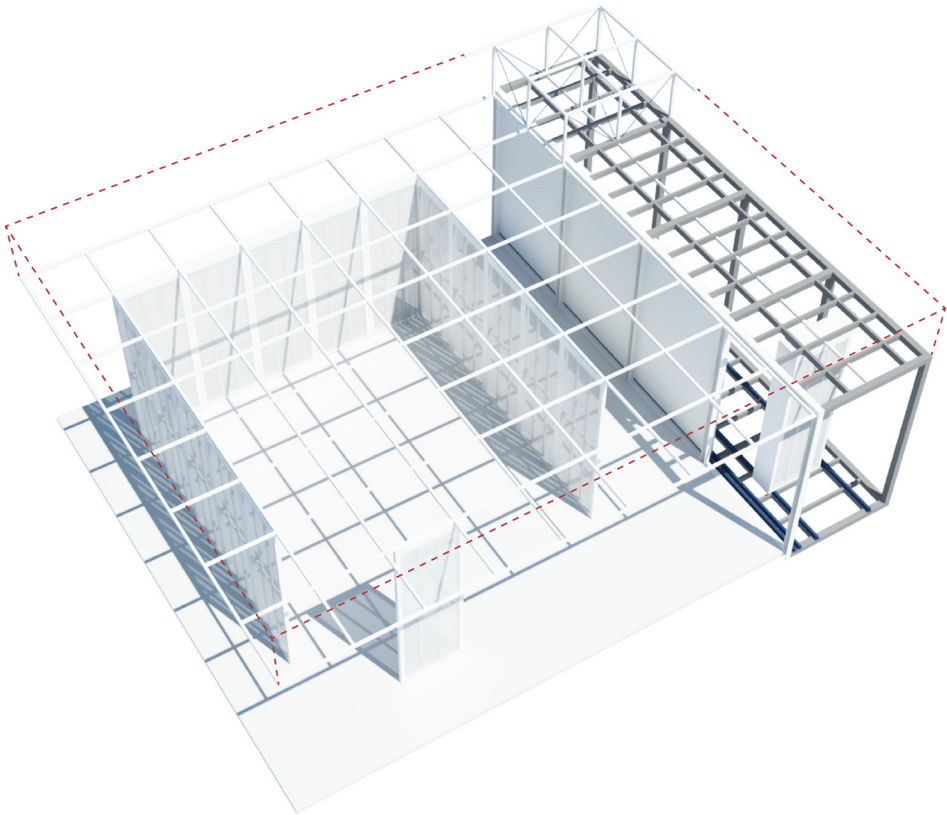
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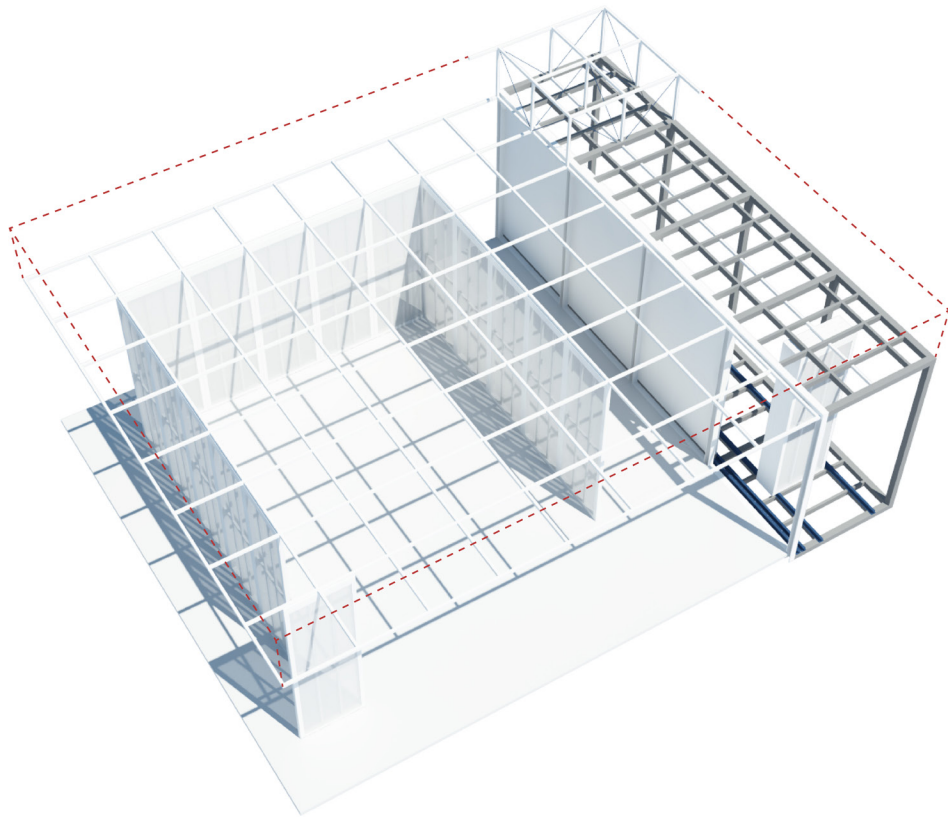
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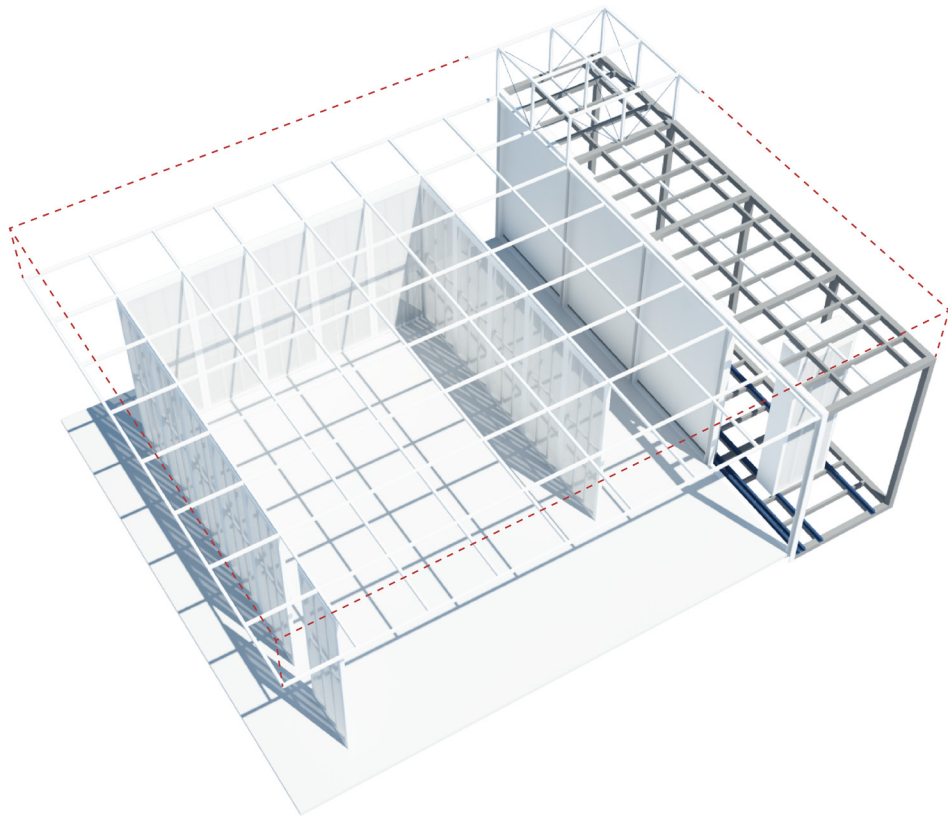
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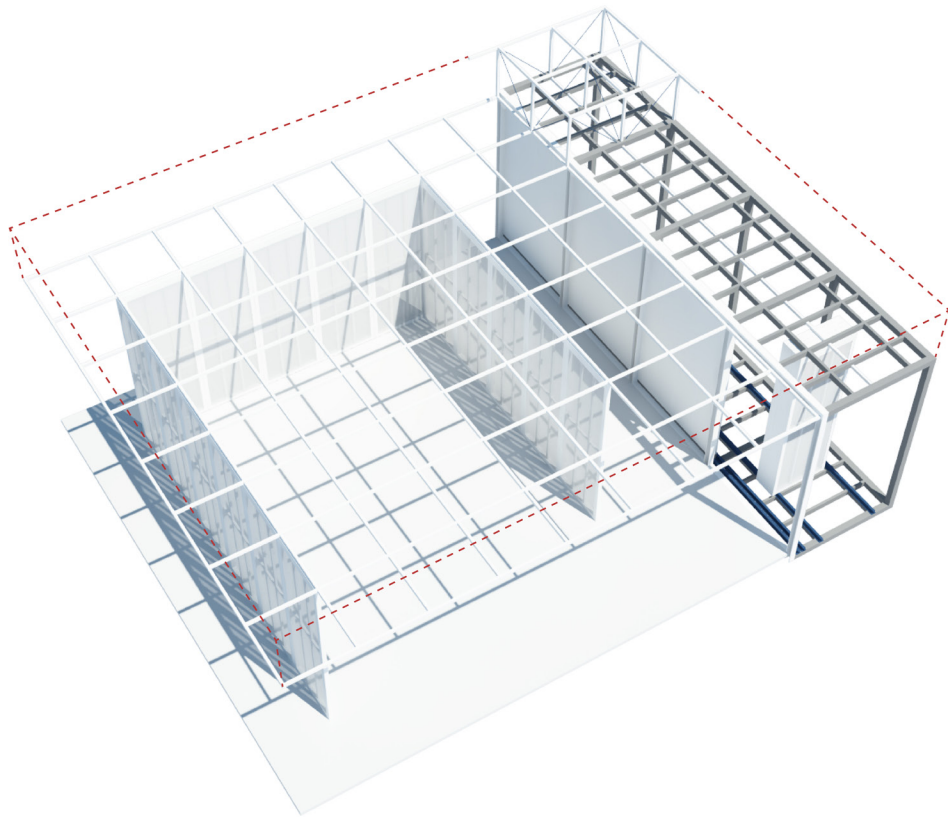
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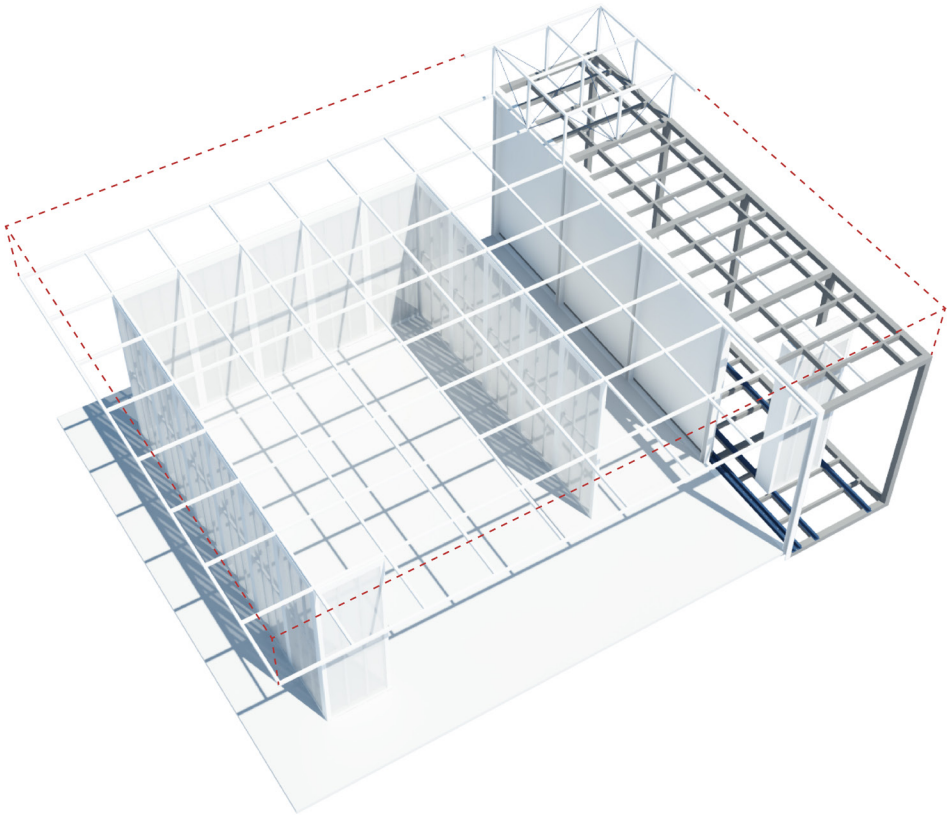
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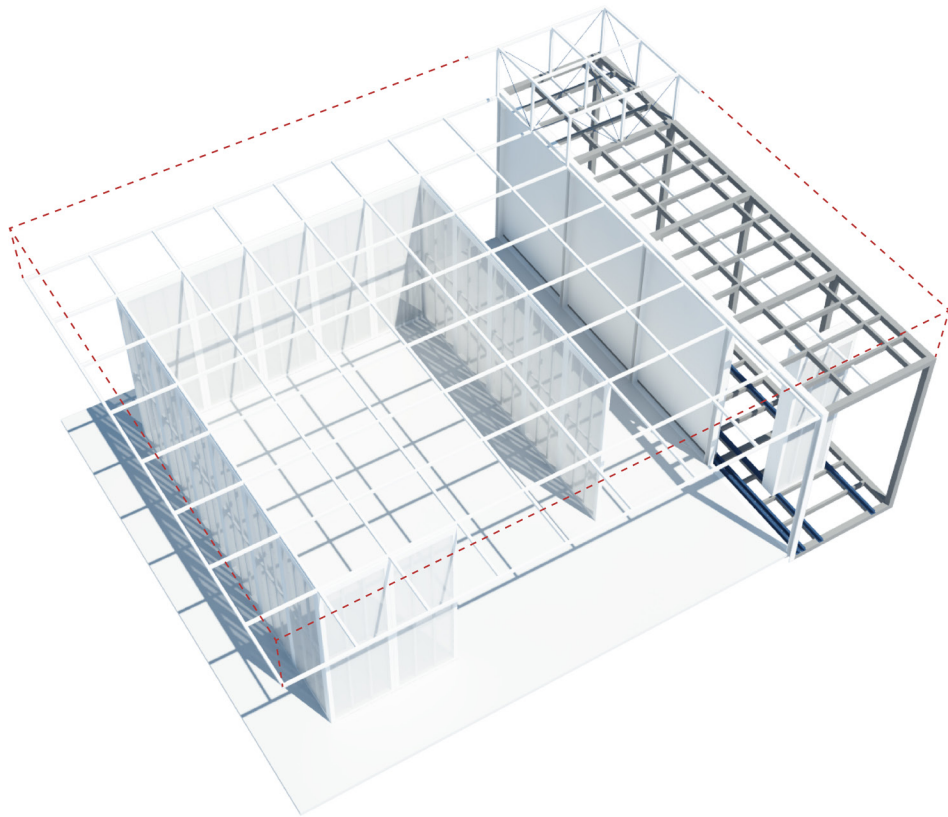
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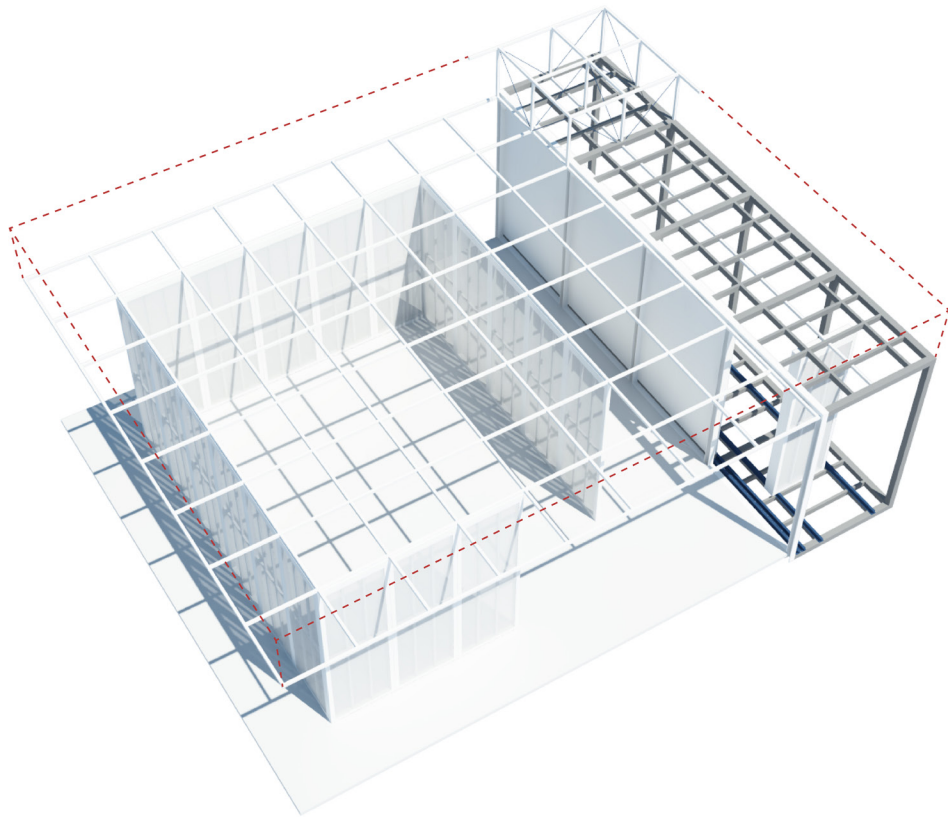
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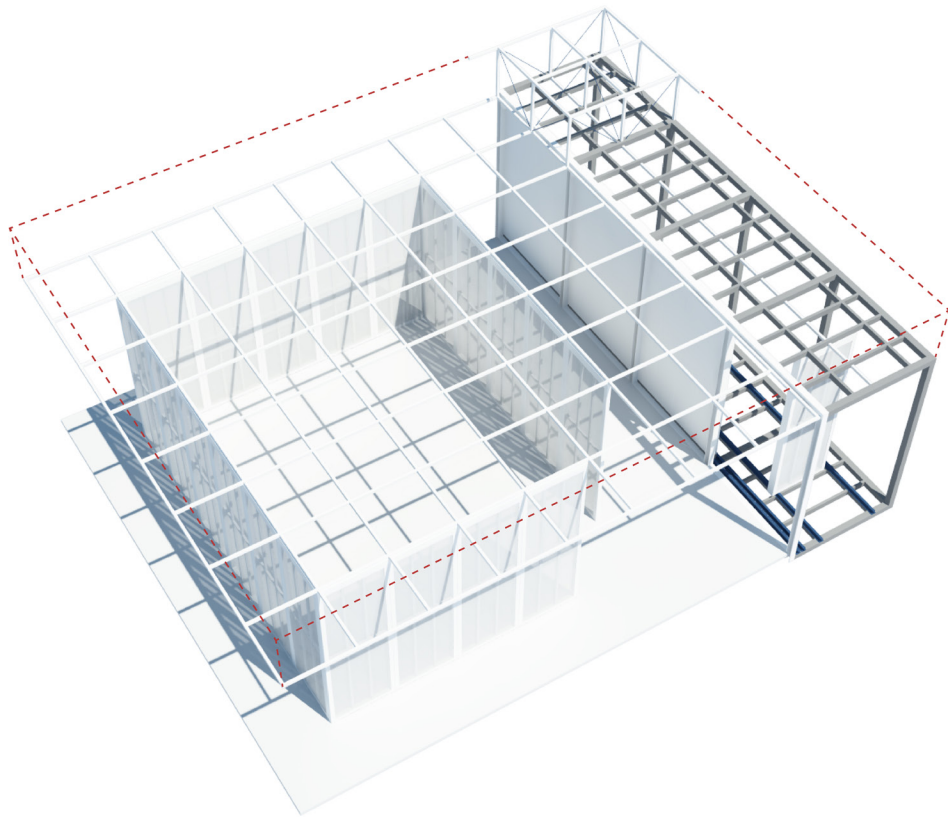
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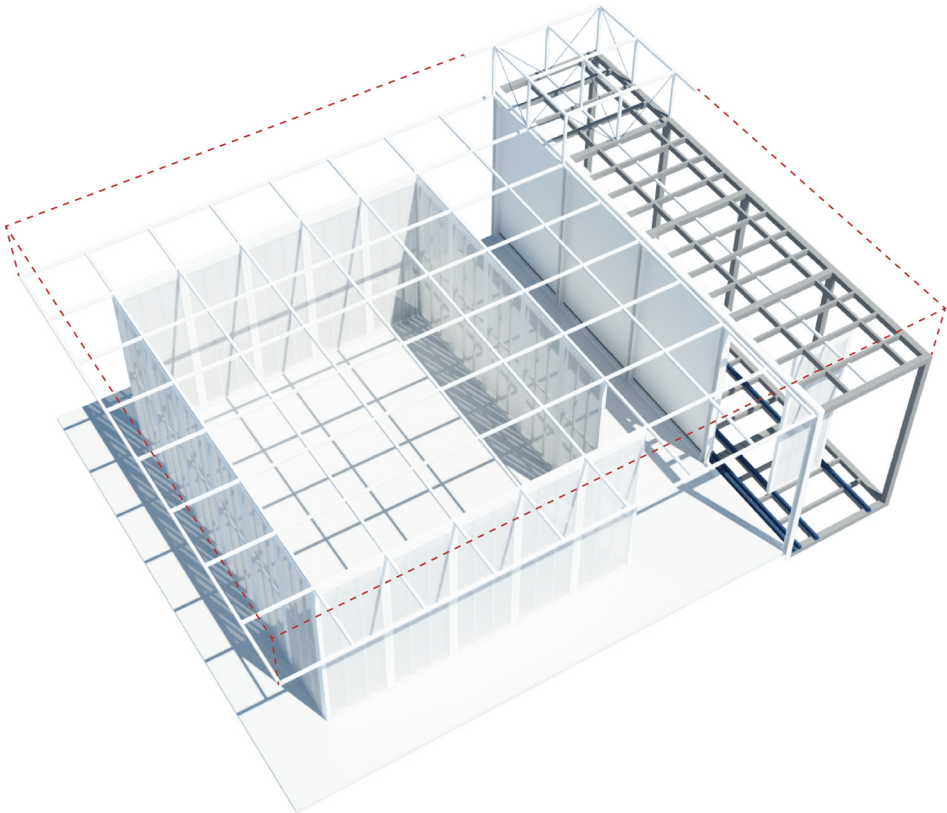
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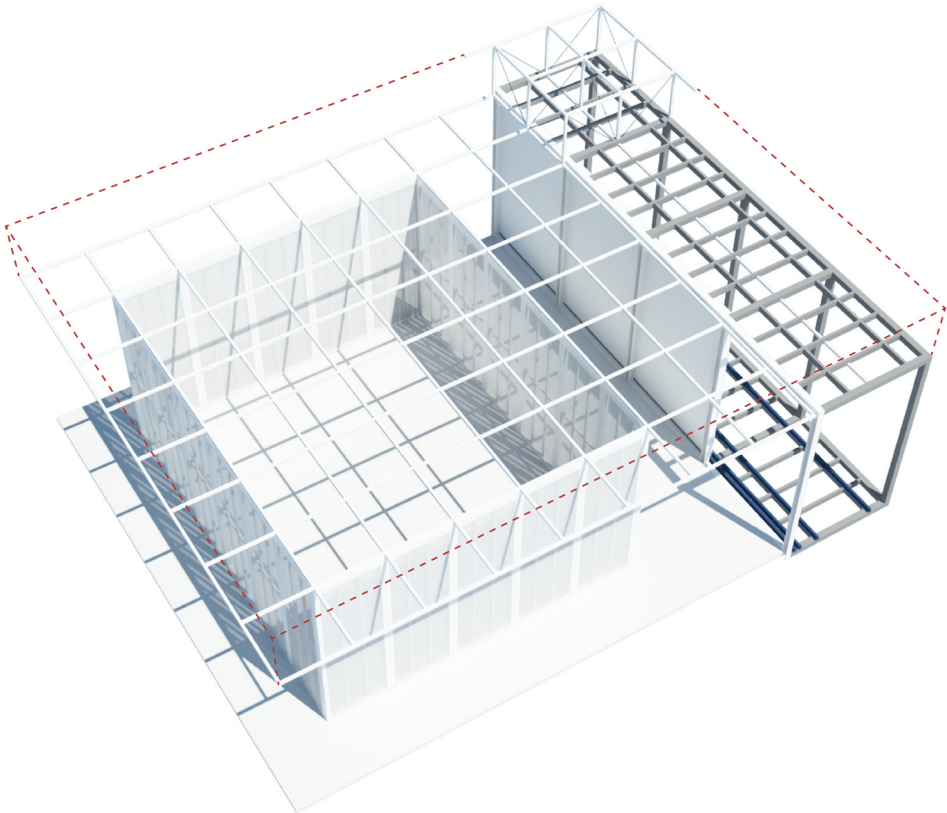
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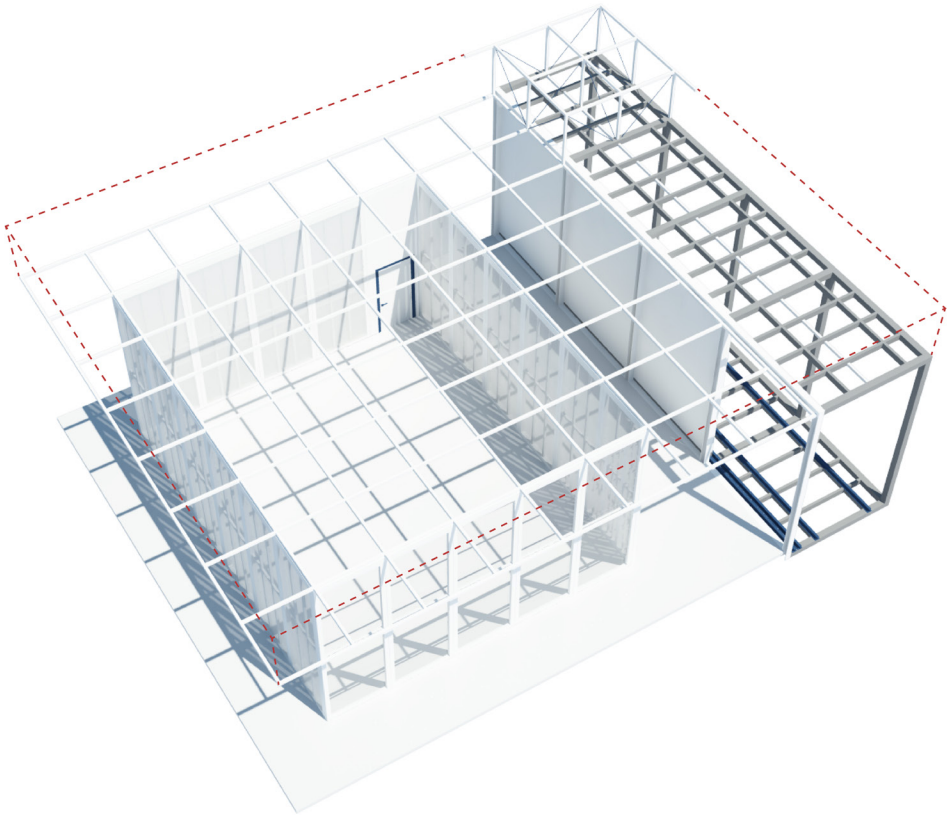
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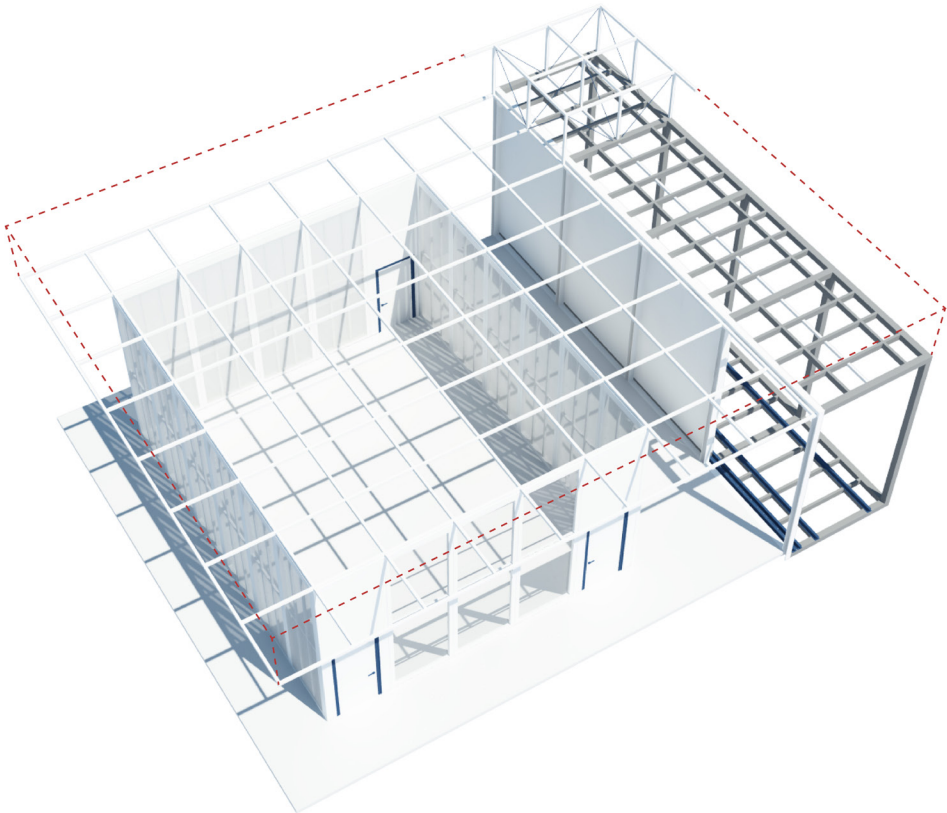
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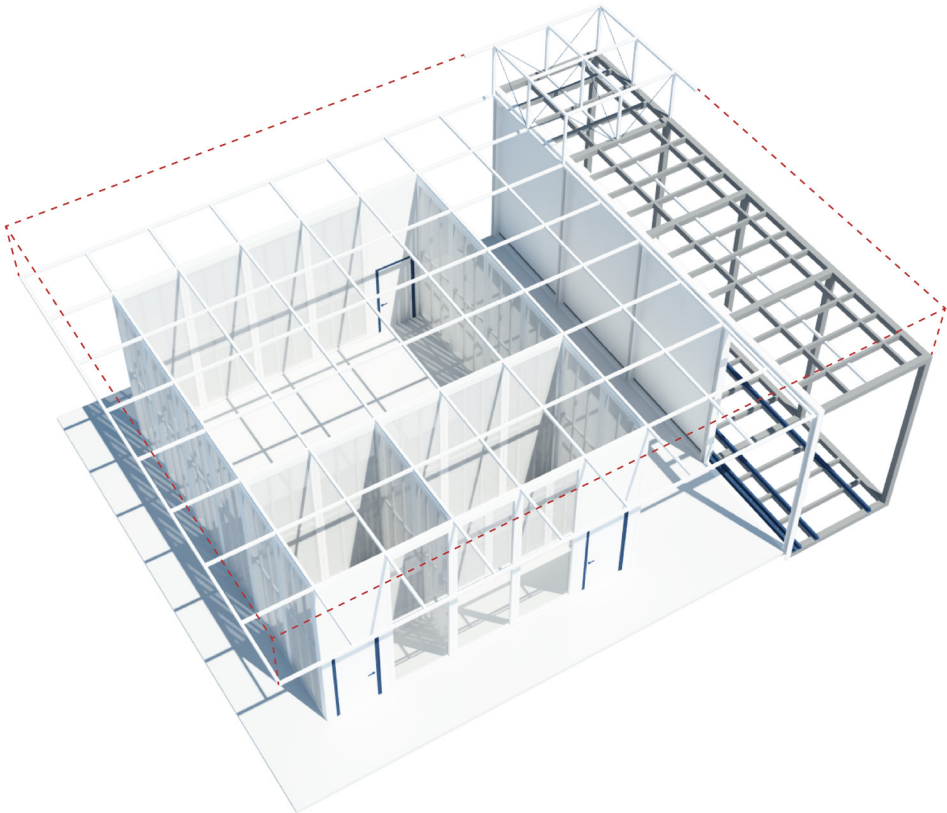
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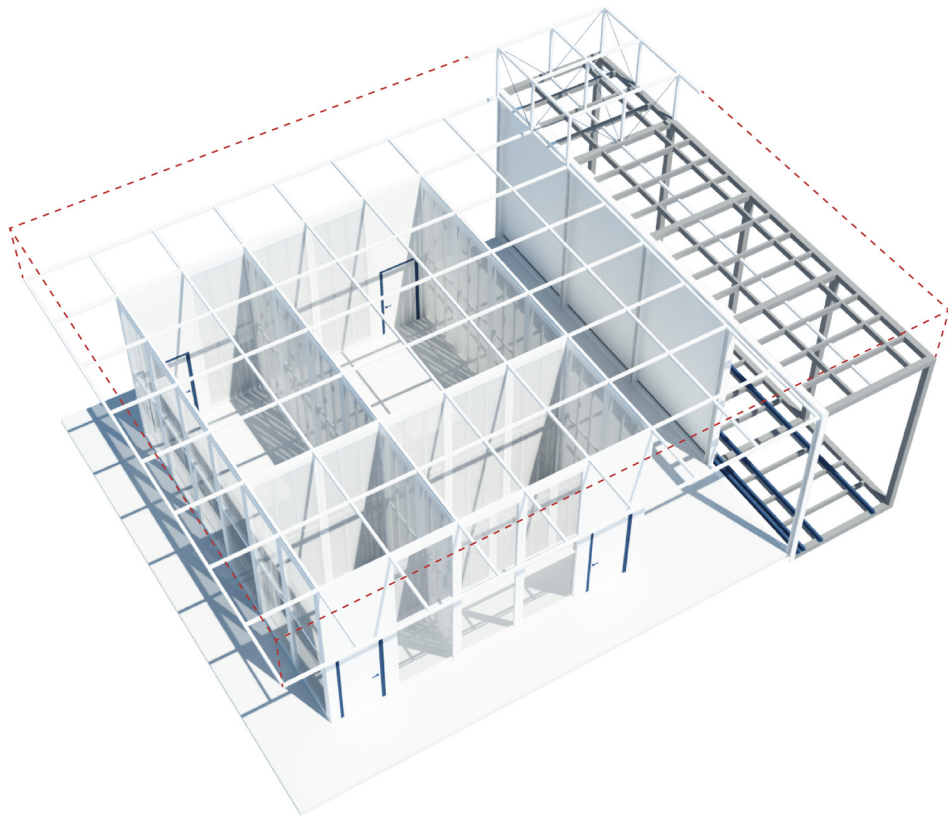
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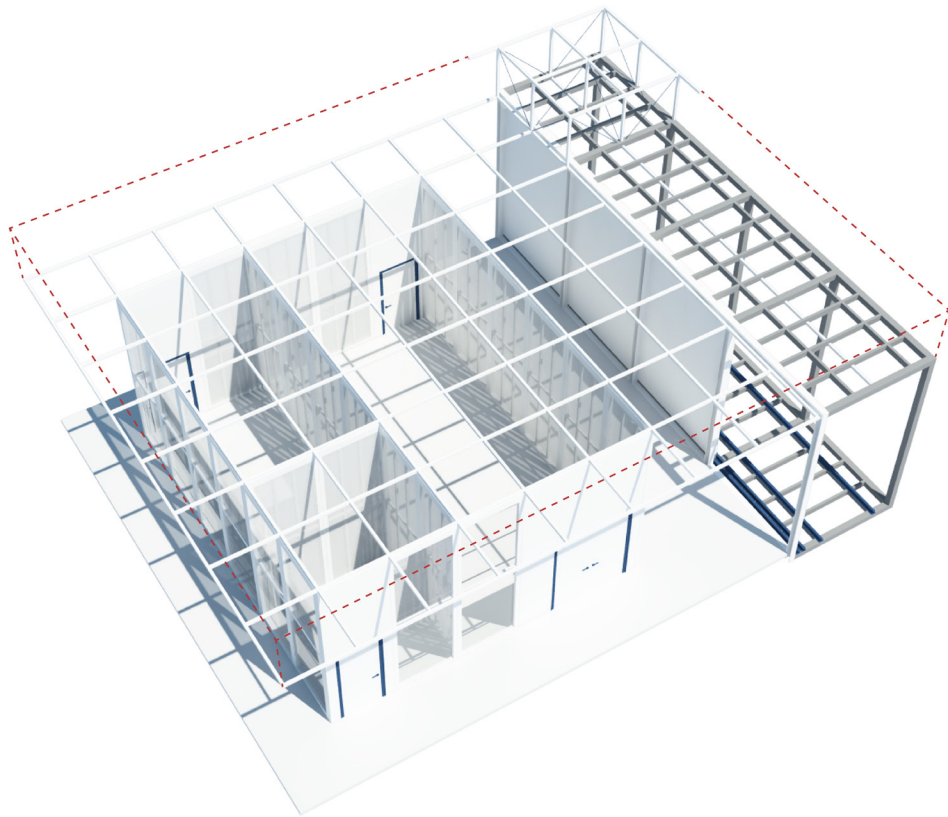
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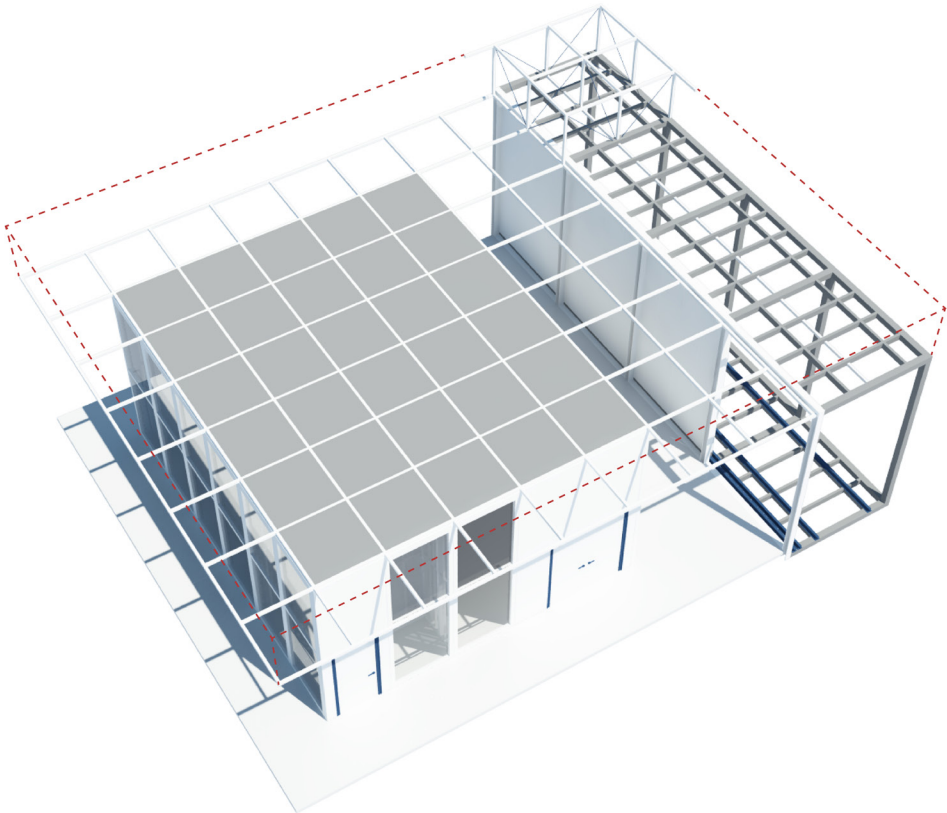
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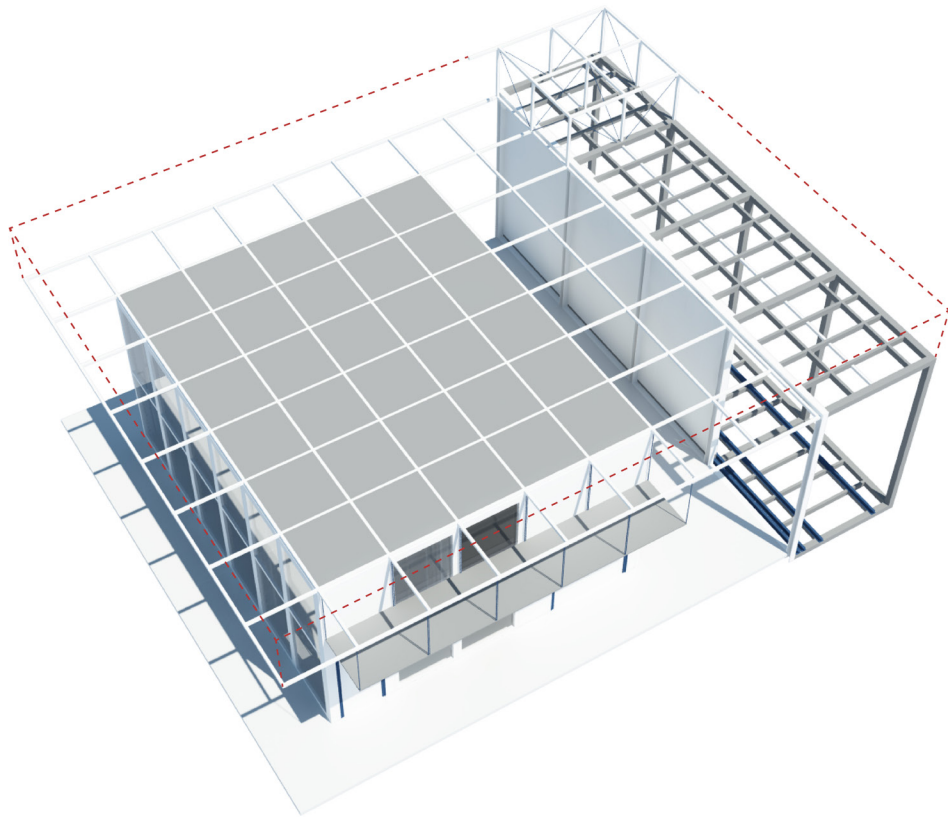
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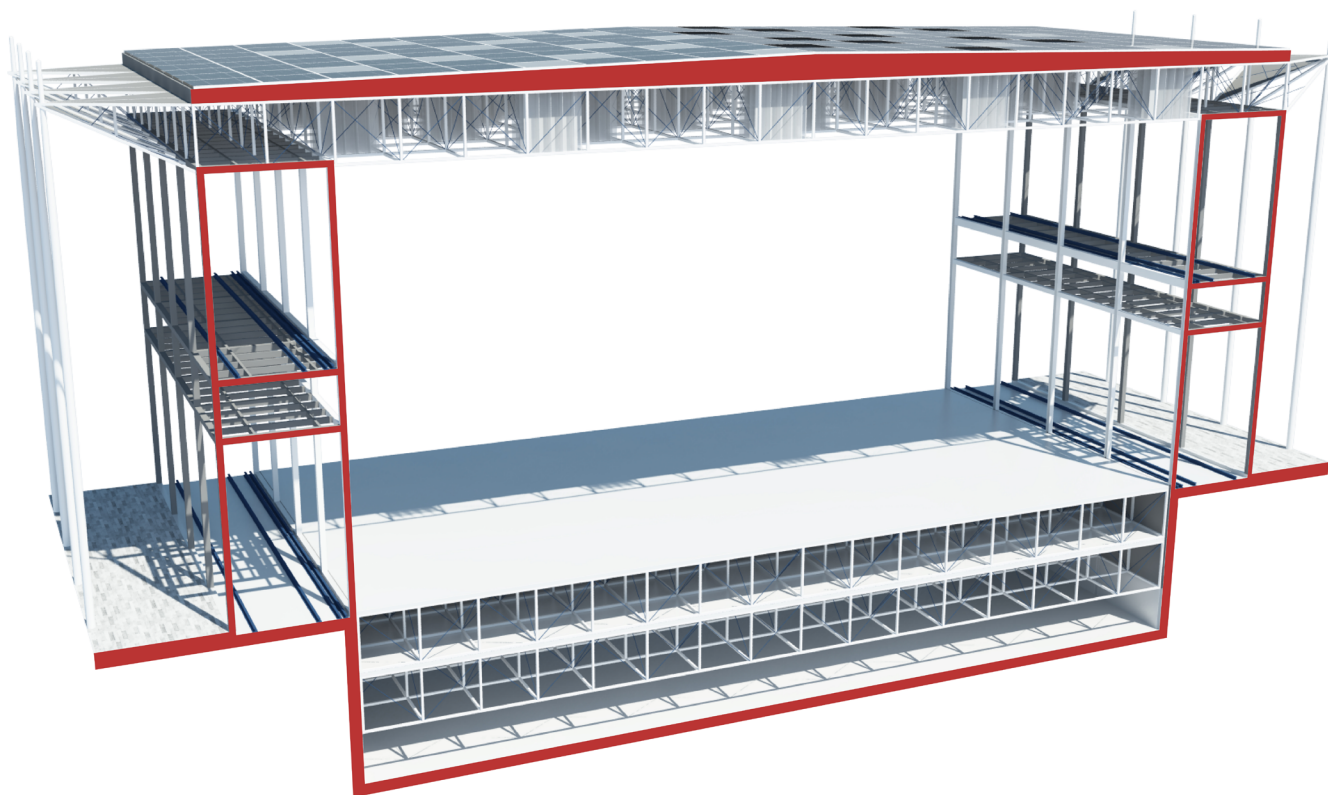
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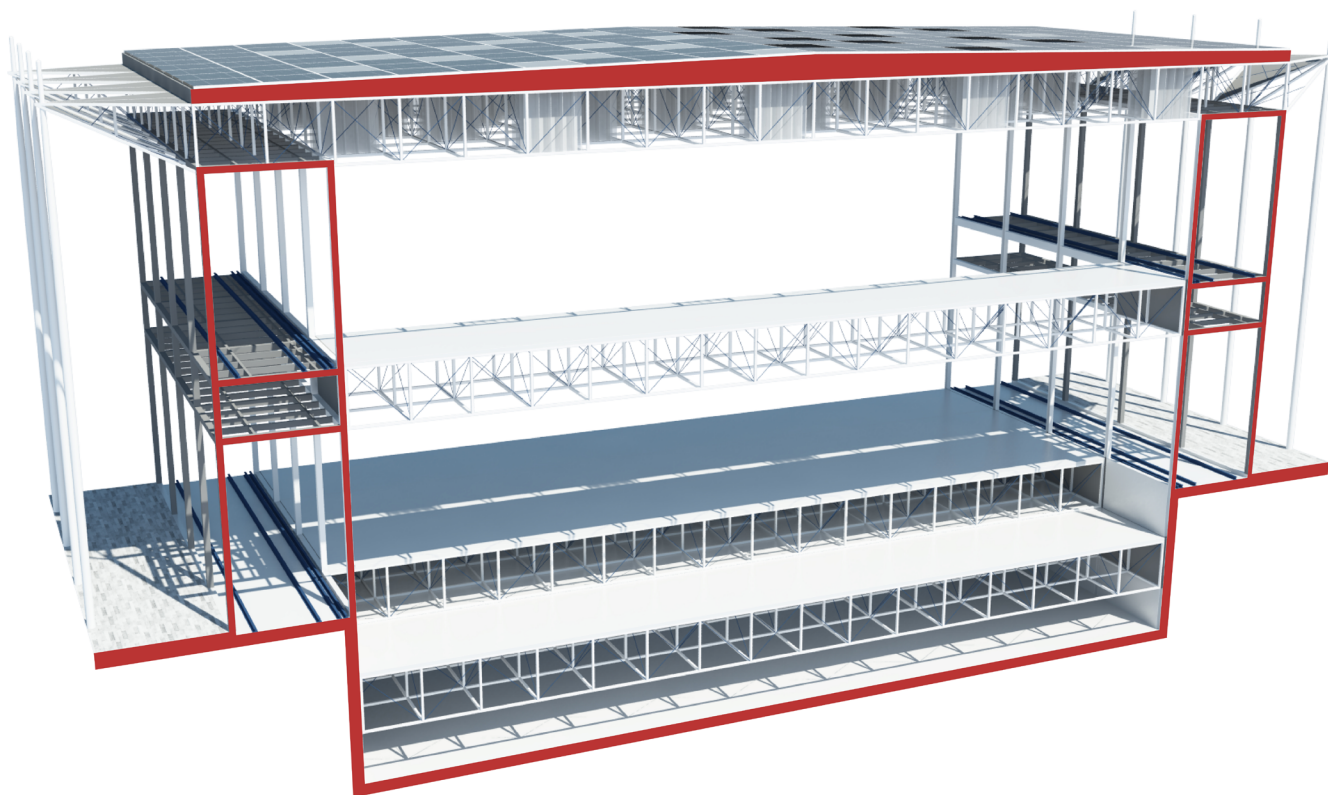
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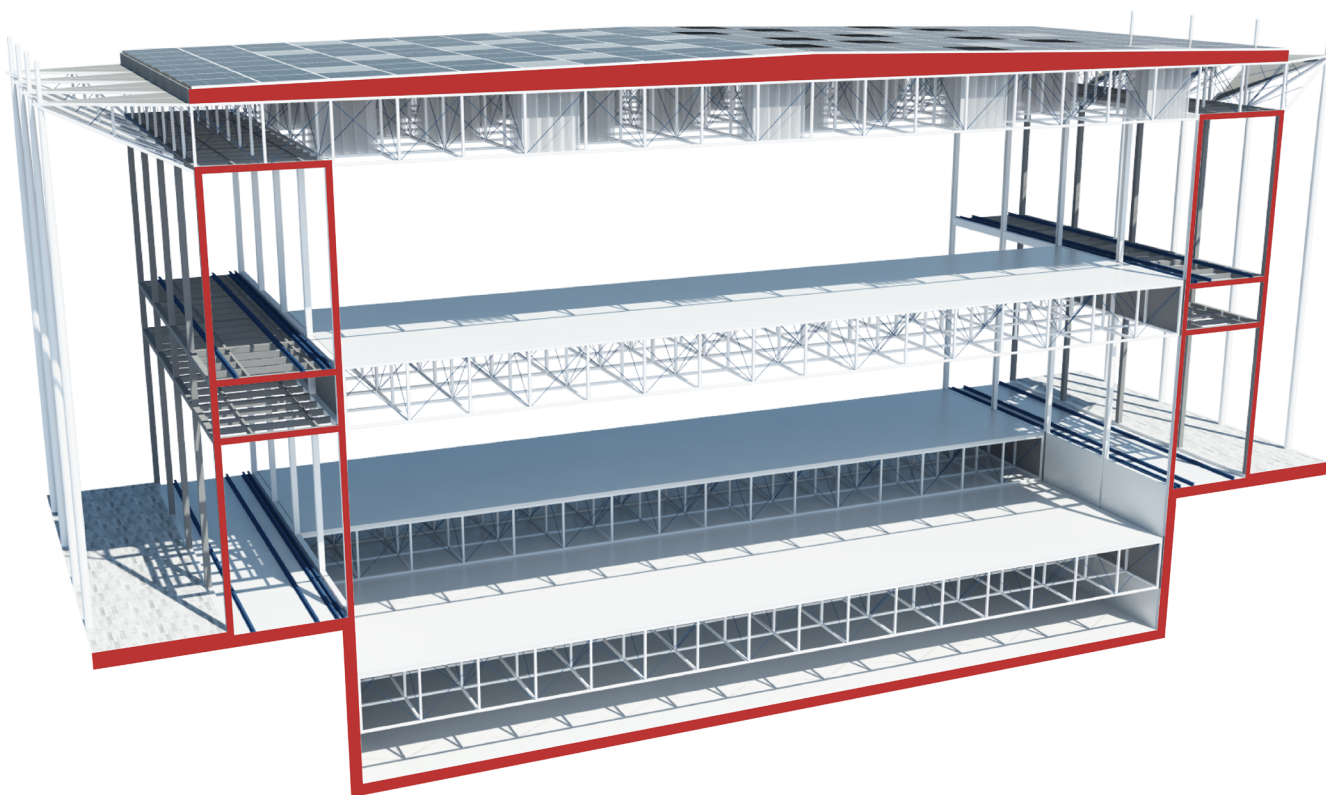
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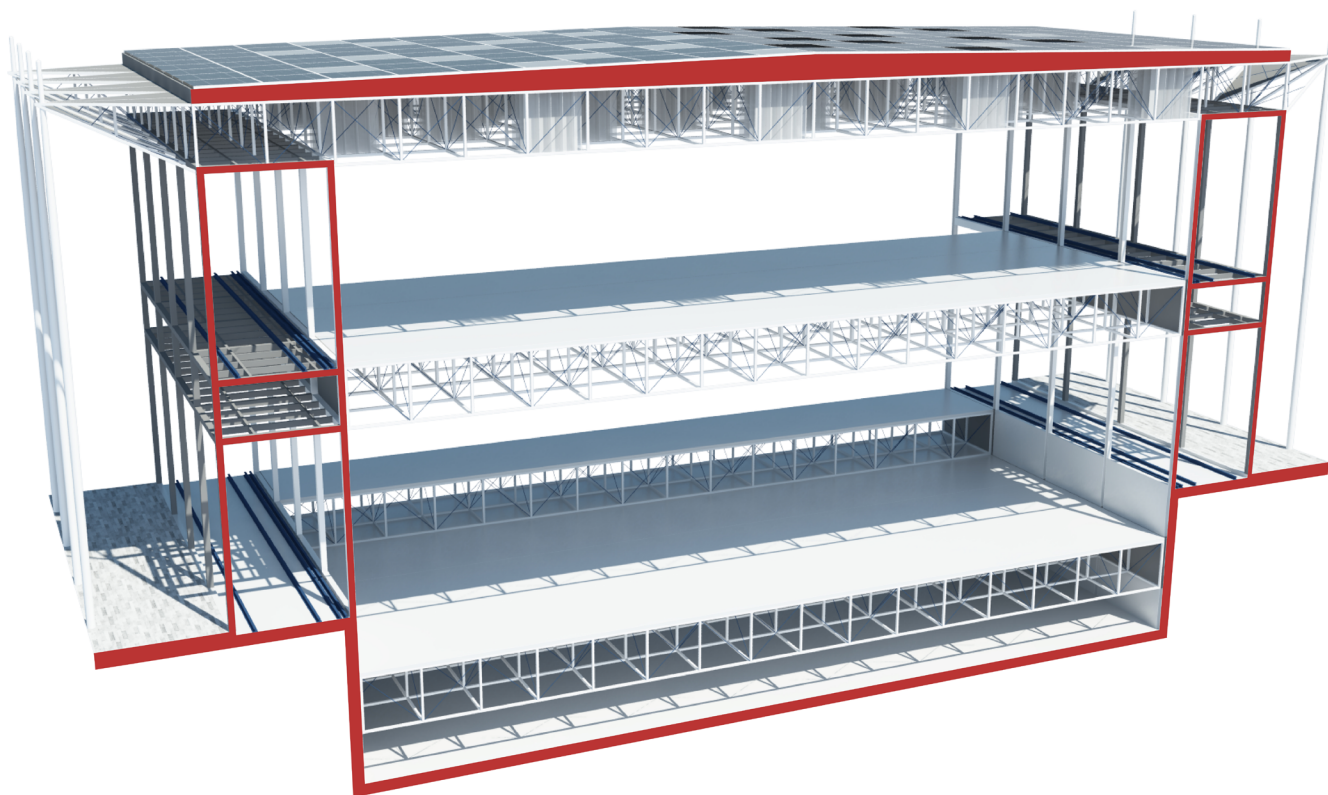
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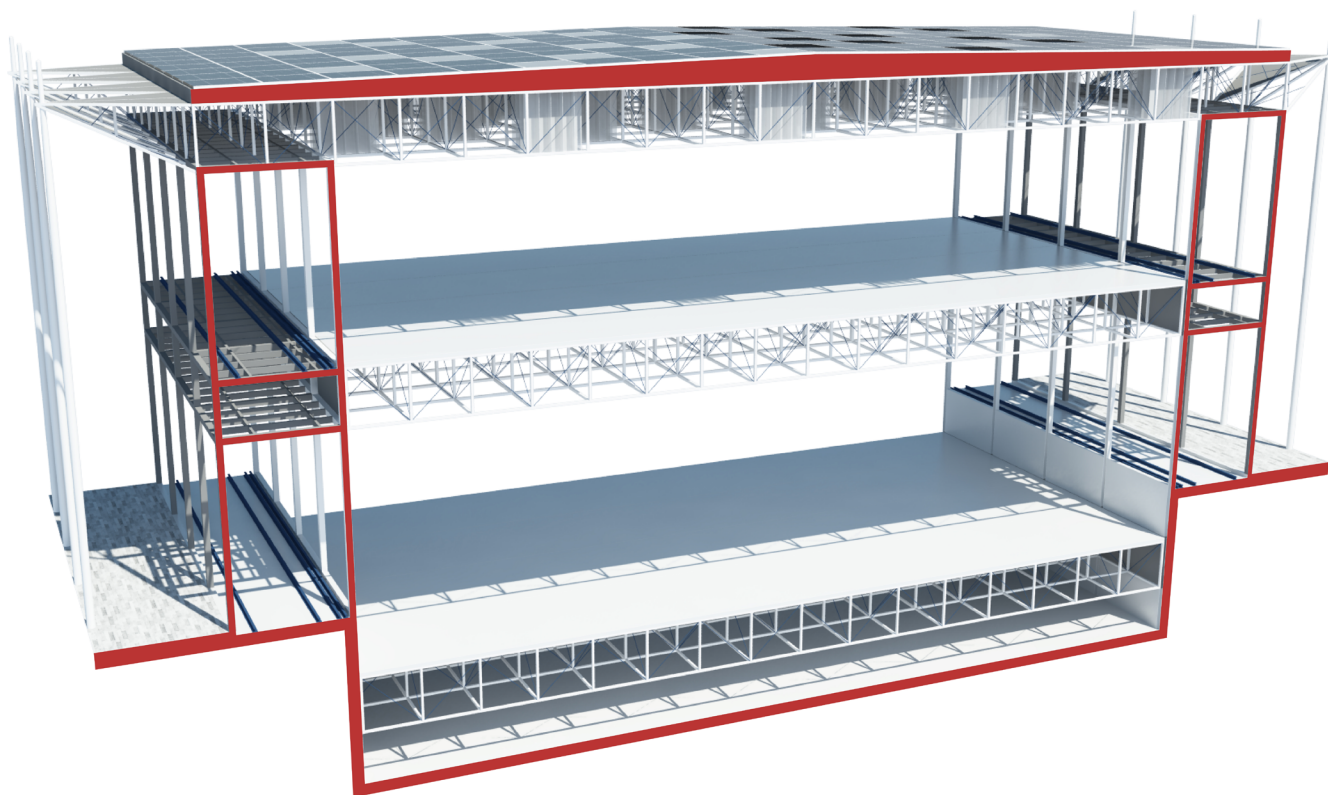
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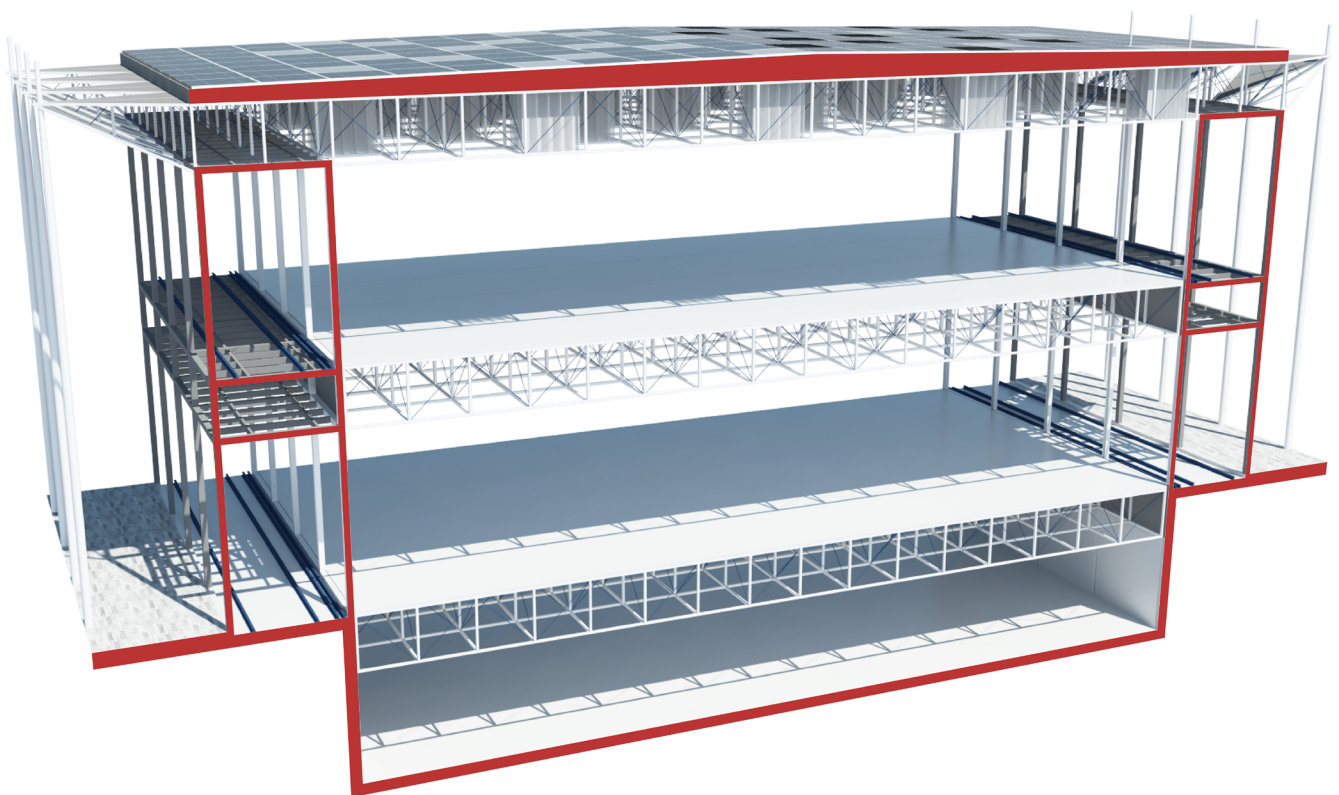
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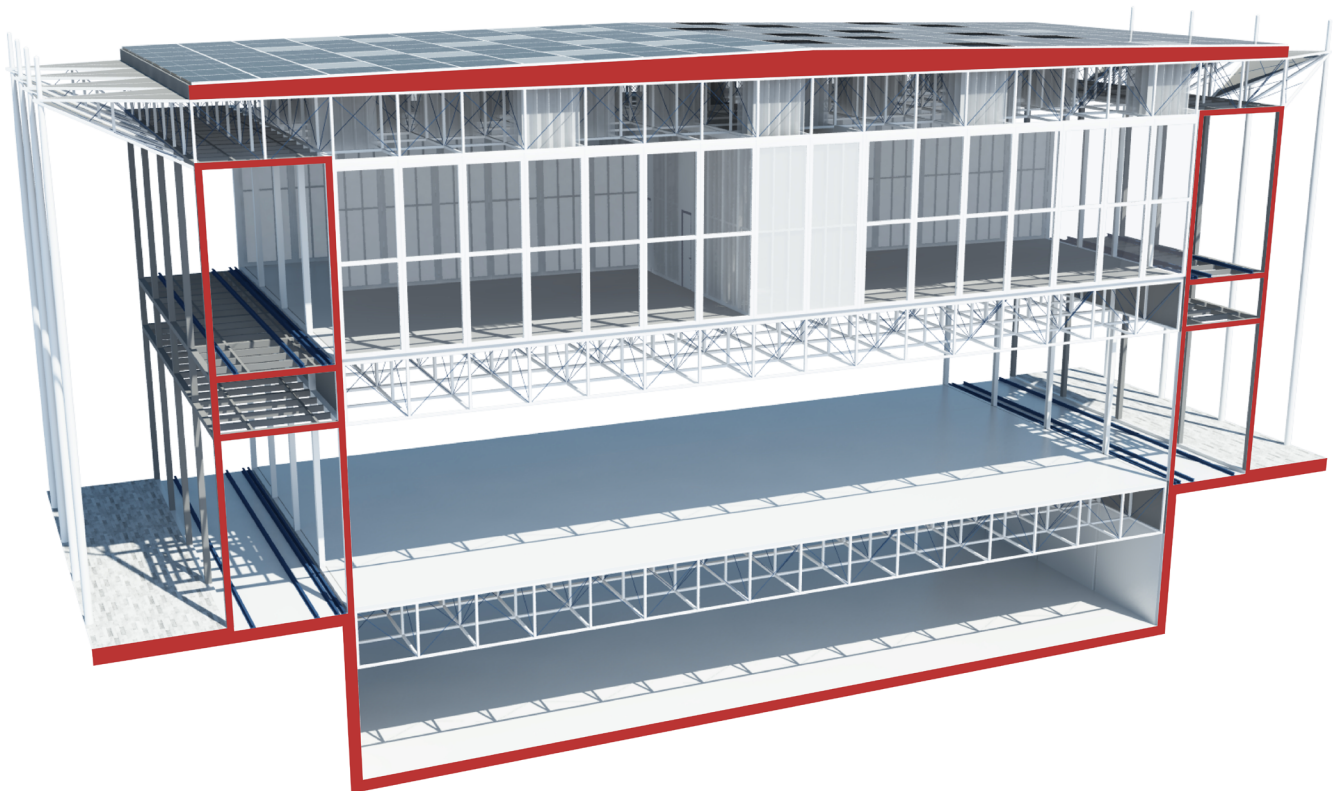
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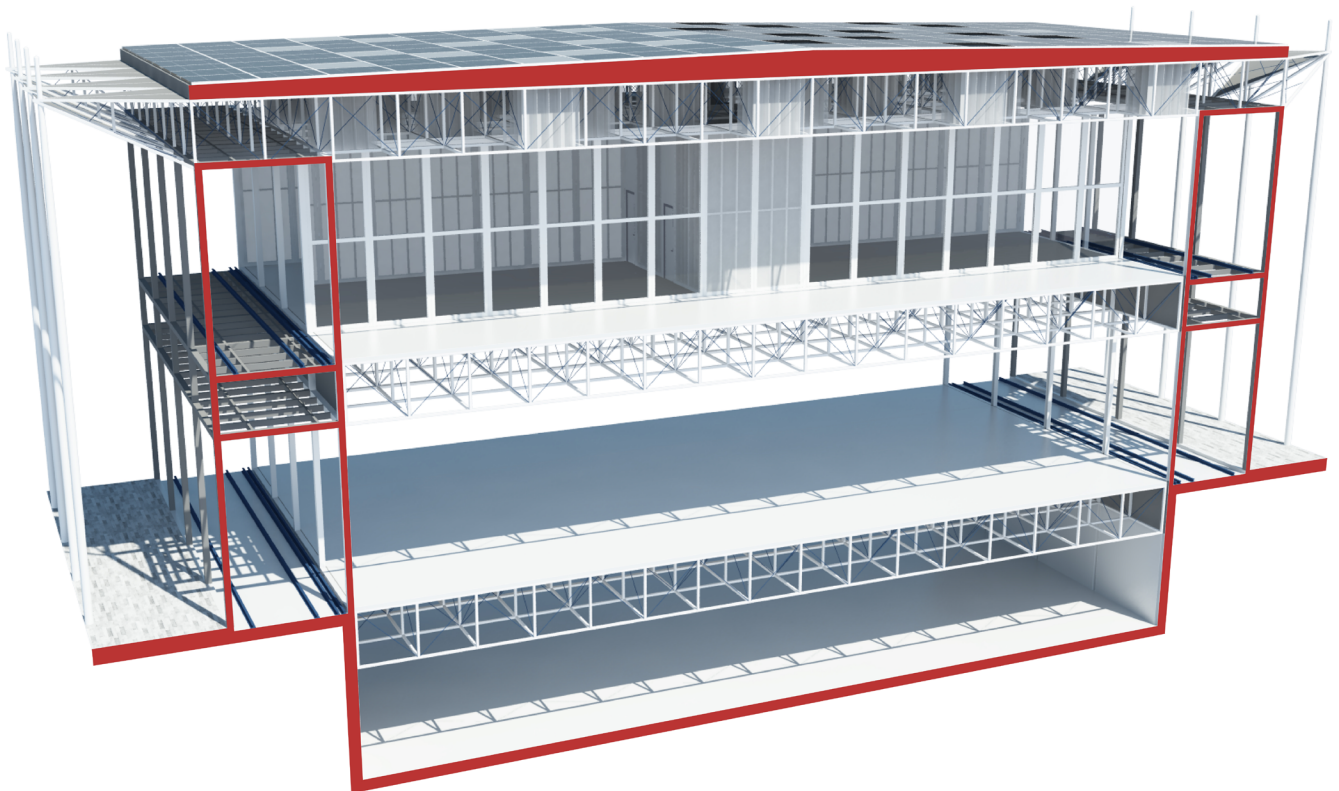
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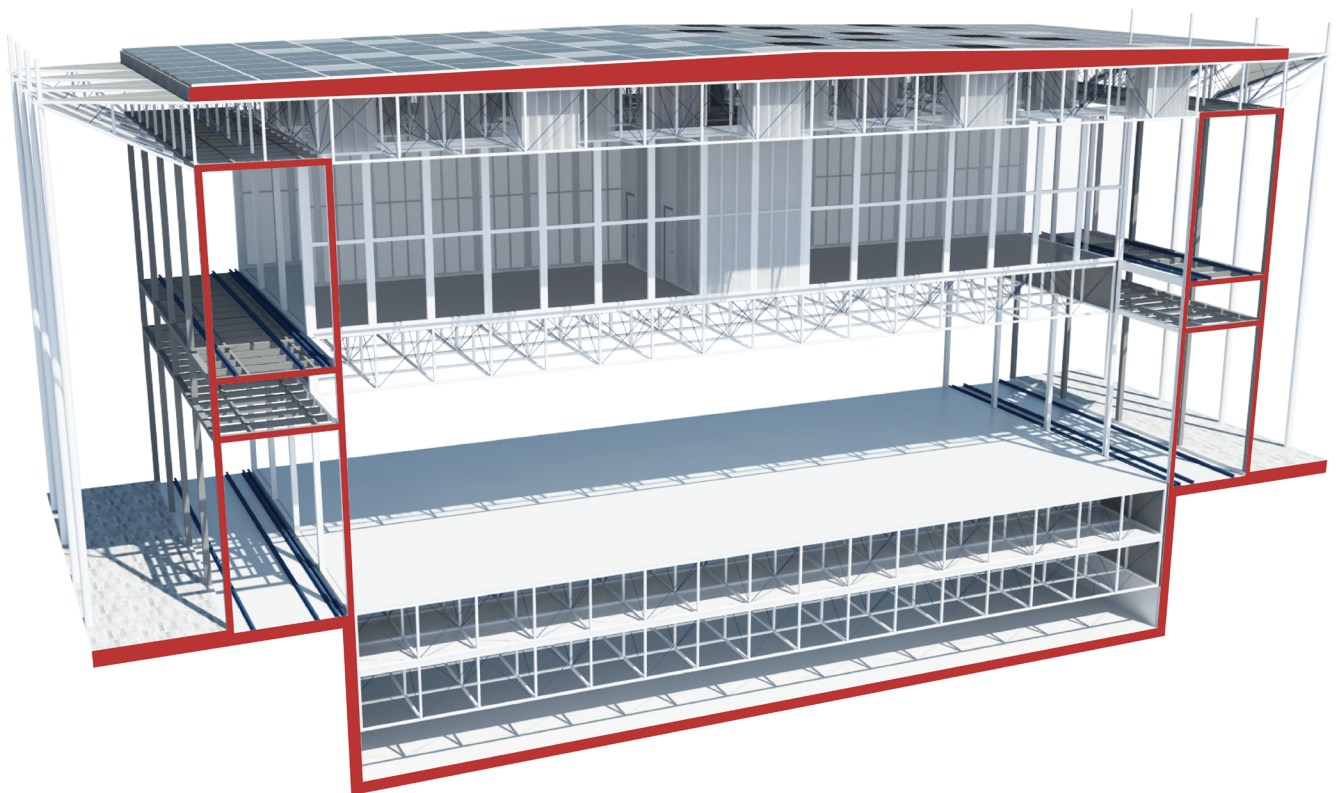
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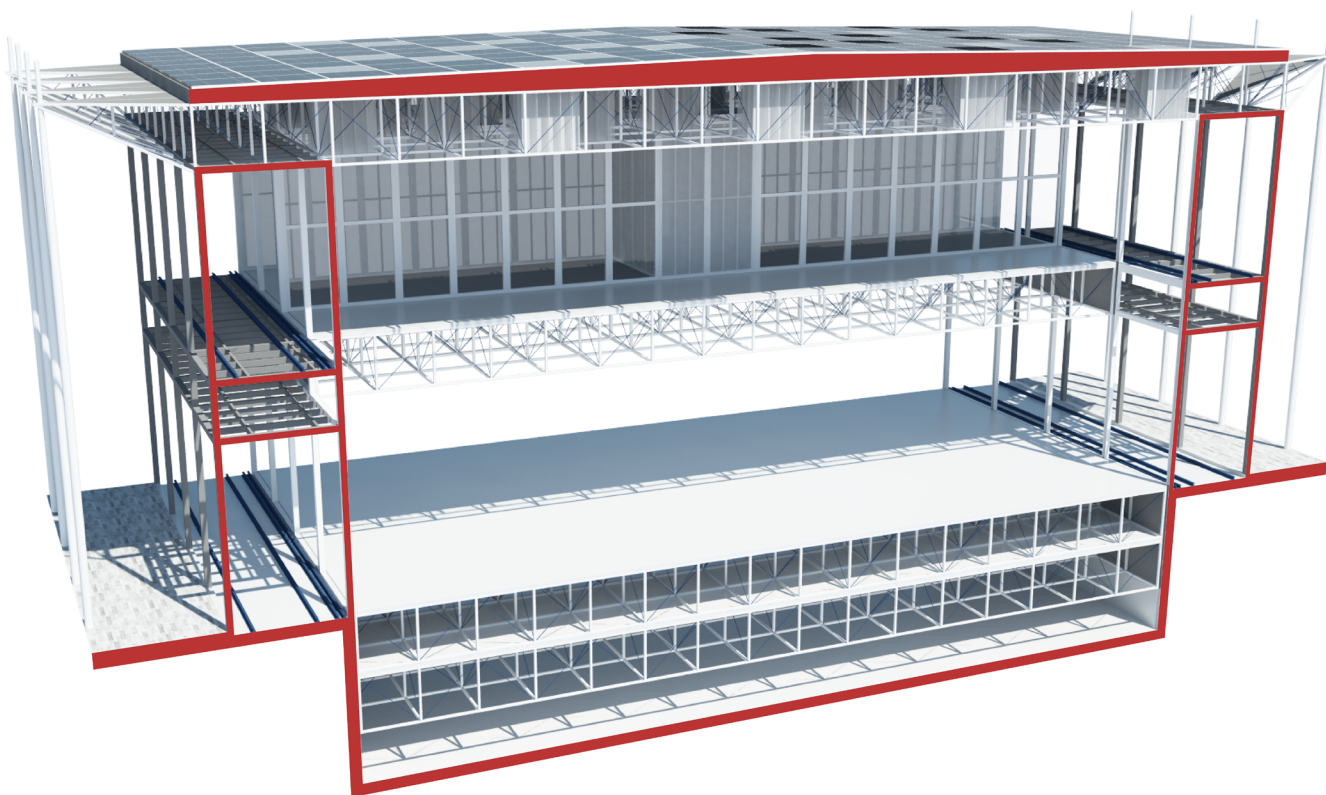
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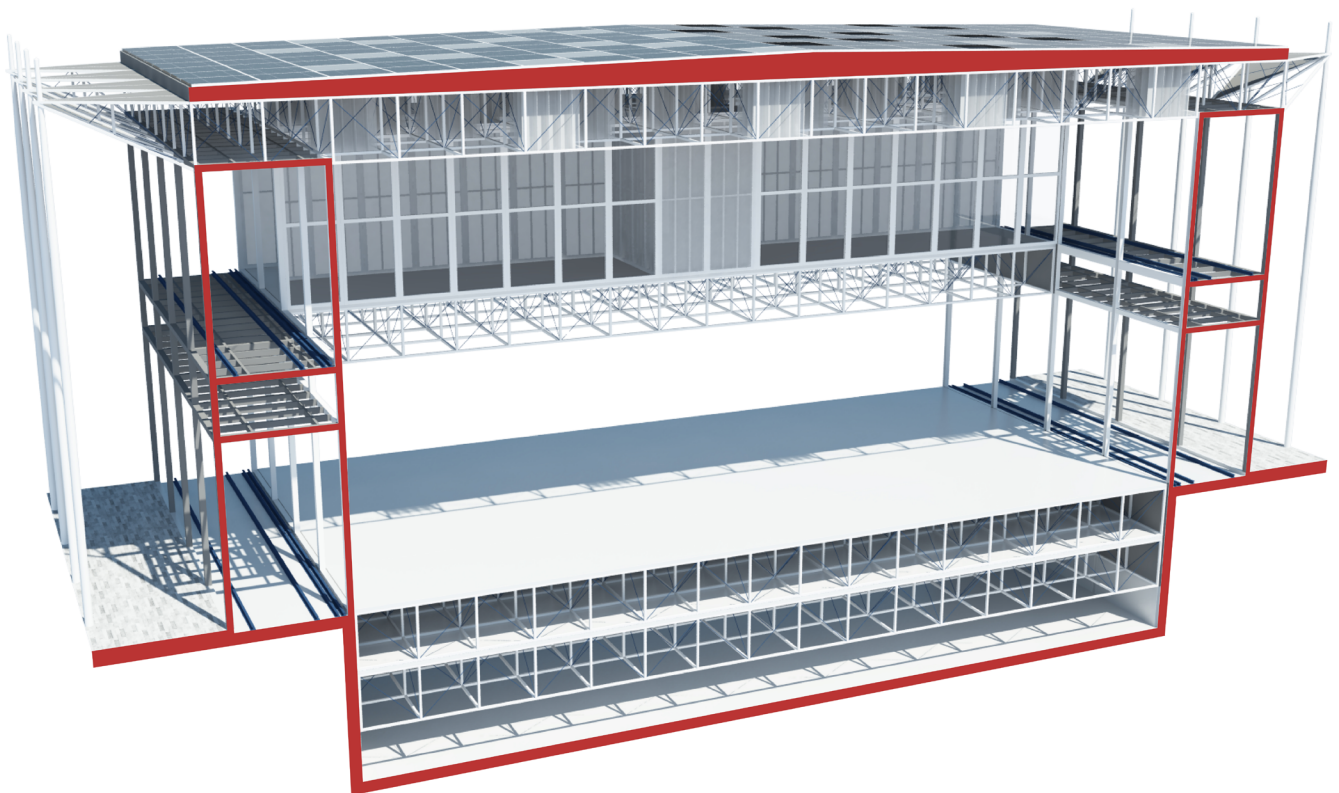
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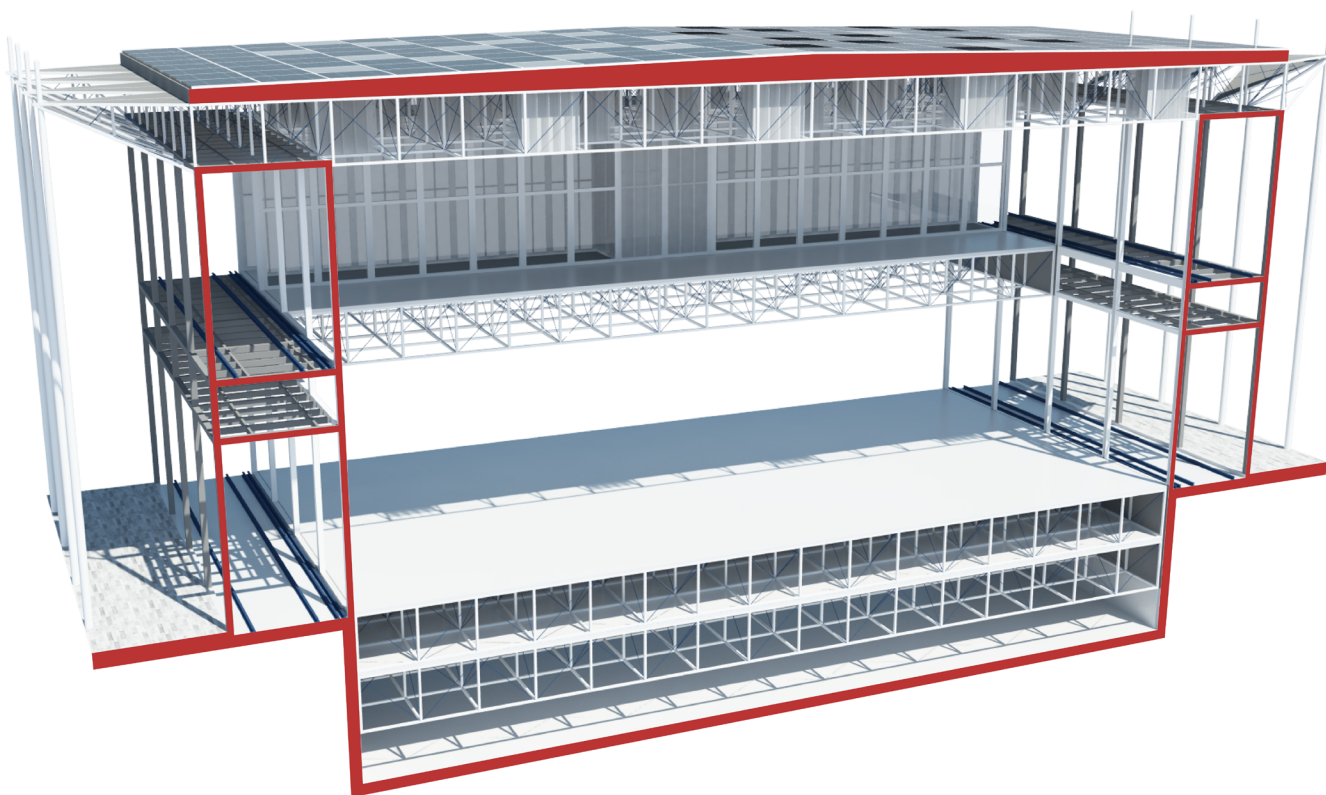
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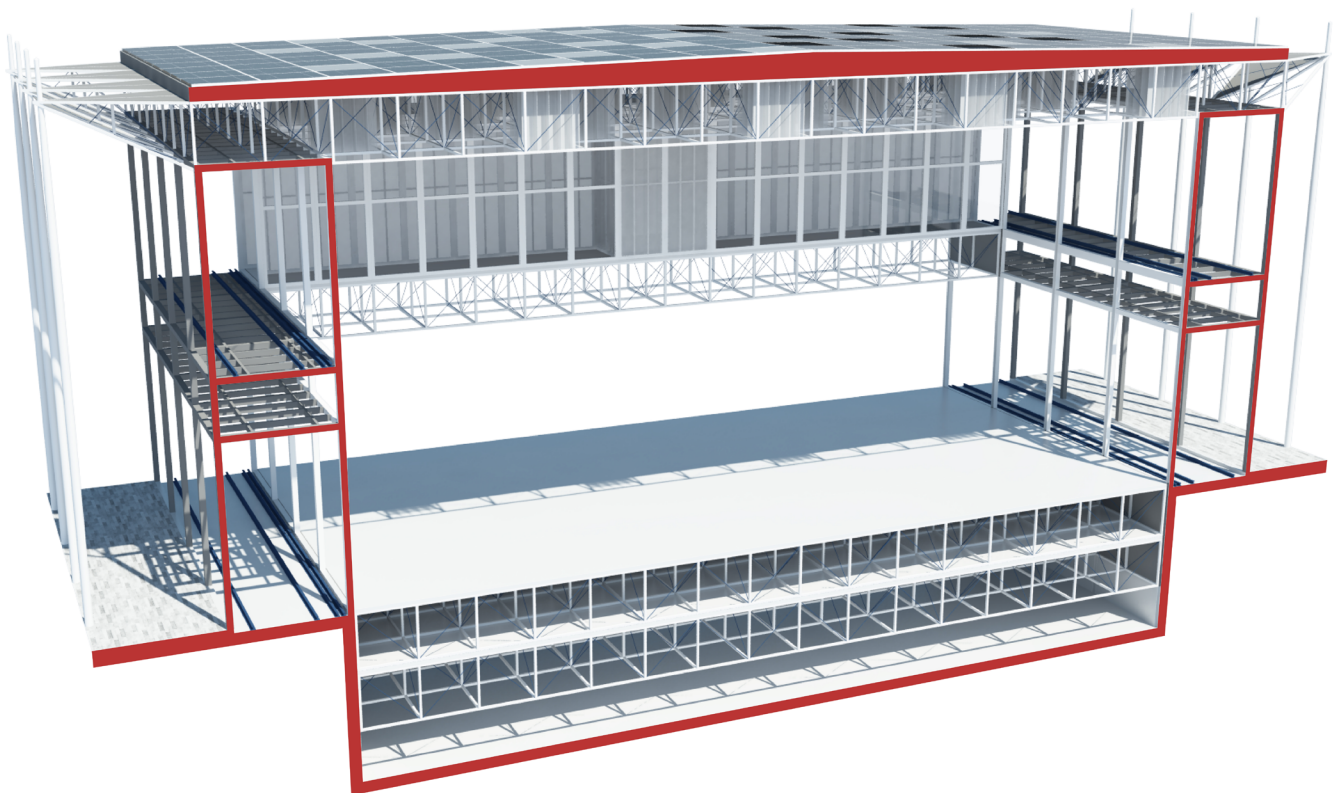
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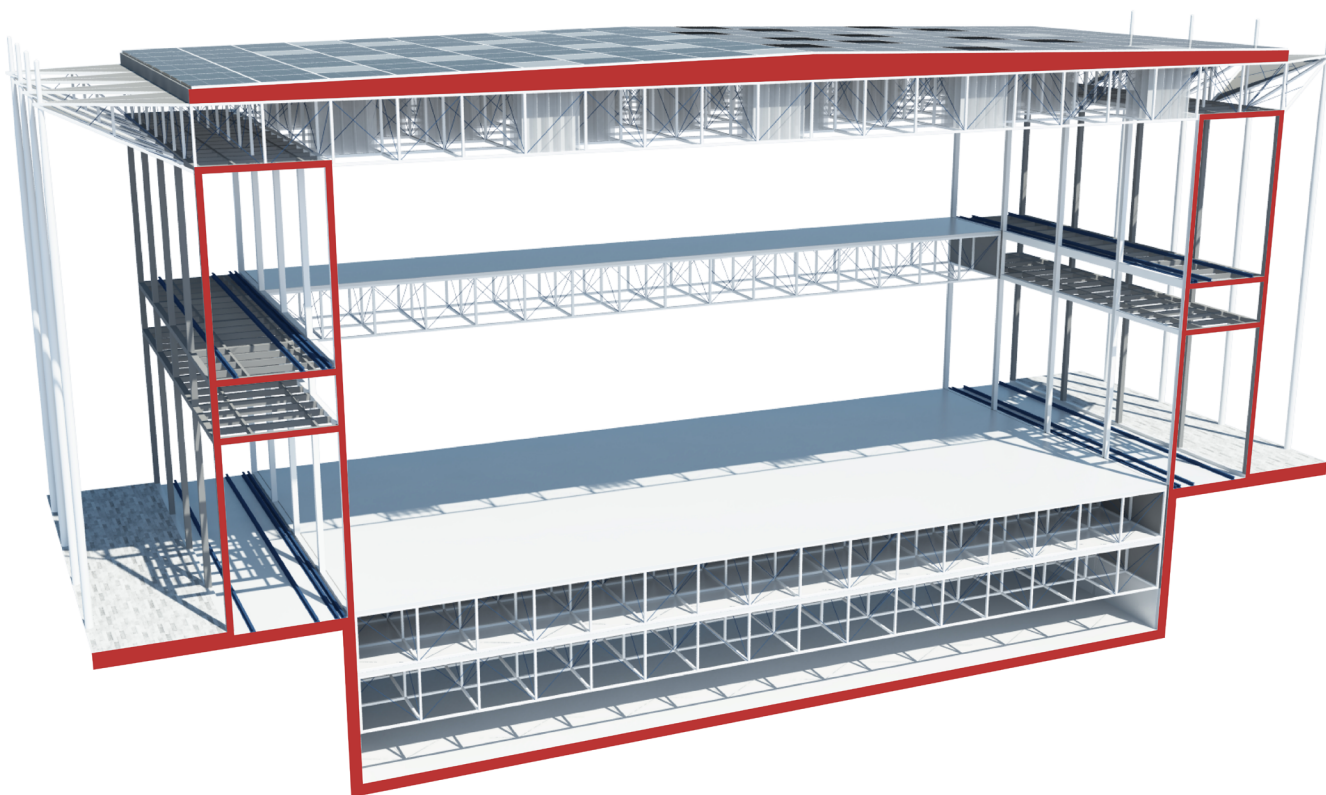
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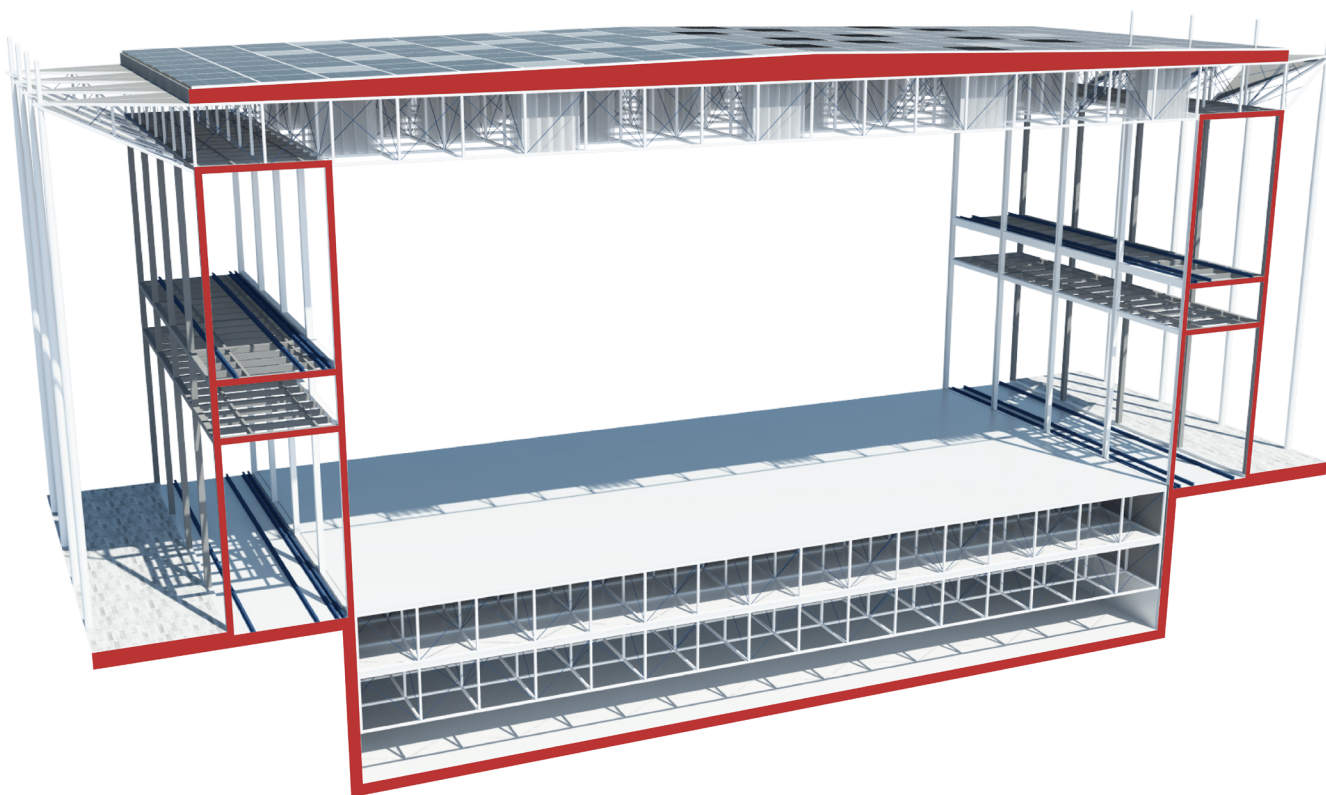
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floors



floors



Attachment 1

data book

datasets

6 cities

+

site selection

Contents

6 cities

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- phoenix	→ 178-191

site selection

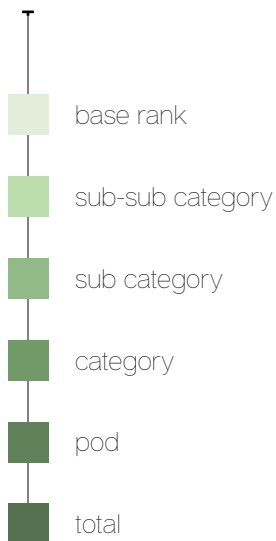
- site selection	→ 194-248
- totals	→ 249-254
- top 4	→ 255-259

6 cities
dataset

Key

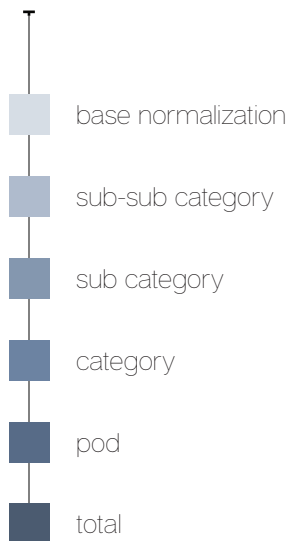
$\bar{X}$

Mean



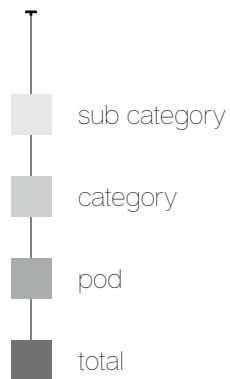
%

Percent
Normalization



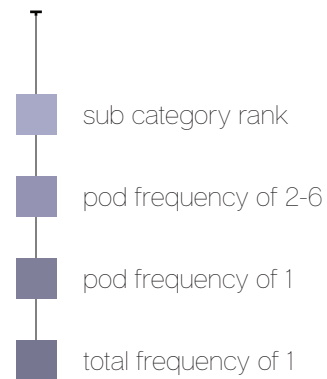
+

Sum



f

Subcategory
Frequency



general data

*data from this section does not factor into calculations

GENERAL DATA

POPULATION STATS

Study Area Populations | US Census American Community Survey (ACS) | All | 2016

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
city name	seattle	san diego	phoenix	sacramento	denver	salt lake city
city population	668,849	1,374,812	1,555,324	484,530	663,303	191,446
metro name*	seattle-tacoma-bellevue	san diego-carlsbad	phoenix-mesa-scottsdale	sacramento-roseville-arden/arcade	denver-aurora-lakewood	salt lake city
metro population	3,671,095	3,253,356	4,486,153	2,242,542	2,752,056	1,154,504
county name	king	san diego	maricopa	sacramento	denver	salt lake
county population	2,079,550	3,253,356	4,088,549	1,479,300	663,303	1,092,518
state name	washington	california	arizona	california	colorado	utah
state population	7,073,146	38,654,206	6,728,577	38,654,206	5,359,295	2,948,427

*data was collected with a focus on metro data

General Population Stats | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
median age (years)	37.1	35.3	36	36.9	36.2	32.1
male (%)	49.90	50.26	49.69	48.93	49.80	50.25
female (%)	50.10	49.74	50.31	51.07	50.20	49.75
veteran (%)	8.8	9.4	8.8	8	7.9	5.9
average household size	2.55	2.91	2.77	2.76	2.58	3.03
average family size	3.13	3.48	3.38	3.36	3.21	3.58

RACE

Race | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac- Bellevue	San Diego- Carlsbad	Phoenix-Mesa- Scottsdale	Sacramento- Roseville	Denver-Aurora- Lakewood	Salt Lake City Metro
one race (%)	93.7	95.1	96.7	93.9	96.6	97.2
2+ races (%)	6.3	4.9	3.3	6.1	3.4	2.8
white (%)	71.1	71	78.7	66.2	81.9	81.7
black/african american (%)	5.6	5	5.2	7.1	5.6	1.6
american indian/alaska native (%)	0.9	0.7	2.2	0.7	0.8	0.7
american indian/alaska native - cherokee (%)	0	0	0	0.1	0.1	0
american indian/alaska native - chippewa (%)	0	0	0	0	0	0
american indian/alaska native - navajo (%)	0	0	0.7	0	0.1	0.4
american indian/alaska native - sioux (%)	0	0	0	0	0.1	0
asian (%)	12.4	11.6	3.7	12.7	3.9	3.6
asian - asian indian (%)	2.1	1	0.9	1.9	0.7	0.5
asian - chinese (%)	2.8	1.9	0.7	2.8	0.7	0.8
asian - filipino (%)	1.9	4.8	0.7	2.5	0.3	0.3
asian - japanese (%)	0.8	0.6	0.1	0.6	0.3	0.3
asian - korean (%)	1.4	0.7	0.2	0.5	0.5	0.3
asian - vietnamese (%)	1.6	1.5	0.5	1.3	0.7	0.5
asian - other asian (%)	1.8	1.1	0.5	3	0.8	1
native hawaiian/pacific islander (%)	0.9	0.5	0.2	0.8	0.1	1.5
native hawaiian/pacific islander - native hawaiian (%)	0.1	0.1	0.1	0.1	0	0.1
native hawaiian/pacific islander - guamanian of chamorro (%)	0.2	0.2	0	0.1	0	0
native hawaiian/pacific islander - samoan (%)	0.3	0.1	0	0.1	0	0.5
native hawaiian/pacific islander - other pacific islander (%)	0.3	0.1	0.1	0.6	0	0.9
other race (%)	3	6.4	6.7	6.4	4.2	8
2+ races (%)	6.3	4.9	3.3	6.1	3.4	2.8
2+ races - white and black/african american (%)	1.3	0.7	0.7	1.2	0.7	0.5
2+ races - white and american indian/alaska native (%)	1	0.6	0.6	1	0.7	0.5
2+ races - white and asian (%)	2	1.7	0.7	1.6	0.8	0.7
2+ races - black/african american and american indian/alaska native (%)	0.2	0.1	0.1	0.1	0.1	0

	Seattle-Tac- Bellevue	San Diego- Carlsbad	Phoenix-Mesa- Scottsdale	Sacramento- Roseville	Denver-Aurora- Lakewood	Salt Lake City Metro
hispanic/latino (%)	9.6	33.1	30.2	21	22.8	17.4
hispanic/latino - mexican (%)	6.8	29.5	26.9	17.4	17.7	13.1
hispanic/latino - puerto rican (%)	0.5	0.7	0.6	0.6	0.5	0.4
hispanic/latino - cuban (%)	0.1	0.2	0.2	0.1	0.2	0.1
hispanic/latino - other hispanic/latino (%)	2.1	2.6	2.4	2.9	4.4	3.9
not hispanic/latino (%)	90.4	66.9	69.8	79	77.2	82.6
not hispanic/latino - white alone (%)	65.7	46.7	57	53.8	64.9	73.2
not hispanic/latino - black/african american (%)	5.4	4.7	5	6.8	5.4	1.5
not hispanic/latino - american indian/alaska native (%)	0.7	0.4	1.8	0.4	0.4	0.6
not hispanic/latino - asian (%)	12.3	11.3	3.6	12.5	3.8	3.6
not hispanic/latino - native hawaiian/pacific island (%)	0.8	0.4	0.2	0.7	0.1	1.4
not hispanic/latino - some other race alone (%)	0.2	0.2	0.1	0.3	0.2	0.2
not hispanic/latino - 2+ races (%)	5.3	3.2	2.1	4.4	2.3	2.1

CITIZENSHIP

Citizenship | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
native (%)	81.83	75.95	85.50	81.76	87.85	87.97
foreign born (%)	18.17	24.05	14.50	18.24	12.15	12.03
foreign born, citizen (%)	9.03	12.43	5.93	10.32	4.85	4.10
foreign born, not a citizen (%)	9.14	11.62	8.57	7.92	7.30	7.93
entered 2010 or later (%)	23.8	15.8	16.9	16.3	18.9	23.1
entered 2000-2009 (%)	29.9	23.1	25.8	24.1	28.7	32
entered before 2000 (%)	46.3	61.1	57.3	59.6	52.3	44.9
foreign born in europe (%)	13.9	7	8.8	14.8	10.8	10.8
foreign born in asia (%)	52.1	38.5	23.3	45.9	26.9	25.2
foreign born in africa (%)	8.4	2.7	3.7	2.8	7.4	4.2
foreign born in oceania (%)	2.4	0.5	0.7	3.3	0.9	3.4
foreign born in latin america (%)	19.6	50	58.4	32.2	51.4	55
foreign born in northern america (%)	3.6	1.4	5	1.1	2.6	1.5

LANGUAGE

Language Spoken at Home | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
speak english only (%)	77.7	62.5	74.1	72.1	79.9	80.3
speak other language (%)	22.3	37.5	25.9	27.9	20.1	19.7
spanish (%)	6.4	24.7	20.1	12.5	13.6	12.8
indo-european (%)	5.3	3.2	2.2	6.5	2.7	2.8
asian/pacific island (%)	9	8.1	2.4	8.1	2.7	3.4
other language (%)	1.7	1.6	1.3	0.8	1.2	0.8

RELIGION

Religious Membership | Association of Religion Data Archives (ARDA) | Metro | 2010

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
evangelical protestant	410,918	302,320	554,967	244,699	281,300	28,747
evangelical protestant (%)	11.95	9.77	13.24	11.39	11.31	2.64
black protestant	12,253	10,857	6,647	12,585	9,714	1,302
black protestant (%)	0.36	0.35	0.16	0.59	0.39	0.12
mainline protestant	161,354	74,992	110,014	48,195	115,244	13,082
mainline protestant (%)	4.69	2.42	2.62	2.24	4.63	1.20
orthodox	14,805	7,828	13,579	6,740	8,682	5,352
orthodox (%)	0.43	0.25	0.32	0.31	0.35	0.49
catholic	423,291	801,850	559,919	347,723	408,253	95,048
catholic (%)	12.31	25.91	13.35	16.18	16.41	8.74
other	203,429	161,530	327,968	124,738	117,086	661,702
other (%)	5.91	5.22	7.82	5.80	4.71	60.83
unclaimed	2,213,759	1,735,936	2,619,793	1,364,447	1,547,314	282,640
unclaimed (%)	64.36	56.08	62.48	63.49	62.20	25.98
total population	3,439,809	3,095,313	4,192,887	2,149,127	2,487,593	1,087,873

Religious Service | Gallup | State | 2014

	Washington	California	Arizona	California	Colorado	Utah
weekly (%)	24	28	33	28	25	51
rank (out of 50)	45	36	21	36	42	1
nearly weekly/monthly (%)	17	19	18	19	19	13
seldom/never (%)	58	51	48	51	55	35
don't know (%)	2	2	1	2	1	1

BACHELOR'S DEGREES

Bachelors Degrees | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
total population with bachelor's degrees (25+)	1,110,279	835,451	954,593	504,755	831,258	243,870
science/engineering (%)	43.98	42.04	31.87	40.43	37.98	35.53
science/engineering - computers, math, stats (%)	7.36	5.24	4.20	3.67	4.76	4.69
science/engineering - biology, agriculture, environmental science (%)	6.57	7.36	4.85	8.11	6.41	5.68
science/engineering - physical/related science (%)	3.13	3.57	2.72	3.04	3.52	3.75
science/engineering - psychology (%)	4.85	5.29	4.56	5.24	5.41	4.52
science/engineering - social science (%)	9.45	9.05	6.47	11.49	8.14	8.94
science/engineering - engineering (%)	11.59	10.68	8.24	8.17	8.56	7.06
science/engineering - multidiscipline (%)	1.03	0.84	0.82	0.71	1.17	0.90
science/engineering related fields (%)	8.07	7.94	10.49	8.15	7.84	9.05
business (%)	16.45	19.58	23.16	18.93	22.36	19.46
education (%)	8.02	7.55	13.97	6.88	8.26	11.34
arts/humanities/other (%)	23.48	22.89	20.52	25.61	23.55	24.62
arts/humanities/other - lit/languages (%)	5.09	4.17	2.97	4.34	4.36	5.67
arts/humanities/other - liberal arts/history (%)	5.29	5.09	4.00	5.73	4.52	3.50
arts/humanities/other - visual/performing arts (%)	4.93	4.28	3.57	3.48	3.93	4.54
arts/humanities/other - communications (%)	3.89	4.10	4.33	4.71	5.19	4.97
arts/humanities/other - other (%)	4.27	5.24	5.64	7.35	5.56	5.94

OCCUPATIONS + EMPLOYMENT

Occupations | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
civilian employed population 16+ y/o	1,861,117	1,495,776	2,012,104	989,385	1,448,036	576,943
management, business, science, and arts occupations (%)	44.24	40.96	36.48	39.71	42.66	37.89
a. management, business, and financial occupations (%)	17.98	16.31	15.58	16.01	18.98	15.90
a1. management occupations (%)	12.12	10.79	10.06	9.90	12.45	10.55
a2. business and financial operations occupations (%)	5.86	5.52	5.52	6.11	6.53	5.35
b. computer, engineering, and science occupations (%)	10.37	8.16	5.68	7.18	8.04	6.69
b1. computer and mathematical occupations (%)	6.22	3.60	3.14	3.78	4.43	3.58
b2. architecture and engineering occupations (%)	3.11	2.97	2.00	2.11	2.58	2.00
b3. life, physical, and social science occupations (%)	1.04	1.60	0.54	1.29	1.03	1.11
c. education, legal, community service, arts, and media occupations (%)	10.65	11.15	9.69	10.88	10.52	10.33
c1. community and social services occupations (%)	1.55	1.50	1.66	1.74	1.55	1.25
c2. legal occupations (%)	1.30	1.49	1.06	1.34	1.45	1.24
c3. education, training, and library occupations (%)	5.28	5.65	5.17	5.83	5.23	5.66
c4. arts, design, entertainment, sports, and media occupations (%)	2.52	2.50	1.80	1.96	2.29	2.18
d. healthcare practitioner and technical occupations (%)	5.24	5.33	5.54	5.64	5.13	4.97
d1. health diagnosing and treating practitioners and other technical occupations (%)	3.80	3.79	3.82	4.06	3.77	3.54
d2. health technologists and technicians (%)	1.44	1.55	1.72	1.58	1.36	1.43
service occupations (%)	16.24	19.56	18.61	18.85	16.17	14.95
a. healthcare support occupations (%)	2.03	1.92	1.97	2.05	1.87	1.96
b. protective service occupations (%)	1.62	2.13	2.46	2.48	1.84	1.64
b1. firefighting and prevention, and other protective service workers including supervisors (%)	1.02	1.26	1.47	1.43	1.13	1.01
b2. law enforcement workers including supervisors (%)	0.60	0.88	0.99	1.05	0.71	0.63
c. food preparation and serving related occupations (%)	5.50	6.36	5.87	5.57	5.78	5.09
d. building and grounds cleaning and maintenance occupations (%)	3.11	4.38	4.33	3.80	3.37	3.69
e. personal care and service occupations (%)	3.99	4.77	3.97	4.95	3.32	2.58
sales and office occupations (%)	21.75	23.26	26.63	24.92	24.13	27.17
a. sales and related occupations (%)	9.91	11.10	11.93	10.91	11.36	11.19
b. office and administrative support occupations (%)	11.85	12.16	14.70	14.01	12.76	15.98
natural resources, construction, and maintenance occupations (%)	7.54	7.70	8.58	7.95	8.44	8.03
a. farming, fishing, and forestry occupations (%)	0.37	0.59	0.38	0.63	0.22	0.11
b. construction and extraction occupations (%)	4.23	4.39	4.89	4.46	5.58	5.02
c. installation, maintenance, and repair occupations (%)	2.94	2.72	3.31	2.85	2.64	2.90
production, transportation, and material moving occupations (%)	10.23	8.52	9.69	8.57	8.60	11.96
a. production occupations (%)	4.77	4.11	4.22	3.30	3.44	6.24
b. transportation occupations (%)	3.27	2.77	3.30	3.20	3.29	3.16
c. material moving occupations (%)	2.19	1.64	2.18	2.07	1.87	2.57

Employment Status | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
population 16+ y/o	2,950,186	2,607,875	3,489,998	1,774,628	2,165,921	857,626
in labor force (%)	68	65.1	62.1	61.7	70.8	71
a. civilian labor force (%)	67.2	62.2	62	61.6	70.7	70.9
a1. employed	63.1	57.4	57.7	55.8	66.9	67.3
a2. unemployed	4.1	4.9	4.3	5.8	3.8	3.7
b. armed forces	0.7	2.9	0.1	0.1	0.1	0.1
not in labor force	32	34.9	37.9	38.3	29.2	29
unemployment rate	6.1	7.8	7	9.4	5.4	5.2

OTHER

Resemblance to US | WalletHub | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
overall rank (out of 379)	156	264	6	99	51	158
resemblance index (out of 100)	82.66	78.87	91.34	84.75	87.18	82.53
sociodemographic rank (out of 379)	97	109	11	4	56	290
housing stats rank (out of 379)	316	369	24	261	133	71
economic stats rank (out of 379)	29	17	8	87	48	100
education stats rank (out of 379)	138	99	92	195	38	232

What is your city's twin? (similar job mix) | NY Times | Metro | 2018

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
1) metro name (score - distance (mi))	boston, ma 79 - 2,482	los angeles, ca 83 - 97	denver, co 82 - 583	phoenix, az 81 - 632	dallas, tx 82 - 651	phoenix, az 77 - 497
2) metro name (score - distance (mi))	portland, or 79 - 142	boston, ma 80 - 2,571	tampa, fl 82 - 1,785	los angeles, ca 79 - 367	atlanta, ga 82 - 1,209	portland, or 77 - 637
3) metro name (score - distance (mi))	chicago, il 78 - 1,721	phoenix, az 79 - 299	dallas, tx 81 - 872	houston, tx 79 - 1,596	phoenix, az 82 - 583	denver, co 77 - 375
4) metro name (score - distance (mi))	san diego, ca 78 - 1,049	austin, tx 79 - 1,153	sacramento, ca 81 - 632	dallas, tx 79 - 1,421	austin, tx 80 - 766	kansas city, mo 77 - 928
5) metro name (score - distance (mi))	san francisco, ca 78 - 676	sacramento, ca 78 - 4,627	chicago, il 81 - 1,483	denver, co 79 - 880	los angeles, ca 80 - 829	dallas, tx 77 - 988
6) metro name (score - distance (mi))	philadelphia, pa 77 - 2,487	miami, fl 78 - 2,257	los angeles, ca 80 - 356	san antonio, tx 78 - 1,448	chicago, il 79 - 906	chicago, il 77 - 1,251
7) metro name (score - distance (mi))	baltimore, md 77 - 2,327	san fran, ca 78 - 443	miami, fl 80 - 1,965	miami, fl 78 - 2,528	kansas city, mo 79 - 557	provo, ut 76 - 29
8) metro name (score - distance (mi))	atlanta, ga 77 - 2,176	seattle, wa 78 - 1,049	atlanta, ga 80 - 1,588	kansas city, mo 78 - 1,437	tampa, fl 79 - 1,513	atlanta, ga 76 - 1,584
9) metro name (score - distance (mi))	austin, tx 77 - 1,763	chicago, il 77 - 1,713	san antonio, ca 80 - 842	atlanta, ga 78 - 1,437	portland, or 79 - 985	minneapolis, mn 82 - 660
10) metro name (score - distance (mi))	phoenix, az 76 - 1,112	philadelphia, pa 77 - 2,359	jacksonville, fl 80 - 1,792	san diego, ca 78 - 462	orlando, fl 79 - 1,545	tampa, fl 76 - 1,880
twin metro midwest	chicago, il	chicago, il	chicago, il	kansas city, mo	chicago, il	kansas city, mo
twin metro northeastern	boston, ma	boston, ma	philadelphia, pa	philadelphia, pa	philadelphia, pa	pittsburgh, pa
twin metro southern	atlanta, ga	austin, tx	tampa, fl	houston, tx	dallas, tx	dallas, tx
twin metro less populated	charlottesville, va	charlottesville, va	charlottesville, va	columbia, mo	iowa city, ia	sioux falls, sd
twin metro voted for opposite candidate in 2016 presidential election (trump/clinton)	dallas, tx (trump)	dallas, tx (trump)	denver, co (clinton)	dallas, tx (trump)	dallas, tx (trump)	dallas, tx (trump)

Digitalization of the Workforce | Brookings Institute | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
mean digital score	42.7	41	42	41.9	41.3	43
mean digital score rank (out of 100)	8	53	21	26	45	5
high digital skill jobs (%)	27.7	25.1	26.2	24.5	26.8	30
medium digital skill jobs (%)	44.7	46.5	46.7	47.6	45.5	44.4
low digital skill jobs (%)	27.6	28.5	27	27.9	27.7	25.6

Foreign Investment | Brookings Institute | Metro | 2011

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
2011 employment in foreign-owned establishments (%)	4.6	4.8	3.7	2.6	4.8	4.6
2011 employment in foreign-owned establishments rank (out of 100)	57	49	75	93	48	58
1991 employment in foreign-owned establishments (%)	3.6	3.2	3.8	1.3	4.5	4.4
1991 employment in foreign-owned establishments rank (out of 100)	59	64	47	99	36	42
change foreign-owned establishments 2011-1991 (%)	1	1.6	-0.1	1.3	0.3	0.2

safety

- crime
- traffic + pedestrian safety
- natural disasters

CRIME

VIOLENT CRIME

Violent Crime | Federal Bureau of Investigation (FBI) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
murder and nonnegligent manslaughter (per 100,000)	2.7	3.0	5.5	4.2	4.3	3.9
rape (per 100,000)	39.5	32.8	46.1	26.1	67.0	69.5
robbery (per 100,000)	109.2	83.7	112.7	120.1	86.2	103.9
aggravated assault (per 100,000)	201.7	210.8	262.6	260.7	231.5	233.2
violent crime (per 100,000)	353.2	330.4	426.9	411.0	389.0	410.5
violent crime mean	5.00	6.00	1.00	2.00	4.00	3.00
violent crime % normalization	0.83	0.77	1.00	0.96	0.91	0.96
violent crime sum	5	6	1	2	4	3
violent crime subcategory rank	5	6	1	2	4	3

PROPERTY CRIME

Property Crime | Federal Bureau of Investigation (FBI) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
burglary (per 100,000)	726.8	313.2	552.3	458.9	435.8	612.4
larceny-theft (per 100,000)	2,603.4	1,204.5	2,028.6	1,565.7	2,055.3	3,396.6
motor vehicle theft (per 100,000)	559.8	332.4	289.2	366.4	462.9	590.4
property crime (per 100,000)	3,890.0	1,850.1	2,870.1	2,391	2,954	4,599.4
property crime mean	2.00	6.00	4.00	5.00	3.00	1.00
property crime % normalization	0.85	0.40	0.62	0.52	0.64	1.00
property crime sum	2	6	4	5	3	1
property crime subcategory rank	2	6	4	5	3	1

SAFETY

Safety | Gallup | Metro | 2013

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
feel safe walking alone (%)	70.2	69.4	70.3	67.5	74.5	75.4
rank (out of 189)	90	82	92	67	146	156
safety mean	3.00	2.00	4.00	1.00	5.00	6.00
safety % normalization	0.66	0.78	0.63	1.00	-0.18	-0.33
safety sum	3	2	4	1	5	6
safety subcategory rank	3	2	4	1	5	6

POLICE SPENDING

Police Spending | WalletHub | City | 2016

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
crime rate (%)	5.69	2.78	4.73	4.93	4.33	8.13
crime rate rank (out of 104)	64	6	37	44	30	99
per-capita spending (\$)	357	313	347	402	363	346
per-capita spending rank (out of 104)	50	35	47	70	55	46
return on investment rank (out of 104)	91	82	43	64	65	51
police spending mean	1.00	2.00	6.00	4.00	3.00	5.00
police spending % normalization	1.00	0.90	0.47	0.70	0.71	0.56
police spending sum	1	2	6	4	3	5
police spending subcategory rank	1	2	6	4	3	5

CRIME TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	2.75	4.00	3.75	3.00	3.75	3.75
percent normalization	0.83	0.71	0.68	0.80	0.52	0.55
sum	11	16	15	12	15	15

TRAFFIC + PEDESTRIAN SAFETY

TRAFFIC SAFETY

Traffic Safety | National Highway Traffic Safety Administration (NHTSA) | County | 2016

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
alcohol-impaired driving fatalities	25	77	124	52	18	10
alcohol-impaired driving fatalities (per 100,000)	1.16	2.32	2.92	3.43	2.6	0.89
single vehicle crash fatalities	54	149	267	89	38	41
single vehicle crash fatalities (per 100,000)	2.51	4.49	6.29	5.88	5.48	3.66
large truck involved crash fatalities	8	5	29	18	3	4
large truck involved crash fatalities (per 100,000)	0.37	0.15	0.68	1.19	0.43	0.36
speeding involved crash fatalities	30	75	137	55	22	13
speeding involved crash fatalities (per 100,000)	1.4	2.26	3.23	3.63	3.17	1.16
rollover involved crash fatalities	8	41	90	27	10	6
rollover involved crash fatalities (per 100,000)	0.37	1.24	2.12	1.78	1.44	0.54
roadway departure crash fatalities	50	106	141	56	15	19
roadway departure crash fatalities (per 100,000)	2.33	3.19	3.32	3.7	2.16	1.69
intersection (or related) crash fatalities	40	48	166	46	27	24
intersection (or related) crash fatalities (per 100,000)	1.86	1.45	3.91	3.04	3.9	2.14
passenger car occupant fatalities	38	76	119	63	12	20
passenger car occupant fatalities (per 100,000)	1.77	2.29	2.8	4.16	1.73	1.78
light truck occupant fatalities	16	31	96	16	3	9
light truck occupant fatalities (per 100,000)	0.74	0.93	2.26	1.06	0.43	0.8
motorcyclist fatalities	18	52	87	21	14	14
motorcyclist fatalities (per 100,000)	0.84	1.57	2.05	1.39	2.02	1.25
pedestrian fatalities	23	71	133	45	19	21
pedestrian fatalities (per 100,000)	1.07	2.14	3.13	2.97	2.74	1.87
bicyclist fatalities	2	5	22	16	4	2
bicyclist fatalities (per 100,000)	0.09	0.15	0.52	1.06	0.58	0.18
total fatalities	100	239	483	164	54	69
total fatalities (per 100,000)	4.65	7.2	11.38	10.83	7.79	6.15
traffic safety mean	6.00	4.00	1.00	2.00	3.00	5.00
traffic safety % normalization	0.41	0.63	1.00	0.95	0.68	0.54
traffic safety sum	6	4	1	2	3	5
traffic safety subcategory rank	6	4	1	2	3	5

PEDESTRIAN SAFETY

Pedestrian Safety | Smart Growth America | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
pedestrian deaths (2005-2014)	316	559	814	375	327	125
annual pedestrian fatalities (per 100,000)	0.89	1.76	1.88	1.71	1.23	1.11
annual pedestrian fatalities rank	6	2	1	3	4	5
annual pedestrian fatalities % norm.	0.47	0.94	1.00	0.91	0.65	0.59
2011 pedestrian danger index	35.9	74.7	132.4	90.7	74.3	60.2
2014 pedestrian danger index	26.8	66	118.6	81.3	58.1	55.3
2016 pedestrian danger index	24.7	62.7	125.1	81.3	58.7	53
2016 rank (out of 104)	97	56	16	43	58	61
2016 pedestrian safety rank	6	3	1	2	4	5
2016 pedestrian safety % norm.	0.20	0.50	1.00	0.65	0.47	0.42
change in pedestrian danger index 2014 to 2016	-2.1	-3.3	6.5	0	0.6	-2.3
change in pedestrian danger index 2014 to 2016 rank	4	6	1	3	2	5
change in pedestrian danger index 2014 to 2016 % norm.	-0.32	-0.51	1.00	0.00	0.09	-0.35
pedestrian safety mean	5.33	3.67	1.00	2.67	3.33	5.00
pedestrian safety % normalization	0.12	0.31	1.00	0.52	0.41	0.22
pedestrian safety sum	16	11	3	8	10	15
pedestrian safety subcategory rank	6	4	1	2	3	5

TRAFFIC + PEDESTRIAN SAFETY TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	5.67	3.83	1.00	2.33	3.17	5.00
percent normalization	0.26	0.47	1.00	0.74	0.54	0.38
sum	22	15	4	10	13	20

NATURAL DISASTERS

NATURAL DISASTERS

Natural Disasters | Attom Data Solutions | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
earthquake risk	very high	very high	moderate	very high	very low	very high
earthquake risk index	46.38	56.12	3.4	23.24	0.89	29.55
earthquake risk rank	2	1	5	4	6	3
flood risk	very low	very low	low	moderate	very low	very low
flood risk index	0	0.76	1.3	6.42	0.23	0.32
flood risk rank	6	3	2	1	5	4
hail risk	very low	very low	very low	very low	very high	very low
hail risk index	0	0.5	0.34	0	46.55	1.68
hail risk rank	5	3	4	5	1	2
hurricane storm surge risk	very low	very low	very low	very low	very low	very low
hurricane storm surge risk index	0	0	0	0	0	0
hurricane storm surge risk rank	n/a	n/a	n/a	n/a	n/a	n/a
tornado risk	very low	very low	very low	very low	moderate	very low
tornado risk index	0.03	0	0.01	0.19	7.97	0.03
tornado risk rank	3	5	4	2	1	3
wildfire risk	very low	high	very low	moderate	very low	low
wildfire risk index	0	5.37	0.27	1.91	0	0.82
wildfire risk rank	5	1	4	2	5	3
hazard risk	very high	very high	very low	very high	very high	very high
hazard risk index	46.42	62.75	5.31	31.76	55.65	32.39
natural disasters mean	3.00	1.00	6.00	5.00	2.00	4.00
natural disasters % normalization	0.74	1.00	0.08	0.51	0.89	0.52
natural disasters sum	3	1	6	5	2	4
natural disasters subcategory rank	3	1	6	5	2	4

NATURAL DISASTERS TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.00	1.00	6.00	5.00	2.00	4.00
percent normalization	0.74	1.00	0.08	0.51	0.89	0.52
sum	3	1	6	5	2	4

SAFETY TOTAL

MEAN

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
violent crime	5.00	6.00	1.00	2.00	4.00	3.00
property crime	2.00	6.00	4.00	5.00	3.00	1.00
safety	3.00	2.00	4.00	1.00	5.00	6.00
police spending	1.00	2.00	6.00	4.00	3.00	5.00
crime	2.75	4.00	3.75	3.00	3.75	3.75
traffic safety	6.00	4.00	1.00	2.00	3.00	5.00
pedestrian safety	5.33	3.67	1.00	2.67	3.33	5.00
traffic + pedestrian safety	5.67	3.83	1.00	2.33	3.17	5.00
natural disasters	3.00	1.00	6.00	5.00	2.00	4.00
natural disasters	3.00	1.00	6.00	5.00	2.00	4.00
safety mean	3.81	2.94	3.58	3.44	2.97	4.25

PERCENT NORMALIZATION

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
violent crime	0.83	0.77	1.00	0.96	0.91	0.96
property crime	0.85	0.40	0.62	0.52	0.64	1.00
safety	0.66	0.78	0.63	1.00	-0.18	-0.33
police spending	1.00	0.90	0.47	0.70	0.71	0.56
crime	0.83	0.71	0.68	0.80	0.52	0.55
traffic safety	0.41	0.63	1.00	0.95	0.68	0.54
pedestrian safety	0.12	0.31	1.00	0.52	0.41	0.22
traffic + pedestrian safety	0.26	0.47	1.00	0.74	0.54	0.38
natural disasters	0.74	1.00	0.08	0.51	0.89	0.52
natural disasters	0.74	1.00	0.08	0.51	0.89	0.52
safety percent normalization	0.61	0.73	0.59	0.68	0.65	0.48

SUM

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
violent crime	5	6	1	2	4	3
property crime	2	6	4	5	3	1
safety	3	2	4	1	5	6
police spending	1	2	6	4	3	5
crime	11	16	15	12	15	15
traffic safety	6	4	1	2	3	5
pedestrian safety	16	11	3	8	10	15
traffic + pedestrian safety	22	15	4	10	13	20
natural disasters	3	1	6	5	2	4
natural disasters	3	1	6	5	2	4
safety sum	36	32	25	27	30	39

SUBCATEGORY FREQUENCY

		Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
crime	violent crime	5	6	1	2	4	3
	property crime	2	6	4	5	3	1
	safety	3	2	4	1	5	6
	police spending	1	2	6	4	3	5
traffic + ped. safety	traffic safety	6	4	1	2	3	5
	pedestrian safety	6	4	1	2	3	5
natural disasters	natural disaster risk	3	1	6	5	2	4
	frequency of "6"	2	2	2	0	0	1
	frequency of "5"	1	0	0	2	1	3
	frequency of "4"	0	2	2	1	1	1
	frequency of "3"	2	0	0	0	4	1
	frequency of "2"	1	2	0	3	1	0
	safety frequency of "1"	1	1	3	1	0	1
	safety subcategory sum	26	25	23	21	23	29
	crime	2.75	4.00	3.75	3.00	3.75	3.75
	traffic + pedestrian safety	6.00	4.00	1.00	2.00	3.00	5.00
	natural disasters	3.00	1.00	6.00	5.00	2.00	4.00
	safety subcategory mean	3.71	3.57	3.29	3.00	3.29	4.14

health

- physical health
- mental health
- healthy eating
- lifestyle
- health stats
- facilities + services

PHYSICAL HEALTH

PHYSICAL ACTIVITY

Exercise | Gallup | Metro | 2015/2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
regular exercise (%)	56.3	60.6	53.8	56.6	58.3	54.2
rank (out of 189)	46	13	84	43	19	73
exercise rank	3	6	1	4	5	2
exercise % norm.	0.95	0.87	1.00	0.95	0.92	0.99

Physical | Centers for Disease Control and Prevention (CDC) | City | 2015

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
poor physical health over 14 days (%)	8.5	10.4	13.3	13	10.3	10.5
poor physical health over 14 days rank	6	4	1	2	5	3
poor physical health over 14 days % norm.	0.64	0.78	1.00	0.98	0.77	0.79
no leisure time physical activity (%)	14.3	17.4	26.4	21.4	17.8	21.8
no leisure time physical activity rank	6	5	1	3	4	2
no leisure time physical activity % norm.	0.54	0.66	1.00	0.81	0.67	0.83
physical rank	6	4.5	1	2.5	4.5	2.5
physical % norm.	0.59	0.72	1.00	0.89	0.72	0.81

Activity | American College of Sports Medicine (ACSM) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
personal health rank (out of 50)	13	10	21	15	1	6
personal health score	67.5	70.8	52.9	63.1	82.7	73.6
community health rank (out of 50)	4	23	41	15	8	25
community health score	70.5	57.6	37.1	61.7	62.8	57.3
acsm overall rank (out of 50)	6	10	34	13	3	8
acsm overall score	69	64.1	44.9	62.4	72.6	65.5
acsm overall score rank	5	3	1	2	6	4
acsm overall score % norm.	0.46	0.57	1.00	0.61	0.38	0.54
physical activity in last 30 days (%)	83	71.4	78.9	73.3	84.1	82.1
physical activity in last 30 days rank	5	1	3	2	6	4
physical activity in last 30 days % norm.	0.84	1.00	0.89	0.97	0.82	0.85
meeting cdc aerobic activity guidelines (%)	31.4	33	24.6	30.3	29.2	28.3
meeting cdc aerobic activity guidelines rank	5	6	1	4	3	2
meeting cdc aerobic activity guidelines % norm.	0.72	0.66	1.00	0.77	0.81	0.85
meeting both cdc aerobic and strength guidelines (%)	20.2	24.5	18.8	25.2	22.3	19.9
meeting both cdc aerobic and strength guidelines rank	3	5	1	6	4	2
meeting both cdc aerobic and strength guidelines % norm.	0.93	0.70	1.00	0.66	0.81	0.94
activity rank	4.5	3.75	1.5	3.5	4.75	3
activity % norm.	0.74	0.73	0.97	0.75	0.71	0.80

Access to Exercise Opportunities | County Health Rankings + Roadmaps | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
access to exercise opportunities (%)	98	96	93	97	100	95
access to exercise opportunities rank	5	3	1	4	6	2
access to exercise opportunities % norm.	0.95	0.97	1.00	0.96	0.92	0.98
physical activity mean	4.63	4.31	1.13	3.50	5.06	2.38
physical activity % normalization	0.81	0.82	0.99	0.89	0.82	0.89
physical activity sum	38	33	10	27	39	21
physical activity subcategory rank	5	4	1	3	6	2

WEIGHT

Weight Stats | Centers for Disease Control and Prevention (CDC) | Metro | 2010

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
healthy weight (%)	42.3	41.2	36	40.9	43	41.8
healthy weight rank	6	3	1	2	5	4
healthy weight % norm.	0.83	0.86	1.00	0.86	0.81	0.84
overweight (%)	34.9	32.8	41.1	35.1	37.4	34.6
overweight rank	4	6	1	3	2	5
overweight % norm.	0.85	0.80	1.00	0.85	0.91	0.84
obese (%)	22.8	26.1	22.8	24	19.6	23.6
obese rank	4	1	4	2	5	3
obese % norm.	0.87	1.00	0.87	0.92	0.75	0.90
weight stats rank	4.67	3.33	2	2.33	4	4
weight stats % norm.	0.85	0.88	0.96	0.88	0.82	0.86

Obesity | Centers for Disease Control and Prevention (CDC) | City | 2015

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
obesity 18+ (%)	22.3	21.9	29.8	26.3	20.4	24.9
obesity 18+ rank	4	5	1	2	6	3
obesity 18+ % norm.	0.75	0.73	1.00	0.88	0.68	0.84

Obesity | Gallup | Metro | 2014/2015

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
obesity (%)	22.9	22.3	25.7	25.6	20	24.9
obesity rank (out of 100)	12	11	34	30	3	32
obesity rank	4	5	1	2	6	3
obesity % norm.	0.35	0.32	1.00	0.88	0.09	0.94
obesity overall rank	4	5	1	2	6	3
obesity overall % norm.	0.55	0.53	1.00	0.88	0.39	0.89
weight mean	4.33	4.17	1.50	2.17	5.00	3.50
weight % normalization	0.70	0.71	0.98	0.88	0.60	0.88
weight sum	22	20	8	11	24	18
weight subcategory rank	4	5	1	2	6	3

PHYSICAL HEALTH TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	4.48	4.24	1.31	2.83	5.03	2.94
percent normalization	0.75	0.77	0.99	0.88	0.71	0.88
sum	60	53	18	38	63	39

MENTAL HEALTH

MENTAL HEALTH + ILLNESS

Mental Health + Illness | Centers for Disease Control and Prevention (CDC) | City | 2015

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
poor mental health over 14 days (%)	10	10.9	13.4	13.1	10.9	11.6
poor mental health over 14 days rank	5	4	1	2	4	3
poor mental health over 14 days % norm.	0.75	0.81	1.00	0.98	0.81	0.87

Mental Health + Illness | SAMHSA | Metro/County | 2015/2016

	King County	San Diego County	Maricopa County	Sacramento County	Denver-Aurora-Lakewood	Salt Lake City County
serious mental illness in the past year (18+ y/o) (%)	4.36	4.11	4.08	4.08	3.81	4.97
serious mental illness in the past year rank	2	3	4	4	5	1
serious mental illness in the past year % norm.	0.88	0.83	0.82	0.82	0.77	1.00
serious mental illness in the past year (18-25 y/o) (%)	4.51	4.08	4.45	4.16	4.33	6.73
serious mental illness in the past year rank	2	6	3	5	4	1
serious mental illness in the past year % norm.	0.67	0.61	0.66	0.62	0.64	1.00
any mental illness in the past year (18+ y/o) (%)	19.72	19.25	17.92	19.4	17.45	21.08
any mental illness in the past year rank	2	4	5	3	6	1
any mental illness in the past year % norm.	0.94	0.91	0.85	0.92	0.83	1.00
any mental illness in the past year (18-25 y/o) (%)	22.52	22.22	18.53	20.46	20.09	26.35
any mental illness in the past year rank	2	3	6	4	5	1
any mental illness in the past year % norm.	0.85	0.84	0.70	0.78	0.76	1.00
mental health + illness mean	2.60	4.00	3.80	3.60	4.80	1.40
mental health + illness % normalization	0.82	0.80	0.81	0.82	0.76	0.97
mental health + illness sum	13	20	19	18	24	7
mental health + illness subcategory rank	2	3	4	3	5	1

DEPRESSION

Depression | Substance Abuse and Mental Health Services Administration (SAMHSA) | Metro/County | 2015/2016

	King County	San Diego County	Maricopa County	Sacramento County	Denver-Aurora-Lakewood	Salt Lake City County
major depressive episode in the past year (18+ y/o) (%)	7.48	6.48	7.03	6.69	6.31	7.85
major depressive episode in the past year rank	2	5	3	4	6	1
major depressive episode in the past year % norm.	0.95	0.83	0.90	0.85	0.80	1.00
major depressive episode in the past year (18-25 y/o) (%)	12.25	10.32	12.87	11.52	10.63	12.2
major depressive episode in the past year rank	2	6	1	4	5	3
major depressive episode in the past year % norm.	0.95	0.80	1.00	0.90	0.83	0.95

Depression | Gallup | Metro | 2014/2015

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
depression (%)	19.6	16.8	15.9	18.4	17.5	21
depression rank	2	5	6	3	4	1
depression % norm.	0.93	0.80	0.76	0.88	0.83	1.00
depression mean	2.00	5.33	3.33	3.67	5.00	1.67
depression % normalization	0.95	0.81	0.88	0.87	0.82	0.98
depression sum	6	16	10	11	15	5
depression subcategory rank	2	6	3	4	5	1

SUICIDE

Suicide | Centers for Disease Control and Prevention (CDC) | County | 2012-2016

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
suicide (per 100,000)	12	12.4	15.8	13.2	15.8	22.2
suicide rank	5	4	2	3	2	1
suicide % norm.	0.54	0.56	0.71	0.59	0.71	1.00

Suicide | Substance Abuse and Mental Health Services Administration (SAMHSA) | Metro/County | 2015/2016

	King County	San Diego County	Maricopa County	Sacramento County	Denver-Aurora-Lakewood	Salt Lake City County
serious thoughts of suicide in the past year (18+ y/o) (%)	4.13	3.83	3.96	4.1	4.05	4.67
serious thoughts of suicide in the past year rank	2	6	5	3	4	1
serious thoughts of suicide in the past year % norm.	0.88	0.82	0.85	0.88	0.87	1.00
serious thoughts of suicide in the past year (18-25 y/o) (%)	7.1	7.67	7.53	7.95	7.25	10.21
serious thoughts of suicide in the past year rank	6	3	4	2	5	1
serious thoughts of suicide in the past year % norm.	0.70	0.75	0.74	0.78	0.71	1.00
suicide mean	4.33	4.33	3.67	2.67	3.67	1.00
suicide % normalization	0.71	0.71	0.77	0.75	0.76	1.00
suicide sum	13	13	11	8	11	3
suicide subcategory rank	4	4	3	2	3	1

MENTAL HEALTH TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	2.98	4.56	3.60	3.31	4.49	1.36
percent normalization	0.82	0.77	0.82	0.82	0.78	0.99
sum	32	49	40	37	50	15

HEALTHY EATING

HEALTHY EATING

Healthy Eating | Gallup | Metro | 2015/2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
healthy eating all day the previous day (%)	65.5	69.4	64.4	64.1	64.6	64.2
healthy eating all day the previous day rank (out of 189)	52	18	73	76	70	75
healthy eating rank	5	6	3	1	4	2
healthy eating % norm.	0.68	0.24	0.96	1.00	0.92	0.99

Fruits and Veggies | American College of Sports Medicine (ACSM) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
consuming 2+ fruits per day (%)	28.8	36.2	26.9	37.9	30.8	33
consuming 2+ fruits per day rank	2	5	1	6	3	4
consuming 2+ fruits per day % norm.	0.93	0.65	1.00	0.59	0.86	0.77
consuming 3+ vegetables per day (%)	16	22.5	15.1	22.5	16.8	16.7
consuming 3+ vegetables per day rank	2	5	1	5	4	3
consuming 3+ vegetables per day % norm.	0.94	0.51	1.00	0.51	0.89	0.89
fruits and veggies rank	2	5	1	5.5	3.5	3.5
fruits and veggies % norm.	0.93	0.58	1.00	0.55	0.87	0.83
healthy eating mean	3.50	5.50	2.00	3.25	3.75	2.75
healthy eating % normalization	0.81	0.41	0.98	0.78	0.90	0.91
healthy eating sum	9	16	5	12	11	9
healthy eating subcategory rank	4	6	1	3	5	2

FOOD ACCESS

Affordable Fruits + Veggies | Gallup | Metro | 2012/2013

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
easy access to fruits and veggies (%)	93.4	92.9	92.3	91.8	94.4	94.5
easy access to fruits and veggies rank (out of 189)	45	63	88	103	20	19
affordable fruits + veggies rank	4	3	2	1	5	6
affordable fruits + veggies % norm.	0.44	0.61	0.85	1.00	0.19	0.18

Grocery Stores + Fast Food | US Department of Agriculture (USDA) | County | Varies

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
2015 low access to grocery stores (%)	16.45	13.7	13.39	13.65	14.25	8.85
low access to grocery stores rank	1	3	5	4	2	6
low access to grocery stores % norm.	1.00	0.83	0.81	0.83	0.87	0.54
2014 grocery stores (per 1,000)	0.24	0.19	0.12	0.18	0.18	0.13
grocery stores rank	5	4	1	3	3	2
grocery stores % norm.	0.00	0.42	1.00	0.50	0.50	0.92
grocery stores rank	3	3.5	3	3.5	2.5	4
grocery stores % norm.	0.50	0.62	0.91	0.66	0.68	0.73
2014 fast food restaurants (per 1,000)	0.83	0.81	0.68	0.68	0.88	0.83
fast food rank	2	3	4	4	1	2
fast food % norm.	0.94	0.92	0.77	0.77	1.00	0.94

Farmer's Markets | American College of Sports Medicine (ACSM) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
farmer's markets (per 1,000,000)	18.8	15	8.7	27.2	16.7	9.5
farmer's markets rank	5	3	1	6	4	2
farmer's markets % norm.	-0.16	0.28	1.00	-1.13	0.08	0.91
food access mean	3.50	3.13	2.50	3.63	3.13	3.50
food access % normalization	0.43	0.61	0.88	0.33	0.49	0.69
food access sum	17	16	13	18	15	18
food access subcategory rank	4	2	1	2	3	5

HEALTHY EATING TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.50	4.31	2.25	3.44	3.44	3.13
percent normalization	0.62	0.51	0.93	0.55	0.69	0.80
sum	26	32	18	30	26	27

LIFESTYLE

ALCOHOL

Alcohol Use | Centers for Disease Control and Prevention (CDC) | City | 2015

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
binge drinking 18+ (%)	20.8	19.1	14.6	17.4	20.2	14.5
binge drinking 18+ rank	1	3	5	4	2	6
binge drinking 18+ % norm.	1.00	0.92	0.70	0.84	0.97	0.70

Alcohol Use | County Health Rankings and Roadmaps | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
excessive drinking (binge or heavy) (%)	22	20	16	19	22	15
excessive drinking rank	1	2	4	3	1	5
excessive drinking % norm.	1.00	0.91	0.73	0.86	1.00	0.68

Use/Perceptions/Dependence/Treatment | SAMHSA | Metro/County | 2012-2014

	King County	San Diego County	Maricopa County	Sacramento County	Denver-Aurora-Lakewood	Salt Lake City County
alcohol use in the past month (12+ y/o) (%)	59.16	55.47	55.74	47.11	60.75	35.44
alcohol use in the past month (12+ y/o) rank	2	4	3	5	1	6
alcohol use in the past month (12+ y/o) % norm.	0.97	0.91	0.92	0.78	1.00	0.58
alcohol use in the past month (12-17 y/o) (%)	10.65	12.63	13.98	11.2	14.15	7.79
alcohol use in the past month (12-17 y/o) rank	5	3	2	4	1	6
alcohol use in the past month (12-17 y/o) % norm.	0.75	0.89	0.99	0.79	1.00	0.55
alcohol use in the past month (12-20 y/o) (%)	24.06	26.48	24.83	21.16	25.38	14.85
alcohol use in the past month (12-20 y/o) rank	4	1	3	5	2	6
alcohol use in the past month (12-20 y/o) % norm.	0.91	1.00	0.94	0.80	0.96	0.56
binge alcohol use in the past month (12+ y/o) (%)	20.84	22.73	23.61	21.95	25.8	17.3
binge alcohol use in the past month (12+ y/o) rank	5	3	2	4	1	6
binge alcohol use in the past month (12+ y/o) % norm.	0.81	0.88	0.92	0.85	1.00	0.67
binge alcohol use in the past month (12-17+ y/o) (%)	5.76	6.54	7.25	5.89	6.81	5.62
binge alcohol use in the past month (12-17 y/o) rank	5	3	1	4	2	6
binge alcohol use in the past month (12-17 y/o) % norm.	0.79	0.90	1.00	0.81	0.94	0.78
binge alcohol use in the past month (12-20 y/o) (%)	13.56	15.49	14.13	13	14.78	10.65
binge alcohol use in the past month (12-20 y/o) rank	4	1	3	5	2	6
binge alcohol use in the past month (12-20 y/o) % norm.	0.88	1.00	0.91	0.84	0.95	0.69
alcohol use rank	3.38	2.5	2.88	4.25	1.5	5.88
alcohol use % norm.	0.89	0.93	0.89	0.82	0.98	0.65
perceptions of great risk from having 5+ drinks of an alcoholic beverage 1-2 a week (12+ y/o) (%)	41.3	42.58	41.95	44.03	38.08	45.17
perceptions of great risk from having 5+ drinks of an alcoholic beverage 1-2 a week (12+ y/o) rank	2	4	3	5	1	6
perceptions of great risk from having 5+ drinks of an alcoholic beverage 1-2 a week (12+ y/o) % norm.	0.92	0.88	0.90	0.84	1.00	0.81
perceptions of great risk from having 5+ drinks of an alcoholic beverage 1-2 a week (12-17 y/o) (%)	38.5	39.02	38.59	40.6	35.81	46.9
perceptions of great risk from having 5+ drinks of an alcoholic beverage 1-2 a week (12-17 y/o) rank	2	4	3	5	1	6
perceptions of great risk from having 5+ drinks of an alcoholic beverage 1-2 a week (12-17 y/o) % norm.	0.92	0.91	0.92	0.87	1.00	0.69
alcohol risk perceptions rank	2	4	3	5	1	6
alcohol risk perceptions % norm.	0.92	0.90	0.91	0.85	1.00	0.75

alcohol dependence or abuse in the past year (12+ y/o) (%)	7.22	6.64	7.61	6.48	8.17	5.59
alcohol dependence or abuse in the past year (12+ y/o) rank	3	4	2	5	1	6
alcohol dependence or abuse in the past year (12+ y/o) % norm.	0.88	0.81	0.93	0.79	1.00	0.68
alcohol dependence or abuse in the past year (12-17 y/o) (%)	3.05	2.97	3.74	2.75	3.57	2.48
alcohol dependence or abuse in the past year (12-17 y/o) rank	3	4	1	5	2	6
alcohol dependence or abuse in the past year (12-17 y/o) rank % norm.	0.82	0.79	1.00	0.74	0.95	0.66
alcohol dependence in the past year (12+ y/o) (%)	3.1	3.33	3.8	3.36	3.66	2.53
alcohol dependence in the past year (12+ y/o) rank	6	5	1	4	2	3
alcohol dependence in the past year (12+ y/o) % norm.	0.82	0.88	1.00	0.88	0.96	0.67
alcohol dependence in the past year (12-17 y/o) (%)	1.2	1.08	1.5	1.01	1.32	1
alcohol dependence in the past year (12-17 y/o) rank	4	3	1	5	2	6
alcohol dependence in the past year (12-17 y/o) % norm.	0.80	0.72	1.00	0.67	0.88	0.67
alcohol dependence rank	4	4	1.25	4.75	1.75	5.25
alcohol dependence % norm.	0.83	0.80	0.98	0.77	0.95	0.67
needing but not receiving treatment for alcohol use (12+ y/o) (%)	6.65	6.3	7.12	5.88	7.39	5.34
needing but not receiving treatment for alcohol use rank	3	4	2	5	1	6
needing but not receiving treatment for alcohol use % norm.	0.90	0.85	0.96	0.80	1.00	0.72

Drinking and Driving Deaths | County Health Rankings and Roadmaps | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
driving deaths with alcohol involvement (%)	35	29	28	31	36	21
drinking and driving deaths rank	2	4	5	3	1	6
drinking and driving deaths % norm.	0.97	0.81	0.78	0.86	1.00	0.58
alcohol mean	2.88	3.70	2.83	4.40	1.25	5.83
alcohol % normalization	0.90	0.86	0.90	0.82	0.99	0.68
alcohol sum	52	52	41	71	23	92
alcohol subcategory rank	3	4	2	5	1	6

TOBACCO

Tobacco Use | Centers for Disease Control and Prevention (CDC) | City | 2015

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
smoking 18+ (%)	11.9	12.3	17.8	15.9	17.7	10.9
smoking 18+ rank	5	4	1	3	2	6
smoking 18+ % norm.	0.67	0.69	1.00	0.89	0.99	0.61

Use, Perceptions | Substance Abuse and Mental Health Services Administration (SAMHSA) | Metro/County | 2012-2014

	King County	San Diego County	Maricopa County	Sacramento County	Denver-Aurora-Lakewood	Salt Lake City County
tobacco product use in the past month (12+ y/o) (%)	20.51	18.78	22.85	22.82	27.15	18.43
tobacco product use in the past month (12+ y/o) rank	4	5	2	3	1	6
tobacco product use in the past month (12+ y/o) % norm.	0.76	0.69	0.84	0.84	1.00	0.68
tobacco product use in the past month (12-17 y/o) (%)	6.28	5.07	7.06	6.24	9.16	5.62
tobacco product use in the past month (12-17 y/o) rank	3	6	2	4	1	5
tobacco product use in the past month (12-17 y/o) % norm.	0.69	0.55	0.77	0.68	1.00	0.61
cigarette use in the past month (12+ y/o) (%)	16.64	14.7	18.5	19.35	21.69	15.54
cigarette use in the past month (12+ y/o) rank	4	6	3	2	1	5
cigarette use in the past month (12+ y/o) % norm.	0.77	0.68	0.85	0.89	1.00	0.72
cigarette use in the past month (12-17 y/o) (%)	4.83	3.8	5.14	4.54	6.37	4.73
cigarette use in the past month (12-17 y/o) rank	3	6	2	5	1	4
cigarette use in the past month (12-17 y/o) % norm.	0.76	0.60	0.81	0.71	1.00	0.74
tobacco use rank	3.8	5.4	2	3.4	1.2	5.2
tobacco use % norm.	0.73	0.64	0.85	0.80	1.00	0.67
perceptions of great risk from smoking 1+ packs of cigarettes per day (12+ y/o) (%)	73.51	74.4	72.51	73.26	74.09	73.17
perceptions of great risk from smoking 1+ packs of cigarettes per day (12+ y/o) rank	4	6	1	3	5	2
perceptions of great risk from smoking 1+ packs of cigarettes per day (12+ y/o) % norm.	0.99	0.97	1.00	0.99	0.98	0.99
perceptions of great risk from smoking 1+ packs of cigarettes per day (12-17) (%)	68.63	69.2	61.4	66.97	65.33	70.04
perceptions of great risk from smoking 1+ packs of cigarettes per day (12-17) rank	4	5	1	3	2	6
perceptions of great risk from smoking 1+ packs of cigarettes per day (12-17) % norm.	0.88	0.87	1.00	0.91	0.94	0.86
tobacco risk perception rank	4	5.5	1	3	3.5	4
tobacco risk perception % norm.	0.93	0.92	1.00	0.95	0.96	0.93
tobacco mean	3.90	5.45	1.50	3.20	2.35	4.60
tobacco % normalization	0.83	0.78	0.93	0.88	0.98	0.80
tobacco sum	27	38	12	23	13	34
tobacco subcategory rank	4	6	1	3	2	5

SLEEPING

Sleeping | Centers for Disease Control and Prevention (CDC) | City | 2015

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
sleeping less than 7 hours 18+ (%)	30.2	34.7	36.2	34.6	28.4	32.1
sleeping mean	5.00	2.00	1.00	3.00	6.00	4.00
sleeping % normalization	0.83	0.96	1.00	0.96	0.78	0.89
sleeping sum	5	2	1	3	6	4
sleeping subcategory rank	5	2	1	3	6	4

TEEN PREGNANCY

Teen Pregnancy | County Health Rankings and Roadmaps | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
teen pregnancy (15-19 y/o) (per 1,000 females)	15	28	39	29	52	31
teen pregnancy mean	6.00	5.00	2.00	4.00	1.00	3.00
teen pregnancy % normalization	0.29	0.54	0.75	0.56	1.00	0.60
teen pregnancy sum	6	5	2	4	1	3
teen pregnancy subcategory rank	6	5	2	4	1	3

DRUGS

Deaths | Centers for Disease Control and Prevention (CDC) | County | 2016

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
drug overdose deaths (per 100,000)	12	10.9	15.7	11.3	15.7	16.6
drug overdose deaths rank	3	5	2	4	2	1
drug overdose deaths % norm.	0.72	0.66	0.95	0.68	0.95	1.00

Deaths | NY Times | County | 2016

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
drug related deaths (15-44 y/o) (%)	19	15	18	13	17	27
drug related deaths (15-44 y/o) rank	2	5	3	6	4	1
drug related deaths (15-44 y/o) % norm.	0.70	0.56	0.67	0.48	0.63	1.00
drug deaths rank	2.5	5	2.5	5	3	1
drug deaths % norm.	0.71	0.61	0.81	0.58	0.79	1.00

Use/Perceptions/Dependence/Treatment | SAMHSA | Metro/County | 2012-2014

	King County	San Diego County	Maricopa County	Sacramento County	Denver-Aurora-Lakewood	Salt Lake City County
illicit drug use in the past month (12+ y/o) (%)	14.67	11.65	10.78	12.19	16.75	8.81
illicit drug use in the past month (12+ y/o) rank	2	4	5	3	1	6
illicit drug use in the past month (12+ y/o) % norm.	0.88	0.70	0.64	0.73	1.00	0.53
illicit drug use in the past month (12-17 y/o) (%)	11.14	10.38	11.38	10.36	14.91	8.39
illicit drug use in the past month (12-17 y/o) rank	3	4	2	4	1	5
illicit drug use in the past month (12-17 y/o) % norm.	0.75	0.70	0.76	0.69	1.00	0.56
marijuana use in the past year (12+ y/o) (%)	19.34	15.81	12.37	15.7	21.45	10.92
marijuana use in the past year (12+ y/o) rank	2	3	5	4	1	6
marijuana use in the past year (12+ y/o) % norm	0.90	0.74	0.58	0.73	1.00	0.51
marijuana use in the past year (12-17 y/o) (%)	16.22	16.1	14.17	15.08	20.33	11.69
marijuana use in the past year (12-17 y/o) rank	2	3	5	4	1	6
marijuana use in the past year (12-17 y/o) % norm.	0.80	0.79	0.70	0.74	1.00	0.58
marijuana use in the past month (12+ y/o) (%)	12.74	9.42	7.64	10.19	14.8	6.61
marijuana use in the past month (12+ y/o) rank	2	4	5	3	1	6
marijuana use in the past month (12+ y/o) % norm.	0.86	0.64	0.52	0.69	1.00	0.45
marijuana use in the past month (12-17 y/o) (%)	9.36	8.37	8.01	8.4	12.38	6.77
marijuana use in the past month (12-17 y/o) rank	2	4	5	3	1	6
marijuana use in the past month (12-17 y/o) % norm	0.76	0.68	0.65	0.68	1.00	0.55
illicit drug use other than marijuana in the past month (12+ y/o) (%)	4.47	4.04	4.54	3.8	4.35	3.1
illicit drug use other than marijuana in the past month (12+ y/o) rank	2	4	1	5	3	6
illicit drug use other than marijuana in the past month (12+ y/o) % norm.	0.98	0.89	1.00	0.84	0.96	0.68
illicit drug use other than marijuana in the past month (12-17 y/o) (%)	4.03	3.9	4.63	3.67	3.88	3.03
illicit drug use other than marijuana in the past month (12-17 y/o) rank	5	4	6	2	3	1
illicit drug use other than marijuana in the past month (12-17 y/o) % norm.	0.67	0.71	0.47	0.79	0.72	1.00
cocaine use in the past year (12+ y/o) (%)	2.04	2.04	2.19	1.91	3.21	1.59
cocaine use in the past year (12+ y/o) rank	3	3	2	4	1	5
cocaine use in the past year (12+ y/o) % rank	0.64	0.64	0.68	0.60	1.00	0.50
nonmedical use of pain relievers in the past year (12+ y/o) (%)	4.67	4.93	5.37	4.78	4.99	3.88

nonmedical use of pain relievers in the past year (12+ y/o) rank	5	3	1	4	2	6
nonmedical use of pain relievers in the past year (12+ y/o) % norm.	0.87	0.92	1.00	0.89	0.93	0.72
nonmedical use of pain relievers in the past year (12-17 y/o) (%)	5.91	5.07	6.61	5.85	6.44	4.18
nonmedical use of pain relievers in the past year (12-17 y/o) rank	3	5	1	4	2	6
nonmedical use of pain relievers in the past year (12-17 y/o) % norm.	0.89	0.77	1.00	0.89	0.97	0.63
drug use rank	2.82	3.73	3.45	3.64	1.55	5.36
drug use % norm.	0.82	0.74	0.73	0.75	0.96	0.61
perceptions of great risk from smoking marijuana once a month (12+ y/o) (%)	17.54	25.35	25.4	24.4	18.37	32.06
perceptions of great risk from smoking marijuana once a month (12+ y/o) rank	1	4	3	3	2	5
perceptions of great risk from smoking marijuana once a month (12+ y/o) % norm.	1.00	0.55	0.55	0.61	0.95	0.17
perceptions of great risk from smoking marijuana once a month (12-17 y/o) (%)	16.77	19.51	21.3	18.55	17.47	32.65
perceptions of great risk from smoking marijuana once a month (12-17 y/o) rank	1	4	5	3	2	6
perceptions of great risk from smoking marijuana once a month (12-17 y/o) % norm.	1.00	0.84	0.73	0.89	0.96	0.05
drug risk perception rank	1	4	4	3	2	5.5
drug risk perception % norm.	1.00	0.70	0.64	0.75	0.96	0.11
illicit drug dependence or abuse in the past year (12+ y/o) (%)	2.73	3	3.11	3.44	3.24	2.72
illicit drug dependence or abuse in the past year (12+ y/o) rank	5	4	3	1	2	6
illicit drug dependence or abuse in the past year (12+ y/o) % norm.	0.79	0.87	0.90	1.00	0.94	0.79
illicit drug dependence or abuse in the past year (12-17 y/o) (%)	3.54	4.48	5.12	4.13	5.19	3.51
illicit drug dependence or abuse in the past year (12-17 y/o) rank	5	3	2	4	1	6
illicit drug dependence or abuse in the past year (12-17 y/o) % norm.	0.68	0.86	0.99	0.80	1.00	0.68
illicit drug dependence in the past year (12+ y/o) (%)	2.01	2.08	1.84	2.44	2.06	1.73
illicit drug dependence in the past year (12+ y/o) rank	4	2	5	1	3	6
illicit drug dependence in the past year (12+ y/o) % norm.	0.82	0.85	0.75	1.00	0.84	0.71
illicit drug dependence in the past year (12-17 y/o) (%)	1.83	2.05	2.2	2.28	2.29	1.61
illicit drug dependence in the past year (12-17 y/o) rank	5	4	3	2	1	6
illicit drug dependence in the past year (12-17 y/o) % norm.	0.80	0.90	0.96	1.00	1.00	0.70
drug dependence rank	4.75	3.25	3.25	2	1.75	6
drug dependence % norm.	0.77	0.87	0.90	0.95	0.95	0.72
needing but not receiving treatment for illicit drug use (12+ y/o) (%)	2.55	2.71	2.82	2.95	2.81	2.49
needing but not receiving treatment for illicit drug use (12+ y/o) rank	5	4	3	1	2	6
needing but not receiving treatment for illicit drug use (12+ y/o) % norm.	0.86	0.92	0.96	1.00	0.95	0.84
needing but not receiving treatment for illicit drug use (12-17 y/o) (%)	3.24	4.21	4.69	3.9	4.89	3.39

needing but not receiving treatment for illicit drug use (12-17 y/o) rank	6	3	2	4	1	5
needing but not receiving treatment for illicit drug use (12-17 y/o) % norm.	0.66	0.86	0.96	0.80	1.00	0.69
needing but not receiving treatment for illicit drug use (12+ y/o) (%)	2.82	2.96	3.56	2.69	3.26	2.47
needing but not receiving treatment for illicit drug use (12+ y/o) rank	4	3	1	5	2	6
needing but not receiving treatment for illicit drug use (12+ y/o) % norm.	0.79	0.83	1.00	0.76	0.92	0.69
drug treatment rank	5	3.33	2	3.33	1.67	5.67
drug treatment % norm.	0.77	0.87	0.97	0.85	0.96	0.74

drugs mean	3.21	3.86	3.04	3.39	1.99	4.71
drugs % normalization	0.82	0.76	0.81	0.78	0.92	0.64
drugs sum	72	82	70	74	39	113
drugs subcategory rank	3	5	2	4	1	6

LIFESTYLE TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	4.20	4.00	2.07	3.60	2.52	4.43
percent normalization	0.73	0.78	0.88	0.80	0.93	0.72
sum	162	179	126	175	82	246

HEALTH STATS

DISABILITY

Disability | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
hearing difficulty (%)	3.3	2.7	3.4	3.6	2.9	2.8
vision difficulty (%)	1.9	1.7	2.1	2.1	1.7	1.6
cognitive difficulty (%)	4.7	4.2	4.3	5.2	3.5	4
ambulatory difficulty (%)	5.6	5.5	6.2	6.7	4.7	4.7
self-care difficulty (%)	2.2	2.3	2.3	2.9	1.7	1.7
independent living difficulty (%)	4.9	5.2	5	6.3	4	4.2
disability (%)	11	9.9	11.1	12.2	9.2	9.3
disability mean	3.00	4.00	2.00	1.00	6.00	5.00
disability % normalization	0.90	0.81	0.91	1.00	0.75	0.76
disability sum	3	4	2	1	6	5
disability subcategory rank	3	4	2	1	6	5

STDs

STDs | Centers for Disease Control and Prevention (CDC) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
chlamydia (per 100,000)	452.3	573.9	515.2	478.9	507.5	449.8
chlamydia rank	5	1	2	4	3	6
chlamydia % norm.	0.79	1.00	0.90	0.83	0.88	0.78
gonorrhea (per 100,000)	137.9	151.2	176.8	149.6	136.7	124.9
gonorrhea rank	4	2	1	3	5	6
gonorrhea % norm.	0.78	0.86	1.00	0.85	0.77	0.71
syphilis (per 100,000)	25.9	43	32.8	26.8	19.6	16
syphilis rank	4	1	2	3	5	6
syphilis % norm.	0.60	1.00	0.76	0.62	0.46	0.37
hiv diagnosis (per 100,000)	8.3	14.9	13.1	10	10.6	8.5
hiv diagnosis rank	6	1	2	4	3	5
hiv diagnosis % norm.	0.56	1.00	0.88	0.67	0.71	0.57
std mean	4.75	1.25	1.75	3.50	4.00	5.75
std % normalization	0.68	0.96	0.88	0.74	0.71	0.61
std sum	19	5	7	14	16	23
std subcategory rank	5	1	2	3	4	6

LUNG

Lung | American Lung Association | Metro | 2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
pediatric asthma (%)	1.42	1.58	2.69	1.67	1.99	2.18
pediatric asthma rank	6	5	1	4	3	2
pediatric asthma % norm.	0.53	0.59	1.00	0.62	0.74	0.81
adult asthma (%)	7.38	5.99	7.09	5.92	6.95	6.27
adult asthma rank	1	5	2	6	3	4
adult asthma % norm.	1.00	0.81	0.96	0.80	0.94	0.85
chronic obstructive pulmonary disease (%)	4.71	3.11	4.70	3.22	3.18	2.46
chronic obstructive pulmonary disease rank	1	5	2	3	4	6
chronic obstructive pulmonary disease % norm.	1.00	0.66	1.00	0.68	0.68	0.52
lung cancer (%)	0.0555	0.0434	0.0488	0.0433	0.0425	0.0265
lung cancer rank	1	3	2	4	5	6
lung cancer % norm.	1.00	0.78	0.88	0.78	0.77	0.48
cardiovascular disease (%)	5.73	4.88	5.78	5.22	4.47	3.66
cardiovascular disease rank	2	4	1	3	5	6
cardiovascular disease % norm.	0.99	0.84	1.00	0.90	0.77	0.63
lung mean	2.20	4.40	1.60	4.00	4.00	4.80
lung % normalization	0.90	0.74	0.97	0.76	0.78	0.66
lung sum	11	22	8	20	20	24
lung subcategory rank	2	4	1	3	3	5

HEART

Heart | Gallup | Metro | 2014/2015

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
heart attack (%)	2.6	2.2	3.6	2.4	3.1	2.2
heart attack rank (out of 190)	27	13	80	17	45	12
heart attack rank	3	5	1	4	2	5
heart attack % norm.	0.72	0.61	1.00	0.67	0.86	0.61

Heart | Centers for Disease Control and Prevention (CDC) | City | 2015

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
high blood pressure (18+ y/o)	23.4	24.1	27.5	30.3	23.7	22.4
high blood pressure rank	5	3	2	1	4	6
high blood pressure % norm.	0.77	0.80	0.91	1.00	0.78	0.74
high cholesterol (18+ y/o)	31.3	30.9	35.4	32.1	29.2	31.8
high cholesterol rank	4	5	1	2	6	3
high cholesterol % norm.	0.88	0.87	1.00	0.91	0.82	0.90
coronary heart disease (18+ y/o)	3.8	4.1	5.1	5.3	4.3	4.1
coronary heart disease rank	5	4	2	1	3	4
coronary heart disease % norm.	0.72	0.77	0.96	1.00	0.81	0.77
heart mean	4.25	4.25	1.50	2.00	3.75	4.50
heart % normalization	0.77	0.76	0.97	0.89	0.82	0.76
heart sum	17	17	6	8	15	18
heart subcategory rank	4	4	1	2	3	5

DIABETES

Diabetes | Gallup | Metro | 2014/2015

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
diabetes (%)	8.7	9.8	11.3	11.2	8.9	8.3
diabetes rank (out of 190)	24	44	81	78	25	14
diabetes rank	5	3	1	2	4	6
diabetes % norm.	0.77	0.87	1.00	0.99	0.79	0.73

Diabetes | Centers for Disease Control and Prevention (CDC) | City | 2015

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
diagnosed diabetes (18+ y/o) (%)	6.6	7.7	9.8	10.1	7.2	7.5
diagnose diabetes rank	6	3	2	1	5	4
diagnose diabetes % norm.	0.65	0.76	0.97	1.00	0.71	0.74

Diabetes, Awareness/Control | Institute for Health Metrics and Evaluation (IHME) | County | 2012

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
undiagnosed diabetes (%)	3.7	4.05	3.86	4.2	3.76	3.65
undiagnosed diabetes rank	5	2	3	1	4	6
undiagnosed diabetes % norm.	0.88	0.96	0.92	1.00	0.90	0.87
diagnosed diabetes (%)	7.87	9.45	9.52	9.75	7.57	8.61
diagnosed diabetes rank	5	3	2	1	6	4
diagnosed diabetes % norm.	0.81	0.97	0.98	1.00	0.78	0.88
diabetes rank	5.25	2.75	2	1.25	4.75	5
diabetes % norm.	0.78	0.89	0.97	1.00	0.79	0.81
diabetes awareness (%)	68.03	70.02	71.14	69.89	66.82	70.24
diabetes awareness rank	2	4	6	3	1	5
diabetes awareness % norm.	0.98	0.95	0.94	0.95	1.00	0.95
diabetes control (%)	19.18	18.6	19.21	18.85	17.91	19.27
diabetes control rank	4	2	5	3	1	6
diabetes control % norm.	0.93	0.96	0.93	0.95	1.00	0.92
diabetes awareness/control rank	3	3	5.5	3	1	5.5
diabetes awareness/control % norm.	0.96	0.96	0.93	0.95	1.00	0.94
diabetes mean	4.13	2.88	3.75	2.13	2.88	5.25
diabetes % normalization	0.87	0.92	0.95	0.97	0.90	0.87
diabetes sum	27	17	19	11	21	31
diabetes subcategory rank	4	2	3	1	2	5

ALLERGIES

Allergies | Asthma and Allergy Foundation of America (AAFA) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
allergy threat fall (score out of 100)	38.84	40.15	47.65	33.38	34.62	42.3
allergy threat fall rank (out of 100)	89	86	75	99	96	83
allergy threat fall rank	4	3	1	6	5	2
allergy threat fall % norm.	0.82	0.84	1.00	0.70	0.73	0.89
allergy threat spring (score out of 100)	51.3	40.95	57.91	47.06	39.63	48.27
allergy threat spring rank (out of 100)	82	97	62	89	99	88
allergy threat spring rank	2	5	1	4	6	3
allergy threat spring % norm.	0.89	0.71	1.00	0.81	0.68	0.83
allergies mean	3.00	4.00	1.00	5.00	5.50	2.50
allergies % normalization	0.85	0.77	1.00	0.76	0.71	0.86
allergies sum	6	8	2	10	11	5
allergies subcategory rank	3	4	1	5	6	2

OTHER DISEASES/CONDITIONS

Arthritis, Cancer, Chronic Kidney Disease, Stroke | Centers for Disease Control and Prevention (CDC) | City | 2015

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
arthritis (18+ y/o) (%)	18	16.3	19.6	21.3	18.7	17.8
arthritis mean	4.00	6.00	2.00	1.00	3.00	5.00
arthritis % normalization	0.85	0.77	0.92	1.00	0.88	0.84
arthritis sum	4	6	2	1	3	5
arthritis subcategory rank	4	6	2	1	3	5
cancer (18+ y/o) (%)	5.6	5.3	5.5	5.2	5.4	5.1
cancer mean	1.00	4.00	2.00	5.00	3.00	6.00
cancer % normalization	1.00	0.95	0.98	0.93	0.96	0.91
cancer sum	1	4	2	5	3	6
cancer subcategory rank	1	4	2	5	3	6
chronic kidney disease (%)	2.3	2.3	2.8	2.6	2.4	2.4
chronic kidney disease mean	4.00	4.00	1.00	2.00	3.00	3.00
chronic kidney disease % normalization	0.82	0.82	1.00	0.93	0.86	0.86
chronic kidney disease sum	4	4	1	2	3	3
chronic kidney disease subcategory rank	4	4	1	2	3	3
stroke (18+ y/o) (%)	2.1	2.3	2.8	3	2.4	2.3
stroke mean	5.00	4.00	2.00	1.00	3.00	4.00
stroke % normalization	0.70	0.77	0.93	1.00	0.80	0.77
stroke sum	5	4	2	1	3	4
stroke subcategory rank	5	4	2	1	3	4

HEALTH OUTCOMES

Health Outcomes | National Association of Counties (NACo) | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
premature death/years of potential life lost before 17 y/o (per 100,000)	4,571	4,746	6,136	6,192	6,694	6,163
premature death rank	5	6	4	2	1	3
premature death % norm.	0.68	0.71	0.92	0.93	1.00	0.92
poor or fair health (%)	10.20	14.90	15.50	17.10	15.10	12.50
poor or fair health rank	6	4	2	1	3	5
poor or fair health % norm.	0.60	0.87	0.91	1.00	0.88	0.73

Health Outcomes | Institute for Health Metrics and Evaluation (IHME) | County | 2014

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
life expectancy (years)	81.37	81.43	80.06	79.12	80.02	79.4
life expectancy rank	5	6	4	2	3	1
life expectancy % norm.	0.98	0.97	0.99	1.00	0.99	1.00
health outcomes mean	5.33	5.33	3.33	1.67	2.33	3.00
health outcomes % normalization	0.75	0.85	0.94	0.98	0.96	0.88
health outcomes sum	16	16	10	5	7	9
health outcomes subcategory rank	5	5	4	1	2	3

MORTALITY RATES

Mortality Rates | Institute for Health Metrics and Evaluation (IHME) | County | 2014

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
mortality rates (deaths per 100,000)	647.54	636.48	702.7	766.38	728.75	782.6
mortality rate rank	5	6	4	2	3	1
mortality rate % norm.	0.83	0.81	0.90	0.98	0.93	1.00
mortality rate male (deaths per 100,000)	766.22	757.59	825.03	913.84	855.73	893.46
mortality rate male rank	5	6	4	1	3	2
mortality rate male % norm.	0.84	0.83	0.90	1.00	0.94	0.98
mortality rate female (deaths per 100,000)	552.92	536.64	597.6	650.38	626.49	688.13
mortality rate female rank	5	6	4	2	3	1
mortality rate female % norm.	0.80	0.78	0.87	0.95	0.91	1.00
mortality risks probability (under 5 y/o) (%)	0.47	0.49	0.64	0.57	0.6	0.58
mortality risks probability rank	6	5	1	4	2	3
mortality risks probability % norm.	0.73	0.77	1.00	0.89	0.94	0.91
mortality risks probability (5-25 y/o) (%)	0.57	0.56	0.83	0.76	0.72	0.77
mortality risks probability (5-25 y/o) rank	5	6	1	3	4	2
mortality risks probability (5-25 y/o) % norm.	0.69	0.67	1.00	0.92	0.87	0.93
mortality risks probability (25-45 y/o) (%)	1.91	2.12	2.56	2.63	2.37	2.61
mortality risks probability (25-45 y/o) rank	6	5	3	1	4	2
mortality risks probability (25-45 y/o) % norm.	0.73	0.81	0.97	1.00	0.90	0.99
mortality risks probability (45-65 y/o) (%)	8.98	9.66	10.79	12.11	10.05	10.55
mortality risks probability (45-65 y/o) rank	6	5	2	1	4	3
mortality risks probability (45-65 y/o) % norm.	0.74	0.80	0.89	1.00	0.83	0.87
mortality risks probability (65-85 y/o) (%)	43.79	43.17	44.37	48.05	47.09	48.82
mortality risks probability (65-85 y/o) rank	5	6	4	2	3	1
mortality risks probability (65-85 y/o) % norm.	0.90	0.88	0.91	0.98	0.96	1.00
communicable, maternal, neonatal, and nutritional diseases (deaths per 100,000)	26.28	24.49	25.21	37.91	35.07	35.39
communicable, maternal, neonatal, and nutritional diseases rank	4	6	5	1	3	2
communicable, maternal, neonatal, and nutritional diseases % norm.	0.69	0.65	0.66	1.00	0.93	0.93
1. hiv/aids and tb (deaths per 100,000)	1.94	2.19	1.98	2.46	1.61	0.94
a. tb (deaths per 100,000)	0.25	0.3	0.26	0.37	0.23	0.17
b. hiv/aids (deaths per 100,000)	1.7	1.89	1.72	2.09	1.38	0.76
2. diarrhea, lower respiratory, and other common infectious diseases (death rate per 100,000)	19.76	17.47	17.74	30.08	27.47	28.08
a. diarrheal diseases (deaths per 100,000)	2.69	2.48	2.36	4.16	2.35	1.82
b. lower respiratory infections (deaths per 100,000)	16.43	14.45	14.61	25.13	24.26	25.4
c. meningitis (deaths per 100,000)	0.34	0.27	0.41	0.43	0.43	0.41
3. neglected tropical diseases and malaria (deaths per 100,000)	0.03	0.03	0.07	0.05	0.11	0.07
4. maternal disorders (deaths per 100,000)	0.16	0.17	0.2	0.26	0.21	0.33
5. neonatal disorders (deaths per 100,000)	1.86	2	2.69	2.46	2.84	2.26
6. nutritional deficiencies (deaths per 100,000)	0.94	1.1	0.7	0.68	1.41	2.25
7. other communicable, maternal, neonatal, and nutritional diseases (deaths per 100,000)	1.59	1.53	1.83	1.92	1.43	1.47
a. hepatitis (deaths per 100,000)	0.4	0.47	0.33	0.77	0.32	0.31
non-communicable diseases (deaths per 100,000)	598.76	583.98	623.13	690.23	641.96	689.27
non-communicable diseases rank	5	6	4	1	3	2
non-communicable diseases % norm.	0.87	0.85	0.90	1.00	0.93	1.00
1 neoplasms (deaths per 100,000)	165.6	166.18	169.07	185.32	165.9	161.34
a. lip and oral cavity cancer (deaths per 100,000)	1.93	1.85	1.49	1.85	1.53	1.36

b. nasopharynx cancer (deaths per 100,000)	0.37	0.31	0.23	0.54	0.22	0.26
c. other pharynx cancer	0.85	0.88	0.71	1.01	0.69	0.66
d. esophageal cancer (deaths per 100,000)	4.48	4.14	4.67	4.69	4.94	4.02
e. stomach cancer (deaths per 100,000)	4.11	4.27	3.82	4.9	4.18	3.83
f. colon and rectum cancer (deaths per 100,000)	16.88	18.23	19.4	20.53	19.91	19.13
g. liver cancer (deaths per 100,000)	7.64	7.59	6.45	8.99	6.14	5.75
h. gallbladder and biliary tract cancer (deaths per 100,000)	0.97	0.94	0.96	1.12	1.02	0.92
i. pancreatic cancer (deaths per 100,000)	11.97	11.73	11.68	12.79	11.6	11.86
j. larynx cancer (deaths per 100,000)	0.9	0.89	0.98	1.13	0.95	0.66
k. tracheal, bronchus, and lung cancer (deaths per 100,000)	40	37.72	43.2	48.65	38.9	29.23
l. malignant skin melanoma (deaths per 100,000)	2.87	3.44	3.24	2.73	3.31	3.9
m. non-melanoma skin cancer (deaths per 100,000)	0.98	1.11	1.41	0.95	1.01	0.99
n. breast cancer (deaths per 100,000)	12.53	13.38	13.29	14.32	12.47	14.45
o. cervical cancer (deaths per 100,000)	1.32	1.76	1.69	2.01	1.44	1.4
p. uterine cancer (deaths per 100,000)	2	1.87	1.59	1.96	1.69	2.21
q. ovarian cancer (deaths per 100,000)	5.08	4.8	4.75	4.36	4.92	5.44
r. prostate cancer (deaths per 100,000)	9.97	10.7	9.43	9.96	10.67	12.03
s. testicular cancer (deaths per 100,000)	0.08	0.17	0.13	0.19	0.1	0.12
t. kidney cancer (deaths per 100,000)	3.99	4.2	4.13	4.42	4.03	3.79
u. bladder cancer (deaths per 100,000)	4.83	4.51	4.64	5.02	4.6	4.47
v. brain and nervous system cancer (deaths per 100,000)	5.24	5.09	4.9	5.08	4.63	4.95
w. thyroid cancer (deaths per 100,000)	0.52	0.63	0.53	0.59	0.57	0.66
x. mesothelioma (deaths per 100,000)	1.01	1.07	0.89	0.9	0.82	0.97
y. hodgkin lymphoma (deaths per 100,000)	0.29	0.39	0.34	0.43	0.33	0.35
z. non-hodgkin lymphoma (deaths per 100,000)	7.92	7.76	7.74	8.02	7.61	8.47
aa. multiple myeloma (deaths per 100,000)	3.62	3.52	3.4	3.75	3.6	4.3
ab. leukemia (deaths per 100,000)	8.15	8.24	8.38	8.61	8.68	9.12
ac. other neoplasms (deaths per 100,000)	5.11	4.98	5.01	5.82	5.32	6.06
2. cardiovascular diseases (deaths per 100,000)	197.5	206	203.06	251.78	210.76	232.47
a. rheumatic heart disease (deaths per 100,000)	2.22	2.14	1.52	2.24	3.47	4.84
b. ischemic heart disease (deaths per 100,000)	108.14	121.86	123.56	150.56	118.13	130.69
c. cerebrovascular disease (deaths per 100,000)	44.49	42.77	38.24	52.99	45.9	51.44
d. hypertensive heart disease (deaths per 100,000)	8.86	7.64	14.4	12.37	9.49	5.83
e. cardiomyopathy and myocarditis (deaths per 100,000)	5.93	6.34	4.66	7.41	5.72	6.55
f. atrial fibrillation and flutter (deaths per 100,000)	6.21	8.78	4.54	8.78	7.5	11.24
g. aortic aneurysm (deaths per 100,000)	3.85	2.95	3.18	3.5	4.32	3.4
h. peripheral vascular disease (deaths per 100,000)	2.3	1.95	2.44	2.57	1.97	2.02
i. endocarditis (deaths per 100,000)	2.27	1.66	1.85	1.59	2.85	3.72
j. other cardiovascular and circulatory diseases (deaths per 100,000)	13.24	9.91	8.68	9.77	11.39	12.73
3. chronic respiratory diseases (deaths per 100,000)	37.33	38.91	51.21	49.15	57.93	49.88
a. chronic pulmonary disease (deaths per 100,000)	30.05	32.06	44.59	41.44	50.29	39.36
b. pneumoconiosis (deaths per 100,000)	0.33	0.25	0.21	0.21	0.38	0.53
c. asthma (deaths per 100,000)	0.93	0.86	1.04	1.5	1.08	1.6
d. interstitial lung disease (deaths per 100,000)	5.42	5.33	4.76	5.35	5.4	7.2
e. other chronic reparatory diseases (deaths per 100,000)	0.6	0.41	0.61	0.64	0.78	1.19
4. cirrhosis and other chronic liver diseases (deaths per 100,000)	14.05	14.06	17.51	18.2	19.87	15.99
5. digestive diseases (deaths per 100,000)	14.16	11.81	11.68	14.13	14.26	16.98
6. neurological disorders (deaths per 100,000)	103.71	88.41	98.1	95.15	106.77	121.5
7. mental and substance use disorders (deaths per 100,000)	12.21	11.93	15.59	16.85	15.93	18.06
a. alcohol use disorder (deaths per 100,000)	1.96	2.88	3.8	4.58	5.09	4.72

b. drug use disorder (deaths per 100,000)	10.08	8.94	11.7	12.17	10.62	12.9
8. diabetes, urogenital, blood and endocrine diseases (deaths per 100,000)	45.94	39.72	48.83	51.41	41.47	60.52
9. musculoskeletal disorders (deaths per 100,000)	2.98	2.52	2.77	2.77	3.35	5.68
10. other non-communicable diseases (deaths per 100,000)	5.27	4.43	5.3	5.47	5.72	6.85
injuries (deaths per 100,000)	40.88	39.04	58.05	48.18	60.34	64.37
injuries rank	5	6	3	4	2	1
injuries % norm.	0.64	0.61	0.90	0.75	0.94	1.00
1. transport injuries (deaths per 100,000)	7.19	9.51	13.06	11.41	11.44	11.82
2. unintentional injuries (deaths per 100,000)	17.43	13.77	21.33	14.81	26.38	23.33
3. self-harm and interpersonal violence (deaths per 100,000)	16.18	15.73	23.63	21.93	22.48	29.14
a. self-harm (deaths per 100,000)	12.92	12.66	17.32	15.1	18.58	25.67
b. interpersonal violence (deaths per 100,000)	3.26	3.07	6.31	6.84	3.9	3.47
4. forces of nature, war, and legal intervention (deaths per 100,000)	0.08	0.03	0.03	0.03	0.04	0.08
mortality rates mean	5.18	5.73	3.18	2.00	3.09	1.82
mortality rates % normalization	0.77	0.77	0.90	0.95	0.92	0.96
mortality rates sum	57	63	35	22	34	20
mortality rates subcategory rank	5	6	4	2	3	1

HEALTH STATS TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.82	4.15	2.09	2.52	3.63	4.22
percent normalization	0.82	0.82	0.95	0.91	0.84	0.81
sum	170	170	96	100	142	153

FACILITIES + SERVICES

FACILITIES

Facilities | National Association of Counties (NACo) | County | 2015

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
hospitals	24	25	57	14	11	21
# of beds	3,305	4,724	8,154	2,381	1,508	2,231
# of people per hospital	67,219	96,800	52,592	78,844	46,673	36,689
# of people per hospital rank	3	1	4	2	5	6
# of people per hospital % norm.	0.69	1.00	0.54	0.81	0.48	0.38
# of people per hospital bed	488	512	367	463	340	345
# of people per hospital bed rank	2	1	4	3	6	5
# of people per hospital bed % norm.	0.95	1.00	0.72	0.90	0.66	0.67
facilities mean	2.50	1.00	4.00	2.50	5.50	5.50
facilities % normalization	0.82	1.00	0.63	0.86	0.57	0.53
facilities sum	5	2	8	5	11	11
facilities subcategory rank	2	1	3	2	4	4

SERVICES

Services | County Health Rankings + Roadmaps | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
population to mental health provider ratio	320	340	850	310	220	270
population to mental health provider rank	3	2	1	4	6	5
population to mental health provider % norm.	0.38	0.40	1.00	0.36	0.26	0.32
population to dentist ratio	960	1,210	1,550	1,360	1,490	1,350
population to dentist rank	6	5	1	3	2	4
population to dentist % norm.	0.62	0.78	1.00	0.88	0.96	0.87
population to primary care physician ratio	840	1,280	1,420	1,250	780	1,350
population to primary care physician rank	5	3	1	4	6	2
population to primary care physician % norm.	0.59	0.90	1.00	0.88	0.55	0.95
services rank	4.67	3.33	1	3.67	4.67	3.67
services % norm.	0.53	0.69	1.00	0.71	0.59	0.71

Child Services | Centers for Disease Control and Prevention (CDC) | County | 2015

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
pediatricians (per 10,000 children) (0-17 y/o)	10.8	8	5.8	6.7	14.2	7.7
pediatricians rank	2	3	6	5	1	4
pediatricians % norm.	0.76	0.56	0.41	0.47	1.00	0.54
psychiatrists (per 10,000 children) (0-17 y/o)	7.6	6.4	3.5	4.8	11.4	4
psychiatrists rank	2	3	6	4	1	5
psychiatrists % norm.	0.67	0.56	0.31	0.42	1.00	0.35
family medicine physicians (per 10,000 children) (0-17 y/o)	22.9	13.9	10.9	11.9	17.6	9.2
family medicine physicians rank	1	3	5	4	2	6
family medicine physicians % norm.	1.00	0.61	0.48	0.52	0.77	0.40
licensed social workers (per 10,000 children) (0-17 y/o)	25.4	20	10	25.2	52.4	48.1
licensed social workers rank	3	5	6	4	1	2
licensed social workers % norm.	0.48	0.38	0.19	0.48	1.00	0.92
psychologists (per 10,000 children) (0-17 y/o)	23.4	23.1	13.6	13.5	34.9	12.6
psychologists rank	2	3	4	5	1	6
psychologists % norm.	0.67	0.66	0.39	0.39	1.00	0.36
child services rank	2	3.4	5.4	4.4	1.2	4.6
child services % norm.	0.72	0.56	0.35	0.46	0.95	0.51

Uninsured | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
uninsured (%)	8.8	12.2	13.5	9.6	10.8	13.2
uninsured rank	6	3	1	5	4	2
uninsured % norm.	0.65	0.90	1.00	0.71	0.80	0.98
services mean	4.22	3.24	2.47	4.36	3.29	3.42
services % normalization	0.63	0.72	0.78	0.62	0.78	0.74
services sum	30	30	31	38	24	36
services subcategory rank	5	2	1	6	3	4

FACILITIES + SERVICES TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.36	2.12	3.23	3.43	4.39	4.46
percent normalization	0.73	0.86	0.71	0.74	0.68	0.63
sum	35	32	39	43	35	47

HEALTH TOTAL

MEAN

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
physical activity	4.63	4.31	1.13	3.50	5.06	2.38
weight	4.33	4.17	1.50	2.17	5.00	3.50
physical health	4.48	4.24	1.31	2.83	5.03	2.94
mental health + illness	2.60	4.00	3.80	3.60	4.80	1.40
depression	2.00	5.33	3.33	3.67	5.00	1.67
suicide	4.33	4.33	3.67	2.67	3.67	1.00
mental health	2.98	4.56	3.60	3.31	4.49	1.36
healthy eating	3.50	5.50	2.00	3.25	3.75	2.75
food access	3.50	3.13	2.50	3.63	3.13	3.50
healthy eating	3.50	4.31	2.25	3.44	3.44	3.13
alcohol	2.88	3.70	2.83	4.40	1.25	5.83
tobacco	3.90	5.45	1.50	3.20	2.35	4.60
sleeping	5.00	2.00	1.00	3.00	6.00	4.00
teen pregnancy	6.00	5.00	2.00	4.00	1.00	3.00
drugs	3.21	3.86	3.04	3.39	1.99	4.71
lifestyle	4.20	4.00	2.07	3.60	2.52	4.43
disability	3.00	4.00	2.00	1.00	6.00	5.00
std	4.75	1.25	1.75	3.50	4.00	5.75
lung	2.20	4.40	1.60	4.00	4.00	4.80
heart	4.25	4.25	1.50	2.00	3.75	4.50
diabetes	4.13	2.88	3.75	2.13	2.88	5.25
allergies	3.00	4.00	1.00	5.00	5.50	2.50
arthritis	4.00	6.00	2.00	1.00	3.00	5.00
cancer	1.00	4.00	2.00	5.00	3.00	6.00
chronic kidney disease	4.00	4.00	1.00	2.00	3.00	3.00
stroke	5.00	4.00	2.00	1.00	3.00	4.00
health outcomes	5.33	5.33	3.33	1.67	2.33	3.00
mortality rates	5.18	5.73	3.18	2.00	3.09	1.82
health stats	3.82	4.15	2.09	2.52	3.63	4.22
facilities	2.50	1.00	4.00	2.50	5.50	5.50
services	4.22	3.24	2.47	4.36	3.29	3.42
facilities + services	3.36	2.12	3.23	3.43	4.39	4.46
health mean	3.72	3.90	2.43	3.19	3.92	3.42

PERCENT NORMALIZATION

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
physical activity	0.81	0.82	0.99	0.89	0.82	0.89
weight	0.70	0.71	0.98	0.88	0.60	0.88
physical health	0.75	0.77	0.99	0.88	0.71	0.88
mental health + illness	0.82	0.80	0.81	0.82	0.76	0.97
depression	0.95	0.81	0.88	0.87	0.82	0.98
suicide	0.71	0.71	0.77	0.75	0.76	1.00
mental health	0.82	0.77	0.82	0.82	0.78	0.99
healthy eating	0.81	0.41	0.98	0.78	0.90	0.91
food access	0.43	0.61	0.88	0.33	0.49	0.69
healthy eating	0.62	0.51	0.93	0.55	0.69	0.80
alcohol	0.90	0.86	0.90	0.82	0.99	0.68
tobacco	0.83	0.78	0.93	0.88	0.98	0.80
sleeping	0.83	0.96	1.00	0.96	0.78	0.89
teen pregnancy	0.29	0.54	0.75	0.56	1.00	0.60
drugs	0.82	0.76	0.81	0.78	0.92	0.64
lifestyle	0.73	0.78	0.88	0.80	0.93	0.72
disability	0.90	0.81	0.91	1.00	0.75	0.76
std	0.68	0.96	0.88	0.74	0.71	0.61
lung	0.90	0.74	0.97	0.76	0.78	0.66
heart	0.77	0.76	0.97	0.89	0.82	0.76
diabetes	0.87	0.92	0.95	0.97	0.90	0.87
allergies	0.85	0.77	1.00	0.76	0.71	0.86
arthritis	0.85	0.77	0.92	1.00	0.88	0.84
cancer	1.00	0.95	0.98	0.93	0.96	0.91
chronic kidney disease	0.82	0.82	1.00	0.93	0.86	0.86
stroke	0.70	0.77	0.93	1.00	0.80	0.77
health outcomes	0.75	0.85	0.94	0.98	0.96	0.88
mortality rates	0.77	0.77	0.90	0.95	0.92	0.96
health stats	0.82	0.82	0.95	0.91	0.84	0.81
facilities	0.82	1.00	0.63	0.86	0.57	0.53
services	0.63	0.72	0.78	0.62	0.78	0.74
facilities + services	0.73	0.86	0.71	0.74	0.68	0.63
health percent normalization	0.75	0.75	0.88	0.78	0.77	0.81

SUM

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
physical activity	38	33	10	27	39	21
weight	22	20	8	11	24	18
physical health	60	53	18	38	63	39
mental health + illness	13	20	19	18	24	7
depression	6	16	10	11	15	5
suicide	13	13	11	8	11	3
mental health	32	49	40	37	50	15
healthy eating	9	16	5	12	11	9
food access	17	16	13	18	15	18
healthy eating	26	32	18	30	26	27
alcohol	52	52	41	71	23	92
tobacco	27	38	12	23	13	34
sleeping	5	2	1	3	6	4
teen pregnancy	6	5	2	4	1	3
drugs	72	82	70	74	39	113
lifestyle	162	179	126	175	82	246
disability	3	4	2	1	6	5
std	19	5	7	14	16	23
lung	11	22	8	20	20	24
heart	17	17	6	8	15	18
diabetes	27	17	19	11	21	31
allergies	6	8	2	10	11	5
arthritis	4	6	2	1	3	5
cancer	1	4	2	5	3	6
chronic kidney disease	4	4	1	2	3	3
stroke	5	4	2	1	3	4
health outcomes	16	16	10	5	7	9
mortality rates	57	63	35	22	34	20
health stats	170	170	96	100	142	153
facilities	5	2	8	5	11	11
services	30	30	31	38	24	36
facilities + services	35	32	39	43	35	47
health sum	485	515	337	423	398	527

SUBCATEGORY FREQUENCY

		Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
physical health	physical activity	5	4	1	3	6	2
	weight	4	5	1	2	6	3
mental health	mental health + illness	2	3	4	3	5	1
	depression	2	6	3	4	5	1
	suicide	4	4	3	2	3	1
healthy eating	healthy eating	4	6	1	3	5	2
	food access	4	2	1	2	3	5
lifestyle	alcohol	3	4	2	5	1	6
	tobacco	4	6	1	3	2	5
	sleeping	5	2	1	3	6	4
	teen pregnancy	6	5	2	4	1	3
	drugs	3	5	2	4	1	6
health stats	disability	3	4	2	1	6	5
	std	5	1	2	3	4	6
	lung	2	4	1	3	3	5
	heart	4	4	1	2	3	5
	diabetes	4	2	3	1	2	5
	allergies	3	4	1	5	6	2
	arthritis	4	6	2	1	3	5
	cancer	1	4	2	5	3	6
	chronic kidney disease	4	4	1	2	3	3
	stroke	5	4	2	1	3	4
	health outcomes	5	5	4	1	2	3
	mortality rates	5	6	4	2	3	1
facilities + services	facilities	2	1	3	2	4	4
	services	5	2	1	6	3	4
	frequency of "6"	1	5	0	1	5	4
	frequency of "5"	7	4	0	3	3	7
	frequency of "4"	9	10	3	3	2	4
	frequency of "3"	4	1	4	7	10	4
	frequency of "2"	4	4	8	7	3	3
health frequency of "1"		1	2	11	5	3	4
health frequency sum		98	103	51	73	92	97
physical health		4.50	4.50	1.00	2.50	6.00	2.50
mental health + illness		2.67	4.33	3.33	3.00	4.33	1.00
healthy eating		4.00	4.00	1.00	2.50	4.00	3.50
lifestyle		4.20	4.40	1.60	3.80	2.20	4.80
health stats		3.75	4.00	2.08	2.25	3.42	4.17
facilities + services		3.50	1.50	2.00	4.00	3.50	4.00
health subcategory mean		3.77	3.96	1.96	2.81	3.54	3.73

education

- enrollment
- attainment
- quality
- child well-being
- teachers/schools/spending

ENROLLMENT

ENROLLMENT

Enrollment | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
public (3-17 y/o) (%)	84.2	88.9	91	89.3	89.2	89.6
not enrolled (3-17 y/o) (%)	11.02	8.87	12.08	9.08	8.96	10.22
not enrolled rank	2	6	1	4	5	3
not enrolled % norm.	0.91	0.73	1.00	0.75	0.74	0.85
private school (3-17 y/o) (%)	15.8	11.1	9	10.7	10.8	10.4
private school rank	1	2	6	4	3	5
private school % norm.	1.00	0.70	0.57	0.68	0.68	0.66
enrollment mean	1.50	4.00	3.50	4.00	4.00	4.00
enrollment % normalization	0.96	0.72	0.78	0.71	0.71	0.75
enrollment sum	3	8	7	8	8	8
enrollment subcategory rank	1	3	2	3	3	3

ENROLLMENT TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	1.50	4.00	3.50	4.00	4.00	4.00
percent normalization	0.96	0.72	0.78	0.71	0.71	0.75
sum	3	8	7	8	8	8

ATTAINMENT

ATTAINMENT

Attainment | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
less than high school diploma (25+ y/o) (%)	8	13.6	12.9	11.7	9.2	10
less than high school diploma rank	6	1	2	3	5	4
less than high school diploma % norm.	0.59	1.00	0.95	0.86	0.68	0.74
high school (equivalent) (25+ y/o) (%)	19.6	18.4	23	21.3	20.5	23.3
high school (equivalent) rank	5	6	2	3	4	1
high school (equivalent) % norm.	0.84	0.79	0.99	0.91	0.88	1.00
some college/associates degree (25+ y/o) (%)	30.4	30.6	33.3	34.4	27.8	33.7
some college/associates degree rank	2	3	4	6	1	5
some college/associates degree % norm.	0.91	0.90	0.80	0.76	1.00	0.79
bachelor's degree (25+ y/o) (%)	26.1	23.3	19.8	20.7	26.9	20.8
bachelor's degree rank	5	4	1	2	6	3
bachelor's degree % norm.	0.68	0.82	1.00	0.95	0.64	0.95
graduate/professional degree (25+ y/o) (%)	15.9	14	11.1	11.9	15.6	12.2
graduate/professional degree rank	6	4	1	2	5	3
graduate/professional degree % norm.	0.57	0.74	1.00	0.93	0.59	0.90
high school + (25+ y/o) (%)	92	86.4	86.8	88.5	90.4	89.9
high school + rank	6	1	2	3	5	4
high school + % norm.	0.94	1.00	1.00	0.98	0.95	0.96
bachelor's + (25+ y/o) (%)	40.1	36.5	29.8	31.8	41.3	32.2
bachelor's + rank	5	4	1	2	6	3
bachelor's + % norm.	0.65	0.78	1.00	0.93	0.61	0.92
attainment rank	5	3.29	1.86	3	4.57	3.29
attainment % norm.	0.74	0.86	0.96	0.90	0.77	0.89

Education Attainment Equality | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
bachelor's + male (%)	40.6	37.2	30.6	32.5	41.3	33.9
bachelor's + female (%)	39.7	35.8	29.1	31.2	41.2	30.5
bachelor's + male to female ratio	0.98	0.96	0.95	0.96	1.00	0.90
bachelor's + male to female ratio rank	5	4	2	3	6	1
bachelor's + male to female ratio % norm.	0.91	0.93	0.94	0.93	0.89	1.00
bachelor's + white (%)	42	45.7	35.8	31.6	49	35.5
bachelor's + black (%)	22.2	23.4	23.6	20.4	24.5	25
bachelor's + white to black ratio	0.53	0.51	0.66	0.65	0.50	0.70
bachelor's + white to black ratio rank	3	2	5	4	1	6
bachelor's + white to black ratio % norm.	0.94	0.98	0.68	0.71	1.00	0.59
bachelor's + american indian/alaska native (%)	15.1	15.4	13.4	15.7	19.8	15.3
bachelor's + white to american indian/alaska native ratio	0.36	0.34	0.37	0.50	0.40	0.43
bachelor's + white to american indian/alaska native ratio rank	2	1	3	6	4	5
bachelor's + white to american indian/alaska native ratio % norm.	0.94	1.00	0.90	0.54	0.81	0.73
bachelor's + (%)	52	48.6	55.3	40.6	50.2	49.5
bachelor's + white to asian ratio	1.24	1.06	1.54	1.28	1.02	1.39
bachelor's + white to asian ratio rank	3	2	6	4	1	5
bachelor's + white to asian ratio % norm.	0.79	0.96	0.49	0.74	1.00	0.63
bachelor's + hawaiian/pacific islander (%)	10.7	22.6	15.9	11.4	36.3	10.9
bachelor's + white to hawaiian/pacific islander ratio	0.25	0.49	0.44	0.36	0.74	0.31
bachelor's + white to hawaiian/pacific islander ratio rank	1	5	4	3	6	2
bachelor's + white to hawaiian/pacific islander ratio % norm.	1.00	0.02	0.22	0.56	-0.96	0.77
bachelor's + other single race (%)	14.6	12.1	9.4	11.9	12.8	9.6
bachelor's + white to other single race ratio	0.35	0.26	0.26	0.38	0.26	0.27
bachelor's + white to other single race ratio rank	5	3	2	6	1	4
bachelor's + white to other single race ratio % norm.	0.66	0.98	0.99	0.55	1.00	0.96
bachelor's + 2+ race (%)	33.4	34.5	29.1	28.4	37.9	26.9
bachelor's + white to 2+ race ratio	0.80	0.75	0.81	0.90	0.77	0.76
bachelor's + white to 2+ race ratio rank	4	1	5	6	3	2
bachelor's + white to 2+ race ratio % norm.	0.95	1.00	0.92	0.81	0.98	1.00
bachelor's + hispanic/latino (%)	20.3	16	11.6	16.1	14.3	12.7
bachelor's + white to hispanic/latino ratio	0.48	0.35	0.32	0.51	0.2918	0.36
bachelor's + white to hispanic/latino ratio rank	5	3	2	6	1	4
bachelor's + white to hispanic/latino ratio % norm.	0.33	0.79	0.88	0.24	1.00	0.77
bachelor's + white to other race ratio rank	3.29	2.43	3.86	5	2.43	4
bachelor's + white to other race ratio % norm.	0.80	0.82	0.73	0.59	0.69	0.78

Graduation Rate | Open Data Network | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
high school graduation rate (%)	92	86.4	86.8	88.5	90.4	89.9
high school graduation rate rank	6	1	2	3	5	4
high school graduation rate % norm.	0.94	1.00	1.00	0.98	0.95	0.96
didn't finish 9th grade (%)	3.2	7	6.1	5.7	4.2	3.7
didn't finish 9th grade rank	6	1	2	3	4	5
didn't finish 9th grade % norm.	0.46	1.00	0.87	0.81	0.60	0.53
graduation rate rank	6	1	2	3	4.5	4.5
graduation rate % norm.	0.70	1.00	0.93	0.89	0.78	0.74

Change in College Educated Residents | NY Times | Metro | 1970-2010

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
share with college degree 1970 (%)	14.7	14	12.5	13.2	16.2	14.7
share with college degree 2010 (%)	27	33.7	27.2	29.4	38.2	29
change 1970 to 2010 (%)	22.3	19.8	14.7	16.3	22	14.3
change rank (out of 100)	11	19	66	45	9	51
change in college educated residents rank	6	4	2	3	5	1
change in college educated residents % norm.	0.44	0.62	0.97	0.86	0.46	1.00

attainment mean	5.06	2.94	2.34	3.40	4.50	2.76
attainment % normalization	0.72	0.85	0.91	0.84	0.72	0.88
attainment sum	81	50	48	68	69	62
attainment subcategory rank	6	3	1	4	5	2

ATTAINMENT TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	5.06	2.94	2.34	3.40	4.50	2.76
percent normalization	0.72	0.85	0.91	0.84	0.72	0.88
sum	81	50	48	68	69	62

QUALITY

TEST SCORES

Standardized Test Scores | National Assessment of Educational Progress (NAEP) | State | 2015

	Washington	California	Arizona	California	Colorado	Utah
grade 4 math score	245	232	238	232	242	243
grade 4 math score rank	5	1	2	1	3	4
grade 4 math score % norm.	0.94	1.00	0.97	1.00	0.96	0.95
grade 4 reading score	226	213	215	213	224	226
grade 4 reading score rank	4	1	2	1	3	4
grade 4 reading score % norm.	0.94	1.00	0.99	1.00	0.95	0.94
grade 8 math score	287	275	283	275	286	286
grade 8 math score rank	4	1	2	1	3	3
grade 8 math score % norm.	0.96	1.00	0.97	1.00	0.96	0.96
grade 8 reading score	267	259	263	259	268	269
grade 8 reading score rank	3	1	2	1	4	5
grade 8 reading score % norm.	0.97	1.00	0.98	1.00	0.97	0.96
grade 8 writing score (2007)	158	148	148	148	161	152
grade 8 writing score rank	3	1	1	1	4	2
grade 8 writing score % norm.	0.93	1.00	1.00	1.00	0.91	0.97
standardized test scores rank	3.8	1	1.8	1	3.4	3.6
standardized test scores % norm.	0.95	1.00	0.98	1.00	0.95	0.96

SAT Scores | CollegeBoard | State | 2017

	Washington	California	Arizona	California	Colorado	Utah
total test takers (class of 2017)	43,911	226,699	20,466	226,699	5,896	1,277
sat participation rate (%)	64	53	30	53	11	3
mean reading and writing score	541	531	563	531	606	624
mean math score	534	524	553	524	595	614
total score	1,075	1,055	1,116	1,055	1,201	1,238
sat scores rank	2	1	3	1	4	5
sat scores % norm.	0.98	1.00	0.94	1.00	0.86	0.83

ACT Scores | ACT | State | 2017

	Washington	California	Arizona	California	Colorado	Utah
2017 graduates tested (%)	29	31	62	31	100	100
average english score	20.9	22.5	18.6	22.5	20.1	19.5
average mathematics score	21.9	22.7	19.8	22.7	20.3	19.9
average reading score	22.1	23.1	20.1	23.1	21.2	20.8
average science score	22	22.2	19.8	22.2	20.9	20.6
average composite score	21.9	22.8	19.7	22.8	20.8	20.3
act scores rank	4	5	1	5	3	2
act scores % norm.	0.89	0.84	1.00	0.84	0.94	0.97

AP Exams | CollegeBoard | State | 2017

	Washington	California	Arizona	California	Colorado	Utah
2017 graduating class scoring 3+ on ap exam (%)	22.9	30.3	16.4	30.3	27.4	25
3+ ap exam rank	2	5	1	5	4	3
3+ ap exam % norm.	0.60	0.15	1.00	0.15	0.33	0.48
mean score	2.93	2.85	2.82	2.85	2.91	3.07
mean score rank	4	2	1	2	3	5
mean score % norm.	0.96	0.99	1.00	0.99	0.97	0.91
ap exams rank	3	3.5	1	3.5	3.5	4
ap exams % norm.	0.78	0.57	1.00	0.57	0.65	0.69

Test Scores | WalletHub | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
average standardized test scores	60.67	60.41	57.73	55.2	44.72	76.22
average standardized test score rank (out of 112)	47	49	55	60	88	9
test scores rank	5	4	3	2	1	6
test scores % norm.	0.53	0.56	0.63	0.68	1.00	0.10
test scores mean	3.56	2.90	1.96	2.50	2.98	4.12
test scores % normalization	0.83	0.79	0.91	0.82	0.88	0.71
test scores sum	36	22	18	20	32	39
attainment subcategory rank	6	3	1	4	5	2

SCHOOL/EDUCATION RANKINGS

Top High School and University Rankings | US News | City | 2017

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
national high school highest ranking	333	134	371	564	97	489
national high school second highest ranking	2,441	233	1,021	1,189	123	511
national high school third highest ranking	2,501	235	1,160	1,323	129	771
top three high school average	1,758.33	200.67	850.67	1,025.33	116.33	590.33
top high school rank	1	5	3	2	6	4
top high school % norm.	1.00	0.11	0.48	0.58	0.07	0.34
national university highest ranking	56	42	115	46	75	61
national university rank	4	6	1	5	2	3
national university % norm.	0.49	0.37	1.00	0.40	0.65	0.53
top public schools highest ranking	18	9	53	12	29	51
top public schools rank	4	6	1	5	3	2
top public schools % norm.	0.34	0.17	1.00	0.23	0.55	0.96
best value schools highest ranking	134	66	110	53	56	11
best value schools rank	1	3	2	5	4	6
best value schools % norm.	1.00	0.49	0.82	0.40	0.42	0.08
quality university rank	3	5	1.33	5	3	3.67
quality university % norm.	0.61	0.34	0.94	0.34	0.54	0.52

Public School Rating | Niche | City | 2018

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
public school grade (k-12)	a-	a	b+	b	c+	b
public school rank	5	6	4	3	1	2
public school % norm.	0.90	1.00	0.70	0.60	0.40	0.60

Education Rank | WalletHub | Metro | 2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
most/least educated cities (out of 150)	11	21	61	30	16	32
most/least educated cities rank	6	4	1	3	5	2
most/least educated cities % norm.	0.18	0.34	1.00	0.49	0.26	0.52
educational attainment (out of 150)	10	28	75	48	14	41
educational attainment rank	6	4	1	2	5	3
educational attainment % norm.	0.13	0.37	1.00	0.64	0.19	0.55
quality of education + attainment gap (out of 150)	37	9	44	14	65	25
quality of education + attainment gap rank	3	6	2	5	1	4
quality of education + attainment gap % norm.	0.57	0.14	0.68	0.22	1.00	0.38
education rank	5	4.67	1.33	3.33	3.67	3
education % norm.	0.29	0.29	0.89	0.45	0.48	0.49
school/education mean	3.50	5.17	2.42	3.33	3.42	3.17
school/education % normalization	0.70	0.44	0.75	0.49	0.37	0.49
school/education sum	30	40	15	30	27	26
school/education subcategory rank	5	6	1	3	4	2

LITERACY + LANGUAGE

Literacy | National Center for Education Statistics (NCES) | County | 2003

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
lacking basic prose literacy skills (%)	8	21	12	13	16	11
literacy rank	6	1	4	3	2	5
literacy % norm.	0.38	1.00	0.57	0.62	0.76	0.52

Language | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
speak english less than "very well"	39.3	39.3	34.8	40.7	38.2	35.4
language rank	2	2	5	1	3	4
language % norm.	0.97	0.97	0.86	1.00	0.94	0.87

literacy + language mean	4.00	1.50	4.50	2.00	2.50	4.50
literacy + language % normalization	0.67	0.98	0.71	0.81	0.85	0.70
literacy + language sum	8	3	9	4	5	9
literacy + language subcategory rank	4	1	5	2	3	5

DAILY LEARNING

Daily Learning | Gallup | Metro | 2012/2013

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
learned something yesterday (%)	68	70.7	63.8	66.3	68.9	68.9
learned something yesterday rank (out of 189)	39	12	109	52	25	26
daily learning mean	3.00	5.00	1.00	2.00	4.00	4.00
daily learning % normalization	0.93	0.89	1.00	0.96	0.92	0.92
daily learning sum	3	5	1	2	4	4
daily learning subcategory rank	3	5	1	2	4	4

QUALITY TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.52	3.64	2.47	2.46	3.22	3.95
percent normalization	0.78	0.78	0.84	0.77	0.76	0.70
sum	77	70	43	56	68	78

CHILD WELL-BEING

ECONOMIC CONDITION

Child Poverty | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
children in households with income below poverty (%)	13.7	18	23.8	20.7	14.9	14
child poverty rank	6	3	1	2	4	5
child poverty % norm.	0.58	0.76	1.00	0.87	0.63	0.59

Family Economic Condition | Resource Center for Child and Adolescent Health | State | 2016

	Washington	California	Arizona	California	Colorado	Utah
children live in "working poor" household (%)	10.7	15.4	18.7	15.4	10.1	9.9
children live in "working poor" household rank	3	2	1	2	4	5
children live in "working poor" household % norm.	0.57	0.82	1.00	0.82	0.54	0.53
somewhat often hard to get by on family income (%)	15.7	18.1	20.8	18.1	15.9	17.2
very often hard to get by on family income (%)	7.1	3.9	6.1	3.9	7.3	7
somewhat/very often hard to get by on family income (%)	22.8	22	26.9	22	23.2	24.2
somewhat/very often hard to get by on family income rank	3	5	1	5	4	2
somewhat/very often hard to get by on family income % norm.	0.85	0.82	1.00	0.82	0.86	0.90
parent sometimes or often could not afford enough food (%)	7.6	4.8	7.5	4.8	7	7
parent sometimes or often could not afford enough food rank	1	4	2	4	3	3
parent sometimes or often could not afford enough food % norm.	1.00	0.63	0.99	0.63	0.92	0.92
children received food/cash assistance (%)	32.4	45	48.6	45	34.9	27.8
children received food/cash assistance rank	4	2	1	2	3	5
children received food/cash assistance % norm.	0.67	0.93	1.00	0.93	0.72	0.57
parent job change due to child care (0-5 y/o) (%)	11.2	7	10.8	7	10	7.8
parent job change due to child care (0-5 y/o) rank	1	5	2	5	3	4
parent job change due to child care (0-5 y/o) % norm.	1.00	0.63	0.96	0.63	0.89	0.70
problems paying child's medical bills (%)	8.8	5.8	10	5.8	9.8	12.9
problems paying child's medical bills rank	4	5	2	5	3	1
problems paying child's medical bills % norm.	0.68	0.45	0.78	0.45	0.76	1.00
family economic condition rank	2.67	3.83	1.5	3.83	3.33	3.33
family economic condition % norm.	0.79	0.71	0.95	0.71	0.78	0.77

Student Debt | The Institute for College Access and Success (TICAS) | State | 2016

	Washington	California	Arizona	California	Colorado	Utah
average debt (\$)	24,609	22,744	23,447	22,744	26,520	19,975
average debt rank (out of 50)	44	48	47	48	37	50
average debt rank	2	4	3	4	1	5
average debt % norm.	0.81	0.70	0.73	0.70	1.00	0.65
proportion of class of 2016 in debt (%)	53	53	49	53	53	43
proportion of class of 2016 in debt rank (out of 50)	37	37	47	37	37	50
proportion of class of 2016 in debt rank	1	1	2	1	1	3
proportion of class of 2016 in debt % norm.	1.00	1.00	0.73	1.00	1.00	0.65
student debt rank	1.5	2.5	2.5	2.5	1	4
student debt % norm.	0.91	0.85	0.73	0.85	1.00	0.65

Tuition | National Association of Counties (NACo) | County | 2015

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
average in-state tuition (\$)	14,000	13,500	10,700	13,100	17,000	13,400
average in-state tuition rank	2	3	6	5	1	4
average in-state tuition % norm.	0.82	0.79	0.63	0.77	1.00	0.79
average out-of-state tuition (\$)	16,600	15,700	13,700	11,500	20,200	14,800
average out-of-state tuition rank	2	3	5	6	1	4
average out-of-state tuition % norm.	0.82	0.78	0.68	0.57	1.00	0.73
tuition rank	2	3	5.5	5.5	1	4
tuition % norm.	0.82	0.79	0.65	0.67	1.00	0.76

Support/Need | US Department of Agriculture (USDA) | County | Varies

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
2015 national food lunch program participants (%)	7.27	8.36	9.94	8.36	6.93	11.16
2015 national food lunch program participants rank	4	3	2	3	5	1
2015 national food lunch program participants % norm.	0.65	0.75	0.89	0.75	0.62	1.00
2014 students eligible for free lunch (%)	29.34	40.51	32.16	49.48	61.14	34.87
2014 students eligible for free lunch rank	6	3	5	2	1	4
2014 students eligible for free lunch % norm.	0.48	0.66	0.53	0.81	1.00	0.57
support/need rank	5	3	3.5	2.5	3	2.5
support/need % norm.	0.57	0.71	0.71	0.78	0.81	0.79
economic condition mean	3.43	3.07	2.80	3.27	2.47	3.77
economic condition % normalization	0.73	0.76	0.81	0.78	0.84	0.71
economic condition sum	39	43	33	46	34	46
economic condition subcategory rank	5	3	2	4	1	6

HEALTH

Health | Resource Center for Child and Adolescent Health (National Survey of Children's Health) | State | 2016

	Washington	California	Arizona	California	Colorado	Utah
add/adhd (3-17 y/o) (%)	7.9	4.5	7.9	4.5	7.3	9.8
add/adhd rank	2	4	2	4	3	1
add/adhd % norm.	0.81	0.46	0.81	0.46	0.74	1.00
add/adhd parent rated mild (3-17 y/o) (%)	3.2	2.4	2.7	2.4	3	4.6
add/adhd parent rated moderate or severe (3-17 y/o) (%)	4.6	2.1	4.9	2.1	4.2	5.2
add/adhd parent rated moderate or severe rank	3	5	2	5	4	1
add/adhd parent rated moderate or severe % norm.	0.88	0.40	0.94	0.40	0.81	1.00
add/adhd taking medication (3-17 y/o) (%)	4.3	1.9	5.6	1.9	3.7	5.4
add/adhd condition w/o medication (3-17 y/o) (%)	3.5	2.6	2.3	2.6	3.6	4.3
add/adhd condition w/o medication rank	3	4	5	4	2	1
add/adhd condition w/o medication % norm.	0.81	0.60	0.53	0.60	0.84	1.00
add/adhd received behavioral treatment (3-17 y/o) (%)	3.5	3	5	3	2.4	4.4
add/adhd condition w/o behavioral treatment (3-17 y/o) (%)	4.3	1.5	2.9	1.5	4.9	5.4
add/adhd condition w/o behavioral treatment rank	3	5	4	5	2	1
add/adhd condition w/o behavioral treatment % norm.	0.80	0.28	0.54	0.28	0.91	1.00
autism/asd (3-17 y/o) (%)	1.5	2	3	2	1.8	3.4
autism/asd rank	5	3	2	3	4	1
autism/asd % norm.	0.44	0.59	0.88	0.59	0.53	1.00
autism/asd/asperger's/pdd taking medication (3-17 y/o) (%)	0.3	0.1	0.5	0.1	0.3	0.9
autism/asd/asperger's/pdd condition w/o medication (3-17) (%)	1.2	1.9	2.1	1.9	1.6	2.6
autism/asd/asperger's/pdd condition w/o medication rank	5	3	2	3	4	1
autism/asd/asperger's/pdd condition w/o medication % norm.	0.46	0.73	0.81	0.73	0.62	1.00
autism/asd/asperger's/pdd behavioral treatment (3-17 y/o) (%)	1.2	1.4	0.5	1.4	1.3	2.1
autism/asd/asperger's/pdd condition w/o behavioral treatment (3-17 y/o) (%)	0.3	0.6	2.5	0.6	0.5	1.3
autism/asd/asperger's/pdd condition w/o behavioral treatment rank	5	3	1	3	4	2
autism/asd/asperger's/pdd condition w/o behavioral treatment % norm.	0.12	0.24	1.00	0.24	0.20	0.52
medication for add/adhd, asd, emotions, concentration, behavior (3-17 y/o) (%)	8.5	3.3	7.3	3.3	5.6	8.5
medication for add/adhd, asd, emotions, concentration, behavior rank	1	4	2	4	3	1
medication for add/adhd, asd, emotions, concentration, behavior % norm.	1.00	0.39	0.86	0.39	0.66	1.00
learning conditions rank	3.38	3.88	2.5	3.88	3.25	1.13
learning conditions % norm.	0.67	0.46	0.80	0.46	0.66	0.94
body mass index overweight (10-17 y/o) (%)	16.8	15.1	11.1	15.1	18.2	9.8
body mass index overweight (10-17 y/o) rank	2	3	4	3	1	5
body mass index overweight (10-17 y/o) % norm.	0.92	0.83	0.61	0.83	1.00	0.54
body mass index obese (10-17 y/o) (%)	8.7	16.1	15.9	16.1	9	9.5
body mass index obese rank	5	1	2	1	4	3
body mass index obese % norm.	0.54	1.00	0.99	1.00	0.56	0.59
0 days of exercise in past week (6-17 y/o) (%)	7	6.9	10	6.9	6.6	7.8
0 days of exercise in past week rank	3	4	1	4	5	2
0 days of exercise in past week % norm.	0.70	0.69	1.00	0.69	0.66	0.78

1-3 days of exercise in past week (6-17 y/o) (%)	36	37.3	41.8	37.3	37.1	37.2
4-6 days of exercise in past week (6-17 y/o) (%)	31.5	30	28.9	30	34.4	37.2
7 days of exercise in past week (6-17 y/o) (%)	25.5	25.9	19.4	25.9	21.9	17.9
parents concerned child's weight is too high (%)	6.6	7.5	8.3	7.5	7.5	5.8
parents concerned child's weight is too high rank	3	2	1	2	2	4
parents concerned child's weight is too high % norm.	0.80	0.90	1.00	0.90	0.90	0.70
physical health rank	3.3	2.5	2	2.5	3	3.5
physical health % norm.	0.74	0.86	0.90	0.86	0.78	0.65
1+ health condition (6-17 y/o) (%)	20.5	18.3	20.2	18.3	17.5	17.4
1+ health condition rank	1	3	2	3	4	5
1+ health condition % norm.	1.00	0.89	0.99	0.89	0.85	0.85
2+ health condition (6-17 y/o) (%)	15.7	13.6	18.7	13.6	16.2	18.6
2+ health condition rank	4	5	1	5	3	2
2+ health condition % norm.	0.84	0.73	1.00	0.73	0.87	0.99
child has no emergency room visit during past 12 months (%)	82.3	83.4	82.1	83.4	78.3	88.2
child has no emergency room visit during past 12 months rank	3	4	2	4	1	5
child has no emergency room visit during past 12 months % norm.	0.95	0.93	0.95	0.93	1.00	0.87
health condition rank	2.67	4.00	1.67	4.00	2.67	4.00
health condition % norm.	0.93	0.85	0.98	0.85	0.91	0.91
child has health insurance (%)	98.1	94.3	92.7	94.3	94.7	94.2
child has health insurance rank	5	3	1	3	4	2
child has health insurance % norm.	0.94	0.98	1.00	0.98	0.98	0.98
child's health insurance met needs always (%)	62.8	64.7	67.3	64.7	62.6	60.6
child's health insurance met needs always rank	3	4	5	4	2	1
child's health insurance met needs always % norm.	0.96	0.93	0.89	0.93	0.97	1.00
no preventative checkup w/ health care professional last 12 months (%)	17.3	22.8	18.6	22.8	14.4	20.3
no preventative checkup w/ health care professional last 12 months rank	4	1	3	1	5	2
no preventative checkup w/ health care professional last 12 months % norm.	0.76	1.00	0.82	1.00	0.63	0.89
no preventative dental care past 12 months (1-17 y/o) (%)	13.6	25.4	16.7	25.4	20.1	19.9
no preventative dental care past 12 months rank	5	1	4	1	2	3
no preventative dental care past 12 months % norm.	0.54	1.00	0.66	1.00	0.79	0.78
problems obtaining mental health care (3-17 y/o) (%)	42.2	39.8	50.1	39.8	52.2	42.6
problems obtaining mental health care rank	4	5	2	5	1	3
problems obtaining mental health care % norm.	0.81	0.76	0.96	0.76	1.00	0.82
child has no vision screening (%)	30.1	30.6	33.2	30.6	29.2	34.3
child has no vision screening rank	4	3	2	3	5	1
child has no vision screening % norm.	0.88	0.89	0.97	0.89	0.85	1.00
care rank	4.17	2.83	2.83	2.83	3.17	2
care % norm.	0.81	0.93	0.88	0.93	0.87	0.91
child goes to bed same time on weeknights always (%)	34.8	36.1	30	36.1	32.3	25.8
child goes to bed same time on weeknights usually (%)	54	53.1	54.6	53.1	58.2	61.4
child goes to bed same time on weeknights sometimes (%)	8.8	7.1	10.6	7.1	6.9	10.3
child goes to bed same time on weeknights rarely or never (%)	2.4	3.7	4.9	3.7	2.6	2.4
child goes to bed same time on weeknights rarely/never/sometimes (%)	11.2	10.8	15.5	10.8	9.5	12.7
child goes to bed same time on weeknights rarely/never/sometimes rank	3	4	1	4	5	2

child goes to bed same time on weeknights rarely/never/sometimes % norm.	0.72	0.70	1.00	0.70	0.61	0.82
adequate sleep (4months-17 y/o) (%)	73.6	64.6	68.8	64.6	74.5	72.2
adequate sleep rank	2	5	4	5	1	3
adequate sleep % norm.	0.99	0.87	0.92	0.87	1.00	0.97
sleep rank	2.5	4.5	2.5	4.5	3	2.5
sleep % norm.	0.86	0.78	0.96	0.78	0.81	0.89
child lives in home with tobacco user (%)	13.3	10.9	14.8	10.9	14	8.6
child lives in home with tobacco user rank	3	4	1	4	2	5
child lives in home with tobacco user % norm.	0.90	0.74	1.00	0.74	0.95	0.58
child lives in home where someone smokes inside (%)	0.4	0.6	1.6	0.6	1.7	0.4
child lives in home where someone smokes inside rank	4	3	2	3	1	4
child lives in home where someone smokes inside % norm.	0.24	0.35	0.94	0.35	1.00	0.24
tobacco rank	3.5	3.5	1.5	3.5	1.5	4.5
tobacco % norm	0.57	0.54	0.97	0.54	0.97	0.41
health mean	3.24	3.53	2.17	3.53	2.76	2.94
health % normalization	0.76	0.74	0.91	0.74	0.83	0.79
health sum	85	86	58	86	74	61
health subcategory rank	4	5	1	5	2	3

WELL-BEING

Well-Being | Resource Center for Child and Adolescent Health (National Survey of Children's Health) | State | 2016

	Washington	California	Arizona	California	Colorado	Utah
bounce back quick when things go wrong (definitely true) (6months-5 y/o)	72.1	56.6	69.5	56.6	72.6	73.5
bounce back quick when things go wrong (definitely true) rank	3	1	2	1	4	5
bounce back quick when things go wrong (definitely true) % norm.	0.73	1.00	0.77	1.00	0.72	0.70
calm/cool when faced with a challenge (definitely true) (6-17 y/o) (%)	48.9	52.4	52.3	52.4	51.3	42
calm/cool when faced with a challenge (somewhat true) (6-17 y/o) (%)	43.9	42.5	40.1	42.5	39.7	51.8
calm/cool when faced with a challenge (definitely and somewhat true) (6-17 y/o) (%)	92.8	94.9	92.4	94.9	91	93.8
calm/cool when faced with a challenge rank	3	5	2	5	1	4
calm/cool when faced with a challenge % norm.	0.98	0.96	0.98	0.96	1.00	0.97
argue too much (definitely true) (6-17 y/o) (%)	6.6	6.5	9.7	6.5	5.8	8.4
argue too much (somewhat true) (6-17 y/o) (%)	27.7	27.8	26.8	27.8	29.8	26.3
argue too much (definitely and somewhat true) (6-17 y/o) (%)	34.3	34.3	36.5	34.3	35.6	34.7
argue too much rank	4	4	1	4	2	3
argue too much % norm.	0.94	0.94	1.00	0.94	0.98	0.95
reaction when faced with difficulties rank	3.33	3.33	1.67	3.33	2.33	4
reaction when faced with difficulties % norm.	0.88	0.97	0.92	0.97	0.90	0.87
finish tasks (definitely true) (6-17 y/o) (%)	62.1	68	62.3	68	63.3	62.6
finish tasks rank	1	5	2	5	4	3
finish tasks % norm.	1.00	0.90	1.00	0.90	0.98	0.99
interest in learning new things (definitely true) (6-17 y/o) (%)	83.6	85.6	81.3	85.6	81.2	84.9
interest in learning new things rank	3	5	2	5	1	4
interest in learning new things % norm.	0.97	0.95	1.00	0.95	1.00	0.95
child cares about doing well in school (%)	76.2	81.6	73.9	81.6	75.7	76.7
child cares about doing well in school rank	3	5	1	5	2	4
child cares about doing well in school % norm.	0.97	0.90	1.00	0.90	0.98	0.96
child completes required hwy (definitely true) (%)	69.4	77.3	66.7	77.3	69.4	65.5
child completes required hwy (somewhat true) (%)	25.9	18	29.5	18	23.1	29.6
child completes required hwy (definitely and somewhat true) (%)	95.3	95.3	96.2	95.3	92.5	95.1
child completes required hwy rank	3	3	4	3	1	2
child completes required hwy % norm.	0.97	0.97	0.96	0.97	1.00	0.97
repeated a grade (6-17 y/o) (%)	3.3	5.8	5.8	5.8	4.2	2.2
repeated a grade rank	3	1	1	1	2	4
repeated a grade % norm.	0.57	1.00	1.00	1.00	0.72	0.38
missed 0 days in last 12 months (6-17 y/o) (%)	25.5	33.5	30.6	33.5	26.4	26.1
missed 0 days in last 12 months rank	1	5	4	5	3	2
missed 0 days in last 12 months % norm.	1.00	0.69	0.80	0.69	0.96	0.98
missed 1-3 days of school in last 12 months (6-17 y/o) (%)	48.5	47.9	39	47.9	46.1	46.9
missed 4-6 days of school in last 12 months (6-17 y/o) (%)	14.4	10.4	16.6	10.4	13.7	15.8
missed 7-10 days of school in last 12 months (6-17 y/o) (%)	8.4	4.6	7.4	4.6	9.3	7.9
missed 11+ days of school in last 12 months (6-17 y/o) (%)	3.3	3.6	6.4	3.6	4.4	3.3

missed 4+ days of school in the last 12 months (6-17 y/o) (%)	26.1	18.6	30.4	18.6	27.4	27
missed 4+ days of school in the last 12 months rank	4	5	1	5	2	3
missed 4+ days of school in the last 12 months % norm.	0.86	0.61	1.00	0.61	0.90	0.89
interest/success in school rank	2.57	4.14	2.14	4.14	2.14	3.14
interest/success in school % norm.	0.91	0.86	0.97	0.86	0.94	0.87
mentor other than parent (6-17 y/o) (%)	88.8	84.7	90.1	84.7	93.4	93.4
mentor other than parent rank	2	1	3	1	4	4
mentor other than parent % norm.	0.95	1.00	0.94	1.00	0.90	0.90
making and keeping friends (no difficulty) (6-17 y/o) (%)	78.7	81.3	76.9	81.3	74.2	77.4
making and keeping friends rank	4	5	2	5	1	3
making and keeping friends % norm.	0.94	0.90	0.96	0.90	1.00	0.96
support outside of family rank	3	3	2.5	3	2.5	3.5
support outside of family % norm.	0.95	0.95	0.95	0.95	0.95	0.93
family faces problems, talks together some or none of the time (%)	13.7	14.2	17.3	14.2	12.5	12.2
family faces problems, talks together some or none of the time rank	3	2	1	2	4	5
family faces problems, talks together some or none of the time % norm.	0.79	0.82	1.00	0.82	0.72	0.71
family faces problems, works together to solve it some or none of the time (%)	13.3	13.1	16.9	13.1	12.4	12.5
family faces problems, works together to solve it some or none of the time rank	2	3	1	3	5	4
family faces problems, works together to solve it some or none of the time % norm.	0.79	0.78	1.00	0.78	0.73	0.74
family faces problems, have strengths to draw on some or none of the time (%)	11.9	10.9	13.6	10.9	10.8	9.9
family faces problems, have strengths to draw on some or none of the time rank	2	3	1	3	4	5
family faces problems, have strengths to draw on some or none of the time % norm.	0.88	0.80	1.00	0.80	0.79	0.73
family faces problems, stays hopeful some or none of the time (%)	8.9	6.9	10.3	6.9	7.3	6.1
family faces problems, stays hopeful some or none of the time rank	2	4	1	4	3	5
family faces problems, stays hopeful some or none of the time % norm.	0.86	0.67	1.00	0.67	0.71	0.59
family shares ideas/talks about things that matter with child (not very well/not very well at all) (6-17) (%)	4.7	3.1	7.6	3.1	5.2	4.7
family shares ideas/talks about things that matter with child rank	3	4	1	4	2	3
family shares ideas/talks about things that matter with child % norm.	0.62	0.41	1.00	0.41	0.68	0.62
place in family rank	2.4	3.2	1	3.2	3.6	4.4
place in family % norm.	0.79	0.70	1.00	0.70	0.73	0.68
parent/guardian divorced (%)	23.5	21.6	31.9	21.6	26.6	18
parent/guardian divorced rank	3	4	1	4	2	5
parent/guardian divorced % norm.	0.74	0.68	1.00	0.68	0.83	0.56
parent/guardian died (%)	1.5	1.5	2.8	1.5	2.5	1.3
parent/guardian died rank	3	3	1	3	2	4
parent/guardian died % norm.	0.54	0.54	1.00	0.54	0.89	0.46
parent/guardian spent time in jail (%)	5.5	5.8	12.9	5.8	7.8	6
parent/guardian spent time in jail rank	5	4	1	4	2	3
parent/guardian spent time in jail % norm.	0.43	0.45	1.00	0.45	0.60	0.47
child witnessed domestic violence (%)	4.3	2.9	10.8	2.9	5.4	4.5

child witnessed domestic violence rank	4	5	1	5	2	3
child witnessed domestic violence % norm.	0.40	0.27	1.00	0.27	0.50	0.42
child lives with someone that is mentally ill, suicidal, severely depressed (%)	10.7	5.6	9.9	5.6	8.7	11.7
child lives with someone that is mentally ill, suicidal, severely depressed rank	2	5	3	5	4	1
child lives with someone that is mentally ill, suicidal, severely depressed % norm.	0.91	0.48	0.85	0.48	0.74	1.00
child lived with someone that has drug/alcohol problem (%)	10.2	7.3	15.9	7.3	12.2	9.1
child lived with someone that has drug/alcohol problem rank	3	5	1	5	2	4
child lived with someone that has drug/alcohol problem % norm.	0.64	0.46	1.00	0.46	0.77	0.57
child treated/judged unfairly because of race (%)	2.5	4	3.9	4	4.7	1.4
child treated/judged unfairly because of race rank	4	2	3	2	1	5
child treated/judged unfairly because of race % norm.	0.53	0.85	0.83	0.85	1.00	0.30
life altering events rank	3.43	4	1.57	4	2.14	3.57
life altering events % norm.	0.60	0.53	0.95	0.53	0.76	0.54
children live in neighborhood w/ sidewalks/walking paths (%)	80	89.9	86.2	89.9	89.5	92
children live in neighborhood w/ sidewalks/walking paths rank	1	4	2	4	3	5
children live in neighborhood w/ sidewalks/walking paths % norm.	1.00	0.88	0.92	0.88	0.88	0.85
children live in neighborhood w/ park/playground (%)	80.5	87.5	81.9	87.5	87.9	89.7
children live in neighborhood w/ park/playground rank	5	3	4	3	2	1
children live in neighborhood w/ park/playground % norm.	0.90	0.98	0.91	0.98	0.98	1.00
children live in neighborhood w/ rec center/community center/boys' and girls' club (%)	51.7	63	42.9	63	65.7	63
children live in neighborhood w/ rec center/community center/boys' and girls' club rank	2	3	1	3	4	3
children live in neighborhood w/ rec center/community center/boys' and girls' club % norm.	0.79	0.53	1.00	0.53	0.47	0.53
children live in neighborhood w/ garbage/litter (%)	20.8	26.3	19	26.3	17	12.5
children live in neighborhood w/ garbage/litter rank	2	1	3	1	4	5
children live in neighborhood w/ garbage/litter % norm.	0.79	1.00	0.72	1.00	0.65	0.48
children live in neighborhood w/ poorly kept/rundown housing (%)	13.8	16.4	17.4	16.4	10.2	10.7
children live in neighborhood w/ poorly kept/rundown housing rank	3	2	1	2	5	4
children live in neighborhood w/ poorly kept/rundown housing % norm.	0.79	0.94	1.00	0.94	0.59	0.61
children live in neighborhood w/ vandalism (%)	10.6	13.8	13.6	13.8	8.8	5.7
children live in neighborhood w/ vandalism rank	3	1	2	1	4	5
children live in neighborhood w/ vandalism % norm.	0.77	1.00	0.99	1.00	0.64	0.41
child does not live in supportive neighborhood (%)	49.1	54.6	50.2	54.6	42.6	28.8
child does not live in supportive neighborhood rank	3	1	2	1	4	5
child does not live in supportive neighborhood % norm.	0.90	1.00	0.92	1.00	0.78	0.53
neighborhood rank	2.71	2.14	2.14	2.14	3.71	4
neighborhood % norm.	0.85	0.90	0.92	0.90	0.71	0.63
child is bully (definitely and somewhat true) (6-17 y/o) (%)	7.9	7.4	6.5	7.4	8.1	8.1
child is bully (definitely and somewhat true) (6-17 y/o) rank	2	3	4	3	1	1

child is bully (definitely and somewhat true) (6-17 y/o) % norm.	0.98	0.91	0.80	0.91	1.00	1.00
child is bullied (definitely true) (6-17 y/o) (%)	5.9	4.9	4	4.9	5.6	3.8
child is bullied (somewhat true) (6-17 y/o) (%)	14.8	14.5	21.3	14.5	20.2	20.4
child is bullied (definitely and somewhat true) (6-17 y/o) (%)	20.7	19.4	25.3	19.4	25.8	24.2
child is bullied rank	4	5	2	5	1	3
child is bullied % norm.	0.80	0.75	0.98	0.75	1.00	0.94
child lives in a safe neighborhood (%)	59.4	57.5	56.4	57.5	64.7	70.5
child lives in a safe neighborhood rank	3	2	1	2	4	5
child lives in a safe neighborhood % norm.	0.95	0.98	1.00	0.98	0.85	0.75
child safe at school (6-17 y/o) (%)	73.1	72.7	71.2	72.7	71.5	74.9
child safe at school rank	4	3	1	3	2	5
child safe at school % norm.	0.97	0.98	1.00	0.98	1.00	0.95
victim/witness of neighborhood violence (%)	2.2	2	5.9	2	3.4	2.8
victim/witness of neighborhood violence rank	4	5	1	5	2	3
victim/witness of neighborhood violence % norm.	0.37	0.34	1.00	0.34	0.58	0.47
safety rank	3.4	3.6	1.8	3.6	2	3.4
safety % norm.	0.81	0.79	0.96	0.79	0.88	0.82
parent felt child is difficult to care for (sometimes) (%)	9.7	10	11.3	10	11.3	12.6
parent felt child is difficult to care for (always or usually) (%)	4.2	3.8	4.1	3.8	3.8	3.9
parent felt child is difficult to care for (sometimes/always/usually rank (%)	13.9	13.8	15.4	13.8	15.1	16.5
parent felt child is difficult to care for rank	4	5	2	5	3	1
parent felt child is difficult to care for % norm.	0.84	0.84	0.93	0.84	0.92	1.00
parent felt child does things that bothers them a lot (sometimes) (%)	18.1	12.9	13.1	12.9	16.9	17.9
parent felt child does things that bothers them a lot (always or usually) (%)	2.4	2.6	3.2	2.6	1.8	1.9
parent felt child does things that bothers them a lot (sometimes/always/usually) (%)	20.5	15.5	16.3	15.5	18.7	19.8
parent felt child does things that bothers them a lot rank	1	5	4	5	3	2
parent felt child does things that bothers them a lot % norm.	1.00	0.76	0.80	0.76	0.91	0.97
parent felt angry at child sometimes, usually, or always (%)	19.4	17.4	18.6	17.4	18.4	18.7
parent felt angry at child sometimes, usually, or always rank	1	5	3	5	4	2
parent felt angry at child sometimes, usually, or always % norm.	1.00	0.90	0.96	0.90	0.95	0.96
parent receives emotional support for parenting (%)	75.2	67.5	72.1	67.5	79.6	86.8
parent receives emotional support for parenting rank	4	6	5	6	2	1
parent receives emotional support for parenting % norm.	0.87	0.78	0.83	0.78	0.92	1.00
parents coping with demands of raising children somewhat well, not very well, not very well at all (%)	33.8	35.7	34.9	35.7	35.9	37.9
parents coping with demands of raising children somewhat well, not very well, not very well at all rank	5	3	4	3	2	1
parents coping with demands of raising children somewhat well, not very well, not very well at all % norm.	0.89	0.94	0.92	0.94	0.95	1.00
parent-child relationship rank	3	4.8	3.6	4.8	2.8	1.4
parent-child relationship % norm.	0.92	0.84	0.89	0.84	0.93	0.99
family reads to child (0-3 days a week) (0-5 y/o) (%)	34.8	42.6	46.7	42.6	31.5	33.6
family reads to child (0-3 days a week) (0-5 y/o) rank	3	2	1	2	5	4

family reads to child (0-3 days a week) (0-5 y/o) % norm.	0.75	0.91	1.00	0.91	0.67	0.72
family reads to child (4-6 days a week) (0-5 y/o) (%)	22.8	26.5	18.5	26.5	21.6	28.6
family reads to child (everyday) (0-5 y/o) (%)	42.4	30.9	34.9	30.9	46.9	37.8
family tells stories/sings to child (0-3 days a week) (%)	26.8	35.5	29.3	35.5	28.7	27.2
family tells stories/sings to child (0-3 days a week) rank	1	5	4	5	3	2
family tells stories/sings to child (0-3 days a week) % norm.	1.00	0.68	0.91	0.68	0.93	0.99
family tells stories/sings to child (4-6 days a week) (%)	20.6	20.5	31.4	20.5	17.5	20
family tells stories/sings to child (everyday) (%)	52.6	44	39.3	44	53.7	52.7
family eats meals together (0 days a week) (%)	3.6	2.4	3.7	2.4	3.3	1.6
family eats meals together (1-3 days a week) (%)	19	25	23.8	25	19.1	20.6
family eats meals together (0-3 days a week) (%)	22.6	27.4	27.5	27.4	22.4	22.2
family eats meals together (0-3 days a week) rank	3	2	1	2	4	5
family eats meals together (0-3 days a week) % norm.	0.82	1.00	1.00	1.00	0.81	0.81
family eats meals together (4-6 days a week) (%)	28.3	26.7	28.4	26.7	33.2	34.1
family eats meals together (everyday) (%)	49.1	46	44.1	46	44.3	43.7
child watches 0 hours of tv per day (%)	9.7	8.8	5.4	8.8	10	7.9
child watches 1 or less hours of tv per day (%)	19.1	18	19	18	21.1	17.6
child watches 1-3 hours of tv per day (%)	63.3	65.5	64.9	65.5	62.9	68.3
child watches 3+ hours of tv per day (%)	7.9	7.7	10.7	7.7	6	6.2
child watches 1+ hours of tv per day (%)	71.2	73.2	75.6	73.2	68.9	74.5
child watches 1+ hours of tv per day rank	4	3	1	3	5	2
child watches 1+ hours of tv per day % norm.	0.94	0.97	1.00	0.97	0.91	0.99
child spends 0 hours on electronic devices (%)	20.2	17.3	16.6	17.3	19.2	16.7
child spends 0-1 hours on electronic devices (%)	21.2	19.2	18.6	19.2	23.8	24.2
child spends 1-4 hours on electronic devices (%)	48.3	54.1	51.7	54.1	46.6	50.8
child spends 4+ hours on electronic devices (%)	10.3	9.4	13.2	9.4	10.3	8.2
child spends 4+ hours on electronic devices rank	2	3	1	3	2	4
child spends 4+ hours on electronic devices % norm.	0.78	0.71	1.00	0.71	0.78	0.62
extracurricular activity (6-17 y/o) (%)	82.3	76	78.5	76	84.1	84.5
extracurricular activity rank	3	1	2	1	4	5
extracurricular activity % norm.	0.92	1.00	0.97	1.00	0.89	0.89
parent participation in activities (always/usually) (6-17 y/o) (%)	81.9	77.8	77.4	77.8	82.2	89.8
parent participation in activities (sometimes) (6-17 y/o) (%)	10.1	11.1	9.7	11.1	9.8	5
parent participation in activities (rarely/never) (6-17 y/o) (%)	8	11.1	12.9	11.1	8.1	5.1
parent participation in activities (rarely/never) rank	4	2	1	2	3	5
parent participation in activities (rarely/never) % norm.	0.62	0.86	1.00	0.86	0.63	0.40
community service/volunteer (6-17 y/o) (%)	42.8	33.9	41.6	33.9	55.9	55.9
community service/volunteer rank	3	1	2	1	4	4
community service/volunteer % norm.	0.74	1.00	0.77	1.00	0.35	0.35
work for pay (12-17 y/o) (%)	37	26.6	34.9	26.6	43.5	63.8
work for pay rank	3	1	2	1	4	5
work for pay % norm.	0.61	1.00	0.69	1.00	0.36	-0.40
activities rank	2.89	2.22	1.67	2.22	3.78	4
activities % norm.	0.80	0.90	0.93	0.90	0.71	0.59

GENERAL WELL-BEING STATS

General Well-Being Stats | Kids Count Data Center | State | 2017

	Washington	California	Arizona	California	Colorado	Utah
child well-being score	14	37	46	37	22	7
child well-being rank	4	2	1	2	3	5
child well-being % norm.	0.30	0.80	1.00	0.80	0.48	0.15
economic well-being score	24	46	43	46	16	5
economic well-being rank	3	1	2	1	4	5
economic well-being % norm.	0.52	1.00	0.93	1.00	0.35	0.11
education score	28	38	44	38	26	15
education rank	3	2	1	2	4	5
education % norm.	0.64	0.86	1.00	0.86	0.59	0.34
health score	5	9	40	9	43	19
health rank	5	4	2	4	1	3
health % norm.	0.12	0.21	0.93	0.21	1.00	0.44
family and community score	17	42	46	42	19	3
family and community rank	4	2	1	2	3	5
family and community % norm.	0.37	0.91	1.00	0.91	0.41	0.07
well-being mean	3.27	2.96	1.79	2.96	2.86	3.89
well-being % normalization	0.67	0.80	0.95	0.80	0.74	0.57
well-being sum	166	177	105	177	159	199
well-being subcategory rank	4	3	1	3	2	5

CHILD WELL-BEING TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.31	3.19	2.25	3.25	2.70	3.53
percent normalization	0.72	0.77	0.89	0.77	0.81	0.69
sum	290	306	196	309	267	306

TEACHERS/SCHOOLS/SPENDING

TEACHERS

Student to Teacher Ratio | Public School Review | City | 2018

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
high schools	50	66	144	50	82	29
high schools # of students	24,813	57,492	81,476	37,603	43,796	24,879
high schools diversity score	0.76	0.72	0.58	0.77	0.6	0.58
high schools minority enrollment (%)	61	77	65	79	73	38
high schools student to teacher ratio	20 to 1	23 to 1	20 to 1	21 to 1	16 to 1	23 to 1
high schools ratio rank	3	1	3	2	4	1
high schools ratio % norm.	0.87	1.00	0.87	0.91	0.70	1.00
middle schools	28	61	84	34	64	30
middle schools # of students	14,381	39,373	48,589	18,238	30,344	18,599
middle schools diversity score	0.76	0.72	0.58	0.77	0.6	0.58
middle schools minority enrollment (%)	65	76	65	78	78	36
middle schools student to teacher ratio	18 to 1	22 to 1	20 to 1	21 to 1	14 to 1	23 to 1
middle schools ratio rank	5	2	4	3	6	1
middle schools ratio % norm.	0.78	0.96	0.87	0.91	0.61	1.00
elementary schools	124	197	274	129	197	95
elementary schools # of students	51,642	96,396	158,807	70,872	92,894	48,820
elementary schools diversity score	0.76	0.72	0.58	0.77	0.6	0.58
elementary schools minority enrollment (%)	59	76	73	81	73	43
elementary schools student to teacher ratio	15 to 1	24 to 1	19 to 1	24 to 1	16 to 1	23 to 1
elementary school ratio rank	5	1	3	1	4	2
elementary school ratio % norm.	0.63	1.00	0.79	1.00	0.67	0.96
all public	179	288	435	192	285	132
all public schools # of students	87,064	176,321	253,592	117,497	142,900	82,782
all public schools diversity score	0.76	0.72	0.58	0.77	0.6	0.58
all public schools minority enrollment (%)	60	75	72	80	72	42
all public schools student to teacher ratio	17 to 1	24 to 1	20 to 1	23 to 1	16 to 1	23 to 1
all public schools ratio rank	4	1	3	2	5	2
all public schools ratio % norm.	0.71	1.00	0.83	0.96	0.67	0.96
private schools	118	103	99	63	112	49
private schools # of students	24,819	23,021	20,535	12,339	24,759	7,343
private schools minority enrollment (%)	32	37	35	43	28	21
private schools student to teacher ratio	11 to 1	13 to 1	14 to 1	14 to 1	12 to 1	11 to 1
private schools ratio rank	4	2	1	1	3	4
private schools ratio % norm.	0.79	0.93	1.00	1.00	0.86	0.79
student to teacher ratio rank	4.2	1.4	2.8	1.8	4.4	2
student to teacher ratio % norm.	0.75	0.98	0.87	0.96	0.70	0.94

Teacher Respect | Gallup | State | 2013

	Washington	California	Arizona	California	Colorado	Utah
well-respected teachers (%)	79	75	72	75	76	82
teacher respect rank	4	2	1	2	3	5
teacher respect % norm.	0.90	0.96	1.00	0.96	0.94	0.86
teachers mean	4.10	1.70	1.90	1.90	3.70	3.50
teachers % normalization	0.83	0.97	0.94	0.96	0.82	0.90
teachers sum	25	9	15	11	25	15
teacher subcategory rank	5	1	2	2	4	3

SCHOOLS

Schools | National Association of Counties (NACo) | County | 2015

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
number of colleges/universities	47	72	91	29	23	33
number of public institutions	13	13	21	7	6	2
total college/university enrollment	191,800	466,600	772,800	155,300	113,900	193,300
number of colleges/universities (per 100,000 residents)	2.22	2.18	2.18	1.93	3.37	2.98
number of colleges/universities rank	3	2	2	1	5	4
number of colleges/universities % norm.	0.85	0.87	0.87	1.00	0.25	0.46
number of public institutions (per 100,000 residents)	0.61	0.39	0.5	0.47	0.88	0.18
number of public institutions rank	5	2	4	3	6	1
number of public institutions % norm.	-1.39	-0.17	-0.78	-0.61	-2.89	1.00
colleges/universities rank	4	2	3	2	5.5	2.5
colleges/universities % norm.	-0.27	0.35	0.05	0.19	-1.32	0.73
number of elementary and secondary schools	487	761	1,203	372	224	294
total elementary and secondary school enrollment	273,900	499,500	722,400	243,700	89,700	212,200
number of elementary and secondary schools (per 10,000 residents)	2.30	2.31	2.89	2.48	3.28	2.66
elementary and secondary school rank	6	5	2	4	1	3
elementary and secondary school % norm.	0.70	0.70	0.88	0.76	1.00	0.81
schools mean	5.00	3.50	2.50	3.00	3.25	2.75
schools % normalization	0.22	0.53	0.46	0.47	-0.16	0.77
schools sum	14	9	8	8	12	8
schools subcategory rank	6	5	1	3	4	2

SPENDING

Spending | WalletHub | City | 2016

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
average standardized test scores (%)	60.67	60.41	57.73	55.2	44.72	76.22
average standardized test scores rank (out of 112)	47	49	55	60	88	9
education expenditures per capita (\$)	1,006	1,458	1,356	1,491	1,540	1,221
education expenditures per capita rank (out of 112)	4	41	29	44	51	15
return on investment rank (out of 112)	66	78	44	59	93	26
spending mean	3.00	2.00	5.00	4.00	1.00	6.00
spending % norm.	0.71	0.84	0.47	0.63	1.00	0.28
spending sum	3	2	5	4	1	6
spending subcategory rank	3	2	5	4	1	6

TEACHERS/SCHOOLS/SPENDING TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	4.03	2.40	3.13	2.97	2.65	4.08
percent normalization	0.58	0.78	0.62	0.69	0.55	0.65
sum	42	20	28	23	38	29

EDUCATION TOTAL

MEAN

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
enrollment	1.50	4.00	3.50	4.00	4.00	4.00
enrollment	1.50	4.00	3.50	4.00	4.00	4.00
attainment	5.06	2.94	2.34	3.40	4.50	2.76
attainment	5.06	2.94	2.34	3.40	4.50	2.76
test scores	3.56	2.90	1.96	2.50	2.98	4.12
school/education rankings	3.50	5.17	2.42	3.33	3.42	3.17
literacy + language	4.00	1.50	4.50	2.00	2.50	4.50
daily learning	3.00	5.00	1.00	2.00	4.00	4.00
quality	3.52	3.64	2.47	2.46	3.22	3.95
economic condition	3.43	3.07	2.80	3.27	2.47	3.77
health	3.24	3.53	2.17	3.53	2.76	2.94
well-being	3.27	2.96	1.79	2.96	2.86	3.89
child well-being	3.31	3.19	2.25	3.25	2.70	3.53
teachers	4.10	1.70	1.90	1.90	3.70	3.50
schools	5.00	3.50	2.50	3.00	3.25	2.75
spending	3.00	2.00	5.00	4.00	1.00	6.00
teachers/schools/spending	4.03	2.40	3.13	2.97	2.65	4.08
education mean	3.48	3.23	2.74	3.22	3.41	3.66

PERCENT NORMALIZATION

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
enrollment	0.96	0.72	0.78	0.71	0.71	0.75
enrollment	0.96	0.72	0.78	0.71	0.71	0.75
attainment	0.72	0.85	0.91	0.84	0.72	0.88
attainment	0.72	0.85	0.91	0.84	0.72	0.88
test scores	0.83	0.79	0.91	0.82	0.88	0.71
school/education rankings	0.70	0.44	0.75	0.49	0.37	0.49
literacy + language	0.67	0.98	0.71	0.81	0.85	0.70
daily learning	0.93	0.89	1.00	0.96	0.92	0.92
quality	0.78	0.78	0.84	0.77	0.76	0.70
economic condition	0.73	0.76	0.81	0.78	0.84	0.71
health	0.76	0.74	0.91	0.74	0.83	0.79
well-being	0.67	0.80	0.95	0.80	0.74	0.57
child well-being	0.72	0.77	0.89	0.77	0.81	0.69
teachers	0.83	0.97	0.94	0.96	0.82	0.90
schools	0.22	0.53	0.46	0.47	-0.16	0.77
spending	0.71	0.84	0.47	0.63	1.00	0.28
teachers/schools/spending	0.58	0.78	0.62	0.69	0.55	0.65
education percent normalization	0.75	0.78	0.81	0.76	0.71	0.74

SUM

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
enrollment	3	8	7	8	8	8
enrollment	3	8	7	8	8	8
attainment	81	50	48	68	69	62
attainment	81	50	48	68	69	62
test scores	36	22	18	20	32	39
school/education rankings	30	40	15	30	27	26
literacy + language	8	3	9	4	5	9
daily learning	3	5	1	2	4	4
quality	77	70	43	56	68	78
economic condition	39	43	33	46	34	46
health	85	86	58	86	74	61
well-being	166	177	105	177	159	199
child well-being	290	306	196	309	267	306
teachers	25	9	15	11	25	15
schools	14	9	8	8	12	8
spending	3	2	5	4	1	6
teachers/schools/spending	42	20	28	23	38	29
education sum	493	454	322	464	450	483

SUBCATEGORY FREQUENCY

		Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
enrollment	enrollment	1	3	2	3	3	3
attainment	attainment	6	3	1	4	5	2
quality	test scores	6	3	1	4	5	2
	school/education rankings	5	6	1	3	4	2
	literacy + language	4	1	5	2	3	5
	daily learning	3	5	1	2	4	4
child well-being	economic condition	5	3	2	4	1	6
	health	4	5	1	5	2	3
	well-being	4	3	1	3	2	5
teachers/ schools/ spending	teachers	5	1	2	2	4	3
	schools	6	5	1	3	4	2
	spending	3	2	5	4	1	6
	frequency of "6"	3	1	0	0	0	2
	frequency of "5"	3	3	2	1	2	2
	frequency of "4"	3	0	0	4	4	1
	frequency of "3"	2	5	0	4	2	3
	frequency of "2"	0	1	3	3	2	4
education frequency of "1"		1	2	7	0	2	0
education subcategory sum		52	40	23	39	38	43
enrollment		1.00	3.00	2.00	3.00	3.00	3.00
attainment		6.00	3.00	1.00	4.00	5.00	2.00
quality		4.50	3.75	2.00	2.75	4.00	3.25
child well-being		4.33	3.67	1.33	4.00	1.67	4.67
teachers/schools/spending		4.67	2.67	2.67	3.00	3.00	3.67
education subcategory mean		4.33	3.33	1.92	3.25	3.17	3.58

environment

- transportation
- energy
- air pollution
- water
- species
- climate
- climate change
- sustainability/efficiency indexes

TRANSPORTATION

MEANS OF TRANSPORT

Transport to Work (16+ y/o) | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
car/truck/van alone (%)	79	85	87.7	86.5	84.5	87
car/truck/van alone rank	6	4	1	3	5	2
car/truck/van alone % norm.	0.90	0.97	1.00	0.99	0.96	0.99
car/truck/van carpool (%)	10	9.1	10.9	10.3	8.6	12
car/truck/van carpool rank	3	2	5	4	1	6
car/truck/van carpool % norm.	0.84	0.94	0.73	0.80	1.00	0.60
public transport (%)	9.2	3	2.1	2.5	4.3	3.8
public transport rank	6	3	1	2	5	4
public transport % norm.	-2.38	0.57	1.00	0.81	-0.05	0.19
walked (%)	3.8	2.9	1.5	2.1	2.2	2.2
walked rank	5	4	1	2	3	3
walked % norm.	-0.53	0.07	1.00	0.60	0.53	0.53
biked (%)	1.1	0.7	0.8	1.8	0.8	0.8
biked rank	3	1	2	4	2	2
biked % norm.	0.43	1.00	0.86	-0.57	0.86	0.86
didn't work from home, bike, walk, use public transit, carpool (%)	70.2	77.3	78.6	77.4	77	76.1
didn't work from home, bike, walk, use public transit, carpool rank	6	3	1	2	4	5
didn't work from home, bike, walk, use public transit, carpool % norm.	0.89	0.98	1.00	0.98	0.98	0.97
transport to work rank	4.83	2.83	1.83	2.83	3.33	3.67
transport to work % norm.	0.02	0.76	0.93	0.60	0.71	0.69

Vehicles Available (per household) | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
zero (%)	3.9	2.3	3	2.5	2.5	2.2
zero rank	5	2	4	3	3	1
zero % norm.	0.23	0.95	0.64	0.86	0.86	1.00
one (%)	21.6	19.1	22.7	19.3	20	17.4
two (%)	41.1	41.7	44.2	42.2	43.9	41.3
three plus (%)	33.4	36.9	30.1	36	33.7	39.1
three plus rank	5	2	6	3	4	1
three plus % norm.	0.85	0.94	0.77	0.92	0.86	1.00
vehicles available rank	5	2	5	3	3.5	1
vehicles available % norm.	0.54	0.95	0.70	0.89	0.86	1.00

Public Transit | Federal Transit Administration (FTA) | Urbanized Area | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
urbanized area population	3,059,393	2,956,746	3,629,114	1,723,634	2,374,203	1,021,243
trips per resident	71.73	38.68	21.93	16.50	43.68	44.58
trips per resident rank	6	3	2	1	4	5
trips per resident % norm.	-2.35	-0.34	0.67	1.00	-0.65	-0.70
passenger miles per resident	481.00	229.41	103.32	92.27	258.74	365.94
passenger miles per resident rank	6	3	2	1	4	5
passenger miles per resident % norm.	-3.21	-0.49	0.88	1.00	-0.80	-1.97
public transit options	11	8	5	6	5	7
public transit options rank	5	4	1	2	1	3
public transit options % norm.	-0.20	0.40	1.00	0.80	1.00	0.60
public transit rank	5.67	3.33	1.67	1.33	3	4.33
public transit % norm.	-1.92	-0.14	0.85	0.93	-0.15	-0.69

Alternative Transport | Walk Score | City | 2017

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
walk score	73	51	41	47	61	57
walk score rank	6	3	1	2	5	4
walk score % norm.	0.22	0.76	1.00	0.85	0.51	0.61
transit score	57	37	32	34	47	43
transit score rank	6	3	1	2	5	4
transit score % norm.	0.22	0.84	1.00	0.94	0.53	0.66
bike score	63	46	54	69	71	69
bike score rank	3	1	2	4	5	4
bike score % norm.	0.63	1.00	0.83	0.50	0.46	0.50
alternative transport rank	5	2.33	1.33	2.67	5	4
alternative transport % norm.	0.36	0.87	0.94	0.76	0.50	0.59
means of transportation mean	5.13	2.63	2.46	2.46	3.71	3.25
means of transportation % normalization	-0.25	0.61	0.86	0.80	0.48	0.40
means of transportation sum	71	38	30	35	51	49
means of transportation subcategory rank	5	2	1	1	4	3

TRAFFIC

Travel Time to Work (16+ y/o) | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
less than 10min	8.2	9	10	11.2	8.7	10.8
10-14min	10.5	13.3	12.4	13.6	11	14.5
15-19min	13.4	17.3	14.8	15.6	14.5	18.3
20-24min	14.4	17.4	16	15.8	15.9	20
25-29min	7.1	7.6	7.5	7	7.6	7.6
30-34min	16	15.5	16.1	15.2	17	14.5
35-44min	9.1	6.7	7.9	6.9	8.7	5.2
45-59min	10.5	6.8	8.7	7.4	9.5	5.2
60+min	10.8	6.4	6.5	7.3	7.3	3.7
mean travel time (minutes)	29.6	25.3	26	26.4	27.3	22.5
travel time to work rank	1	5	4	3	2	6
travel time to work % norm.	1.00	0.85	0.88	0.89	0.92	0.76

Traffic Index | TomTom | City | 2016

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
world rank (390 cities, 48 countries)	53	102	165	131	136	168
north america rank (78 cities)	6	16	54	27	30	57
usa rank (71 cities)	4	11	47	22	25	50
usa rank	1	2	5	3	4	6
usa % norm.	1.00	-0.75	-9.75	-3.50	-4.25	-10.50
extra travel time (%)	34	27	16	22	20	16
extra travel time rank	1	2	5	3	4	5
extra travel time % norm.	1.00	0.79	0.47	0.65	0.59	0.47
increase/decrease from last year (%)	3	3	1	3	-1	2
increase/decrease from last year rank	1	1	3	1	4	2
increase/decrease from last year % norm.	1.00	1.00	0.33	1.00	-0.33	0.67
morning peak (%)	54	44	31	38	33	20
morning peak rank	1	2	5	3	4	6
morning peak % norm.	1.00	0.81	0.57	0.70	0.61	0.37
evening peak (%)	77	60	36	54	44	43
evening peak rank	1	2	6	3	4	5
evening peak % norm.	1.00	0.78	0.47	0.70	0.57	0.56
highways (%)	33	19	10	15	14	7
highways rank	1	2	5	3	4	6
highways % norm.	1.00	0.58	0.30	0.45	0.42	0.21
non-highways (%)	35	35	20	26	24	22
non-highways rank	1	1	5	2	3	4
non-highways % norm.	1.00	1.00	0.57	0.74	0.69	0.63
extra travel time per day (minutes)	40	32	20	28	24	20
extra travel time per day rank	1	2	5	3	4	5
extra travel time per day % norm.	1.00	0.80	0.50	0.70	0.60	0.50
extra travel time 2008 (%)	24	18	15	18	14	16
extra travel time 2009 (%)	23	17	15	17	15	16
extra travel time 2010 (%)	23	19	14	18	16	16
extra travel time 2011 (%)	24	20	13	17	18	15
extra travel time 2012 (%)	26	20	13	17	17	15
extra travel time 2013 (%)	27	21	14	18	19	16
extra travel time 2014 (%)	31	24	15	20	22	15
extra travel time 2015 (%)	31	24	15	19	21	14
extra travel time 2016 (%)	34	27	16	22	20	16
change in extra travel time 2008-2016 (%)	41.67	50	6.67	22.22	42.86	0
change in extra travel time 2008-2016 rank	3	1	5	4	2	6
change in extra travel time 2008-2016 % norm.	0.83	1.00	0.13	0.44	0.86	0.00
traffic index rank	1.22	2	4.89	2.78	3.67	5.00
traffic index % norm.	0.98	0.67	-0.71	0.21	-0.03	-0.79

Proximity to Highways | Centers for Disease Control and Prevention (CDC) | County | 2010

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
living within 150m to highway (%)	3.6	6.5	3.7	4.7	3.9	3.1
proximity to highways rank	2	6	3	5	4	1
proximity to highways % norm.	0.84	-0.10	0.81	0.48	0.74	1.00
traffic mean	1.41	4.22	3.96	3.59	3.22	4.00
traffic % normalization	0.94	0.48	0.32	0.53	0.55	0.32
traffic sum	14	26	51	33	39	52
traffic subcategory rank	1	6	5	3	2	4

TRANSPORTATION TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.27	3.42	3.21	3.03	3.47	3.63
percent normalization	0.35	0.54	0.59	0.66	0.51	0.36
sum	85	64	81	68	90	101

ENERGY

SOLAR ENERGY

Solar Energy Potential | US Department of Energy (DOE) | Metro | 2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
solar energy potential (watt hours/ft2/day)	336-362	523-536	603-616	510-522	510-522	497-509
solar energy potential rank	1	4	5	3	3	2
solar energy potential % norm. (max)	1.00	0.52	0.30	0.56	0.56	0.59
100,000 sf solar energy generation (# of homes)	900	1400	1500	1300	1300	1250
100,000 sf solar energy generation rank	1	4	5	3	3	2
100,000 sf solar energy generation % norm.	1.00	0.44	0.33	0.56	0.56	0.61

Solar Energy Potential | US Department of Energy (DOE) | City | 2013

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
solar potential (kwh/m2/day)	3.5 to 4	5.5 to 6	6.5 to 7	5.5 to 6	5 to 6	5 to 6
solar potential rank	1	3	4	3	2	2
solar potential % norm. (max)	1.00	0.50	0.25	0.50	0.50	0.50

Solar Energy Potential | Northwest Climate Toolbox | City | 1971-2000

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
solar radiation annual average 1971-2000 (w/m2)	148.6	245.7	237.1	216.4	197.1	200.9
solar radiation rank	1	6	5	4	2	3
solar radiation % norm.	1.00	0.35	0.40	0.54	0.67	0.65
solar energy potential rank	1	4.25	4.75	3.25	2.5	2.25
solar energy potential % norm.	1.00	0.45	0.32	0.54	0.57	0.59

Solar Installed | Environment America | City | 2017

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
total solar pv installed (mw-dc)	15	303	165	40	45	15
total solar pv installed rank (out of 66)	24	1	5	13	12	23
total solar pv installed rank	1	5	4	2	3	1
total solar pv installed % norm.	1.00	-18.20	-9.00	-0.67	-1.00	1.00
per capita solar pv installed (watts-dc)	21.2	217.6	105.6	81.4	66.4	77.5
per capita solar pv installed rank (out of 66)	32	2	7	10	16	14
per capita solar pv installed rank	1	6	5	4	2	3
per capita solar pv installed % norm.	1.00	-8.26	-2.98	-1.84	-1.13	-1.66
small building solar pv potential installed (%)	1.3	13.7	5.5	5.1	6.7	5.4
small building solar pv potential installed rank	1	6	4	2	5	3
small building solar pv potential installed % norm.	1.00	-8.54	-2.23	-1.92	-3.15	-2.15
solar installed rank	1	5.67	4.33	2.67	3.33	2.33
solar installed % norm.	1.00	-11.67	-4.74	-1.48	-1.76	-0.94
solar energy mean	1.00	4.96	4.54	2.96	2.92	2.29
solar energy % normalization	1.00	-5.61	-2.21	-0.47	-0.60	-0.17
solar energy sum	7	34	32	21	20	16
solar energy subcategory rank	1	6	5	4	3	2

WIND ENERGY

Wind Speed | Northwest Climate Toolbox | City | 1971-2000

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
annual wind speed average 1971-2000 (mph)	9.4	6.4	4.8	6.3	8.3	8.2
wind speed rank	6	3	1	2	5	4
wind speed % norm.	0.04	0.67	1.00	0.69	0.27	0.29

Wind Power Potential | US Department of Energy (DOE) | County | 2015

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
potential wind capacity at 110m hub height (sq km)	0-100	0	0	100-200	0	0-100
potential capacity 110m rank	2	1	1	3	1	2
potential capacity 110m % norm. (max)	0.00	1.00	1.00	-1.00	1.00	0.00
potential wind capacity at 140m hub height (sq km)	0-100	0	0-100	100-200	0	0-100
potential capacity 140m rank	2	1	2	3	1	2
potential capacity 140m % norm.	0.00	1.00	0.00	-1.00	1.00	0.00
installed vs potential capacity (%) (state)	1.76	1.85	0.0564	1.85	0.79	0.14
installed vs potential capacity rank	4	5	1	5	3	2
installed vs potential capacity % norm.	-29.28	-30.76	1.00	-30.76	-11.91	-0.49
wind power potential rank	2.67	2.33	1.33	3.67	1.67	2
wind power potential % norm.	-9.76	-9.59	0.67	-10.92	-3.30	-0.16
wind energy mean	4.33	2.67	1.17	2.83	3.33	3.00
wind energy % normalization	-4.86	-4.46	0.83	-5.12	-1.52	0.06
wind energy sum	14	10	5	13	10	10
wind energy subcategory rank	6	2	1	3	5	4

OTHER RENEWABLE ENERGY SOURCES

Biomass Potential | US Department of Energy (DOE) | City | 2013

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
biomass potential (thousand tonnes/yr)	500+	250-500	500+	100-250	50-150	100-150
biomass potential rank	4	3	4	2	1	2
biomass potential % norm.	-1.33	-1.33	-1.33	0.33	1.00	1.00

Geothermal Potential | National Renewable Energy Laboratory (NREL) | County | 2011

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
deep enhanced geothermal potential (1-6 most to least favorable)	6	2	3	6	3	2
geothermal potential rank	1	3	2	1	2	3
geothermal potential % norm.	1.00	0.33	0.50	1.00	0.50	0.33
other renewable energy sources mean	2.50	3.00	3.00	1.50	1.50	2.50
other renewable energy sources % normalization	-0.17	-0.50	-0.42	0.67	0.75	0.67
other renewable energy sources sum	5	6	6	3	3	5
other renewable energy sources subcategory rank	2	3	3	1	1	2

ENERGY USE

Energy Use | US Department of Energy (DOE) | City | 2013

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
industrial electricity usage per capita (mwh)	3.1	0.84	1.42	0.59	2.28	7.21
industrial electricity usage rank	2	5	4	6	3	1
industrial electricity usage % norm.	0.43	0.12	0.20	0.08	0.32	1.00
commercial electricity usage per capita (mwh)	7.36	4.07	5.25	2.94	5.16	6.94
commercial electricity usage rank	1	5	4	6	3	2
commercial electricity usage % norm.	1.00	0.55	0.71	0.40	0.70	0.94
residential electricity usage per capita (mwh)	6.41	2.52	5.66	2.35	4.91	5.33
residential electricity usage rank	1	5	2	6	4	3
residential electricity usage % norm.	1.00	0.39	0.88	0.37	0.77	0.83
energy use mean	1.33	5.00	3.33	6.00	3.33	2.00
energy use % normalization	0.81	0.35	0.60	0.28	0.59	0.92
energy use sum	4	15	10	18	10	6
energy use subcategory rank	1	4	3	5	3	2

ENERGY RATES

Energy Rates | US Department of Energy (DOE) | City | 2013

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
average residential electricity rates (\$/kwh)	0.0775	0.164	0.120	0.124	0.111	0.103
residential electricity rates rank	6	1	3	2	4	5
residential electricity rates % norm.	0.47	1.00	0.73	0.76	0.67	0.63
average commercial electricity rates (\$/kwh)	0.0680	0.148	0.102	0.138	0.0916	0.0803
commercial electricity rates rank	6	1	3	2	4	5
commercial electricity rates % norm.	0.46	1.00	0.69	0.93	0.62	0.54
average industrial electricity rates (\$/kwh)	0.0595	0.122	0.0787	0.112	0.0604	0.0548
industrial electricity rates rank	5	1	3	2	4	6
industrial electricity rates % norm.	0.49	1.00	0.65	0.92	0.50	0.45
energy rates mean	5.67	1.00	3.00	2.00	4.00	5.33
energy rates % normalization	0.47	1.00	0.69	0.87	0.60	0.54
energy rates sum	17	3	9	6	12	16
energy rates subcategory rank	6	1	3	2	4	5

ENERGY SOURCES

Renewable Energy | Brookings Institution | Metro | 2014

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
coal (% of capacity)	0	0	0	0	35.5	24.6
coal megawatts	0	0	0	0	653	212.7
natural gas (% of capacity)	49.8	95.8	69	40.9	44.1	73.5
natural gas megawatts	387	3,117.4	11,080.6	1,130.1	810.7	635.9
nuclear (% of capacity)	0	0	24.5	0	0	0
nuclear megawatts	0	0	3,937	0	0	0
hydro (% of capacity)	40.4	1.7	1.9	49.9	18.3	0.8
hydro megawatts	314.1	54.7	308.2	1381.7	377	7.2
wind (% of capacity)	0	0	0	1.4	0.8	0
wind megawatts	0	0	0	37.8	14	0
solar (% of capacity)	0	1.4	4.6	4.4	0.6	0
solar megawatts	0	45	733.3	122.3	11.6	0
petroleum (% of capacity)	0.3	0	0	0.4	0	0
petroleum megawatts	2.5	0	0	12	0	0
other (% of capacity)	9.5	1.2	0	3	0.7	0.9
other megawatts	74	37.8	0	82.5	13	7.6
% of energy from renewable sources	40.4	3.1	6.5	55.7	19.7	0.8
renewable energy rank	5	2	3	6	4	1
renewable energy % norm.	-48.50	-1.88	-6.13	-67.63	-22.63	1.00

Renewable Energy | US Department of Energy (DOE) | State | 2015

	Washington	California	Arizona	California	Colorado	Utah
hydro-electric (pumped storage) (mwh)	0	407	0	407	0	0
coal (mwh)	5,489	291	31,396	291	29,242	26,390
nuclear (mwh)	8,128	17,901	32,340	17,901	0	0
natural gas (mwh)	9,077	87,906	29,550	87,906	12,650	5,902
other (mwh)	0	838	0	838	0	122
geothermal (mwh)	0	11,624	0	11,624	0	463
hydro-electric (conventional) (mwh)	82,825	42,693	6,972	42,693	2,018	819
solar (mwh)	116	33,733	6,498	33,733	1,463	2,262
wind (mwh)	7,481	13,971	588	13,971	9,567	935
biomass (mwh)	2,035	5,911	238	5,911	166	73
renewable (%)	80.29	50.33	13.29	50.33	23.98	12.31
renewable rank	5	4	2	4	3	1
renewable % norm.	-4.52	-2.09	0.92	-2.09	0.05	1.00
energy sources mean	5.00	3.00	2.50	5.00	3.50	1.00
energy sources % normalization	-26.51	-1.98	-2.60	-34.86	-11.29	1.00
energy sources sum	10	6	5	10	7	2
energy sources subcategory rank	5	3	2	5	4	1

ENERGY TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.31	3.27	2.92	3.38	3.10	2.69
percent normalization	-4.88	-1.87	-0.52	-6.44	-1.91	0.50
sum	57	74	67	71	62	55

AIR POLLUTION

AIR POLLUTION

Air Pollution | American Lung Association | Metro | 2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
ozone (out of 228)	63	7	5	8	11	20
ozone rank	6	2	1	3	4	5
ozone % norm.	-10.60	0.60	1.00	0.40	-0.20	-2.00
year-round particle pollution (out of 184)	121	47	47	39	131	86
year-round particle pollution rank	4	2	2	1	5	3
year-round particle pollution % norm.	-1.10	0.79	0.79	1.00	-1.36	-0.21
short-term particle pollution (24hr) (out of 186)	17	34	24	14	30	7
short-term particle pollution rank	3	6	4	2	5	1
short-term particle pollution % norm.	-0.43	-2.86	-1.43	0.00	-2.29	1.00
air pollution rank	4.33	3.33	2.33	2	4.67	3
air pollution % norm.	-4.04	-0.49	0.12	0.47	-1.28	-0.40

Air Quality Index | US Environmental Protection Agency (EPA) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
good (days)	279	69	26	128	92	183
good rank	6	2	1	4	3	5
good % norm.	-8.73	-0.65	1.00	-2.92	-1.54	-5.04
moderate (days)	84	255	265	177	245	155
moderate rank	6	2	1	4	3	5
moderate % norm.	0.32	0.96	1.00	0.67	0.92	0.58
unhealthy for sensitive groups (days)	2	40	67	45	25	23
unhealthy for sensitive groups rank	6	3	1	2	4	5
unhealthy for sensitive groups % norm.	0.03	0.60	1.00	0.67	0.37	0.34
unhealthy (days)	1	2	5	16	4	5
unhealthy rank	5	4	2	1	3	2
unhealthy % norm.	0.06	0.13	0.31	1.00	0.25	0.31
very unhealthy (days)	0	0	3	0	0	0
very unhealthy rank	2	2	1	2	2	2
very unhealthy % norm.	0.00	0.00	1.00	0.00	0.00	0.00
air quality index rank	5	2.6	1.2	2.6	3	3.8
air quality index % norm.	-1.66	0.21	0.86	-0.12	0.00	-0.76

Fine Particulate Matter | Centers for Disease Control and Prevention (CDC) | County | 2003-2011

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
average fine particulate matter (ug/m3)	9.94	11.55	11.17	10.52	10.95	11.8
fine particulate matter rank	6	2	3	5	4	1
fine particulate matter % norm.	0.84	0.98	0.95	0.89	0.93	1.00
air pollution mean	5.11	2.64	2.18	3.20	3.89	2.60
air pollution % normalization	-1.62	0.23	0.64	0.41	-0.12	-0.05
air pollution sum	44	25	16	24	33	29
air pollution subcategory rank	6	3	1	4	5	2

AIR POLLUTION TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	5.11	2.64	2.18	3.20	3.89	2.60
percent normalization	-1.62	0.23	0.64	0.41	-0.12	-0.05
sum	44	25	16	24	33	29

WATER

WATER QUALITY

Tap Water Quality | Environmental Working Group (EWG) | 8 Largest Water Utilities | 2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
population served	1,663,028	2,532,157	3,175,500	1,272,054	1,901,607	904,270
total contaminants above guidelines	54	59	41	36	41	31
total contaminants above guidelines rank	2	1	3	4	3	5
total contaminants above guidelines % norm.	0.92	1.00	0.69	0.61	0.69	0.53
average contaminants above guidelines	6.75	7.38	5.13	4.50	5.13	3.88
average contaminants above guidelines rank	2	1	3	4	3	5
average contaminants above guidelines % norm.	0.91	1.00	0.69	0.61	0.69	0.53
max contaminants above guidelines	9	10	6	7	9	7
max contaminants above guidelines rank	2	1	4	3	2	3
max contaminants above guidelines % norm.	0.90	1.00	0.60	0.70	0.90	0.70
total other contaminants detected	75	98	101	76	88	87
total other contaminants detected rank	6	2	1	5	3	4
total other contaminants detected % norm.	0.74	0.97	1.00	0.75	0.87	0.86
average other contaminants detected	9.08	11.71	11.79	8.94	10.35	10.10
average other contaminants detected rank	5	2	1	6	3	4
average other contaminants detected % norm.	0.77	0.99	1.00	0.76	0.88	0.86
max other contaminants above guidelines	12	17	17	15	14	16
max other contaminants above guidelines rank	5	1	1	3	4	2
max other contaminants above guidelines % norm.	0.71	1.00	1.00	0.88	0.82	0.94
total source: agriculture	18	14	32	22	21	25
total source: industry	52	85	118	91	95	94
total source: treatment byproducts	70	92	42	29	47	33
total source: runoff + sprawl	9	8	27	25	20	13
man-made contaminate sources	149	199	219	167	183	165
man-made contaminate sources rank	6	2	1	4	3	5
man-made contaminate sources % norm.	0.68	0.91	1.00	0.76	0.84	0.75
total source: naturally occurring	52	69	100	77	92	96
tap water quality rank	4	1.43	2	4.14	3	4
tap water quality % norm.	0.80	0.98	0.86	0.73	0.81	0.74

Access to Clean/Safe Water | Gallup | Metro | 2010

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
easy access to clean/safe water (%)	97.4	94.5	93.4	95.4	96.9	97.4
access to clean/safe water rank	5	2	1	3	4	5
access to clean/safe water % norm.	0.96	0.99	1.00	0.98	0.96	0.96
water quality mean	4.50	1.71	1.50	3.57	3.50	4.50
water quality % normalization	0.88	0.98	0.93	0.85	0.89	0.85
water quality sum	33	12	15	32	25	33
water quality subcategory rank	5	2	1	4	3	5

WATER USE

Water Use | Brookings Institution | Metro | 2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
total withdrawals (millions of gallons per day)	659	2818	3084	1708	748	597
change in withdrawals 2005-2010 (%)	18.9	-31	-5.3	-3.4	6.4	7.2
change in withdrawals rank	1	6	5	4	2	3
change in withdrawals % norm.	1.00	-1.64	-0.28	-0.18	0.34	0.38
total withdrawals per capita (gal/day)	192	910	735	795	294	549
total withdrawals per capita rank	6	1	3	2	5	4
total withdrawals per capita % norm.	0.21	1.00	0.81	0.87	0.32	0.60
water use mean	3.50	3.50	4.00	3.00	3.50	3.50
water use % normalization	0.61	-0.32	0.26	0.35	0.33	0.49
water use sum	7	7	8	6	7	7
water use subcategory rank	2	2	3	1	2	2

WATER TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	4.00	2.61	2.75	3.29	3.50	4.00
percent normalization	0.74	0.33	0.60	0.60	0.61	0.67
sum	40	19	23	38	32	40

SPECIES

THREATENED + ENDANGERED SPECIES

Threatened + Endangered Species | National Association of Counties (NACo) | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
endangered species	0	32	11	21	1	1
endangered rank	5	1	3	2	4	4
endangered % norm.	0.00	1.00	0.34	0.66	0.03	0.03
threatened species	4	12	2	12	3	3
threatened rank	2	1	4	1	3	3
threatened % norm.	0.33	1.00	0.17	1.00	0.25	0.25
threatened + endangered species mean	3.50	1.00	3.50	1.50	3.50	3.50
threatened + endangered species % normalization	0.17	1.00	0.26	0.83	0.14	0.14
threatened + endangered species sum	7	2	7	3	7	7
threatened + endangered species subcategory rank	3	1	3	2	3	3

SPECIES TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.50	1.00	3.50	1.50	3.50	3.50
percent normalization	0.17	1.00	0.26	0.83	0.14	0.14
sum	7	2	7	3	7	7

CLIMATE

CLIMATE

Climate | National Oceanic and Atmospheric Administration (NOAA) | City | 2015

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
highest temperature recorded (degrees f)	103	111	122	115	104	107
highest temperature recorded rank	6	3	1	2	5	4
highest temperature recorded % norm.	0.84	0.91	1.00	0.94	0.85	0.88
lowest temperature recorded (degrees f)	0	29	17	18	-25	-22
lowest temperature recorded rank	3	6	4	5	1	2
lowest temperature recorded % norm.	0.00	-1.16	-0.68	-0.72	1.00	0.88
mean # of days temperature 90+ (degrees f)	3	3	169	73	36	57
mean # of days temperature 90+ rank	5	5	1	2	4	3
mean # of days temperature 90+ % norm.	0.02	0.02	1.00	0.43	0.21	0.34
mean # of days temperature 32- (degrees f)	33	0	8	18	155	123
mean # of days temperature 32- rank	3	6	5	4	1	2
mean # of days temperature 32- % norm.	0.21	0.00	0.05	0.12	1.00	0.79
mean # of days with precipitation .01+ In.	156	41	35	57	87	92
mean # of days with precipitation .01+ In. rank	1	5	6	4	3	2
mean # of days with precipitation .01+ In. % norm.	1.00	0.26	0.22	0.37	0.56	0.59
average snowfall (in)	11	0	0	0	58.1	59.3
average snowfall rank	3	4	4	4	2	1
average snowfall % norm.	0.19	0.00	0.00	0.00	0.98	1.00
average wind speed	7.9	6.4	6.1	6.4	8	8.4
average wind speed rank	3	4	5	4	2	1
average wind speed % norm.	0.94	0.76	0.73	0.76	0.95	1.00
max wind speed	69	64	86	77	70	94
max wind speed rank	5	6	2	3	4	1
max wind speed % norm.	0.73	0.68	0.91	0.82	0.74	1.00
average % of possible sunshine	45	69	85	77	69	66
average % of possible sunshine rank	1	3	5	4	3	2
average % of possible sunshine % norm.	1.00	0.47	0.11	0.29	0.47	0.53
mean # of clear days	71	146	211	188	115	125
mean # of clear days rank	1	4	6	5	2	3
mean # of clear days % norm.	1.00	-0.06	-0.97	-0.65	0.38	0.24
mean # of partly cloudy days	93	117	85	77	130	101
mean # of partly cloudy days rank	4	2	5	6	1	3
mean # of partly cloudy days % norm.	0.72	0.90	0.65	0.59	1.00	0.78
mean # of cloudy days	201	102	70	100	120	139
mean # of cloudy days rank	1	4	6	5	2	3
mean # of cloudy days % norm.	1.00	0.51	0.35	0.50	0.60	0.69
average relative humidity morning	83	75	47	79	53	64
average relative humidity afternoon	63	63	23	45	43	43
normal daily mean temperature (1981-2010)	53.5	63.6	75	61	50.4	52.7
normal daily mean temperature rank	3	5	6	4	1	2
normal daily mean temperature % norm.	0.94	0.74	0.51	0.79	1.00	0.95
heating degree days (base 65 degrees f) (1981-2010)	4,370	1,225	935	2,619	6,058	5,607
heating degree days rank	3	5	6	4	1	2
heating degree days % norm.	0.72	0.20	0.15	0.43	1.00	0.93
cooling degree days (base 65 degrees f) (1981-2010)	188	720	4,607	1,178	769	1,160
cooling degree days rank	6	5	1	2	4	3
cooling degree days % norm.	0.04	0.16	1.00	0.26	0.17	0.25

normal precipitation (in.) (1981-2010)	37.72	10.34	8.03	18.52	14.3	16.1
normal precipitation rank	1	5	6	2	4	3
normal precipitation % norm.	1.00	0.27	0.21	0.49	0.38	0.43
climate mean	3.06	4.50	4.31	3.75	2.50	2.31
climate % normalization	0.65	0.29	0.33	0.34	0.71	0.70
climate sum	49	72	69	60	40	37
climate subcategory rank	3	6	5	4	2	1

Weather Unpredictability | fivethirtyeight | City | 2014

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
temperature	33	18	41	42	79	64
precipitation	64	33	29	35	52	60
severe weather	46	38	41	51	67	60
unpredictability index	47	31	38	43	66	61
weather unpredictability mean	3.00	6.00	5.00	4.00	1.00	2.00
weather unpredictability % normalization	0.71	0.47	0.58	0.65	1.00	0.92
weather unpredictability sum	3	6	5	4	1	2
weather unpredictability subcategory rank	3	6	5	4	1	2

CLIMATE TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.03	5.25	4.66	3.88	1.75	2.16
percent normalization	0.68	0.38	0.45	0.50	0.85	0.81
sum	52	78	74	64	41	39

CLIMATE CHANGE

PROJECTED CLIMATE CHANGE

Climate Change Data | Northwest Climate Toolbox | City | Varies

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
wind speed annual projected change 1971-2000 vs 2010-2039 (low emissions)	-0.1	0	0	0	-0.2	-0.2
wind speed annual projected change 1971-2000 vs 2040-2069 (low emissions)	-0.2	0	0	-0.1	-0.3	-0.3
wind speed annual projected change 1971-2000 vs 2070-2099 (low emissions)	-0.3	0	0	-0.1	-0.4	-0.4
wind speed annual projected change 1971-2000 vs 2010-2039 (high emissions)	-0.1	0	0	-0.1	-0.2	-0.2
wind speed annual projected change 1971-2000 vs 2040-2069 (high emissions)	-0.3	0	0.1	-0.1	-0.4	-0.4
wind speed annual projected change 1971-2000 vs 2070-2099 (high emissions)	-0.4	0	0.1	-0.1	-0.6	-0.5
wind speed change sum	-1.4	0	0.2	-0.5	-2.1	-2
wind speed change rank	3	6	5	4	1	2
wind speed change % norm.	0.67	0.00	-0.10	0.24	1.00	0.95
mean temperature annual projected change 1971-2000 vs 2010-2039 (low emission)	2.1	1.8	2.3	1.9	2.4	2.8
mean temperature annual projected change 1971-2000vs2040-2069 (low emission)	4	3.3	4.1	3.7	4.2	4.9
mean temperature annual projected change 1971-2000vs2070-2099 (low emission)	5	4.1	5	4.6	5.2	6
mean temperature annual projected change 1971-2000vs2010-2039 (high emission)	2.4	2.2	2.6	2.2	2.7	3.2
mean temperature annual projected change 1971-2000vs2040-2069 (high emission)	5.3	4.5	5.6	4.9	5.8	6.6
mean temperature annual projected change 1971-2000vs2070-2099 (high emission)	8.6	7.2	9	8.1	9.3	10.3
mean temperature change sum	27.4	23.1	28.6	25.4	29.6	33.8
mean temperature change rank	4	6	3	5	2	1
mean temperature change % norm.	0.81	0.68	0.85	0.75	0.88	1.00
max temp annual projected change 1971-2000 vs 2010-2039 (low emission)	2.2	1.8	2.5	2	2.4	2.8
max temp annual projected change 1971-2000 vs 2040-2069 (low emission)	4.1	3.4	4.4	4	4.4	5
max temp annual projected change 1971-2000 vs 2070-2099 (low emission)	5.1	4.2	5.3	4.9	5.4	6.1
max temp annual projected change 1971-2000 vs 2010-2039 (high emission)	2.6	2.1	2.8	2.4	2.7	3.1
max temp annual projected change 1971-2000 vs 2040-2069 (high emission)	5.4	4.5	5.9	5.2	6	6.7
max temp annual projected change 1971-2000 vs 2070-2099 (high emission)	8.7	7.3	9.3	8.3	9.7	10.5
max temp change sum	28.1	23.3	30.2	26.8	30.6	34.2
max temp change rank	4	6	3	5	2	1
max temp change % norm.	0.82	0.68	0.88	0.78	0.89	1.00
min temp annual projected change 1971-2000 vs 2010-2039 (low emission)	2	1.8	2.2	1.7	2.3	2.9
min temp annual projected change 1971-2000 vs 2040-2069 (low emission)	3.8	3.2	3.9	3.4	4.1	4.9

min temp annual projected change 1971-2000 vs 2070-2099 (low emission)	4.9	4	4.8	4.3	4.9	6
min temp annual projected change 1971-2000 vs 2010-2039 (high emission)	2.3	2.2	2.4	2	2.6	3.2
min temp annual projected change 1971-2000 vs 2040-2069 (high emission)	5.1	4.5	5.3	4.6	5.6	6.5
min temp annual projected change 1971-2000 vs 2070-2099 (high emission)	8.5	7.1	8.6	7.8	8.9	10.2
min temp change sum	26.6	22.8	27.2	23.8	28.4	33.7
min temp change rank	4	6	3	5	2	1
min temp change % norm.	0.79	0.68	0.81	0.71	0.84	1.00
annual projected change precipitation 1971-2000 vs 2010-2039 (low emissions)	0.9	-0.2	-0.1	0.4	0.7	0.9
annual projected change precipitation 1971-2000 vs 2040-2069 (low emissions)	1.7	-0.3	0.1	0.2	0.8	0.8
annual projected change precipitation 1971-2000 vs 2070-2099 (low emissions)	2.1	-0.2	0.1	0.8	1.1	1
annual projected change precipitation 1971-2000 vs 2010-2039 (high emissions)	0.7	0.4	0.2	0.7	0.7	1
annual projected change precipitation 1971-2000 vs 2040-2069 (high emissions)	1.8	-0.2	0.1	0.5	0.9	1.1
annual projected change precipitation 1971-2000 vs 2070-2099 (high emissions)	3.2	-0.3	-0.1	1.6	0.8	1.8
precipitation change sum	10.4	-0.8	0.3	4.2	5	6.6
precipitation change rank	1	5	6	3	4	2
precipitation change % norm.	1.00	-0.08	0.03	0.40	0.48	0.63
annual projected change solar radiation 1971-2000 vs 2010-2039 (low emissions)	1.6	1.2	1.2	1.2	0.7	-0.3
annual projected change solar radiation 1971-2000 vs 2040-2069 (low emissions)	2.7	1.6	1.5	2.3	0.9	-0.7
annual projected change solar radiation 1971-2000 vs 2070-2099 (low emissions)	3.3	1.4	1.2	2.3	0.6	-1.4
annual projected change solar radiation 1971-2000 vs 2010-2039 (high emissions)	2.3	1.1	1.3	1.4	0.7	-0.3
annual projected change solar radiation 1971-2000 vs 2040-2069 (high emissions)	3	1.4	1.4	1.9	0.3	-1.8
annual projected change solar radiation 1971-2000 vs 2070-2099 (high emissions)	3.4	0.3	0.5	1.8	0	-3.2
solar radiation change sum	16.3	7	7.1	10.9	3.2	-7.7
solar radiation change rank	1	5	4	2	6	3
solar radiation change % norm.	1.00	0.43	0.44	0.67	0.20	-0.47
annual projected change in 100-hour fuel moisture 1971-2000 vs 2010-2039 (low emissions) (%)	-0.1	-0.1	-0.2	-0.1	-0.1	-0.2
annual projected change in 100-hour fuel moisture 1971-2000 vs 2040-2069 (low emissions) (%)	-0.3	-0.2	-0.3	-0.3	-0.3	-0.5
annual projected change in 100-hour fuel moisture 1971-2000 vs 2010-2039 (high emissions) (%)	-0.2	-0.1	-0.2	-0.1	-0.1	-0.2
annual projected change in 100-hour fuel moisture 1971-2000 vs 2040-2069 (high emissions) (%)	-0.4	-0.3	-0.4	-0.4	-0.4	-0.6
fire risk change sum	-1	-0.7	-1.1	-0.9	-0.9	-1.5
fire risk change rank	3	5	2	4	4	1
fire risk change % norm.	0.67	0.47	0.73	0.60	0.60	1.00

Sea Level Rise | Time | County | 2016

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
.9m sea level change 2100 affected population	1,210	13,515	0	0	0	0
1.8m sea level change 2100 affected population	4,989	45,034	0	0	0	0
sea level rise impact rank	2	1	3	3	3	3
sea level rise impact % norm.	0.11	1.00	0.00	0.00	0.00	0.00

projected climate change mean	2.75	5.00	3.63	3.88	3.00	1.75
projected climate change % normalization	0.73	0.48	0.45	0.52	0.61	0.64
projected climate change sum	22	40	29	31	24	14
projected climate change subcategory rank	2	6	4	5	3	1

PROJECTED COST

Projected Cost | Science | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
GDP (%)	0 to -5	0 to -5	5 to 10	0 to 5	0 to 5	0 to 5
projected cost mean	3.00	3.00	1.00	2.00	2.00	2.00
projected cost % normalization	-0.50	-0.50	1.00	0.50	0.50	0.50
projected cost sum	3	3	1	2	2	2
projected cost subcategory rank	3	3	1	2	2	2

CARBON SEQUESTRATION

Carbonscapes | US Department of Agriculture (USDA) | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
total forest and soil carbon stock (tons of carbon per acre)	158	34	16	56	87	56
percentile	100	10	10	30	80	30
carbonscapes rank	5	2	1	3	4	3
carbonscapes % norm.	-8.00	1.00	1.00	-1.00	-6.00	-1.00

Carbon Storage | US Environmental Protection Agency (EPA) | County | 2013

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
forest carbon (tons/sq m)	0.052	0.001	0	0	0.002	0.005
forest carbon rank	5	2	1	1	3	4
forest carbon % norm.	0.95	1.00	1.00	1.00	1.00	1.00
change in carbon storage 1990-2013 (forest biomass)	2.35	-31.7	10.67	-41.91	0	12.78
change in carbon storage rank	4	2	5	1	3	6
change in carbon storage % norm.	-0.06	0.76	-0.25	1.00	0.00	-0.30
carbon sequestration rank	4.5	2	3	1	3	5
carbon sequestration % norm.	0.45	0.88	0.37	1.00	0.50	0.35
carbon sequestration mean	4.75	2.00	2.00	2.00	3.50	4.00
carbon sequestration % normalization	-3.78	0.94	0.69	0.00	-2.75	-0.33
carbon sequestration sum	14	6	7	5	10	13
carbon sequestration subcategory rank	4	1	1	2	3	3

PARIS AGREEMENT

Paris Agreement | We Are Still In | City/State | 2017

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
committed	x	x	x	x	x	x

BELIEF, PERCEPTION, SUPPORT, BEHAVIOR

Belief, Perception, Support, Behavior | Yale Program on Climate Change Communication | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
global warming is happening (%)	77	73	69	75	73	69
global warming is happening rank	4	2	1	3	2	1
global warming is happening % norm.	0.88	0.94	1.00	0.91	0.94	1.00
mostly caused by humans (%)	59	54	52	55	56	51
mostly caused by humans rank	6	3	2	4	5	1
mostly caused by humans % norm.	0.84	0.94	0.98	0.92	0.90	1.00
most scientists think global warming is happening (%)	59	52	49	56	54	48
most scientists think global warming is happening rank	6	3	2	5	4	1
most scientists think global warming is happening % norm.	0.77	0.92	0.98	0.83	0.88	1.00
trust climate scientists (%)	74	73	74	72	74	69
trust climate scientists rank	4	3	4	2	4	1
trust climate scientists % norm.	0.93	0.94	0.93	0.96	0.93	1.00
belief rank	5	2.75	2.25	3.5	3.75	1
belief % norm.	0.86	0.94	0.97	0.91	0.91	1.00
worried about global warming (%)	64	62	57	61	62	57
worried about global warming rank	4	3	1	2	3	1
worried about global warming % norm.	0.88	0.91	1.00	0.93	0.91	1.00
global warming is already harming people in the us now or in 10 years (%)	56	54	48	52	52	47
global warming is already harming people in the us now or in 10 years rank	5	4	2	3	3	1
global warming is already harming people in the us now or in 10 years % norm.	0.81	0.85	0.98	0.89	0.89	1.00
global warming will harm me personally (%)	42	42	39	43	41	37
global warming will harm me personally rank	4	4	2	5	3	1
global warming will harm me personally % norm.	0.86	0.86	0.95	0.84	0.89	1.00
global warming will harm people in the us (%)	63	61	58	60	59	56
global warming will harm people in the us rank	6	5	2	4	3	1
global warming will harm people in the us % norm.	0.88	0.91	0.96	0.93	0.95	1.00
global warming will harm people in developing countries (%)	70	67	62	66	64	61
global warming will harm people in developing countries rank	6	5	2	4	3	1
global warming will harm people in developing countries % norm.	0.85	0.90	0.98	0.92	0.95	1.00
global warming will harm future generations (%)	77	72	68	74	73	68
global warming will harm future generations rank	5	2	1	4	3	1
global warming will harm future generations % norm.	0.87	0.94	1.00	0.91	0.93	1.00
global warming will harm plants and animals (%)	76	73	66	74	72	68
global warming will harm plants and animals rank	6	4	1	5	3	2
global warming will harm plants and animals % norm.	0.85	0.89	1.00	0.88	0.91	0.97
risk perceptions rank	5.14	3.86	1.57	3.86	3	1.14
risk perceptions % norm.	0.86	0.90	0.98	0.90	0.92	1.00
support funding research into renewable energy (%)	85	82	82	81	84	83
support funding research into renewable energy rank	5	2	2	1	4	3
support funding research into renewable energy % norm.	0.95	0.99	0.99	1.00	0.96	0.98
support regulating carbon dioxide (%)	77	75	73	76	75	73
support regulating carbon dioxide rank	4	2	1	3	2	1
support regulating carbon dioxide % norm.	0.95	0.97	1.00	0.96	0.97	1.00

support setting strict carbon dioxide limits on existing coal-fired power plants (%)	77	70	68	72	74	68
support setting strict carbon dioxide limits on existing coal-fired power plants rank	6	3	1	4	5	2
support setting strict carbon dioxide limits on existing coal-fired power plants % norm.	0.87	0.97	1.00	0.94	0.91	1.00
support requiring utilities to produce 20% electricity from renewable sources (%)	70	68	67	68	68	63
support requiring utilities to produce 20% electricity from renewable sources rank	4	3	2	3	3	1
support requiring utilities to produce 20% electricity from renewable sources % norm.	0.89	0.92	0.94	0.92	0.92	1.00
policy support rank	4.75	2.5	1.5	2.75	3.5	1.75
policy support % norm.	0.91	0.96	0.98	0.96	0.94	0.99
discuss global warming at least occasionally (%)	43	37	35	37	39	34
behavior rank	5	3	2	3	4	1
behavior % norm.	0.74	0.91	0.97	0.91	0.85	1.00
belief, perception, support, behavior mean	4.97	3.03	1.83	3.28	3.56	1.22
belief, perception, support, behavior % normalization	0.84	0.93	0.98	0.92	0.91	1.00
belief, perception, support, behavior sum	80	51	28	55	54	20
belief, perception, support, behavior average subcategory rank	6	3	2	4	5	1

CLIMATE CHANGE TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.87	3.26	2.11	2.79	3.02	2.24
percent normalization	-0.68	0.46	0.78	0.48	-0.18	0.45
sum	119	100	65	93	90	49

SUSTAINABILITY/EFFICIENCY INDEXES

SUSTAINABILITY/EFFICIENCY INDEXES

Energy Efficiency Scorecard | American Council for an Energy-Efficient Economy (ACEEE) | City | 2017

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
local government operations (out of 10)	7.5	8	8	4.5	9	5
community-wide initiatives (out of 12)	9	7.5	7	6	8	5.5
building policies (out of 28)	24	14.5	17	9.5	19.5	7
energy and water utilities (out of 20)	17	16	12	13.5	16	12
transportation policies (out of 30)	21	13	13	7.5	18	13
change (score) from 2015	3.5	24	13	0	12	0
change (rank) from 2015	2	14	4	-4	1	-4
total score	78.5	59	57	41	70.5	42.5
rank (out of 50)	3	13	14	24	9	23
energy efficiency scorecard rank	6	4	3	1	5	2
energy efficiency scorecard % norm.	0.09	0.56	0.61	1.00	0.28	0.96

Sustainable Development Index | Sustainable Development Solutions Network (SDSN) | Metro | 2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
goal 1 no poverty	67.03	43.37	30.10	42.87	61.77	50.04
goal 2 zero hunger	39.53	42.88	24.72	42.10	15.15	32.02
goal 3 good health and well-being	62.12	60.00	48.86	63.08	62.47	51.99
goal 4 quality education	37.61	51.82	36.06	45.09	36.14	29.02
goal 5 gender equality	46.50	66.44	60.84	64.17	39.71	28.14
goal 6 clean water and sanitation	58.18	81.57	60.28	76.25	79.21	72.97
goal 7 affordable and clean energy	100.00	42.53	11.70	42.53	22.89	3.69
goal 8 decent work and economic growth	60.09	67.54	46.62	49.97	66.71	60.57
goal 9 industry, innovation, and infrastructure	51.61	41.49	33.70	15.03	56.43	54.28
goal 10 reduced inequalities	52.16	41.96	39.49	39.32	36.79	64.66
goal 11 sustainable cities and communities	50.19	42.71	44.32	42.55	46.54	40.27
goal 12 responsible consumption and production	87.25	97.52	98.78	97.97	97.19	72.42
goal 13 climate action	13.47	25.00	18.56	21.62	1.10	24.82
goal 14 life on land	59.22	42.06	71.51	55.73	61.92	56.30
goal 15 peace, justice, and strong institutions	76.51	86.77	40.37	70.12	53.63	82.78
goal 16 partnerships for the goals	66.22	68.44	49.11	57.33	60.00	56.00
overall rank	3	5	43	16	24	29
overall index	57.98	56.38	44.69	51.61	49.85	48.75
sustainable development index rank	6	5	1	4	3	2
sustainable development index % norm.	0.70	0.74	1.00	0.85	0.88	0.91

sustainability/efficiency indexes mean	6.00	4.50	2.00	2.50	4.00	2.00
sustainability/efficiency indexes % normalization	0.39	0.65	0.80	0.92	0.58	0.94
sustainability/efficiency indexes sum	12	9	4	5	8	4
sustainability/efficiency indexes subcategory rank	5	4	1	2	3	1

SUSTAINABILITY/EFFICIENCY INDEXES TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	6.00	4.50	2.00	2.50	4.00	2.00
percent normalization	0.39	0.65	0.80	0.92	0.58	0.94
sum	12	9	4	5	8	4

ENVIRONMENT TOTAL

MEAN

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
means of transportation	5.13	2.63	2.46	2.46	3.71	3.25
traffic	1.41	4.22	3.96	3.59	3.22	4.00
transportation	3.27	3.42	3.21	3.03	3.47	3.63
solar energy	1.00	4.96	4.54	2.96	2.92	2.29
wind energy	4.33	2.67	1.17	2.83	3.33	3.00
other renewable energy sources	2.50	3.00	3.00	1.50	1.50	2.50
energy use	1.33	5.00	3.33	6.00	3.33	2.00
energy rates	5.67	1.00	3.00	2.00	4.00	5.33
energy sources	5.00	3.00	2.50	5.00	3.50	1.00
energy	3.31	3.27	2.92	3.38	3.10	2.69
air pollution	5.11	2.64	2.18	3.20	3.89	2.60
air pollution	5.11	2.64	2.18	3.20	3.89	2.60
water quality	4.50	1.71	1.50	3.57	3.50	4.50
water use	3.50	3.50	4.00	3.00	3.50	3.50
water	4.00	2.61	2.75	3.29	3.50	4.00
threatened + endangered species	3.50	1.00	3.50	1.50	3.50	3.50
species	3.50	1.00	3.50	1.50	3.50	3.50
climate	3.06	4.50	4.31	3.75	2.50	2.31
weather unpredictability	3.00	6.00	5.00	4.00	1.00	2.00
climate	3.03	5.25	4.66	3.88	1.75	2.16
projected climate change	2.75	5.00	3.63	3.88	3.00	1.75
projected cost	3.00	3.00	1.00	2.00	2.00	2.00
carbon sequestration	4.75	2.00	2.00	2.00	3.50	4.00
belief, perception, support, behavior	4.97	3.03	1.83	3.28	3.56	1.22
climate change	3.87	3.26	2.11	2.79	3.02	2.24
sustainability/efficiency indexes	6.00	4.50	2.00	2.50	4.00	2.00
sustainability/efficiency indexes	6.00	4.50	2.00	2.50	4.00	2.00
environment mean	4.01	3.24	2.92	2.94	3.28	2.85

PERCENT NORMALIZATION

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
means of transportation	-0.25	0.61	0.86	0.80	0.48	0.40
traffic	0.94	0.48	0.32	0.53	0.55	0.32
transportation	0.35	0.54	0.59	0.66	0.51	0.36
solar energy	1.00	-5.61	-2.21	-0.47	-0.60	-0.17
wind energy	-4.86	-4.46	0.83	-5.12	-1.52	0.06
other renewable energy sources	-0.17	-0.50	-0.42	0.67	0.75	0.67
energy use	0.81	0.35	0.60	0.28	0.59	0.92
energy rates	0.47	1.00	0.69	0.87	0.60	0.54
energy sources	-26.51	-1.98	-2.60	-34.86	-11.29	1.00
energy	-4.88	-1.87	-0.52	-6.44	-1.91	0.50
air pollution	-1.62	0.23	0.64	0.41	-0.12	-0.05
air pollution	-1.62	0.23	0.64	0.41	-0.12	-0.05
water quality	0.88	0.98	0.93	0.85	0.89	0.85
water use	0.61	-0.32	0.26	0.35	0.33	0.49
water	0.74	0.33	0.60	0.60	0.61	0.67
threatened + endangered species	0.17	1.00	0.26	0.83	0.14	0.14
species	0.17	1.00	0.26	0.83	0.14	0.14
climate	0.65	0.29	0.33	0.34	0.71	0.70
weather unpredictability	0.71	0.47	0.58	0.65	1.00	0.92
climate	0.68	0.38	0.45	0.50	0.85	0.81
projected climate change	0.73	0.48	0.45	0.52	0.61	0.64
projected cost	-0.50	-0.50	1.00	0.50	0.50	0.50
carbon sequestration	-3.78	0.94	0.69	0.00	-2.75	-0.33
belief, perception, support, behavior	0.84	0.93	0.98	0.92	0.91	1.00
climate change	-0.68	0.46	0.78	0.48	-0.18	0.45
sustainability/efficiency indexes	0.39	0.65	0.80	0.92	0.58	0.94
sustainability/efficiency indexes	0.39	0.65	0.80	0.92	0.58	0.94
environment percent normalization	-0.61	0.22	0.45	-0.25	0.06	0.48

SUM

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
means of transportation	71	38	30	35	51	49
traffic	14	26	51	33	39	52
transportation	85	64	81	68	90	101
solar energy	7	34	32	21	20	16
wind energy	14	10	5	13	10	10
other renewable energy sources	5	6	6	3	3	5
energy use	4	15	10	18	10	6
energy rates	17	3	9	6	12	16
energy sources	10	6	5	10	7	2
energy	57	74	67	71	62	55
air pollution	44	25	16	24	33	29
air pollution	44	25	16	24	33	29
water quality	33	12	15	32	25	33
water use	7	7	8	6	7	7
water	40	19	23	38	32	40
threatened + endangered species	7	2	7	3	7	7
species	7	2	7	3	7	7
climate	49	72	69	60	40	37
weather unpredictability	3	6	5	4	1	2
climate	52	78	74	64	41	39
projected climate change	22	40	29	31	24	14
projected cost	3	3	1	2	2	2
carbon sequestration	14	6	7	5	10	13
belief, perception, support, behavior	80	51	28	55	54	20
climate change	119	100	65	93	90	49
sustainability/efficiency indexes	12	9	4	5	8	4
sustainability/efficiency indexes	12	9	4	5	8	4
environment sum	416	371	337	366	363	324

SUBCATEGORY FREQUENCY

		Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
transportation	means of transportation	5	2	1	1	4	3
	traffic	1	6	5	3	2	4
energy	solar energy	1	6	5	4	3	2
	wind energy	6	2	1	3	5	4
	other renewable energy sources	2	3	3	1	1	2
	energy use	1	4	3	5	3	2
	energy rates	6	1	3	2	4	5
	energy sources	5	3	2	5	4	1
air pollution	air pollution	6	3	1	4	5	2
water	water quality	5	2	1	4	3	5
	water use	2	2	3	1	2	2
species	threatened + endangered species	3	1	3	2	3	3
climate	climate	3	6	5	4	2	1
	weather unpredictability	3	6	5	4	1	2
climate change	projected climate change	2	6	4	5	3	1
	projected cost	3	3	1	2	2	2
	carbon sequestration	4	1	1	2	3	3
	belief, perception, support, behavior	6	3	2	4	5	1
sust./eff. index	sustainability/efficiency indexes	5	4	1	2	3	1
	frequency of "6"	4	5	0	0	0	0
	frequency of "5"	4	0	4	3	3	2
	frequency of "4"	1	2	1	6	3	2
	frequency of "3"	4	5	5	2	7	3
	frequency of "2"	3	4	2	5	4	7
	environment frequency of "1"	3	3	7	3	2	5
	environment subcategory sum	69	64	50	58	58	46
	transportation	3.00	4.00	3.00	2.00	3.00	3.50
	energy	3.50	3.17	2.83	3.33	3.33	2.67
	air pollution	6.00	3.00	1.00	4.00	5.00	2.00
	water	3.50	2.00	2.00	2.50	2.50	3.50
	species	3.00	1.00	3.00	2.00	3.00	3.00
	climate	3.00	6.00	5.00	4.00	1.50	1.50
	climate change	3.75	3.25	2.00	3.25	3.25	1.75
	sustainability/efficiency indexes	5.00	4.00	1.00	2.00	3.00	1.00
	environment subcategory mean	3.63	3.37	2.63	3.05	3.05	2.42

existing conditions

- 
- demographics
 - density
 - housing
 - parks + recreation
 - arts
 - other culture
 - libraries
 - infrastructure

DEMOGRAPHICS

DEMOGRAPHICS

Population Change | US Census Population Estimates Program (PEP) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
july 1 2010	3,448,746	3,104,346	4,205,016	2,154,527	2,554,864	1,091,689
july 1 2011	3,497,925	3,140,692	4,248,813	2,174,815	2,600,899	1,107,804
july 1 2012	3,552,815	3,181,513	4,325,218	2,193,741	2,647,830	1,124,334
july 1 2013	3,609,617	3,218,419	4,396,197	2,214,570	2,698,125	1,141,510
july 1 2014	3,667,042	3,258,856	4,479,955	2,240,391	2,752,433	1,152,988
july 1 2015	3,727,097	3,290,245	4,567,857	2,267,588	2,808,816	1,167,501
july 1 2016	3,798,902	3,317,749	4,661,537	2,296,418	2,853,077	1,186,187
population change 2010-2016	10.15	6.87	10.86	6.59	11.67	8.66
population change rank	3	5	2	6	1	4
population change % norm.	0.87	0.59	0.93	0.56	1.00	0.74

Good Place for Minorities | Gallup | State | 2014

	Washington	California	Arizona	California	Colorado	Utah
good place for minorities (%)	88	86	84	86	84	84
good place for minorities rank (out of 50)	6	9	16	9	17	23
good place for minorities rank	5	4	3	4	2	1
good place for minorities % norm.	0.26	0.39	0.70	0.39	0.74	1.00

Unauthorized Immigrant Population | Pew Research Center | Metro | 2014

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
total unauthorized immigrant population	150,000	170,000	250,000	60,000	130,000	55,000
total unauthorized immigrant (%)	3.9	5.3	5.5	2.6	4.7	4.7
unauthorized immigrant population rank	4	2	1	5	3	3
unauthorized immigrant population % norm.	0.71	0.96	1.00	0.47	0.85	0.85

Marital Status | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
population over 15 y/o	2,992,824	2,646,310	3,552,473	1,804,345	2,202,637	875,051
married (%)	50.2	47.3	47.2	47.6	49.9	52.3
widowed (%)	4.4	4.9	5.1	5.4	4.2	3.9
separated (%)	1.5	1.8	1.7	2.3	1.6	1.9
never married (%)	32.5	35.6	33.7	33.3	32.2	31.4
divorced (%)	11.5	10.4	12.3	11.4	12.1	10.5
divorced rank	3	6	1	4	2	5
divorced % norm.	0.93	0.85	1.00	0.93	0.98	0.85

demographics mean	3.75	4.25	1.75	4.75	2.00	3.25
demographics % normalization	0.69	0.70	0.91	0.59	0.89	0.86
demographics sum	15	17	7	19	8	13
demographics subcategory rank	4	5	1	6	2	3

DEMOGRAPHICS TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.75	4.25	1.75	4.75	2.00	3.25
percent normalization	0.69	0.70	0.91	0.59	0.89	0.86
sum	15	17	7	19	8	13

DENSITY

DENSITY

Density | US Census | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
total population	3,671,095	3,253,356	4,486,153	2,242,542	2,752,056	1,154,504
total housing units	1,513,374	1,187,644	1,846,867	885,251	1,118,261	397,381
total area (sq. mile)	6,309.61	4,525.68	14,598.62	5,306.39	8,402.89	9,975.42
land area (sq. mile)	5,872.35	4,206.63	14,565.75	5,094.22	8,346.06	9,555.35
population density (people/sq. mile)	625.15	773.39	307.99	440.21	329.74	120.82
population density rank	5	6	2	4	3	1
population density % norm.	-3.17	-4.40	-0.55	-1.64	-0.73	1.00
housing density (people/sq. mile)	257.71	282.33	126.80	173.78	133.99	41.59
housing density rank	5	6	2	4	3	1
housing density % norm.	-4.20	-4.79	-1.05	-2.18	-1.22	1.00
population density change (2010 to 2016) (%)	6.72	5.11	6.98	4.34	8.18	2.65
population density change rank	4	3	5	2	6	1
population density change % norm.	-0.53	0.07	-0.63	0.36	-1.09	1.00
housing density change (2010 to 2016) (%)	3.42	1.96	2.67	1.56	3.62	-3.06
housing density change rank	5	3	4	2	6	1
housing density change % norm.	-1.12	-0.64	-0.87	-0.51	-1.18	1.00
density rank	4.75	4.5	3.25	3	4.5	1
density % norm.	-2.26	-2.44	-0.78	-0.99	-1.06	1.00

Urban vs. Rural | US Census | Metro | 2010

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
rural population (%)	5.57	3.30	4.12	7.17	5.72	3.01
rural population rank	3	5	4	1	2	6
rural population % norm.	0.78	0.46	0.57	1.00	0.80	0.42
rural housing (%)	5.57	3.54	3.88	9.09	6.57	5.50
rural housing rank	3	6	5	1	2	4
rural housing % norm.	0.61	0.39	0.43	1.00	0.72	0.60
urban vs. rural rank	3	5.5	4.5	1	2	5
urban vs. rural % norm.	0.69	0.42	0.50	1.00	0.76	0.51

Sprawl | Smart Growth America | Metro | 2014

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
density score	121.27	125.08	111.6	111.65	118.31	117.77
land use mix score	123.99	130.37	102.36	119.11	119.44	125.49
activity centering score	121.68	100.9	96.37	104.19	109.11	93.32
street connectivity score	131.86	119.95	111.33	108.92	125.16	97.63
composite score	116.11	105.18	78.32	99.27	107.1	106.96
sprawl rank (out of 221)	53	103	173	120	92	94
sprawl rank	6	3	1	2	5	4
sprawl % norm.	0.31	0.60	1.00	0.69	0.53	0.54

density mean	4.58	4.33	2.92	2.00	3.83	3.33
density % normalization	-0.42	-0.47	0.24	0.23	0.08	0.69
density sum	31	32	23	16	27	18
density subcategory rank	6	5	2	1	4	3

DENSITY TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	4.58	4.33	2.92	2.00	3.83	3.33
percent normalization	-0.42	-0.47	0.24	0.23	0.08	0.69
sum	31	32	23	16	27	18

HOUSING

HOUSING

Housing Characteristics | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
detached housing units (%)	59.5	52.3	67.6	68.8	60.6	66
detached housing units rank	5	6	2	1	4	3
detached housing units % norm.	0.86	0.76	0.98	1.00	0.88	0.96
attached/apartment (%)	36.9	44.1	27	28.3	37.6	31.8
attached/apartment rank	4	6	1	2	5	3
attached/apartment % norm.	0.63	0.37	1.00	0.95	0.61	0.82
2 apartments (%)	2.2	1.9	1.1	1.5	1.2	3.2
3-4 apartments (%)	4	5.1	3.5	4.8	2.8	4
5-9 apartments (%)	5.7	7.9	4.8	5.5	4.8	4
10+ apartments (%)	20.5	19.9	12.9	11	20.8	14.6
housing type rank	4.5	6	1.5	1.5	4.5	3
housing type % norm.	0.75	0.56	0.99	0.98	0.74	0.89
house built in 2014+ (%)	0.6	0.3	0.5	0.2	0.8	0.7
house built in 2010-2013 (%)	2.9	1.4	2.3	1.4	2.3	3.4
house built in 2000-2009 (%)	16	11.9	26.7	18.7	17.6	16.4
house built in 1980-1999 (%)	31.4	32.1	38.6	31.9	30.3	29.5
house built in 1960-1979 (%)	26.3	35.5	24	29.2	29.2	28.6
house built in 1940-1959 (%)	12.3	14.6	7	14.2	12.9	13.1
house built in 1930-earlier (%)	10.5	4.4	1	4.3	6.9	8.3
house built in 2000+ (%)	19.5	13.6	29.5	20.3	20.7	20.5
new built environment rank	5	6	1	4	2	3
new built environment % norm.	0.66	0.46	1.00	0.69	0.70	0.69
1 room (%)	2.8	2.3	1.7	1.5	1.6	1.2
2-3 rooms (%)	14.6	16.5	12	11.4	14.2	10.2
4-5 rooms (%)	31.5	38.9	36.8	37.3	28.6	27.4
6-7 rooms (%)	27.5	26.3	32.5	32.9	25.5	25.5
8+ rooms (%)	23.5	15.9	17	16.9	30	35.7

Vacant Housing | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
vacant housing units (%)	6.3	7.1	13.5	9.2	5.3	5.6
vacant housing rank	4	3	1	2	6	5
vacant housing % norm.	0.47	0.53	1.00	0.68	0.39	0.41

Residence 1 Year Ago | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
same house (%)	81.9	84.6	82	83.8	82.5	83.4
different house (%)	18.2	15.4	18	16.2	17.6	16.6
residence 1 year ago rank	1	6	2	5	3	4
residence 1 year ago % norm.	1.00	0.85	0.99	0.89	0.97	0.91
same county (%)	10.7	10.7	12.2	9.1	7.5	9.7
different county (%)	6.2	3.5	5.1	6.4	9.5	6
different county same state (%)	2.6	1.3	1.3	4.8	6	2.3
different county different state (%)	3.6	2.1	3.8	1.7	3.5	3.6
abroad (%)	1.2	1.2	0.7	0.7	0.6	0.9
housing mean	3.63	5.25	1.38	3.13	3.88	3.75
housing % normalization	0.72	0.60	1.00	0.81	0.70	0.73
housing sum	19	27	7	14	20	18
housing subcategory rank	3	6	1	2	5	4

HOUSING TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.63	5.25	1.38	3.13	3.88	3.75
percent normalization	0.72	0.60	1.00	0.81	0.70	0.73
sum	19	27	7	14	20	18

PARKS + RECREATION

PARKS

Parks | American College of Sports Medicine (ACSM) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
parkland (% of city land)	12.4	23.5	15	7.8	7.9	2.8
parkland rank	4	6	5	2	3	1
parkland % norm.	-2.43	-6.39	-3.36	-0.79	-0.82	1.00
acres of parkland (per 1,000 people)	10	35.7	32.5	10.6	9.1	10.6
acres of parkland rank	2	5	4	3	1	3
acres of parkland % norm.	0.90	-1.92	-1.57	0.84	1.00	0.84

Parks | Trust for Public Land (TPL) | City | 2017

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
residents within 10-minute walk to park (%)	96	79	48	81	94	82
residents within 10-minute walk to park rank	6	2	1	3	5	4
residents within 10-minute walk to park % norm.	0.00	0.35	1.00	0.31	0.04	0.29
number of parks in city	513	535	217	258	385	104
number of parks in city per 10,000 residents	7.66	3.91	1.41	5.37	5.76	5.43
number of parks in city per 10,000 residents rank	6	2	1	3	5	4
number of parks in city per 10,000 residents % norm.	-3.43	-0.77	1.00	-1.81	-2.09	-1.85
total park acreage	4,825	43,844	47,836	5,918	5,261	6,064
median park size (acres)	1.6	5.1	14.4	5	5.5	2.3
person per acre of park	135	31	32	81	123	32
person per acre of park rank	1	5	4	3	2	4
person per acre of park % norm.	1.00	0.23	0.24	0.60	0.91	0.24
youth within 10-minute walk to park (%)	96	79	49	81	94	82
youth within 10-minute walk to park rank	6	2	1	3	5	4
youth within 10-minute walk to park % norm.	1.96	1.61	1.00	1.65	1.92	1.67
largest park name	Discovery Park	San Dieguito River Park	South Mountain,	American River Parkway	City Park	Uinta-Wasatch-Cache National Forest
largest park size (acres)	552.08	6,104.60	16,291.31	1,873.49	314.44	4,461.49
parks mean	4.17	3.67	2.67	2.83	3.50	3.33
parks % normalization	-0.33	-1.15	-0.28	0.13	0.16	0.36
parks sum	25	22	16	17	21	20
parks subcategory rank	6	5	1	2	4	3

PARKS + RECREATION FACILITIES

Parks + Recreation Facilities | American College of Sports Medicine (ACSM) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
ball diamonds (per 10,000 people)	1.9	2.3	0.8	2.1	2.3	1.9
ball diamonds rank	2	4	1	3	4	2
ball diamonds % norm.	-0.38	-0.88	1.00	-0.63	-0.88	-0.38
dog parks (per 10,000 people)	2.1	1.1	0.4	2.1	1.7	3.7
dog parks rank	4	2	1	4	3	5
dog parks % norm.	-3.25	-0.75	1.00	-3.25	-2.25	-7.25
park playgrounds (per 10,000 people)	2.3	1.9	1.7	3.9	3.8	3.1
park playgrounds rank	3	2	1	6	5	4
park playgrounds % norm.	0.65	0.88	1.00	-0.29	-0.24	0.18
golf courses (per 100,000 people)	0.8	0.6	0.7	2.1	1.1	5.2
golf courses rank	3	1	2	5	4	6
golf courses % norm.	0.67	1.00	0.83	-1.50	0.17	-6.67
park units (per 10,000)	7	3.3	1.5	4.8	4.3	6.6
park units rank	6	2	1	4	3	5
park units % norm.	-2.67	-0.20	1.00	-1.20	-0.87	-2.40
swimming pools (per 100,000 people)	1.5	1	1.9	2.5	4.5	1
swimming pools rank	2	1	3	4	5	1
swimming pools % norm.	0.50	1.00	0.10	-0.50	-2.50	1.00
tennis courts (per 10,000 people)	2.5	1.1	0.9	1	2.3	3.7
tennis courts rank	5	3	1	2	4	6
tennis courts % norm.	-0.78	0.78	1.00	0.89	-0.56	-2.11
recreation centers (per 20,000 people)	0.8	1	0.5	1	0.9	0.5
recreation centers rank	2	4	1	4	3	1
recreation centers % norm.	0.40	0.00	1.00	0.00	0.20	1.00
parks + recreation facilities mean	3.38	2.38	1.38	4.00	3.88	3.75
parks + recreation facilities % normalization	-0.61	0.23	0.87	-0.81	-0.86	-2.08
parks + recreation sum	27	19	11	32	31	30
parks + recreation facilities subcategory rank	3	2	1	6	5	4

PARK EXPENDITURES

Park Expenditures | American College of Sports Medicine (ACSM) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
park expenditures per resident (\$)	298	111	84	104	104	59
park expenditures mean	5.00	4.00	2.00	3.00	3.00	1.00
park expenditures % normalization	-3.05	0.12	0.58	0.24	0.24	1.00
park expenditures sum	5	4	2	3	3	1
park expenditures subcategory rank	5	4	2	3	3	1

PARKS + RECREATION TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	4.18	3.35	2.01	3.28	3.46	2.69
percent normalization	-1.33	-0.27	0.39	-0.15	-0.16	-0.24
sum	57	45	29	52	55	51

ARTS

ARTS

Arts | SMU National Center for Arts Research | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
arts & culture employees	94	48	57	49	95	74
arts and culture organizations	95	83	59	84	91	77
arts, culture, & entertainment firms	99	91	81	86	98	97
independent artists	93	80	52	23	95	89
arts providers (index)	98	85	70	71	98	93
arts providers rank	5	3	1	2	5	4
arts providers % norm.	0.60	0.79	1.00	0.99	0.60	0.67
program revenue	99	85	90	94	99	93
contributed revenue	98	84	87	88	99	90
total expenses	98	86	89	89	99	93
total compensation	98	88	91	91	99	94
arts dollars (index)	99	86	90	92	99	94
arts dollars rank	5	1	2	3	5	4
arts dollars % norm.	0.85	1.00	0.95	0.93	0.85	0.91
state arts dollars	51	36	64	51	85	86
state arts grants	72	41	64	56	82	88
federal arts dollars	98	92	76	92	100	94
federal arts grants	98	90	78	85	97	97
government support (index)	93	77	76	81	98	95
government support rank	4	2	1	3	6	5
government support % norm.	0.78	0.99	1.00	0.93	0.71	0.75
employment (%)	94	79	71	64	96	96
bachelor's degree (%)	99	92	79	83	96	89
households >\$150k (%)	99	94	79	87	95	85
per capita income	99	91	66	78	96	73
not in poverty (%)	78	55	23	23	51	62
socio-economic (index)	99	92	67	75	96	87
socio-economic rank	6	4	1	2	5	3
socio-economic % norm.	0.52	0.63	1.00	0.88	0.57	0.70
arts mean	5.00	2.50	1.25	2.50	5.25	4.00
arts % normalization	0.69	0.85	0.99	0.93	0.68	0.76
arts sum	20	10	5	10	21	16
arts subcategory rank	5	2	1	3	6	4

ARTS TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	5.00	2.50	1.25	2.50	5.25	4.00
percent normalization	0.69	0.85	0.99	0.93	0.68	0.76
sum	20	10	5	10	21	16

OTHER CULTURE

SPORTS

Professional Sports | ESPN | City | 2016

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
highest rank of professional franchise (out of 122)	12	107	5	113	19	43
professional franchise rank	5	2	6	1	4	3
professional franchise % norm.	0.11	0.95	0.04	1.00	0.17	0.38
name of highest ranked professional franchise	Seattle Seahawks	San Diego Padres	Arizona Cardinals	Sacramento Kings	Denver Broncos	Utah Jazz
highest ranked professional franchise title track rank	6	122	43	121	11	103
highest ranked professional franchise ownership rank	7	111	10	109	17	22
highest ranked professional franchise coaching rank	4	100	4	105	32	34
highest ranked professional franchise players rank	9	118	10	122	25	40
highest ranked professional franchise fan relations rank	15	111	8	118	54	41
highest ranked professional franchise affordability rank	101	73	29	65	84	19
highest ranked professional franchise stadium experience rank	17	34	15	76	59	68
highest ranked professional franchise bang for the buck rank	8	40	14	79	7	58
highest ranked professional franchise change from last year	-7	-27	27	-17	1	-3
national football league (nfl) team	seattle seahawks	n/a	arizona cardinals	n/a	denver broncos	n/a
national basketball Association (nba) team	n/a	n/a	phoenix suns	sacramento kings	denver nuggets	utah jazz
major league baseball (mlb) team	seattle mariners	san diego padres	arizona diamondbacks	n/a	colorado rockies	n/a
major league soccer (mls) team	seattle sounders	n/a	n/a	n/a	colorado rapids	real salt lake
women's national basketball association (wnba) team	seattle storm	n/a	phoenix mercury	n/a	n/a	n/a
national hockey league (nhl) teams	n/a	n/a	arizona coyotes	n/a	colorado avalanche	n/a
number of teams	4	1	5	1	5	2
number of teams rank	3	1	4	1	4	2
number of teams % norm.	-2.00	1.00	-3.00	1.00	-3.00	0.00
number of championships	4	0	6	1	6	1
number of championships rank	3	1	4	2	4	2
number of championships % norm.	-3.00	1.00	-5.00	0.00	-5.00	0.00
professional sports rank	3.67	1.33	4.67	1.33	4	2.33
professional sports % norm.	-1.63	0.98	-2.65	0.67	-2.61	0.13

Sports Cities | WalletHub | City | 2017

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
football rank (out of 450)	6	24	9	179	16	212
football rank	6	3	5	2	4	1
football % norm.	0.03	0.11	0.04	0.84	0.08	1.00
basketball rank (out of 450)	115	100	25	24	29	5
basketball rank	1	2	4	5	3	6
basketball % norm.	1.00	0.87	0.22	0.21	0.25	0.04
baseball rank (out of 450)	23	21	25	291	24	122
baseball rank	5	6	3	1	4	2
baseball % norm.	0.08	0.07	0.09	1.00	0.08	0.42
hockey rank (out of 450)	450	450	14	450	19	450
hockey rank	1	1	3	1	2	1
hockey % norm.	1.00	1.00	0.03	1.00	0.04	1.00
soccer rank (out of 450)	6	119	38	21	11	10
soccer rank	6	1	2	3	4	5
soccer % norm.	0.05	1.00	0.32	0.18	0.09	0.08
sports cities rank	3.8	2.6	3.4	2.4	3.4	3
sports cities % norm.	0.43	0.61	0.14	0.65	0.11	0.51
sports mean	3.73	1.97	4.03	1.87	3.70	2.67
sports % normalization	-0.60	0.80	-1.26	0.66	-1.25	0.32
sports sum	30	17	31	16	29	22
sports subcategory rank	5	2	6	1	4	3

OTHER LEISURE

Other Leisure | SMU National Center for Arts Research | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
hotel rank	91	90	80	75	93	82
restaurant rank	97	90	81	88	98	79
zoo and botanical rank	98	98	57	11	100	47
cinema rank	91	73	94	89	88	99
professional sports	94	71	76	79	94	85
bar rank	89	85	67	78	98	69
other leisure (index)	99	97	90	87	100	93
other leisure rank	5	4	2	1	6	3
other leisure % norm.	0.86	0.89	0.97	1.00	0.85	0.93

Social Associations | County Health Rankings and Roadmaps | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
number of membership associations (per 10,000)	9.3	5.7	5.2	7.3	10.7	4.4
social associations rank	5	3	2	4	6	1
social associations % norm.	-0.11	0.70	0.82	0.34	-0.43	1.00

Fun Cities | WalletHub | City | 2017

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
entertainment and recreation rank (out of 150)	8	2	38	23	18	21
nightlife rank (out of 150)	13	25	77	28	11	41
costs rank (out of 150)	143	112	19	107	78	23
fun city rank (out of 150)	20	10	47	27	11	23
fun city rank	4	6	1	2	5	3
fun city % norm.	0.43	0.21	1.00	0.57	0.23	0.49
other leisure mean	4.67	4.33	1.67	2.33	5.67	2.33
other leisure % normalization	0.39	0.60	0.93	0.64	0.22	0.81
other leisure sum	14	13	5	7	17	7
other leisure subcategory rank	4	3	1	2	5	2

PUBLIC AMENITY EXPENDITURES

Public Amenity Expenditures | National Association of Counties (NACo) | County | 2015

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
amenity expenditures (millions of dollars)	141.7	69.6	92.7	40.1	207	133.7
public amenity expenditures mean	5.00	2.00	3.00	1.00	6.00	4.00
public amenity expenditures % normalization	-1.53	0.26	-0.31	1.00	-3.16	-1.33
public amenity sum	5	2	3	1	6	4
public amenity expenditures subcategory rank	5	2	3	1	6	4

OTHER CULTURE TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	4.47	2.77	2.90	1.73	5.12	3.00
percent normalization	-0.58	0.55	-0.21	0.76	-1.40	-0.07
sum	49	32	39	24	52	33

LIBRARIES

LIBRARIES

Libraries | National Association of Counties (NACo) | County | 2015

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
library branches (per 100,000)	3.50	2.30	1.15	1.80	3.66	2.17
library branches rank	5	4	1	2	6	3
library branches % norm.	-1.04	0.00	1.00	0.44	-1.19	0.12
full-time librarian to branch ratio	4.18	3.74	5.71	3.52	7.00	6.63
full-time librarian to branch ratio rank	3	2	4	1	6	5
full-time librarian to branch ratio % norm.	0.81	0.94	0.38	1.00	0.01	0.12
# of print materials (millions)	4.3	7.2	4	1.4	1.2	2.2
# of print materials rank	5	6	4	2	1	3
# of print materials % norm.	-1.58	-4.00	-1.33	0.83	1.00	0.17
total annual visits per capita	7.51	4.70	3.29	2.93	6.15	5.78
total annual visits per capita rank	6	3	2	1	5	4
total annual visits per capita % norm.	-0.56	0.40	0.88	1.00	-0.10	0.03
total annual circulation (millions)	32	21.8	30.6	7.9	9.1	19.3
total annual circulation rank	6	4	5	1	2	3
total annual circulation % norm.	-2.05	-0.76	-1.87	1.00	0.85	-0.44
computers available (per 100,000)	92.39	67.77	110.01	50.69	140.80	61.68
computers available rank	4	3	5	1	6	2
computers available % norm.	0.18	0.66	-0.17	1.00	-0.78	0.78
libraries mean	4.83	3.67	3.50	1.33	4.33	3.33
libraries % normalization	-0.71	-0.46	-0.19	0.88	-0.03	0.13
libraries sum	29	22	21	8	26	20
libraries subcategory rank	6	4	3	1	5	2

LIBRARIES TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	4.83	3.67	3.50	1.33	4.33	3.33
percent normalization	-0.71	-0.46	-0.19	0.88	-0.03	0.13
sum	29	22	21	8	26	20

INFRASTRUCTURE

BRIDGES + ROADS

Bridges | National Association of Counties (NACo) | County | 2016

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
structurally deficient bridges (%)	4.49	4.87	0.26	3.60	3.76	3.04
structurally deficient bridges rank	2	1	6	4	3	5
structurally deficient bridges % norm.	0.92	1.00	0.05	0.74	0.77	0.62
functionally obsolete bridges (%)	31.36	12.33	10.17	16.90	26.53	8.09
functionally obsolete bridges rank	1	4	5	3	2	6
functionally obsolete bridges % norm.	1.00	0.39	0.32	0.54	0.85	0.26
bridges rank	1.5	2.5	5.5	3.5	2.5	5.5
bridges % norm.	0.96	0.70	0.19	0.64	0.81	0.44

Road Conditions | US Department of Transportation (DOT) | State | 2016

	Washington	California	Arizona	California	Colorado	Utah
annual total extra vehicle repairs/operating costs due to driving on roads in need of fixing (\$ per motorist)	272	586	205	586	287	197
vehicle repairs from poor roads rank	3	1	4	1	2	5
vehicle repairs from poor roads % norm.	0.46	1.00	0.35	1.00	0.49	0.34
roads in poor/mediocre condition (%)	67	68	52	68	70	25
roads in poor/mediocre condition rank	3	2	4	2	1	5
roads in poor/mediocre condition % norm.	0.96	0.97	0.74	0.97	1.00	0.36

Highway Performance | Reason Foundation | State | 2015

	Washington	California	Arizona	California	Colorado	Utah
narrow rural arterial lanes score	43	1	1	1	30	1
fatality rates score	16	14	41	14	22	13
deficient bridges score	35	28	1	28	8	3
urbanized area congestion score	43	49	36	49	35	19
rural arterial pavement condition score	37	46	4	46	29	13
urban interstate pavement condition score	27	45	15	45	22	13
rural interstate pavement condition score	45	33	22	33	47	8
administrative disbursements per mile score	25	46	45	46	22	27
maintenance disbursement per mile score	39	47	20	47	33	40
capital and bridge disbursements per mile score	40	41	34	41	31	19
total disbursements per mile score	39	43	40	43	28	36
change in rank 2012-2015	-1	3	3	3	2	19
overall highway performance ratings	43	42	16	42	31	10
highway performance rank	1	2	4	2	3	5
highway performance % norm.	1.00	0.98	0.37	0.98	0.72	0.23
road condition + highway performance rank	2.33	1.67	4.00	1.67	2.00	5.00
road condition + highway performance % norm.	0.81	0.98	0.49	0.98	0.74	0.31
roads + bridges mean	1.92	2.08	4.75	2.58	2.25	5.25
roads + bridges % normalization	0.88	0.84	0.34	0.81	0.77	0.37
roads + bridges sum	10	10	23	12	11	26
roads + bridges subcategory rank	1	2	5	4	3	6

INTERNET/COMPUTER CONNECTIVITY

Computing + Internet Access | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
households w/o computing device (%)	5.5	5.5	7.6	6.3	5.4	5.4
households w/o computing device rank	3	3	1	2	4	4
households w/o computing device % norm.	0.72	0.72	1.00	0.83	0.71	0.71
households w/ desktop/laptop (%)	87.3	85.9	81.6	84.3	85.6	85
households w/ desktop/laptop rank	6	5	1	2	4	3
households w/ desktop/laptop % norm.	0.93	0.95	1.00	0.97	0.95	0.96
computing rank	4.5	4	1	2	4	3.5
computing % norm.	0.83	0.84	1.00	0.90	0.83	0.83
households w/o internet (%)	9.9	11.3	14.7	12.6	11.3	14.6
households w/o internet rank	5	4	1	3	4	2
households w/o internet % norm.	0.67	0.77	1.00	0.86	0.77	0.99

Internet Access | Brookings Institute | Metro | 2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
without access to 25 mbps broadband (%)	0.3	1.5	3.9	2	1.2	0
without access to 25 mbps broadband rank	5	3	1	2	4	6
without access to 25 mbps broadband % norm.	0.08	0.38	1.00	0.51	0.31	0.00
low subscription to broadband (0-40%) neighborhoods (%)	3.4	1.2	17.1	10.4	9.9	9
moderate subscription to broadband (40-80%) neighborhoods (%)	83.1	55.9	69.9	79.6	84	87.9
high subscription to broadband (80-100%) neighborhoods (%)	13.5	42.9	13	10	6.2	3.1
composite broadband ranking (out of 100)	22	16	64	46	42	38
broadband subscription rank	5	6	1	2	3	4
broadband subscription % norm.	0.34	0.25	1.00	0.72	0.66	0.59
internet access rank	5	4.33	1	2.33	3.67	4
internet access % norm.	0.36	0.47	1.00	0.70	0.58	0.53
internet/computer connectivity mean	4.75	4.17	1.00	2.17	3.83	3.75
internet/computer connectivity % normalization	0.60	0.65	1.00	0.80	0.70	0.68
internet/computer connectivity sum	24	21	5	11	19	19
internet/computer connectivity subcategory rank	6	5	1	2	4	3

GENERAL INFRASTRUCTURE

General Infrastructure | US News | State | 2017

	Washington	California	Arizona	California	Colorado	Utah
energy rank (out of 50)	2	36	9	36	12	21
electricity price rank (out of 50)	2	44	34	44	28	12
power grid reliability rank (out of 50)	25	19	2	19	11	22
renewable energy usage (out of 50)	2	18	21	18	26	44
transportation rank (out of 50)	15	41	7	41	18	2
bridge quality rank (out of 50)	7	11	4	11	14	5
commute time (out of 50)	42	46	33	46	30	12
public transit usage (out of 50)	4	9	21	9	14	13
road quality (out of 50)	40	49	18	49	29	21
internet access rank (out of 50)	9	32	30	32	22	4
broadband access rank (out of 50)	14	17	33	17	18	20
ultra-fast internet access (out of 50)	17	41	18	41	28	7
infrastructure rank (out of 50)	4	38	12	38	14	8
general infrastructure mean	5.00	1.00	2.00	1.00	3.00	4.00
general infrastructure % normalization	0.11	1.00	0.32	1.00	0.37	0.21
general infrastructure sum	5	1	2	1	3	4
general infrastructure subcategory rank	5	1	2	1	3	4

INFRASTRUCTURE TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.89	2.42	2.58	1.92	3.03	4.33
percent normalization	0.53	0.83	0.55	0.87	0.62	0.42
sum	39	32	30	24	33	49

EXISTING CONDITIONS TOTAL

MEAN

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
demographics	3.75	4.25	1.75	4.75	2.00	3.25
demographics	3.75	4.25	1.75	4.75	2.00	3.25
density	4.58	4.33	2.92	2.00	3.83	3.33
density	4.58	4.33	2.92	2.00	3.83	3.33
housing	3.63	5.25	1.38	3.13	3.88	3.75
housing	3.63	5.25	1.38	3.13	3.88	3.75
parks	4.17	3.67	2.67	2.83	3.50	3.33
parks + recreation facilities	3.38	2.38	1.38	4.00	3.88	3.75
park expenditures	5.00	4.00	2.00	3.00	3.00	1.00
parks + recreation	4.18	3.35	2.01	3.28	3.46	2.69
arts	5.00	2.50	1.25	2.50	5.25	4.00
arts	5.00	2.50	1.25	2.50	5.25	4.00
sports	3.73	1.97	4.03	1.87	3.70	2.67
other leisure	4.67	4.33	1.67	2.33	5.67	2.33
public amenity expenditures	5.00	2.00	3.00	1.00	6.00	4.00
other culture	4.47	2.77	2.90	1.73	5.12	3.00
libraries	4.83	3.67	3.50	1.33	4.33	3.33
libraries	4.83	3.67	3.50	1.33	4.33	3.33
roads + bridges	1.92	2.08	4.75	2.58	2.25	5.25
internet/computer connectivity	4.75	4.17	1.00	2.17	3.83	3.75
general infrastructure	5.00	1.00	2.00	1.00	3.00	4.00
infrastructure	3.89	2.42	2.58	1.92	3.03	4.33
existing conditions mean	4.29	3.57	2.29	2.58	3.86	3.46

PERCENT NORMALIZATION

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
demographics	0.69	0.70	0.91	0.59	0.89	0.86
demographics	0.69	0.70	0.91	0.59	0.89	0.86
density	-0.42	-0.47	0.24	0.23	0.08	0.69
density	-0.42	-0.47	0.24	0.23	0.08	0.69
housing	0.72	0.60	1.00	0.81	0.70	0.73
housing	0.72	0.60	1.00	0.81	0.70	0.73
parks	-0.33	-1.15	-0.28	0.13	0.16	0.36
parks + recreation facilities	-0.61	0.23	0.87	-0.81	-0.86	-2.08
park expenditures	-3.05	0.12	0.58	0.24	0.24	1.00
parks + recreation	-1.33	-0.27	0.39	-0.15	-0.16	-0.24
arts	0.69	0.85	0.99	0.93	0.68	0.76
arts	0.69	0.85	0.99	0.93	0.68	0.76
sports	-0.60	0.80	-1.26	0.66	-1.25	0.32
other leisure	0.39	0.60	0.93	0.64	0.22	0.81
public amenity expenditures	-1.53	0.26	-0.31	1.00	-3.16	-1.33
other culture	-0.58	0.55	-0.21	0.76	-1.40	-0.07
libraries	-0.71	-0.46	-0.19	0.88	-0.03	0.13
libraries	-0.71	-0.46	-0.19	0.88	-0.03	0.13
roads + bridges	0.88	0.84	0.34	0.81	0.77	0.37
internet/computer connectivity	0.60	0.65	1.00	0.80	0.70	0.68
general infrastructure	0.11	1.00	0.32	1.00	0.37	0.21
infrastructure	0.53	0.83	0.55	0.87	0.62	0.42
existing conditions percent normalization	-0.05	0.29	0.46	0.62	0.17	0.41

SUM

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
demographics	15	17	7	19	8	13
demographics	15	17	7	19	8	13
density	31	32	23	16	27	18
density	31	32	23	16	27	18
housing	19	27	7	14	20	18
housing	19	27	7	14	20	18
parks	25	22	16	17	21	20
parks + recreation facilities	27	19	11	32	31	30
park expenditures	5	4	2	3	3	1
parks + recreation	57	45	29	52	55	51
arts	20	10	5	10	21	16
arts	20	10	5	10	21	16
sports	30	17	31	16	29	22
other leisure	14	13	5	7	17	7
public amenity expenditures	5	2	3	1	6	4
other culture	49	32	39	24	52	33
libraries	29	22	21	8	26	20
libraries	29	22	21	8	26	20
roads + bridges	10	10	23	12	11	26
internet/computer connectivity	24	21	5	11	19	19
general infrastructure	5	1	2	1	3	4
infrastructure	39	32	30	24	33	49
existing conditions sum	259	217	161	167	242	218

SUBCATEGORY FREQUENCY

		Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
demographics	demographics	4	5	1	6	2	3
density	density	6	5	2	1	4	3
housing	housing	3	6	1	2	5	4
parks + recreation	parks	6	5	1	2	4	3
	parks + recreation facilities	3	2	1	6	5	4
	park expenditures	5	4	2	3	3	1
arts	arts	5	2	1	3	6	4
other culture	sports	5	2	6	1	4	3
	other leisure	4	3	1	2	5	2
	public amenity expenditures	5	2	3	1	6	4
libraries	libraries	6	4	3	1	5	2
infrastructure	roads + bridges	1	2	5	4	3	6
	internet/computer connectivity	6	5	1	2	4	3
	general infrastructure	5	1	2	1	3	4
	frequency of "6"	4	1	1	2	2	1
	frequency of "5"	5	4	1	0	4	0
	frequency of "4"	2	2	0	1	4	5
	frequency of "3"	2	1	2	2	3	5
	frequency of "2"	0	5	3	4	1	2
existing conditions frequency of "1"		1	1	7	5	0	1
existing conditions subcategory sum		64	48	30	35	59	46
demographics		4.00	5.00	1.00	6.00	2.00	3.00
density		6.00	5.00	2.00	1.00	4.00	3.00
housing		3.00	6.00	1.00	2.00	5.00	4.00
parks + recreation		4.67	3.67	1.33	3.67	4.00	2.67
arts		5.00	2.00	1.00	3.00	6.00	4.00
other culture		4.67	2.33	3.33	1.33	5.00	3.00
libraries		6.00	4.00	3.00	1.00	5.00	2.00
infrastructure		4.00	2.67	2.67	2.33	3.33	4.33
existing conditions subcategory mean		4.57	3.43	2.14	2.50	4.21	3.29

economy

- employment + jobs
- city economy
- personal/household economy
- cost of living
- homelessness
- general metrics

EMPLOYMENT + JOBS

UNEMPLOYMENT

Unemployment | US Bureau of Labor Statistics (BLS) | Metro | 2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
% of labor force unemployed jan 2017	4.3	4.5	4.5	5.3	3.1	3
% of labor force unemployed feb 2017	3.9	4.2	4.4	5.1	3.2	3.2
% of labor force unemployed mar 2017	3.7	4.2	4.1	5	2.4	3.2
% of labor force unemployed april 2017	3.3	3.8	3.9	4.4	2.1	3.1
% of labor force unemployed may 2017	3.6	3.6	4.3	4.1	2.3	3.2
% of labor force unemployed june 2017	4	4.3	4.5	4.8	2.5	3.8
% of labor force unemployed july 2017	4	4.7	4.6	5.1	2.4	3.4
% of labor force unemployed aug 2017	4.2	4.7	4.3	5.1	2.2	3.4
% of labor force unemployed sept 2017	4.1	4.1	4	4.5	2.2	3
% of labor force unemployed oct 2017	4	3.7	3.7	4.1	2.6	2.8
% of labor force unemployed nov 2017	4.1	3.3	3.7	3.7	2.8	2.6
% of labor force unemployed dec 2017	4	3.3	4	3.8	2.9	2.7
% of labor force unemployed jan 2018	4.7	3.6	4.5	4.2	3.2	3
% of labor force unemployed year average	3.99	4.00	4.19	4.55	2.61	3.11
unemployment mean	4.00	3.00	2.00	1.00	6.00	5.00
unemployment % normalization	0.88	0.88	0.92	1.00	0.57	0.68
unemployment sum	4	3	2	1	6	5
unemployment subcategory rank	4	3	2	1	6	5

JOB QUALITY

Job Quality | Gallup | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
good jobs rate (%)	49.3	43.7	46.1	40.9	51.4	51.2
rank (out of 50)	11	22	38	44	6	4
change from 2015 rank	4	6	1	5	2	3
job quality mean	4.00	2.00	3.00	1.00	6.00	5.00
job quality % normalization	0.79	0.93	0.87	1.00	0.74	0.75
job quality sum	4	2	3	1	6	5
job quality subcategory rank	4	2	3	1	6	5

JOB CREATION

Job Creation | Gallup | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
hiring workers (%)	47	45	48	43	46	52
hiring workers rank	4	2	5	1	3	6
hiring workers % norm.	0.91	0.95	0.88	1.00	0.93	0.79
not changing (%)	38	39	35	41	39	37
letting workers go (%)	10	11	10	10	10	7
letting workers go rank	2	1	2	2	2	3
letting workers go % norm.	0.91	1.00	0.91	0.91	0.91	0.64
job creation index	37	34	38	33	36	45
rank (out of 50)	22	34	19	37	24	1
job creation index rank	4	2	5	1	3	6
job creation index % norm.	0.88	0.97	0.85	1.00	0.91	0.64
job creation rank	3.33	1.67	4	1.33	2.67	5
job creation % norm.	0.90	0.97	0.88	0.97	0.92	0.69

Best Places to Find a Job | WalletHub | City | 2018

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
job market rank (out of 182)	28	43	65	55	35	17
socio-economics rank (out of 182)	11	19	75	33	17	28
overall rank (out of 182)	17	30	61	41	25	18
best places to find a job rank	6	3	1	2	4	5
best places to find a job % norm.	0.28	0.49	1.00	0.67	0.41	0.30
job creation mean	4.67	2.33	2.50	1.67	3.33	5.00
job creation % normalization	0.59	0.73	0.94	0.82	0.66	0.49
job creation sum	16	8	13	6	12	20
job creation subcategory rank	5	2	3	1	4	6

JOB PROXIMITY

Job Proximity | Brookings Institute | Metro | 2012

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
number of jobs near average resident	259,753	243,367	388,817	140,038	304,287	173,457
number of jobs near average resident rank (out of 96)	17	18	7	38	10	28
number of jobs near average resident rank	4	3	6	1	5	2
number of jobs near average resident % norm.	0.15	0.26	-0.78	1.00	-0.17	0.76
2000-2012 % change in the number of jobs near the average resident	-0.4	7.6	-16.5	-6.6	-10.7	-3.9
2000-2012 change in the number of jobs near the average resident rank (out of 96)	30	13	90	58	76	44
2000-2012 change in the number of jobs near the average resident rank	5	6	1	3	2	4
2000-2012 change in the number of jobs near the average resident % norm.	0.02	-0.46	1.00	0.40	0.65	0.24
number of jobs near the average resident in high-poverty neighborhoods	301,283	276,409	540,864	195,213	445,240	251,798
number of jobs near the average resident in high-poverty neighborhoods rank (out of 96)	19	23	8	34	11	27
number of jobs near the average resident in high-poverty neighborhoods rank	4	3	6	1	5	2
number of jobs near the average resident in high-poverty neighborhoods % norm.	0.46	0.58	-0.77	1.00	-0.28	0.71
2000-2012 change in the number of jobs near the average resident in high-poverty neighborhood (%)	-9.1	-4	-13.4	-6.4	-15.2	-7.9
2000-2012 change in the number of jobs near the average resident in high-poverty neighborhood rank (out of 96)	34	21	46	27	51	28
2000-2012 change in the number of jobs near the average resident in high-poverty neighborhood rank	3	6	2	5	1	4
2000-2012 change in the number of jobs near the average resident in high-poverty neighborhood % norm.	0.60	0.26	0.88	0.42	1.00	0.52
number of jobs near the average resident in majority-minority neighborhoods	327,992	251,641	493,074	152,200	391,179	248,736
number of jobs near the average resident in majority-minority neighborhoods rank (out of 96)	19	29	7	47	12	30
number of jobs near the average resident in majority-minority neighborhoods rank	4	3	6	1	5	2
number of jobs near the average resident in majority-minority neighborhoods % norm.	-0.16	0.35	-1.24	1.00	-0.57	0.37
2000-2012 change in the number of jobs near the average resident in majority-minority neighborhood (%)	-23.1	3.2	-15.3	-14.3	-17.4	6.3
2000-2012 change in the number of jobs near the average resident in majority-minority neighborhood (out of 96)	86	16	61	58	73	11
2000-2012 change in the number of jobs near the average resident in majority-minority neighborhood rank	1	5	3	4	2	6
2000-2012 change in the number of jobs near the average resident in majority-minority neighborhood % norm.	1.00	0.19	0.71	0.67	0.85	0.13
job proximity mean	3.50	4.33	4.00	2.50	3.33	3.33
job proximity % normalization	0.34	0.20	-0.03	0.75	0.25	0.45
job proximity sum	21	26	24	15	20	20
job proximity subcategory rank	3	5	4	1	2	2

EMPLOYMENT + JOBS TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	4.04	2.92	2.88	1.54	4.67	4.58
percent normalization	0.65	0.69	0.68	0.89	0.56	0.59
sum	45	39	42	23	44	50

CITY ECONOMY

GDP

GDP | US Bureau of Economic Analysis (BEA) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
gdp (millions of dollars)	330,409	215,343	230,070	122,218	197,969	84,826
gdp rank (out of 382)	11	17	16	34	18	41
real gdp per capita (\$)	77,273	57,465	43,602	46,650	63,246	61,900
gdp mean	6.00	3.00	1.00	2.00	5.00	4.00
gdp % normalization	0.23	0.68	1.00	0.93	0.55	0.58
gdp sum	6	3	1	2	5	4
gdp subcategory rank	6	3	1	2	5	4

EXPORTS + TRADE

Exports | Brookings Institute | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
real exports (billion dollars)	51.8	22.9	18.3	7.5	13.4	7.9
real exports rank (out of 100)	6	15	18	44	24	43
real exports rank	6	5	4	1	3	2
real exports % norm.	-4.91	-1.05	-0.44	1.00	0.21	0.95
export share of gdp (%)	17	9.9	8.4	5.5	7.3	9.9
export share of gdp rank (out of 100)	4	37	60	97	77	38
export share of gdp rank	6	5	3	1	2	4
export share of gdp % norm.	-1.09	0.20	0.47	1.00	0.67	0.20
2008-2016 annual growth rate real exports (%)	4.3	3.8	1	1.7	2.5	2.9
annual growth rate real exports rank (out of 100)	4	5	64	42	25	18
annual growth rate real exports rank	6	5	1	2	3	4
annual growth rate real exports % norm.	-2.30	-1.80	1.00	0.30	-0.50	-0.90
2008-2016 annual growth rate real gdp (%)	2.5	2	0.7	1.2	2	2.2
annual growth rate real gdp rank (out of 100)	10	27	80	60	29	14
annual growth rate real gdp rank	6	4	1	2	3	5
annual growth rate real gdp % norm.	-1.57	-0.86	1.00	0.29	-0.86	-1.14
exports rank	6	4.75	2.25	1.5	2.75	3.75
exports % norm.	-2.47	-0.88	0.51	0.65	-0.12	-0.22

North American Trade | Brookings Institute | Metro | 2013

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
trade between mexico/canada (billions of \$)	7.17	7.3	7.61	3.24	5.49	3.66
trade between mexico/canada rank (out of 100)	19	18	16	45	30	40
trade between mexico/canada rank	4	5	6	1	3	2
trade between mexico/canada % norm.	-0.21	-0.25	-0.35	1.00	0.31	0.87
trade between mexico (billions of \$)	3.07	4.32	4.17	1.93	2.51	1.64
trade between mexico rank (out of 100)	20	13	14	34	28	40
trade between mexico rank	4	6	5	2	3	1
trade between mexico % norm.	0.13	-0.63	-0.54	0.82	0.47	1.00
trade between canada (billions of \$)	4.1	2.98	3.44	1.31	2.98	2.02
trade between canada rank (out of 100)	19	29	25	60	30	43
trade between canada rank	6	4	5	1	3	2
trade between canada % norm.	-1.13	-0.27	-0.63	1.00	-0.27	0.46
% of global trade	18.6	27.4	28.2	27.7	28.1	31.1
% of global trade rank (out of 100)	100	65	47	55	50	20
advanced industry share of trade (%)	58.7	71	62.5	63	41.8	34.3
advanced industry share of trade rank	3	6	4	5	2	1
advanced industry share of trade % norm.	0.29	-0.07	0.18	0.16	0.78	1.00
top mexican trading partner	Mexico City	Mexico City	Mexico City	Mexico City	Mexico City	Mexico City
top mexican trading partner bilateral trade (millions of \$)	414	635	646	273	361	249
top canadian trading partner	Montreal	Toronto	Toronto	Toronto	Toronto	Toronto
top canadian trading partner bilateral trade (millions of \$)	777	486	580	219	451	289
north american trade rank	4.25	5.25	5	2.25	2.75	1.5
north american trade % norm.	-0.23	-0.31	-0.33	0.75	0.32	0.83
exports + trade mean	5.13	5.00	3.63	1.88	2.75	2.63
exports + trade % normalization	-1.35	-0.59	0.09	0.70	0.10	0.30
exports + trade sum	41	40	29	15	22	21
exports + trade subcategory rank	6	5	4	1	3	2

TAX BURDEN

Tax Burden | Tax Foundation | State | Varies

	Washington	California	Arizona	California	Colorado	Utah
2012 state-local tax burden as a share of state income (%)	9.3	11	8.8	11	8.9	9.6
2012 state-local tax burden as a share of state income rank (out of 50)	28	6	36	6	35	21
state-local tax burden as a share of state income rank	3	1	5	1	4	2
state-local tax burden as a share of state income % norm.	0.85	1.00	0.80	1.00	0.81	0.87
2012 total tax burden per capita (\$)	4,541	5,237	3,276	5,237	4,304	3,556
total tax burden per capita rank	2	1	5	1	3	4
total tax burden per capita % norm.	0.87	1.00	0.63	1.00	0.82	0.68
2016 state and local tax collections per capita (\$)	3,060	3,950	2,124	3,950	2,314	2,327
2016 state and local tax collections per capita rank (out of 50)	16	10	45	10	22	42
2016 state and local tax collections per capita rank	2	1	5	1	3	4
2016 state and local tax collections per capita % norm.	0.77	1.00	0.54	1.00	0.59	0.59
tax burden rank	2.33	1	5	1	3.33	3.33
tax burden % norm.	0.83	1.00	0.65	1.00	0.74	0.71
2016 state individual income tax collections per capita (\$)	0	2,055	574	2,055	1,173	1,108
2016 state individual income tax collections per capita rank (out of 43)	n/a	4	40	4	14	21
2016 state individual income tax collections per capita rank	5	1	4	1	2	3
2016 state individual income tax collections per capita % norm.	0.00	1.00	0.28	1.00	0.57	0.54
2016 state corporate income tax collections per capita (\$)	0	252	83	252	113	110
2016 state corporate income tax collections per capita rank (out of 45)	n/a	7	38	7	27	30
state corporate income tax collections per capita rank	5	1	4	1	2	3
state corporate income tax collections per capita % norm.	0.00	1.00	0.33	1.00	0.45	0.44
income tax rank	5	1	4	1	2	3
income tax % norm.	0.00	1.00	0.30	1.00	0.51	0.49
2018 state sales tax rate (%)	6.5	7.25	5.6	7.25	2.9	5.95
2018 state sales tax rate rank (out of 45)	9	1	28	1	45	26
state sales tax rate rank	2	1	4	1	5	3
state sales tax rate % norm.	0.90	1.00	0.77	1.00	0.40	0.82
2018 average local tax rate (%)	2.68	1.29	2.73	1.29	4.62	0.82
average local tax rate rank	2	4	3	4	1	5
average local tax rate % norm.	0.58	0.28	0.59	0.28	1.00	0.18
2018 combined state/local tax rate (%)	9.18	8.54	8.33	8.54	7.52	6.77
2018 combined state/local tax rate rank (out of 50)	4	9	11	9	16	29
combined state/local tax rate rank	1	2	3	2	4	5
combined state/local tax rate % norm.	1.00	0.93	0.91	0.93	0.82	0.74
2016 state general sales tax collections per capita (\$)	1,862	997	964	997	514	684
2016 state general sales tax collections per capita rank (out of 45)	2	21	22	21	44	35
2016 state general sales tax collections per capita rank	1	2	3	2	5	4
2016 state general sales tax collections per capita % norm.	1.00	0.54	0.52	0.54	0.28	0.37
2016 state sales tax breadth (%)	39	27	40	27	34	36
2016 state sales tax breadth rank (out of 45)	15	35	11	35	30	24
2016 state sales tax breadth rank	2	5	1	5	4	3

2016 state sales tax breadth % norm.	0.98	0.68	1.00	0.68	0.85	0.90
sales tax rank	1.6	2.8	2.8	2.8	3.8	4
sales tax % norm.	0.89	0.68	0.76	0.68	0.67	0.60
2018 state gasoline tax rates (cents per gallon)	49.4	53.49	19	53.49	22	29.41
2018 state gasoline tax rates rank (out of 50)	3	2	45	2	39	26
state gasoline tax rates rank	2	1	5	1	4	3
state gasoline tax rates % norm.	0.92	1.00	0.36	1.00	0.41	0.55
2018 state cigarette tax (dollars per 20-pack)	3.03	2.87	2	2.87	0.84	1.7
2018 state cigarette tax rank (out of 50)	8	9	14	9	37	22
state cigarette tax rank	1	2	3	2	5	4
state cigarette tax % norm.	1.00	0.95	0.66	0.95	0.28	0.56
2018 state spirit tax (dollars per gallon)	32.52	3.3	3	3.3	2.28	15.38
2018 state spirit tax rank (out of 48)	1	40	43	40	47	5
state spirit tax rank	1	3	4	3	5	2
state spirit tax % norm.	1.00	0.10	0.09	0.10	0.07	0.47
2018 state wine tax (dollars per gallon)	0.87	0.2	0.84	0.2	0.32	0
2018 state wine tax rank (out of 45)	25	45	26	45	40	0
state wine tax rank	1	4	2	4	3	5
state wine tax % norm.	1.00	0.23	0.97	0.23	0.37	0.00
2018 state beer tax (dollars per gallon)	0.26	0.2	0.16	0.2	0.08	0.41
2018 state beer tax rank (out of 50)	25	30	36	30	46	13
state beer tax rank	2	3	4	3	5	1
state beer tax % norm.	0.63	0.49	0.39	0.49	0.20	1.00
2017 state and local cell phone tax rate (%)	19.24	12.82	12.25	12.82	12.06	13.75
2017 state and local cell phone tax rate rank (out of 50)	1	15	20	15	21	13
2017 state and local cell phone tax rate rank	1	3	4	3	5	2
2017 state and local cell phone tax rate % norm.	1.00	0.67	0.64	0.67	0.63	0.71
excise tax rank	1.33	2.67	3.67	2.67	4.5	2.83
excise tax % norm.	0.93	0.57	0.52	0.57	0.32	0.55
2016 property taxes paid as a percentage of owner-occupied housing value (%)	0.96	0.76	0.7	0.76	0.59	0.65
2016 property taxes paid as a percentage of owner-occupied housing value rank (out of 50)	26	34	38	34	43	40
property taxes paid as a percentage of owner-occupied housing value rank	1	2	3	2	5	4
property taxes paid as a percentage of owner-occupied housing value % norm.	1.00	0.79	0.73	0.79	0.61	0.68
2015 state and local property tax collections per capita (\$)	1,409	1,451	1,036	1,451	1,382	976
2015 state and local property tax collections per capita rank (out of 50)	23	21	34	21	26	36
2015 state and local property tax collections per capita rank	2	1	4	1	3	5
2015 state and local property tax collections per capita % norm.	0.97	1.00	0.71	1.00	0.95	0.67
property tax rank	1.5	1.5	3.5	1.5	4	4.5
property tax % norm.	0.99	0.90	0.72	0.90	0.78	0.67
tax burden mean	2.35	1.79	3.79	1.79	3.53	3.53
tax burden % normalization	0.73	0.83	0.59	0.83	0.61	0.61
tax burden sum	36	38	66	38	68	62
tax burden subcategory rank	2	1	4	1	3	3

GOVERNMENT DEBT

Government Debt | Tax Foundation | State | 2015

	Washington	California	Arizona	California	Colorado	Utah
2015 state debt per capita (\$)	4,495	3,876	2,086	3,876	3,152	2,497
2015 state debt per capita rank (out of 50)	12	14	39	14	27	35
state debt per capita rank	1	2	5	2	3	4
state debt per capita % norm.	1.00	0.86	0.46	0.86	0.70	0.56
2015 state and local debt per capita (\$)	11,359	10,754	7,016	10,754	10,290	6,761
2015 state and local debt per capita rank (out of 50)	6	9	35	9	11	38
state and local debt per capita rank	1	2	4	2	3	5
state and local debt per capita % norm.	1.00	0.95	0.62	0.95	0.91	0.60
government debt mean	1.00	2.00	4.50	2.00	3.00	4.50
government debt % normalization	1.00	0.90	0.54	0.90	0.80	0.58
government debt sum	2	4	9	4	6	9
government debt subcategory rank	1	2	4	2	3	4

RECESSION RECOVERED

Recession Recovered | WalletHub | City | 2017

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
employment/earnings opportunities (out of 505)	64	134	459	233	8	82
economic environment rank (out of 505)	230	279	448	267	69	369
recession recovered rank (out of 505)	108	172	472	239	10	155
recession recovered mean	5.00	3.00	1.00	2.00	6.00	4.00
recession recovered % normalization	0.23	0.36	1.00	0.51	0.02	0.33
recession recovered sum	5	3	1	2	6	4
recession recovered subcategory rank	5	3	1	2	6	4

CITY ECONOMY TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.90	2.96	2.78	1.93	4.06	3.73
percent normalization	0.17	0.44	0.64	0.77	0.42	0.48
sum	90	88	106	61	107	100

PERSONAL/HOUSEHOLD ECONOMY

POVERTY/FOOD STAMPS

Poverty | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
below poverty under 5 years old (%)	14.6	17.5	26	23.2	15.9	15
below poverty under 18 years old (%)	13.7	18	23.8	20.7	14.9	14.1
below poverty 18-64 years old (%)	10.4	13.6	15.4	15.5	10.2	10.4
below poverty 65+ years old (%)	8.2	9.1	8.3	9	6.9	7.1
below poverty white (%)	8.8	13.2	14.8	12.9	9.4	8.6
below poverty black/african american (%)	23.9	20.1	23.4	28.7	23.1	28.3
below poverty american indian/alaska native (%)	22.2	20.2	29.7	19	22.7	25.6
below poverty native hawaiian/pacific islander (%)	17.3	14.6	21.7	21.2	12.1	21
below poverty asian (%)	11	10.7	13.1	17.7	11.3	15.6
below poverty hispanic (%)	19.9	19.6	27.4	22	19.7	22.1
below poverty other race (%)	20.8	23.1	28.6	24.7	21.1	26.7
below poverty 2+ races (%)	15	14.3	17	19.1	11.5	15.7
below poverty less than high school (%)	23.8	24.2	30.9	28.6	23.9	21.1
below poverty high school (%)	11.9	14.7	15.8	16.4	11.4	10.6
below poverty bachelors (%)	4.1	5.3	5.2	5.1	3.9	4.7
below poverty (%)	10.9	14	16.5	15.8	10.9	11.1
poverty rank	5	3	1	2	5	4
poverty % norm.	0.66	0.85	1.00	0.96	0.66	0.67

Food Stamps | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
households receiving food stamps (%)	11.6	7	11.7	10.2	7.6	8.4
food stamps rank	2	6	1	3	5	4
food stamps % norm.	0.99	0.60	1.00	0.87	0.65	0.72
poverty/food stamps mean	3.50	4.50	1.00	2.50	5.00	4.00
poverty/food stamps % normalization	0.83	0.72	1.00	0.91	0.66	0.70
poverty/food stamps sum	7	9	2	5	10	8
poverty/Food stamps subcategory rank	3	5	1	2	6	4

INCOME, EARNINGS, WAGES

Household Income (Past 12 Months) | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
<10,000 (\$)	5.3	5.5	6.8	5.9	5	4.4
10,000-14,999 (\$)	3.2	4	4.4	5.2	3.4	3.4
15,000-24,999 (\$)	6.8	8.1	9.6	9	7.4	7.8
25,000-34,999 (\$)	7.3	8.4	10.1	8.9	8.3	8.7
35,000-49,999 (\$)	11.4	11.9	14.2	12.2	12.3	13
50,000-74,999 (\$)	17.3	17	18.7	17.4	18	20.3
75,000-99,999 (\$)	13.6	12.8	12.5	12.5	13.6	15
100,000-149,999 (\$)	17.8	16.4	13.6	15.6	16.8	16.1
150,000-199,999 (\$)	8.4	7.7	5.1	7.1	7.4	5.7
200,000+ (\$)	9	8.1	5	6.2	7.7	5.6
median income (\$)	73,044	66,529	55,227	61,686	68,173	64,564
median income rank	6	4	1	2	5	3
median income % norm.	0.68	0.80	1.00	0.88	0.77	0.83
mean income (\$)	97,001	90,685	75,829	82,859	91,685	83,633
mean income rank	6	4	1	2	5	3
mean income % norm.	0.72	0.80	1.00	0.91	0.79	0.90
household income rank	6	4	1	2	5	3
household income % norm.	0.70	0.80	1.00	0.90	0.78	0.86

Earnings (Past 12 Months) | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
median earnings (16+ y/o) (\$)	40,482	32,656	31,744	33,031	37,049	31,094
median earnings rank	6	3	2	4	5	1
median earnings % norm.	0.70	0.95	0.98	0.94	0.81	1.00
mean earnings (16+ y/o) (\$)	74,793	65,287	58,295	66,049	67,897	58,275
mean earnings rank	6	3	2	4	5	1
mean earnings % norm.	0.72	0.88	1.00	0.87	0.83	1.00
earnings rank	6	3	2	4	5	1
earnings % norm.	0.71	0.91	0.99	0.90	0.82	1.00

Wage | US Bureau of Labor Statistics (BLS) | Metro | 2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
average weekly wage (\$)	1,465	1,073	970	974	1,157	984
wage rank	6	4	1	2	5	3
wage % norm.	0.49	0.89	1.00	1.00	0.81	0.99
income, earnings, wages mean	6.00	3.67	1.33	2.67	5.00	2.33
income, earnings, wages % normalization	0.63	0.87	1.00	0.93	0.80	0.95
income, earnings, wages sum	30	18	7	14	25	11
income, earnings, wages subcategory rank	6	4	1	3	5	2

INEQUALITY/INCLUSION

Income Inequality (20th to 95th percentile) | Brookings Institute | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
2016 household income 20th percentile (\$)	30,429	30,228	22,177	22,129	24,182	23,449
2016 household income 95th percentile (\$)	334,519	267,615	200,053	195,061	276,281	213,734
2016 income inequality ratio	11	8.9	9	8.8	11.4	9.1
2016 income inequality ratio rank	2	5	4	6	1	3
2016 income inequality ratio % norm.	0.96	0.78	0.79	0.77	1.00	0.80
2014 household income 20th percentile (\$)	26,801	27,681	20,185	18,757	22,460	19,594
2014 household income 95th percentile (\$)	270,921	246,914	188,060	184,379	237,676	220,821
2014 income inequality ratio	10.1	8.9	9.3	9.8	10.6	11.3
change 2014-2016 household income 20th percentile (\$)	3,628	2,547	1,992	3,372	1,722	3,855
change 2014-2016 household income 95th percentile (\$)	63,598	20,701	11,993	10,682	38,605	-7,087
2014-2016 income inequality ratio change	0.9	-0.1	-0.3	-1	0.8	-2.2
2014-2016 income inequality ratio change rank	1	3	4	5	2	6
2014-2016 income inequality ratio change % norm.	1.00	-0.11	-0.33	-1.11	0.89	-2.44
income inequality rank	1.5	4	4	5.5	1.5	4.5
income inequality % norm.	0.98	0.33	0.23	-0.17	0.94	-0.82

Income Inequality (Gender/Race) | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
median earnings (past 12 months) male (\$)	52,479	41,881	39,104	41,885	45,957	40,690
median earnings (past 12 months) female (\$)	35,737	30,827	30,645	32,043	34,701	26,712
women's earnings as a percentage of men's (%)	68.1	73.6	78.4	76.5	75.5	65.6
gender income inequality rank	2	3	6	5	4	1
gender income inequality % norm.	0.96	0.88	0.80	0.83	0.85	1.00
mean income white (\$)	44,213	44,044	36,245	38,431	44,341	32,329
mean income black/african american (\$)	24,609	25,888	20,856	21,840	23,426	19,036
white to black/african american ratio (%)	55.66	58.78	57.54	56.83	52.83	58.88
white to black/african american ratio rank	2	5	4	3	1	6
white to black/african american ratio % norm.	0.95	0.89	0.91	0.92	1.00	0.89
mean income american indian/alaska native (\$)	23,188	23,891	16,107	23,645	21,864	17,909
white to american indian/alaska native (%)	52.45	54.24	44.44	61.53	49.31	55.40
white to american indian/alaska native rank	3	4	1	6	2	5
white to american indian/alaska native % norm.	0.82	0.78	1.00	0.62	0.89	0.75
mean income asian (\$)	37,765	33,292	33,021	27,704	31,827	27,778
white to asian (%)	85.42	75.59	91.10	72.09	71.78	85.92
white to asian rank	4	3	6	2	1	5
white to asian	0.81	0.95	0.73	1.00	1.00	0.80
mean income native hawaiian/pacific islander (\$)	20,572	25,458	17,539	21,268	25,747	16,261
white to native hawaiian/pacific islander (%)	46.53	57.80	48.39	55.34	58.07	50.30
white to native hawaiian/pacific islander rank	1	5	2	4	6	3
white to native hawaiian/pacific islander % norm.	1.00	0.76	0.96	0.81	0.75	0.92
mean income other single race (\$)	18,715	16,789	14,598	17,468	18,340	13,314
white to single race (%)	42.33	38.12	40.28	45.45	41.36	41.18
white to single race rank	5	1	2	6	4	3
white to single race % norm.	0.89	1.00	0.94	0.81	0.91	0.92
mean income two races (\$)	20,137	19,168	15,399	16,992	19,981	13,598
white to two races (%)	45.55	43.52	42.49	44.21	45.06	42.06
white to two races rank	6	3	2	4	5	1
white to two races % norm.	0.92	0.97	0.99	0.95	0.93	1.00
mean income hispanic/latino (\$)	20,095	17,920	15,052	18,347	18,334	15,285
white to hispanic/latino (%)	45.45	40.69	41.53	47.74	41.35	47.28
white to hispanic/latino rank	4	1	3	6	2	5
white to hispanic/latino % norm.	0.88	1.00	0.98	0.83	0.98	0.84
race income inequality rank	4	3	3	4	3	4
race income inequality % norm.	0.90	0.91	0.93	0.85	0.92	0.87

Inclusion | Brookings Institute | Metro | Varies

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
2005-2015 white percent change in employment and education (%)	-1.3	-3.5	-4.4	-6	-1.5	-1.9
2005-2015 white percent change in employment and education rank	6	3	2	1	5	4
2005-2015 white percent change in employment and education % norm.	0.22	0.58	0.73	1.00	0.25	0.32
2014-2015 white percent change in employment and education (%)	0.9	1	0.9	1.7	1.5	-0.3
2014-2015 white percent change in employment and education rank	2	3	2	5	4	1
2014-2015 white percent change in employment and education % norm.	-3.00	-3.33	-3.00	-5.67	-5.00	1.00
white percent change in employment and education rank	4	3	2	3	4.5	2.5
white percent change in employment and education % norm.	-1.39	-1.38	-1.13	-2.33	-2.38	0.66
2005-2015 black percent change in employment and education (%)	4.8	-0.8	0.5	-1.8	0	16.5
2005-2015 black percent change in employment and education rank	5	2	4	1	3	6
2005-2015 black percent change in employment and education % norm.	-2.67	0.44	-0.28	1.00	0.00	-9.17
2014-2015 black percent change in employment and education (%)	3.8	2.3	7.2	8.2	-4.6	7.3
2014-2015 black percent change in employment and education rank	3	2	4	6	1	5
2014-2015 black percent change in employment and education % norm.	-0.83	-0.50	-1.57	-1.78	1.00	-1.59
black percent change in employment and education rank	4	2	4	3.5	2	5.5
black percent change in employment and education % norm.	-1.75	-0.03	-0.92	-0.39	0.50	-5.38
2005-2015 hispanic percent change in employment and education (%)	6.3	13.6	14.3	7.1	13.6	20.4
2005-2015 hispanic percent change in employment and education rank	1	3	4	2	3	5
2005-2015 hispanic percent change in employment and education % norm.	1.00	-0.16	-0.27	0.87	-0.16	-1.24
2014-2015 hispanic percent change in employment and education (%)	1.8	4.4	4.6	1.1	1.1	6.6
2014-2015 hispanic percent change in employment and education rank	2	3	4	1	1	5
2014-2015 hispanic percent change in employment and education % norm.	0.36	-2.00	-2.18	1.00	1.00	-4.00
hispanic percent change in employment and education rank	1.5	3	4	1.5	2	5
hispanic percent change in employment and education % norm.	0.68	-1.08	-1.23	0.94	0.42	-2.62
2005-2015 white percent change in median wage (%)	13.6	7.7	1.5	2.7	7.1	9.2
2005-2015 white percent change in median wage rank	6	4	1	2	3	5
2005-2015 white percent change in median wage % norm.	-7.07	-3.13	1.00	0.20	-2.73	-4.13
2014-2015 white percent change in median wage (%)	8.2	-3.4	3	2.6	3.4	10.7
2014-2015 white percent change in median wage rank	5	1	3	2	4	6

2014-2015 white percent change in median wage % norm.	-2.41	1.00	-0.88	-0.76	-1.00	-3.15
white percent change in median wage rank	5.5	2.5	2	2	3.5	5.5
white percent change in median wage % norm.	-4.74	-1.07	0.06	-0.28	-1.87	-3.64
2005-2015 black percent change in median wage (%)	-6	0.8	-6.6	-10.5	-12	-6
2005-2015 black percent change in median wage rank	4	5	3	2	1	4
2005-2015 black percent change in median wage % norm.	0.50	-0.07	0.55	0.88	1.00	0.50
2014-2015 black percent change in median wage (%)	1.1	-6.1	-2.6	21.1	11	-4.6
2014-2015 black percent change in median wage rank	4	1	3	6	5	2
2014-2015 black percent change in median wage % norm.	-0.18	1.00	0.43	-3.46	-1.80	0.75
black percent change in median wage rank	4	3	3	4	3	3
black percent change in median wage % norm.	0.16	0.47	0.49	-1.29	-0.40	0.63
2005-2015 hispanic percent change in median wage (%)	8.7	11.1	6.4	-4.1	3.1	1.5
2005-2015 hispanic percent change in median wage rank	5	6	4	1	3	2
2005-2015 hispanic percent change in median wage % norm.	-2.12	-2.71	-1.56	1.00	-0.76	-0.37
2014-2015 hispanic percent change in median wage (%)	15.2	-0.2	5.8	0.1	1.6	-3.8
2014-2015 hispanic percent change in median wage rank	6	2	5	3	4	1
2014-2015 hispanic percent change in median wage % norm.	-4.00	0.05	-1.53	-0.03	-0.42	1.00
hispanic percent change in median wage rank	5.5	4	4.5	2	3.5	1.5
hispanic percent change in median wage % norm.	-3.06	-1.33	-1.54	0.49	-0.59	0.32
2005-2015 white percent change in relative poverty (%)	-3.7	10.4	2.3	4.4	2.1	-4.8
2005-2015 white percent change in relative poverty rank	2	6	4	5	3	1
2005-2015 white percent change in relative poverty % norm.	0.77	-2.17	-0.48	-0.92	-0.44	1.00
2014-2015 white percent change in relative poverty (%)	-4.3	1.2	-1.7	0.9	-3.3	-4.4
2014-2015 white percent change in relative poverty rank	2	6	4	5	3	1
2014-2015 white percent change in relative poverty % norm.	0.98	-0.27	0.39	-0.20	0.75	1.00
white percent change in relative poverty rank	2	6	4	5	3	1
white percent change in relative poverty % norm	0.87	-1.22	-0.05	-0.56	0.16	1.00
2005-2015 black percent change in relative poverty (%)	18.8	10.9	15.6	23	21.1	8.3
2005-2015 black percent change in relative poverty rank	4	2	3	6	5	1
2005-2015 black percent change in relative poverty % norm.	-0.27	0.69	0.12	-0.77	-0.54	1.00
2005-2015 black percent change in relative poverty (%)	8.6	5.4	1.8	-4	-6.1	15.8
2005-2015 black percent change in relative poverty rank	5	4	3	2	1	6
2005-2015 black percent change in relative poverty % norm.	-1.41	-0.89	-0.30	0.66	1.00	-2.59
black percent change in relative poverty rank	4.5	3	3	4	3	3.5
black percent change in relative poverty % norm.	-0.84	-0.10	-0.09	-0.06	0.23	-0.80
2005-2015 hispanic percent change in relative poverty (%)	-6.5	3.1	-3.6	7.7	-3.5	-5
2005-2015 hispanic percent change in relative poverty rank	1	5	3	6	4	2
2005-2015 hispanic percent change in relative poverty % norm.	1.00	-0.48	0.55	-1.18	0.54	0.77
2005-2015 hispanic percent change in relative poverty (%)	-8.5	-7.8	-0.9	1.8	-3	-5.9
2005-2015 hispanic percent change in relative poverty rank	1	2	5	6	4	3

2005-2015 hispanic percent change in relative poverty % norm.	1.00	0.92	0.11	-0.21	0.35	0.69
hispanic percent change in relative poverty rank	1	3.5	4	6	4	2.5
hispanic percent change in relative poverty % norm.	1.00	0.22	0.33	-0.70	0.45	0.73
inclusion rank	3.56	3.33	3.39	3.44	3.17	3.33
inclusion % norm.	-1.01	-0.61	-0.45	-0.47	-0.39	-1.01
inequality/inclusion mean	2.66	3.37	4.06	4.59	2.92	3.21
inequality/inclusion % normalization	0.46	0.38	0.38	0.26	0.58	0.01
inequality/inclusion sum	62	63	65	78	57	68
inequality/inclusion subcategory rank	1	4	5	6	2	3

MONEY MANAGEMENT

Money Management | WalletHub | City | 2018

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
median credit score	733	703	657	671	682	684
credit-card debt-to-income ratio	4.71	5.52	6.07	4.94	6.06	6.1
mortgage debt-to-income ratio	493.08	609.77	392.93	430.06	463.91	429.11
car-loan debt-to-income ratio	20.53	26.88	39.55	31.59	28.32	30.79
student-load debt-to-income ratio	37.28	36.26	42.99	38.5	45.76	46.86
average number of late payments	1.7	2.74	4.19	3.53	3.26	2.26
overall money management rank (out of 2500)	249	894	1572	1127	1176	1028
money management rank	6	5	1	3	2	4
money management % norm.	0.16	0.57	1.00	0.72	0.75	0.65

Budgeting | WalletHub | Metro | 2015

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
spending and debt rank (out of 150)	22	14	70	26	34	62
credit rank (out of 150)	27	69	98	77	26	25
saving rank (out of 150)	58	38	112	38	70	7
budgeting rank (out of 150)	24	27	90	46	44	30
budgeting rank	6	5	1	2	3	4
budgeting % norm.	0.27	0.30	1.00	0.51	0.49	0.33

Credit Card Debt | WalletHub | City | 2018

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
percentile (99th most sustainable debt)	53	45	56	80	44	58
average credit card debt (\$)	7,612	7,784	7,171	6,511	7,689	7,010
average credit card debt rank	3	1	4	6	2	5
average credit card debt % norm.	0.98	1.00	0.92	0.84	0.99	0.90
debt increase 2016-17 (%)	1.32	1.1	0.88	0.16	2.39	-4.7
debt increase 2016-17 rank	2	3	4	5	1	6
debt increase 2016-17 % norm.	0.55	0.46	0.37	0.07	1.00	-1.97
months until payoff	27	34	43	32	38	41
months until payoff rank	6	4	1	5	3	2
months until payoff % norm.	0.63	0.79	1.00	0.74	0.88	0.95
people with credit card debt (%)	66.21	60.07	46.41	51.69	54.68	50.95
people with credit card debt rank	1	2	6	4	3	5
people with credit card debt % norm.	1.00	0.91	0.70	0.78	0.83	0.77
credit card debt rank	3	2.5	3.75	5	2.25	4.5
credit card debt % norm.	0.79	0.79	0.75	0.61	0.92	0.16
money management mean	5.00	4.17	1.92	3.33	2.42	4.17
money management % normalization	0.40	0.55	0.92	0.61	0.72	0.38
money management sum	24	20	17	25	14	26
money management subcategory rank	5	4	1	3	2	4

PERSONAL/HOUSEHOLD ECONOMY TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	4.29	3.93	2.08	3.27	3.83	3.43
percent normalization	0.58	0.63	0.82	0.68	0.69	0.51
sum	123	110	91	122	106	113

COST OF LIVING

COST LIVING

Value of \$100 | Tax Foundation | Metro | 2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
value of \$100 (\$)	91.41	85.76	102.9	97.47	94.34	100
value of \$100 rank	2	1	6	4	3	5
value of \$100 % norm.	0.93	1.00	0.80	0.86	0.90	0.83

Cost of Living (vs. Seattle) | CNN | City | 2015

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
\$70,000 comparable salary (\$)	70,000	69,662	46,506	55,913	53,453	45,445
salary rank	1	2	5	3	4	6
salary % norm.	1.00	1.00	0.66	0.80	0.76	0.65
price difference groceries (%)	0	-10	-24	-10	-17	-22
grocery rank	1	2	5	2	3	4
grocery % norm.	1.00	0.90	0.76	0.90	0.83	0.78
price difference housing (%)	0	31	-46	-26	-27	-49
housing rank	2	1	5	3	4	6
housing % norm.	0.76	1.00	0.41	0.56	0.56	0.39
price difference utilities (%)	0	-6	-22	-25	-24	-36
utilities rank	1	2	3	5	4	6
utilities % norm.	1.00	0.94	0.78	0.75	0.76	0.64
price difference transportation (%)	0	-5	-28	-9	-23	-21
transportation rank	1	2	6	3	5	4
transportation % norm.	1.00	0.95	0.72	0.91	0.77	0.79
price difference healthcare (%)	0	-15	-24	-20	-16	-27
healthcare rank	1	2	5	4	3	6
healthcare % norm.	1.00	0.85	0.76	0.80	0.84	0.73
cost of living (vs. seattle) rank	1.17	1.83	4.83	3.33	3.83	5.33
cost of living (vs. seattle) % norm.	0.96	0.94	0.68	0.79	0.75	0.66

Housing/Rent | US Census American Community Survey (ACS) | Metro | 2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
owner-occupied units	847,458	581,635	979,617	474,749	670,238	250,911
housing value less than 50,000 (\$)	3.8	3.8	7.8	4.5	3.4	4.3
housing value 50-99,999 (\$)	1.8	2.2	11	3.1	2.7	2.1
housing value 100-149,999 (\$)	4.3	2	15	6	6.5	11.1
housing value 150-199,999 (\$)	9.1	2.9	17.2	10.5	12.3	18.7
housing value 200-299,999 (\$)	23.4	10.7	22.3	23.8	28.6	30.7
housing value 300-499,999 (\$)	32.3	36.5	17.9	34.2	31.1	23.9
housing value 500-999,999 (\$)	21.1	33.8	7	16.1	13.1	8.1
housing value 1,000,000+ (\$)	4.2	8.1	1.8	1.9	2.3	1.1
median housing value (\$)	338,600	454,600	196,400	309,900	287,400	239,700
median housing value rank	2	1	6	3	4	5
median housing value % norm.	0.74	1.00	0.43	0.68	0.63	0.53
occupied units paying rent	553,839	507,617	592,480	318,512	379,281	120,030
gross rent less than 500 (\$)	6.1	4.1	5.2	5.3	5.9	6.8
gross rent 500-999 (\$)	27.3	17.7	46	36.2	34.3	47.1
gross rent 1000-1499 (\$)	35.9	35.2	35.1	35.2	36.1	33.6
gross rent 1500-1999 (\$)	19.6	22.8	9.6	16.5	16.7	9.7
gross rent 2000-2499 (\$)	6.9	12.5	2.5	4.7	4.8	1.8
gross rent 2500-2999 (\$)	2.5	4.7	0.9	1.2	1.1	0.5
gross rent 3000+ (\$)	1.8	3.1	0.8	0.8	1.1	0.5
no paid rent	16,430	13,876	24,544	10,876	8,948	4,186
median gross rent (\$)	1,212	1,395	989	1,106	1,119	967
median gross rent rank	2	1	5	4	3	6
median gross rent % norm.	0.87	1.00	0.71	0.79	0.80	0.69
housing/rent rank	2	1	5.5	3.5	3.5	5.5
housing/rent % norm.	0.81	1.00	0.57	0.74	0.72	0.61

Goods | US Department of Agriculture (USDA) | County | 2010

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
price of low-fat milk/national average	0.86	1.03	1	1.03	0.75	0.72
milk rank	3	1	2	1	4	5
milk % norm.	0.83	1.00	0.97	1.00	0.73	0.70
price of soda/national average	1.24	1.09	0.69	1.09	1	1.01
price of soda rank	1	2	5	2	4	3
price of soda % norm.	1.00	0.88	0.56	0.88	0.81	0.81
goods rank	2	1.5	3.5	1.5	4	4
goods % norm.	0.92	0.94	0.76	0.94	0.77	0.76

Food Security | Feeding America | County | 2015

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
food insecurity rate (%)	12.9	12.3	15	14.5	13.3	12.6
food insecurity rate rank	4	6	1	2	3	5
food insecurity rate % norm.	0.86	0.82	1.00	0.97	0.89	0.84
estimated program eligibility (snap, etc.) (%)	61	77	71	67	62	48
average meal cost (\$)	3.45	3.35	2.97	3.09	3.2	2.87
average meal cost rank	1	2	5	4	3	6
average meal cost % norm.	1.00	0.97	0.86	0.90	0.93	0.83
annual food budget shortfall (\$)	163,877,000	238,371,000	321,341,000	34,171,000	49,382,000	70,052,000
food security rank	2.5	4	3	3	3	5.5
food security % norm.	0.93	0.90	0.93	0.93	0.91	0.84

cost of living mean	1.93	1.87	4.57	3.07	3.47	5.07
cost of living % normalization	0.91	0.95	0.75	0.85	0.81	0.74
cost of living sum	22	25	59	40	47	67
cost of living subcategory rank	2	1	5	3	4	6

COST OF LIVING TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	1.93	1.87	4.57	3.07	3.47	5.07
percent normalization	0.91	0.95	0.75	0.85	0.81	0.74
sum	22	25	59	40	47	67

HOMELESSNESS

HOMELESSNESS

Homelessness | US Department of Housing and Urban Development (HUD) | City + County | 2017

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
total homeless (point-in-time)	11,643	9,160	5,605	3,665	5,506	2,047
total homeless rank	1	2	3	5	4	6
total homeless % norm.	1.00	0.79	0.48	0.31	0.47	0.18
unsheltered homeless (%)	47.11	61.36	36.74	55.99	16.24	7.87
unsheltered homeless rank	3	1	4	2	5	6
unsheltered homeless % norm.	0.77	1.00	0.60	0.91	0.26	0.13
chronically homeless (%)	21.32	22.79	15.74	29.77	18.85	5.91
chronically homeless rank	3	2	5	1	4	6
chronically homeless % norm.	0.72	0.77	0.53	1.00	0.63	0.20
chronically homeless unsheltered (%)	71.65	84	69.84	73.6	43.45	25.62
chronically homeless unsheltered rank	3	1	4	2	5	6
chronically homeless unsheltered % norm.	0.85	1.00	0.83	0.88	0.52	0.31
homeless veterans (%)	11.41	11.65	8.72	12.8	9.95	8.65
homeless veterans unsheltered (%)	52.14	42.55	30.27	69.72	13.14	3.95
homeless unaccompanied children (under 18) (%)	1.9	0.74	0.7	0.08	0.47	0.29
homeless unaccompanied children unsheltered (%)	88.24	60.29	20.51	0	26.93	0
homeless unaccompanied young adults (18-24) (%)	10.97	11.92	5.01	5.51	7.45	5.08
homeless unaccompanied young adults unsheltered (%)	74.16	77.11	47.33	58.42	29.27	21.15
homeless parenting youth (under 25) (%)	1.22	1.03	0.8	0.79	0.65	1.37
homeless parenting youth unsheltered	4.23	22.34	0	0	8.33	0
homeless severely mentally ill (%)	25.08	7.23	15.45	29.8	23.68	33.37
homeless chronic substance abuse (%)	17.96	7.93	12.69	17.16	21.87	24.62
homeless hiv/aids (%)	1.83	0.67	1.07	1.69	1.25	1.37
homeless victims of domestic violence (%)	23.37	22.89	20.59	10.48	10.64	21.1
homeless children of parenting youth (%)	1.91	1.35	1.23	1.09	0.82	1.61
change in homeless count since 2007 to 2017 (%)	47.34	25.03	-33.65	49.47	-36.7	-1.54
change in homeless count rank	2	3	5	1	6	4
change in homeless count % norm.	0.96	0.51	-0.68	1.00	-0.74	-0.03
hispanic/latino	1,598	2,482	1,284	656	1,199	489
black/african american	3,402	2,064	1,338	1,124	1,364	230
white	5,253	5,700	3,723	1,817	3,327	1,514
asian	238	192	30	24	28	25
american indian/alaska native	697	288	311	179	312	131
native hawaiian/pacific islander	259	138	28	31	25	42
multiple races	1,794	778	175	490	450	105
female	4,203	3,074	2,162	1,169	1,868	720
male	7,211	5,977	3,431	2,435	3,596	1,321
homelessness mean	2.40	1.80	4.20	2.20	4.80	5.60
homelessness % normalization	0.86	0.81	0.35	0.82	0.23	0.16
homelessness sum	12	9	21	11	24	28
homelessness subcategory rank	3	1	4	2	5	6

MONEY + HOUSING

Money + Housing | Gallup | Metro | 2012/2013

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
enough money to provide adequate shelter/housing (%)	91.6	88.2	89.9	90.7	91.3	90.4
enough money to provide adequate shelter/housing rank (out of 189)	145	43	79	116	137	104
money + housing rank	6	1	2	4	5	3
money + housing % norm.	-1.37	1.00	0.16	-0.70	-1.19	-0.42

Housing Problems | National Association of Counties (NACo) | County | 2017

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
severe housing problems (%)	18.7	26.2	19.8	23.9	20.4	17.6
housing problems rank	5	1	4	2	3	6
housing problems % norm.	0.71	1.00	0.76	0.91	0.78	0.67
money + housing mean	5.50	1.00	3.00	3.00	4.00	4.50
money + housing % normalization	-0.33	1.00	0.46	0.11	-0.20	0.13
money + housing sum	11	2	6	6	8	9
money + housing subcategory rank	5	1	2	2	3	4

HOUSING ASSISTANCE

Housing Assistance | US Department of Housing and Urban Development (HUD) | Metro | 2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
community development grants per capita (\$)	7.03	7.44	6.67	6.18	5.93	7.23
community development grants rank	4	6	3	2	1	5
community development grants % norm.	0.81	0.75	0.88	0.96	1.00	0.78
multifamily projects with rental assistance (units per capita)	0.00234	0.00282	0.00178	0.00297	0.00376	0.00203
multifamily projects with rental assistance rank	3	4	1	5	6	2
multifamily projects with rental assistance % norm.	0.69	0.42	1.00	0.33	-0.11	0.86
housing assistance mean	3.50	5.00	2.00	3.50	3.50	3.50
housing assistance % normalization	0.75	0.58	0.94	0.64	0.44	0.82
housing assistance sum	7	10	4	7	7	7
housing assistance subcategory rank	2	3	1	2	2	2

HOMELESSNESS TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.80	2.60	3.07	2.90	4.10	4.53
percent normalization	0.43	0.80	0.58	0.52	0.16	0.37
sum	30	21	31	24	39	44

GENERAL METRICS

GENERAL METRICS

Best/Worst Run Cities | WalletHub | City | 2017

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
quality of city services rank (out of 150)	16	18	54	74	82	37
total budget per capita rank (out of 150)	122	82	54	126	140	52
best/worst run city ranking (out of 150)	92	57	46	116	113	40
best/worst run cities rank	3	4	5	1	2	6
best/worst run cities % norm.	0.79	0.49	0.40	1.00	0.97	0.34

Best Performing Cities | Milken Institute | Metro | 2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
job growth rank (2011-16) (out of 200)	32	52	37	41	19	23
job growth rank (2015-16) (out of 200)	36	68	45	26	71	18
wage growth rank (2010-15) (out of 200)	6	59	47	62	18	21
wage growth rank (2014-15) (out of 200)	77	98	76	49	50	34
short-term job growth rank (8/2016-8/2017) (out of 200)	52	114	89	112	79	54
high-tech gdp growth rank (2011-16) (out of 200)	77	41	93	105	103	66
high-tech gdp growth rank (2015-16) (out of 200)	66	113	109	162	43	29
high tech gdp concentration rank (2016) (out of 200)	2	15	56	69	31	46
number of high-tech industries	20	2	40	54	16	13
2016 best performing cities ranking	10	32	46	52	13	11
change 2016-2017	7	19	-6	3	10	-1
2017 best performing cities ranking	17	51	40	55	23	10
best performing cities rank	5	2	3	1	4	6
best performing cities % norm.	0.31	0.93	0.73	1.00	0.42	0.18

Financial Well-Being | Gallup | State | 2014

	Washington	California	Arizona	California	Colorado	Utah
enough money to buy food rank(out of 50)	16	26	38	26	11	13
enough money for healthcare rank (out of 50)	15	23	37	23	16	29
enough money to do what you want rank (out of 50)	18	20	38	20	9	21
last 7 days, no worry about money rank (out of 50)	11	44	31	44	25	48
happy with standard of living rank (out of 50)	20	30	22	30	9	13
financial well-being rank (out of 50)	18	25	35	25	11	33
financial well-being rank	4	3	1	3	5	2
financial well-being % norm.	0.51	0.71	1.00	0.71	0.31	0.94

Economy Tracker | Brookings Institute | Metro | Varies

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
2006-2016 change in jobs (%)	14.3	8	4.8	3.4	18.1	18.3
2006-2016 change in jobs rank (out of 100)	17	41	56	65	12	11
2006-2016 change in gross metropolitan product (%)	29.2	15.9	4.1	4	23.9	23.4
2006-2016 change in gross metropolitan product rank (out of 100)	10	27	75	76	18	19
2006-2016 change in jobs at young firms (%)	-11.2	-22.7	-32.8	-23.3	6	11.2
2006-2016 change in jobs at young firms rank (out of 100)	30	66	90	70	5	31
2006-2016 growth rank (out of 100)	16	41	79	67	9	15
2006-2016 growth rank	4	3	1	2	6	5
2006-2016 growth % norm.	0.20	0.52	1.00	0.85	0.11	0.19
2015-2016 change in jobs (%)	3.4	2.5	3.3	3.5	2.6	3.7
2015-2016 change in jobs rank (out of 100)	21	43	23	15	37	9
2015-2016 change in gross metropolitan product (%)	4.2	2.1	2.8	3	2.6	3.4
2015-2016 change in gross metropolitan product rank (out of 100)	4	51	30	25	38	15
2015-2016 change in jobs at young firms (%)	0.4	5.2	-0.4	11.3	4.2	0.7
2015-2016 change in jobs at young firms rank (out of 100)	84	26	87	12	35	81
2015-2016 growth rank (out of 100)	24	40	38	10	34	27
2015-2016 growth rank	5	1	2	6	3	4
2015-2016 growth % norm.	0.60	1.00	0.95	0.25	0.85	0.68
2006-2016 change in productivity (%)	13.1	7.3	-0.7	0.6	5	4.3
2006-2016 change in productivity rank (out of 100)	6	29	84	77	42	49
2006-2016 change in standard of living (%)	10.8	2.9	-12.6	-6.8	3.1	5.9
2006-2016 change in standard of living rank (out of 100)	8	46	92	83	45	31
2006-2016 change in average annual wage (%)	19.2	9.2	4.9	9.4	8	11.8
2006-2016 change in average annual wage rank (out of 100)	3	30	73	25	36	11
2006-2016 prosperity rank (out of 100)	3	30	87	71	40	24
2006-2016 prosperity rank	6	4	1	2	3	5
2006-2016 prosperity % norm	0.03	0.34	1.00	0.82	0.46	0.28
2015-2016 change in productivity (%)	0.8	-0.4	-0.5	-0.4	-0.1	-0.3
2015-2016 change in productivity rank (out of 100)	12	64	71	67	42	58
2015-2016 change in standard of living (%)	2.3	1.2	0.7	1.7	1	1.8
2015-2016 change in standard of living rank (out of 100)	10	45	74	18	60	16
2015-2016 change in average annual wage (%)	3.7	0	1.3	0	0.8	1.5
2015-2016 change in average annual wage rank (out of 100)	1	80	31	78	50	21
2015-2016 prosperity rank (out of 100)	3	72	62	67	58	29
2015-2016 prosperity rank	6	1	3	2	4	5
2015-2016 prosperity % norm.	0.04	1.00	0.86	0.93	0.81	0.40
2006-2016 change in employment rate (%)	1.1	-0.7	-2.7	-2.2	2.3	-0.8
2006-2016 change in employment rate rank (out of 100)	32	61	83	80	16	64
2006-2016 change in median wage (%)	2.6	-1.6	-9.6	-1.4	5.7	8
2006-2016 change in median wage rank (out of 100)	43	76	97	70	26	17
2006-2016 change in relative poverty (%)	-1.9	3.4	1.5	3.1	-7.2	-2.9
2006-2016 change in relative poverty rank (out of 100)	46	84	75	81	11	38
2006-2016 inclusion rank (out of 100)	37	78	95	84	9	33
2006-2016 inclusion rank	4	3	1	2	6	5
2006-2016 inclusion % norm.	0.39	0.82	1.00	0.88	0.09	0.35
2015-2016 change in employment rate (%)	1.1	5.9	0.2	4.7	1.6	5.8

2015-2016 change in employment rate rank (out of 100)	64	30	68	38	62	32
2015-2016 change in median wage (%)	5.1	-5.9	-2.8	-3.7	-2.4	4.2
2015-2016 change in median wage rank (out of 100)	89	15	29	22	34	87
2015-2016 change in relative poverty (%)	1	0.8	0.8	1.2	0.3	0.8
2015-2016 change in relative poverty rank (out of 100)	45	57	54	38	71	58
2015-2016 inclusion rank (out of 100)	86	20	55	23	61	62
2015-2016 inclusion rank	1	6	4	5	3	2
2015-2016 inclusion % norm	1.00	0.23	0.64	0.27	0.71	0.72
economy tracker rank	4.33	3	2	3.17	4.17	4.33
economy tracker % norm.	0.38	0.65	0.91	0.67	0.51	0.44

general metrics mean	4.08	3.00	2.75	2.04	3.79	4.58
general metrics % normalization	0.50	0.70	0.76	0.85	0.55	0.48
general metrics sum	38	27	21	24	36	40
general metrics subcategory rank	5	3	2	1	4	6

GENERAL METRICS TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	4.08	3.00	2.75	2.04	3.79	4.58
percent normalization	0.50	0.70	0.76	0.85	0.55	0.48
sum	38	27	21	24	36	40

ECONOMY TOTAL

MEAN

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
unemployment	4.00	3.00	2.00	1.00	6.00	5.00
job quality	4.00	2.00	3.00	1.00	6.00	5.00
job creation	4.67	2.33	2.50	1.67	3.33	5.00
job proximity	3.50	4.33	4.00	2.50	3.33	3.33
employment + jobs	4.04	2.92	2.88	1.54	4.67	4.58
gdp	6.00	3.00	1.00	2.00	5.00	4.00
exports + trade	5.13	5.00	3.63	1.88	2.75	2.63
tax burden	2.35	1.79	3.79	1.79	3.53	3.53
government debt	1.00	2.00	4.50	2.00	3.00	4.50
recession recovered	5.00	3.00	1.00	2.00	6.00	4.00
city economy	3.90	2.96	2.78	1.93	4.06	3.73
poverty/food stamps	3.50	4.50	1.00	2.50	5.00	4.00
income, earnings, wages	6.00	3.67	1.33	2.67	5.00	2.33
inequality/inclusion	2.66	3.37	4.06	4.59	2.92	3.21
money management	5.00	4.17	1.92	3.33	2.42	4.17
personal/household economy	4.29	3.93	2.08	3.27	3.83	3.43
cost of living	1.93	1.87	4.57	3.07	3.47	5.07
cost of living	1.93	1.87	4.57	3.07	3.47	5.07
homelessness	2.40	1.80	4.20	2.20	4.80	5.60
money + housing	5.50	1.00	3.00	3.00	4.00	4.50
housing assistance	3.50	5.00	2.00	3.50	3.50	3.50
homelessness	3.80	2.60	3.07	2.90	4.10	4.53
general metrics	4.08	3.00	2.75	2.04	3.79	4.58
general metrics	4.08	3.00	2.75	2.04	3.79	4.58
economy mean	3.67	2.88	3.02	2.46	3.99	4.32

PERCENT NORMALIZATION

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
unemployment	0.88	0.88	0.92	1.00	0.57	0.68
job quality	0.79	0.93	0.87	1.00	0.74	0.75
job creation	0.59	0.73	0.94	0.82	0.66	0.49
job proximity	0.34	0.20	-0.03	0.75	0.25	0.45
employment + jobs	0.65	0.69	0.68	0.89	0.56	0.59
gdp	0.23	0.68	1.00	0.93	0.55	0.58
exports + trade	-1.35	-0.59	0.09	0.70	0.10	0.30
tax burden	0.73	0.83	0.59	0.83	0.61	0.61
government debt	1.00	0.90	0.54	0.90	0.80	0.58
recession recovered	0.23	0.36	1.00	0.51	0.02	0.33
city economy	0.17	0.44	0.64	0.77	0.42	0.48
poverty/food stamps	0.83	0.72	1.00	0.91	0.66	0.70
income, earnings, wages	0.63	0.87	1.00	0.93	0.80	0.95
inequality/inclusion	0.46	0.38	0.38	0.26	0.58	0.01
money management	0.40	0.55	0.92	0.61	0.72	0.38
personal/household economy	0.58	0.63	0.82	0.68	0.69	0.51
cost of living	0.91	0.95	0.75	0.85	0.81	0.74
cost of living	0.91	0.95	0.75	0.85	0.81	0.74
homelessness	0.86	0.81	0.35	0.82	0.23	0.16
money + housing	-0.33	1.00	0.46	0.11	-0.20	0.13
housing assistance	0.75	0.58	0.94	0.64	0.44	0.82
homelessness	0.43	0.80	0.58	0.52	0.16	0.37
general metrics	0.50	0.70	0.76	0.85	0.55	0.48
general metrics	0.50	0.70	0.76	0.85	0.55	0.48
economy percent normalization	0.54	0.70	0.71	0.76	0.53	0.53

SUM

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
unemployment	4	3	2	1	6	5
job quality	4	2	3	1	6	5
job creation	16	8	13	6	12	20
job proximity	21	26	24	15	20	20
employment + jobs	45	39	42	23	44	50
gdp	6	3	1	2	5	4
exports + trade	41	40	29	15	22	21
tax burden	36	38	66	38	68	62
government debt	2	4	9	4	6	9
recession recovered	5	3	1	2	6	4
city economy	90	88	106	61	107	100
poverty/food stamps	7	9	2	5	10	8
income, earnings, wages	30	18	7	14	25	11
inequality/inclusion	62	63	65	78	57	68
money management	24	20	17	25	14	26
personal/household economy	123	110	91	122	106	113
cost of living	22	25	59	40	47	67
cost of living	22	25	59	40	47	67
homelessness	12	9	21	11	24	28
money + housing	11	2	6	6	8	9
housing assistance	7	10	4	7	7	7
homelessness	30	21	31	24	39	44
general metrics	38	27	21	24	36	40
general metrics	38	27	21	24	36	40
economy sum	348	310	350	294	379	414

SUBCATEGORY FREQUENCY

		Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
employment + jobs	unemployment	4	3	2	1	6	5
	job quality	4	2	3	1	6	5
	job creation	5	2	3	1	4	6
	job proximity	3	5	4	1	2	2
city economy	gdp	6	3	1	2	5	4
	exports + trade	6	5	4	1	3	2
	tax burden	2	1	4	1	3	3
	government debt	1	2	4	2	3	4
	recession recovered	5	3	1	2	6	4
personal/ household economy	poverty/food stamps	3	5	1	2	6	4
	income, earnings, wages	6	4	1	3	5	2
	inequality/inclusion	1	4	5	6	2	3
	money management	5	4	1	3	2	4
cost of living	cost of living	2	1	5	3	4	6
homelessness	homelessness	3	1	4	2	5	6
	money + housing	5	1	2	2	3	4
	housing assistance	2	3	1	2	2	2
general metrics	general metrics	5	3	2	1	4	6
	frequency of "6"	3	0	0	1	4	4
	frequency of "5"	5	3	2	0	3	2
	frequency of "4"	2	3	5	0	3	6
	frequency of "3"	3	5	2	3	4	2
	frequency of "2"	3	3	3	7	4	4
	economy frequency of "1"	2	4	6	7	0	0
	economy subcategory sum	68	52	48	36	71	72
	employment + jobs	4.00	3.00	3.00	1.00	4.50	4.50
	city economy	4.00	2.80	2.80	1.60	4.00	3.40
	personal/household economy	3.75	4.25	2.00	3.50	3.75	3.25
	cost of living	2.00	1.00	5.00	3.00	4.00	6.00
	homelessness	3.33	1.67	2.33	2.00	3.33	4.00
	general metrics	5.00	3.00	2.00	1.00	4.00	6.00
	economy subcategory mean	3.78	2.89	2.67	2.00	3.94	4.00

community

- activism
- pride
- well-being
- trending

ACTIVISM

ACTIVE DEMOGRAPHICS

Singleness | Pew Research Center | Metro | 2014

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
single (25-35 years old) (%)	58	58	60	59	56	49
singleness rank	3	3	5	4	2	1
singleness % norm.	0.82	0.82	0.78	0.80	0.86	1.00

LGBT Population | Gallup | Metro | 2012-2014

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
lgbt (%)	4.8	3.9	4.1	3.9	4.6	4.7
lgbt rank (out of 50)	5	32	22	31	9	7
lgbt rank	6	1	3	2	4	5
lgbt % norm.	0.77	1.00	0.95	1.00	0.82	0.79

Religiosity | Gallup | Metro | 2012

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
highly religious (%)	27.6	31.9	35.6	30.5	31.7	46.8
rank (out of 189)	174	152	127	159	154	42
moderately religious (%)	24.3	27.4	28	26.7	26.8	17.3
not religious (%)	48.1	40.7	36.4	42.8	41.5	35.9
religious (%)	51.9	59.3	63.6	57.2	58.5	64.1
religious rank	1	4	5	2	3	6
religious % norm.	1.00	0.86	0.77	0.90	0.87	0.76

active demographics mean	3.33	2.67	4.33	2.67	3.00	4.00
active demographics % normalization	0.86	0.89	0.83	0.90	0.85	0.85
active demographics sum	10	8	13	8	9	12
active demographics subcategory rank	3	1	5	1	2	4

VOTER PARTICIPATION

Voter Participation (2016 Presidential Election) | County Election Offices | County | 2016

	King	San Diego	Maricopa	Sacramento	Denver	Salt Lake
registered voters (18+ y/o)	1,288,327	1,652,875	2,161,716	772,766	475,054	427,064
18+ y/o registered to vote (%)	78.3	65.5	70.5	69.1	90.3	54.5
18+ y/o registered to vote rank	5	2	4	3	6	1
18+ y/o registered to vote % norm.	0.56	0.80	0.71	0.73	0.34	1.00
ballots counted	1,041,613	1,311,618	1,608,875	575,711	341,987	510,397
turnout (%)	80.85	79.35	74.43	74.5	71.99	83.7
turnout rank	5	4	2	3	1	5
turnout % norm.	0.88	0.90	0.97	0.97	1.00	0.84
hilary clinton vote total	69.85	56.07	44.83	56.63	73.69	41.5
donald trump vote total	21.04	36.43	47.67	32.97	18.89	32.58
vote difference	48.81	19.64	2.84	23.66	54.8	8.92
voter participation mean	5.00	3.00	3.00	3.00	3.50	3.00
voter participation % normalization	0.72	0.85	0.84	0.85	0.67	0.92
voter participation sum	10	6	6	6	7	6
voter participation subcategory rank	3	1	1	1	2	1

ACTIVISM TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	4.17	2.83	3.67	2.83	3.25	3.50
percent normalization	0.79	0.87	0.83	0.87	0.76	0.89
sum	20	14	19	14	16	18

PRIDE

PRIDE

Community Pride | Gallup | Metro | 2014

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
you are proud of your community? (%)	63.2	67.1	62.7	61.7	68.1	65.5
community pride rank (out of 100)	52	17	54	67	14	34
community pride rank	3	5	2	1	6	4
community pride % norm.	0.98	0.91	0.98	1.00	0.90	0.94
recognition for improving city? (%)	17.8	18.8	16.6	18.4	20.5	16.4
recognition rank (out of 100)	62	37	81	49	19	84
recognition rank	3	5	2	4	6	1
recognition % norm.	0.91	0.85	0.99	0.88	0.75	1.00
community pride rank	3	5	2	2.5	6	2.5
community pride % norm.	0.95	0.88	0.99	0.94	0.82	0.97

Community Opinion | Gallup | Metro | 2012/2013

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
community satisfaction (%)	87	88.3	85.8	84.3	90.4	89.9
community satisfaction rank (out of 189)	69	49	91	114	24	31
community satisfaction rank	3	4	2	1	6	5
community satisfaction % norm.	0.97	0.95	0.98	1.00	0.93	0.93
community improving (%)	62.3	60.9	61.7	54.3	67.5	68.2
community improving rank	4	2	3	1	5	6
community improving % norm.	0.85	0.88	0.86	1.00	0.76	0.74
community opinion rank	3.5	3	2.5	1	5.5	5.5
community opinion % norm.	0.91	0.92	0.92	1.00	0.84	0.84
pride mean	3.25	4.00	2.25	1.75	5.75	4.00
pride % normalization	0.93	0.90	0.95	0.97	0.83	0.90
pride sum	13	16	9	7	23	16
pride subcategory rank	3	4	2	1	5	4

PRIDE TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	3.25	4.00	2.25	1.75	5.75	4.00
percent normalization	0.93	0.90	0.95	0.97	0.83	0.90
sum	13	16	9	7	23	16

WELL-BEING

WELL-BEING

Well-Being | Gallup | Metro | 2016/2017

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
purpose rank (out of 186)	146	45	34	101	114	97
social rank (out of 186)	124	36	48	59	113	147
financial rank (out of 186)	53	36	72	61	58	67
community rank (out of 186)	105	39	67	96	55	98
physical rank (out of 186)	51	17	44	45	26	76
well-being index score	61.7	63.8	62.8	62.1	62.8	61.7
well-being rank (out of 186)	85	20	48	69	45	86
well-being mean	2.00	6.00	4.00	3.00	5.00	1.00
well-being % normalization	0.99	0.23	0.56	0.80	0.52	1.00
well-being sum	2	6	4	3	5	1
well-being subcategory rank	2	6	4	3	5	1

HISTORIC WELL-BEING

Historic Well-Being | Gallup | Metro | 2014-2016

	Seattle-Tac-Bellevue	San Diego-Carlsbad	Phoenix-Mesa-Scottsdale	Sacramento-Roseville	Denver-Aurora-Lakewood	Salt Lake City Metro
2015/2016 purpose rank (out of 189)	139	54	34	109	114	149
2015/2016 social rank (out of 189)	118	72	47	70	148	132
2015/2016 financial rank (out of 189)	40	50	66	39	96	117
2015/2016 community rank (out of 189)	111	45	66	117	55	99
2015/2016 physical rank (out of 189)	65	13	47	59	24	109
2015/2016 well-being index score (out of 189)	62	63.9	63	62.2	62.7	61.4
2015/2016 well-being rank (out of 189)	79	22	47	66	57	113
2015/2016 well-being rank	2	6	5	3	4	1
2015/2016 well-being % norm.	0.70	0.19	0.42	0.58	0.50	1.00
2014/2015 purpose rank (out of 190)	168	48	52	131	81	126
2014/2015 social rank (out of 190)	156	88	49	89	147	80
2014/2015 financial rank (out of 190)	87	60	77	73	86	125
2014/2015 community rank (out of 190)	113	52	88	121	55	71
2014/2015 physical rank (out of 190)	92	10	54	62	31	59
2014/2015 well-being index score (out of 190)	61.1	63.3	62.3	61.6	62.5	62
2014/2015 well-being rank (out of 190)	126	21	58	87	50	67
2015/2016 well-being rank	1	6	4	2	5	3
2015/2016 well-being % norm.	1.00	0.17	0.46	0.69	0.40	0.53
2013/2014 purpose rank (out of 100)	84	41	33	56	39	60
2013/2014 social rank (out of 100)	66	53	40	27	72	64
2013/2014 financial rank (out of 100)	36	25	48	45	26	74
2013/2014 community rank (out of 100)	55	18	50	56	22	29
2013/2014 physical rank (out of 100)	58	15	37	34	25	36
2013/2014 well-being rank (out of 100)	62	16	38	40	25	42
2013/2014 well-being rank	1	6	4	3	5	2
2013/2014 well-being % norm.	1.00	0.26	0.61	0.65	0.40	0.68
2012/2013 life evaluation rank (out of 189)	24	58	87	104	27	29
2012/2013 emotional health rank (out of 189)	60	29	69	142	20	107
2012/2013 work environment rank (out of 189)	32	71	39	75	13	55
2012/2013 physical health rank (out of 189)	70	35	62	117	7	64
2012/2013 healthy behaviors rank (out of 189)	46	22	86	32	43	58
2012/2013 basic access rank (out of 189)	43	108	116	109	38	56
2012/2013 well-being rank (out of 189)	32	36	51	82	18	38
2012/2013 well-being rank	5	4	2	1	6	3
2012/2013 well-being % norm.	0.39	0.44	0.62	1.00	0.22	0.46
2011/2012 life evaluation rank (out of 189)	56	51	54	101	92	47
2011/2012 emotional health rank (out of 189)	58	42	50	87	82	62
2011/2012 work environment rank (out of 189)	66	91	59	127	45	19
2011/2012 physical health rank (out of 189)	66	22	56	89	24	65
2011/2012 healthy behaviors rank (out of 189)	73	16	115	29	78	46
2011/2012 basic access rank (out of 189)	52	90	121	116	30	50
2011/2012 well-being rank (out of 189)	44	35	69	88	42	28
2011/2012 well-being rank	3	5	2	1	4	6
2011/2012 well-being % norm.	0.50	0.40	0.78	1.00	0.48	0.32
2010/2011 life evaluation rank (out of 189)	27	29	97	112	80	88
2010/2011 emotional health rank (out of 189)	49	68	53	64	21	97
2010/2011 work environment rank (out of 189)	20	52	77	91	82	98
2010/2011 physical health rank (out of 189)	76	19	47	70	20	53
2010/2011 healthy behaviors rank (out of 189)	32	17	72	34	40	95
2010/2011 basic access rank (out of 189)	29	99	112	94	55	66

2010/2011 well-being rank (out of 189)	17	25	67	71	36	76
2010/2011 well-being rank	6	5	3	2	4	1
2010/2011 well-being % norm.	0.22	0.33	0.88	0.93	0.47	1.00
2009/2010 life evaluation rank (out of 189)	34	65	81	103	71	90
2009/2010 emotional health rank (out of 189)	83	51	91	89	118	155
2009/2010 work environment rank (out of 189)	77	66	37	92	69	32
2009/2010 physical health rank (out of 189)	72	15	30	63	45	53
2009/2010 healthy behaviors rank (out of 189)	67	42	91	33	70	87
2009/2010 basic access rank (out of 189)	33	114	123	59	51	86
2009/2010 well-being rank (out of 189)	39	46	66	70	55	74
2009/2010 well-being rank	6	5	3	2	4	1
2009/2010 well-being % norm.	0.53	0.62	0.89	0.95	0.74	1.00
2008/2009 life evaluation rank (out of 189)	16	26	36	42	37	7
2008/2009 emotional health rank (out of 189)	45	42	73	58	92	85
2008/2009 work environment rank (out of 189)	50	32	77	66	105	8
2008/2009 physical health rank (out of 189)	83	28	45	63	25	35
2008/2009 healthy behaviors rank (out of 189)	40	29	84	25	38	75
2008/2009 basic access rank (out of 189)	25	98	130	65	75	67
2008/2009 well-being rank (out of 189)	23	24	59	34	48	9
2008/2009 well-being rank	5	4	1	3	2	6
2008/2009 well-being % norm.	0.39	0.41	1.00	0.58	0.81	0.15
historic well-being mean	3.63	5.13	3.00	2.13	4.25	2.88
historic well-being % normalization	0.59	0.35	0.71	0.80	0.50	0.64
historic well-being sum	29	41	24	17	34	23
historic well-being subcategory rank	2	6	4	1	5	3

OTHER WELL-BEING METRICS

Age 55+ Well-Being | Gallup | State | 2015/2016

	Washington	California	Arizona	California	Colorado	Utah
purpose rank (out of 50)	38	19	4	19	17	43
social rank (out of 50)	33	30	1	30	26	34
financial rank (out of 50)	13	37	10	37	14	32
community rank (out of 50)	36	39	18	39	19	6
physical rank (out of 50)	24	11	5	11	2	36
well-being Score	63.7	63.7	65.2	63.7	65.1	63.8
well-being rank (out of 50)	26	24	2	24	5	21
age 55+ well-being rank	1	2	5	2	4	3
age 55+ well-being % norm.	1.00	0.92	0.08	0.92	0.19	0.81

Where You'll Want to Live in 2032 | Gallup | State | 2012

	Washington	California	Arizona	California	Colorado	Utah
average rank (low is better)	3.6	3.6	3.5	3.6	3.5	3.5
rank (out of 9)	3	3	2	3	2	2
where you'll want to live in 2032 rank	1	1	2	1	2	2
where you'll want to live in 2032 % norm.	1.00	1.00	0.97	1.00	0.97	0.97

other well-being metrics mean	1.00	1.50	3.50	1.50	3.00	2.50
other well-being metrics % normalization	1.00	0.96	0.52	0.96	0.58	0.89
other well-being metrics sum	2	3	7	3	6	5
other well-being metrics subcategory rank	1	2	5	2	4	3

WELL-BEING TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	2.21	4.21	3.50	2.21	4.08	2.13
percent normalization	0.86	0.52	0.60	0.85	0.54	0.84
sum	33	50	35	23	45	29

TRENDING

GOOGLE SEARCH TRENDS

Web Search (USA unless otherwise specified) | Google Trends | City | 2004 - 2/12/2018

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
all categories - worldwide	59	58	33	21	45	12
all categories - worldwide rank	6	5	3	2	4	1
all categories - worldwide % norm.	-2.92	-2.83	-0.75	0.25	-1.75	1.00
all categories	63	63	35	24	50	13
all categories rank	5	5	3	2	4	1
all categories % norm.	-2.85	-2.85	-0.69	0.15	-1.85	1.00
travel	18	60	15	11	21	6
travel rank	4	6	3	2	5	1
travel % norm.	-1.00	-8.00	-0.50	0.17	-1.50	1.00
sports	28	20	11	7	32	3
sports rank	5	4	3	2	6	1
sports % norm.	-7.33	-4.67	-1.67	-0.33	-8.67	1.00
people + society	57	67	42	32	44	12
people + society rank	5	6	3	2	4	1
people + society % norm.	-2.75	-3.58	-1.50	-0.67	-1.67	1.00
news	38	23	12	12	20	9
news rank	6	5	3	2	4	1
news % norm.	-2.22	-0.56	0.67	0.67	-0.22	1.00
jobs + education	33	51	36	13	32	7
jobs + education rank	4	6	5	2	3	1
jobs + education % norm.	-2.71	-5.29	-3.14	0.14	-2.57	1.00
hobbies + leisure	31	60	18	17	25	5
hobbies + leisure rank	5	6	3	2	4	1
hobbies + leisure % norm.	-4.20	-10.00	-1.60	-1.40	-3.00	1.00
health	49	67	37	31	46	12
health rank	5	6	3	2	4	1
health % norm.	-2.08	-3.58	-1.08	-0.58	-1.83	1.00
food + drink	12	29	6	7	79	3
food + drink rank	4	5	2	3	6	1
food + drink % norm.	-2.00	-7.67	0.00	-0.33	-24.33	1.00
books + literature	45	36	23	15	29	8
books + literature rank	6	5	3	2	4	1
books + literature % norm.	-3.63	-2.50	-0.88	0.13	-1.63	1.00
arts + entertainment	52	53	20	18	43	8
arts + entertainment rank	5	6	3	2	4	1
arts + entertainment % norm.	-4.50	-4.63	-0.50	-0.25	-3.38	1.00
web search rank	5	5.42	3.08	2.08	4.33	1
web search % norm.	-3.18	-4.68	-0.97	-0.17	-4.37	1.00

Image Search | Google Trends | City | 2004 - 2/12/2018

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
all categories - worldwide	50	50	42	13	40	10
all categories - worldwide rank	5	5	4	2	3	1
all categories - worldwide % norm.	-3.00	-3.00	-2.20	0.70	-2.00	1.00
all categories - usa	48	49	32	14	39	9
all categories - usa rank	5	6	3	2	4	1
all categories - usa % norm.	-3.33	-3.44	-1.56	0.44	-2.33	1.00
image search rank	5	5.5	3.5	2	3.5	1
image search % norm.	-3.17	-3.22	-1.88	0.57	-2.17	1.00

News Search | Google Trends | City | 2004 - 2/12/2018

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
all categories - worldwide	20	15	9	6	17	2
all categories - worldwide rank	6	4	3	2	5	1
all categories - worldwide % norm.	-8.00	-5.50	-2.50	-1.00	-6.50	1.00
all categories - usa	18	14	7	6	16	2
all categories - usa rank	6	4	3	2	5	1
all categories - usa % norm.	-7.00	-5.00	-1.50	-1.00	-6.00	1.00
news search rank	6	4	3	2	5	1
news search % norm.	-7.50	-5.25	-2.00	-1.00	-6.25	1.00
google search trends mean	5.33	4.97	3.19	2.03	4.28	1.00
google search trends % normalization	-4.62	-4.38	-1.62	-0.20	-4.26	1.00
google search trends sum	82	84	50	33	69	16
google search trends subcategory rank	6	5	3	2	4	1

STATS

Stats | Instagram | City | 2010 - 3/23/2018

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
# name	#seattle	#sandiego	#phoenix	#sacramento	#denver	#saltlakecity
number of posts	15,081,112	18,462,747	5,218,364	3,853,461	8,484,661	1,371,988
number of posts per capita (metro)	4.11	5.67	1.16	1.72	3.08	1.19
number of posts per capita rank	5	6	1	3	4	2
number of posts per capita % norm.	-1.54	-2.89	1.00	0.52	-0.66	0.98

Stats (Twitter and Instagram) | Hashtagify | City | 3/24/2018

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
#	#seattle	#sandiego	#phoenix	#sacramento	#denver	#saltlakecity
popularity (score)	69.6	69.3	67.7	62.2	68	56.2
popularity rank	6	5	3	2	4	1
popularity % norm.	0.76	0.77	0.80	0.89	0.79	1.00
recent popularity (score)	45.1	47.5	44.7	36.8	45.5	28.1
recent popularity rank	5	6	3	2	4	1
recent popularity % norm.	0.40	0.31	0.41	0.69	0.38	1.00
month trend (march) (%)	-2	-5	-3	-2	-1	1
month trend (march) rank	3	1	2	3	4	5
month trend (march) % norm.	0.40	1.00	0.60	0.40	0.20	-0.20
month trend (february) (%)	1	7	-2	4	2	-3
month trend (february) rank	3	6	2	5	4	1
month trend (february) % norm.	-0.33	-2.33	0.67	-1.33	-0.67	1.00
# stats rank	4.25	4.5	2.5	3	4	2
# stats % norm.	0.31	-0.06	0.62	0.16	0.18	0.70
# stats mean	4.63	5.25	1.75	3.00	4.00	2.00
# stats % normalization	-0.62	-1.48	0.81	0.34	-0.24	0.84
# stats sum	22	24	11	15	20	10
# stats subcategory rank	5	6	1	3	4	2

FACEBOOK MARKET DATA

Facebook Market Data | Facebook | City + Market | 2/12/2018

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
potential reach (25 miles of city) (# of people)	2,700,000	2,200,000	3,300,000	1,700,000	2,300,000	1,200,000
potential reach rank	5	3	6	2	4	1
potential reach % norm.	-0.25	0.17	-0.75	0.58	0.08	1.00
estimated daily results reach (25 miles of city) (# of people)	4,300-27,000	4,300-27,000	4,000-25,000	3,300-21,000	4,300-27,000	2,700-17,000
estimated daily results reach rank	4	4	3	2	4	1
estimated daily results reach % norm. (max)	0.41	0.41	0.53	0.76	0.41	1.00
potential reach (25 miles of market) (# of people)	4,000,000	2,600,000	4,100,000	3,200,000	3,400,000	2,300,000
potential reach rank	5	2	6	3	4	1
potential reach % norm.	0.26	0.87	0.22	0.61	0.52	1.00
estimated daily results reach (25 miles of market) (# of people)	5,200-33,000	4,300-27,000	5,300-33,000	4,000-25,000	4,000-25,000	4,300-27,000
estimated daily results reach rank	3	2	4	1	1	2
estimated daily results reach % norm. (max)	0.68	0.92	0.68	1.00	1.00	0.92
facebook market data mean	4.25	2.75	4.75	2.00	3.25	1.25
facebook market data % norm.	0.28	0.59	0.17	0.74	0.50	0.98
facebook market data sum	17	11	19	8	13	5
facebook market data subcategory rank	5	3	6	2	4	1

TRENDING TOTAL

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
mean	4.74	4.32	3.23	2.34	3.84	1.42
percent normalization	-1.65	-1.76	-0.21	0.29	-1.33	0.94
sum	121	119	80	56	102	31

COMMUNITY TOTAL

MEAN

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
active demographics	3.33	2.67	4.33	2.67	3.00	4.00
voter participation	5.00	3.00	3.00	3.00	3.50	3.00
activism	4.17	2.83	3.67	2.83	3.25	3.50
pride	3.25	4.00	2.25	1.75	5.75	4.00
pride	3.25	4.00	2.25	1.75	5.75	4.00
well-being	2.00	6.00	4.00	3.00	5.00	1.00
historic well-being	3.63	5.13	3.00	2.13	4.25	2.88
other well-being metrics	1.00	1.50	3.50	1.50	3.00	2.50
well-being	2.21	4.21	3.50	2.21	4.08	2.13
google search trends	5.33	4.97	3.19	2.03	4.28	1.00
# stats	4.63	5.25	1.75	3.00	4.00	2.00
market data	4.25	2.75	4.75	2.00	3.25	1.25
trending	4.74	4.32	3.23	2.34	3.84	1.42
community mean	3.59	3.84	3.16	2.28	4.23	2.76

PERCENT NORMALIZATION

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
active demographics	0.86	0.89	0.83	0.90	0.85	0.85
voter participation	0.72	0.85	0.84	0.85	0.67	0.92
activism	0.79	0.87	0.83	0.87	0.76	0.89
pride	0.93	0.90	0.95	0.97	0.83	0.90
pride	0.93	0.90	0.95	0.97	0.83	0.90
well-being	0.99	0.23	0.56	0.80	0.52	1.00
historic well-being	0.59	0.35	0.71	0.80	0.50	0.64
other well-being metrics	1.00	0.96	0.52	0.96	0.58	0.89
well-being	0.86	0.52	0.60	0.85	0.54	0.84
google search trends	-4.62	-4.38	-1.62	-0.20	-4.26	1.00
# stats	-0.62	-1.48	0.81	0.34	-0.24	0.84
market data	0.28	0.59	0.17	0.74	0.50	0.98
trending	-1.65	-1.76	-0.21	0.29	-1.33	0.94
community percent normalization	0.23	0.13	0.54	0.75	0.20	0.89

SUM

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
active demographics	10	8	13	8	9	12
voter participation	10	6	6	6	7	6
activism	20	14	19	14	16	18
pride	13	16	9	7	23	16
pride	13	16	9	7	23	16
well-being	2	6	4	3	5	1
historic well-being	29	41	24	17	34	23
other well-being metrics	2	3	7	3	6	5
well-being	33	50	35	23	45	29
google search trends	82	84	50	33	69	16
# stats	22	24	11	15	20	10
market data	17	11	19	8	13	5
trending	121	119	80	56	102	31
community sum	187	199	143	100	186	94

SUBCATEGORY FREQUENCY

		Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
activism	active demographics	3	1	5	1	2	4
	voter participation	3	1	1	1	2	1
pride	pride	3	4	2	1	5	4
well-being	well-being	2	6	4	3	5	1
	historic well-being	2	6	4	1	5	3
	other well-being metrics	1	2	5	2	4	3
trending	google search trends	6	5	3	2	4	1
	# stats	5	6	1	3	4	2
	market data	5	3	6	2	4	1
	frequency of "6"	1	3	1	0	0	0
	frequency of "5"	2	1	2	0	3	0
	frequency of "4"	0	1	2	0	4	2
	frequency of "3"	3	1	1	2	0	2
	frequency of "2"	2	1	1	3	2	1
community frequency of "1"		1	2	2	4	0	4
community subcategory sum		30	34	31	16	35	20
activism		3.00	1.00	3.00	1.00	2.00	2.50
pride		3.00	4.00	2.00	1.00	5.00	4.00
well-being		1.67	4.67	4.33	2.00	4.67	2.33
trending		5.33	4.67	3.33	2.33	4.00	1.33
community subcategory mean		3.33	3.78	3.44	1.78	3.89	2.22

totals

MEAN

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
violent crime	5.00	6.00	1.00	2.00	4.00	3.00
property crime	2.00	6.00	4.00	5.00	3.00	1.00
safety	3.00	2.00	4.00	1.00	5.00	6.00
police spending	1.00	2.00	6.00	4.00	3.00	5.00
crime	2.75	4.00	3.75	3.00	3.75	3.75
traffic safety	6.00	4.00	1.00	2.00	3.00	5.00
pedestrian safety	5.33	3.67	1.00	2.67	3.33	5.00
traffic + pedestrian safety	5.67	3.83	1.00	2.33	3.17	5.00
natural disasters	3.00	1.00	6.00	5.00	2.00	4.00
natural disasters	3.00	1.00	6.00	5.00	2.00	4.00
safety	3.81	2.94	3.58	3.44	2.97	4.25
physical activity	4.63	4.31	1.13	3.50	5.06	2.38
weight	4.33	4.17	1.50	2.17	5.00	3.50
physical health	4.48	4.24	1.31	2.83	5.03	2.94
mental health + illness	2.60	4.00	3.80	3.60	4.80	1.40
depression	2.00	5.33	3.33	3.67	5.00	1.67
suicide	4.33	4.33	3.67	2.67	3.67	1.00
mental health	2.98	4.56	3.60	3.31	4.49	1.36
healthy eating	3.50	5.50	2.00	3.25	3.75	2.75
food access	3.50	3.13	2.50	3.63	3.13	3.50
healthy eating	3.50	4.31	2.25	3.44	3.44	3.13
alcohol	2.88	3.70	2.83	4.40	1.25	5.83
tobacco	3.90	5.45	1.50	3.20	2.35	4.60
sleeping	5.00	2.00	1.00	3.00	6.00	4.00
teen pregnancy	6.00	5.00	2.00	4.00	1.00	3.00
drugs	3.21	3.86	3.04	3.39	1.99	4.71
lifestyle	4.20	4.00	2.07	3.60	2.52	4.43
disability	3.00	4.00	2.00	1.00	6.00	5.00
std	4.75	1.25	1.75	3.50	4.00	5.75
lung	2.20	4.40	1.60	4.00	4.00	4.80
heart	4.25	4.25	1.50	2.00	3.75	4.50
diabetes	4.13	2.88	3.75	2.13	2.88	5.25
allergies	3.00	4.00	1.00	5.00	5.50	2.50
arthritis	4.00	6.00	2.00	1.00	3.00	5.00
cancer	1.00	4.00	2.00	5.00	3.00	6.00
chronic kidney disease	4.00	4.00	1.00	2.00	3.00	3.00
stroke	5.00	4.00	2.00	1.00	3.00	4.00
health outcomes	5.33	5.33	3.33	1.67	2.33	3.00
mortality rates	5.18	5.73	3.18	2.00	3.09	1.82
health stats	3.82	4.15	2.09	2.52	3.63	4.22
facilities	2.50	1.00	4.00	2.50	5.50	5.50
services	4.22	3.24	2.47	4.36	3.29	3.42
facilities + services	3.36	2.12	3.23	3.43	4.39	4.46
health	3.72	3.90	2.43	3.19	3.92	3.42
enrollment	1.50	4.00	3.50	4.00	4.00	4.00
enrollment	1.50	4.00	3.50	4.00	4.00	4.00
attainment	5.06	2.94	2.34	3.40	4.50	2.76
attainment	5.06	2.94	2.34	3.40	4.50	2.76
test scores	3.56	2.90	1.96	2.50	2.98	4.12
school/education rankings	3.50	5.17	2.42	3.33	3.42	3.17

literacy + language	4.00	1.50	4.50	2.00	2.50	4.50
daily learning	3.00	5.00	1.00	2.00	4.00	4.00
quality	3.52	3.64	2.47	2.46	3.22	3.95
economic condition	3.43	3.07	2.80	3.27	2.47	3.77
health	3.24	3.53	2.17	3.53	2.76	2.94
well-being	3.27	2.96	1.79	2.96	2.86	3.89
child well-being	3.31	3.19	2.25	3.25	2.70	3.53
teachers	4.10	1.70	1.90	1.90	3.70	3.50
schools	5.00	3.50	2.50	3.00	3.25	2.75
spending	3.00	2.00	5.00	4.00	1.00	6.00
teachers/schools/spending	4.03	2.40	3.13	2.97	2.65	4.08
education	3.48	3.23	2.74	3.22	3.41	3.66
means of transportation	5.13	2.63	2.46	2.46	3.71	3.25
traffic	1.41	4.22	3.96	3.59	3.22	4.00
transportation	3.27	3.42	3.21	3.03	3.47	3.63
solar energy	1.00	4.96	4.54	2.96	2.92	2.29
wind energy	4.33	2.67	1.17	2.83	3.33	3.00
other renewable energy sources	2.50	3.00	3.00	1.50	1.50	2.50
energy use	1.33	5.00	3.33	6.00	3.33	2.00
energy rates	5.67	1.00	3.00	2.00	4.00	5.33
energy sources	5.00	3.00	2.50	5.00	3.50	1.00
energy	3.31	3.27	2.92	3.38	3.10	2.69
air pollution	5.11	2.64	2.18	3.20	3.89	2.60
air pollution	5.11	2.64	2.18	3.20	3.89	2.60
water quality	4.50	1.71	1.50	3.57	3.50	4.50
water use	3.50	3.50	4.00	3.00	3.50	3.50
water	4.00	2.61	2.75	3.29	3.50	4.00
threatened + endangered species	3.50	1.00	3.50	1.50	3.50	3.50
species	3.50	1.00	3.50	1.50	3.50	3.50
climate	3.06	4.50	4.31	3.75	2.50	2.31
weather unpredictability	3.00	6.00	5.00	4.00	1.00	2.00
climate	3.03	5.25	4.66	3.88	1.75	2.16
projected climate change	2.75	5.00	3.63	3.88	3.00	1.75
projected cost	3.00	3.00	1.00	2.00	2.00	2.00
carbon sequestration	4.75	2.00	2.00	2.00	3.50	4.00
belief, perception, support, behavior	4.97	3.03	1.83	3.28	3.56	1.22
climate change	3.87	3.26	2.11	2.79	3.02	2.24
sustainability/efficiency indexes	6.00	4.50	2.00	2.50	4.00	2.00
sustainability/efficiency indexes	6.00	4.50	2.00	2.50	4.00	2.00
environment	4.01	3.24	2.92	2.94	3.28	2.85
unemployment	4.00	3.00	2.00	1.00	6.00	5.00
job quality	4.00	2.00	3.00	1.00	6.00	5.00
job creation	4.67	2.33	2.50	1.67	3.33	5.00
job proximity	3.50	4.33	4.00	2.50	3.33	3.33
employment + jobs	4.04	2.92	2.88	1.54	4.67	4.58
gdp	6.00	3.00	1.00	2.00	5.00	4.00
exports + trade	5.13	5.00	3.63	1.88	2.75	2.63
tax burden	2.35	1.79	3.79	1.79	3.53	3.53
government debt	1.00	2.00	4.50	2.00	3.00	4.50
recession recovered	5.00	3.00	1.00	2.00	6.00	4.00
city economy	3.90	2.96	2.78	1.93	4.06	3.73
poverty/food stamps	3.50	4.50	1.00	2.50	5.00	4.00
income, earnings, wages	6.00	3.67	1.33	2.67	5.00	2.33
inequality/inclusion	2.66	3.37	4.06	4.59	2.92	3.21

money management	5.00	4.17	1.92	3.33	2.42	4.17
personal/household economy	4.29	3.93	2.08	3.27	3.83	3.43
cost of living	1.93	1.87	4.57	3.07	3.47	5.07
cost of living	1.93	1.87	4.57	3.07	3.47	5.07
homelessness	2.40	1.80	4.20	2.20	4.80	5.60
money + housing	5.50	1.00	3.00	3.00	4.00	4.50
housing assistance	3.50	5.00	2.00	3.50	3.50	3.50
homelessness	3.80	2.60	3.07	2.90	4.10	4.53
general metrics	4.08	3.00	2.75	2.04	3.79	4.58
general metrics	4.08	3.00	2.75	2.04	3.79	4.58
economy	3.67	2.88	3.02	2.46	3.99	4.32
demographics	3.75	4.25	1.75	4.75	2.00	3.25
demographics	3.75	4.25	1.75	4.75	2.00	3.25
density	4.58	4.33	2.92	2.00	3.83	3.33
density	4.58	4.33	2.92	2.00	3.83	3.33
housing	3.63	5.25	1.38	3.13	3.88	3.75
housing	3.63	5.25	1.38	3.13	3.88	3.75
parks	4.17	3.67	2.67	2.83	3.50	3.33
parks + recreation facilities	3.38	2.38	1.38	4.00	3.88	3.75
park expenditures	5.00	4.00	2.00	3.00	3.00	1.00
parks + recreation	4.18	3.35	2.01	3.28	3.46	2.69
arts	5.00	2.50	1.25	2.50	5.25	4.00
arts	5.00	2.50	1.25	2.50	5.25	4.00
sports	3.73	1.97	4.03	1.87	3.70	2.67
other leisure	4.67	4.33	1.67	2.33	5.67	2.33
public amenity expenditures	5.00	2.00	3.00	1.00	6.00	4.00
other culture	4.47	2.77	2.90	1.73	5.12	3.00
libraries	4.83	3.67	3.50	1.33	4.33	3.33
libraries	4.83	3.67	3.50	1.33	4.33	3.33
roads + bridges	1.92	2.08	4.75	2.58	2.25	5.25
internet/computer connectivity	4.75	4.17	1.00	2.17	3.83	3.75
general infrastructure	5.00	1.00	2.00	1.00	3.00	4.00
infrastructure	3.89	2.42	2.58	1.92	3.03	4.33
existing conditions	4.29	3.57	2.29	2.58	3.86	3.46
active demographics	3.33	2.67	4.33	2.67	3.00	4.00
voter participation	5.00	3.00	3.00	3.00	3.50	3.00
activism	4.17	2.83	3.67	2.83	3.25	3.50
pride	3.25	4.00	2.25	1.75	5.75	4.00
pride	3.25	4.00	2.25	1.75	5.75	4.00
well-being	2.00	6.00	4.00	3.00	5.00	1.00
historic well-being	3.63	5.13	3.00	2.13	4.25	2.88
other well-being metrics	1.00	1.50	3.50	1.50	3.00	2.50
well-being	2.21	4.21	3.50	2.21	4.08	2.13
google search trends	5.33	4.97	3.19	2.03	4.28	1.00
# stats	4.63	5.25	1.75	3.00	4.00	2.00
market data	4.25	2.75	4.75	2.00	3.25	1.25
trending	4.74	4.32	3.23	2.34	3.84	1.42
community	3.59	3.84	3.16	2.28	4.23	2.76
total mean	3.80	3.37	2.88	2.87	3.67	3.53

PERCENT NORMALIZATION

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
violent crime	0.83	0.77	1.00	0.96	0.91	0.96
property crime	0.85	0.40	0.62	0.52	0.64	1.00
safety	0.66	0.78	0.63	1.00	-0.18	-0.33
police spending	1.00	0.90	0.47	0.70	0.71	0.56
crime	0.83	0.71	0.68	0.80	0.52	0.55
traffic safety	0.41	0.63	1.00	0.95	0.68	0.54
pedestrian safety	0.12	0.31	1.00	0.52	0.41	0.22
traffic + pedestrian safety	0.26	0.47	1.00	0.74	0.54	0.38
natural disasters	0.74	1.00	0.08	0.51	0.89	0.52
natural disasters	0.74	1.00	0.08	0.51	0.89	0.52
safety	0.61	0.73	0.59	0.68	0.65	0.48
physical activity	0.81	0.82	0.99	0.89	0.82	0.89
weight	0.70	0.71	0.98	0.88	0.60	0.88
physical health	0.75	0.77	0.99	0.88	0.71	0.88
mental health + illness	0.82	0.80	0.81	0.82	0.76	0.97
depression	0.95	0.81	0.88	0.87	0.82	0.98
suicide	0.71	0.71	0.77	0.75	0.76	1.00
mental health	0.82	0.77	0.82	0.82	0.78	0.99
healthy eating	0.81	0.41	0.98	0.78	0.90	0.91
food access	0.43	0.61	0.88	0.33	0.49	0.69
healthy eating	0.62	0.51	0.93	0.55	0.69	0.80
alcohol	0.90	0.86	0.90	0.82	0.99	0.68
tobacco	0.83	0.78	0.93	0.88	0.98	0.80
sleeping	0.83	0.96	1.00	0.96	0.78	0.89
teen pregnancy	0.29	0.54	0.75	0.56	1.00	0.60
drugs	0.82	0.76	0.81	0.78	0.92	0.64
lifestyle	0.73	0.78	0.88	0.80	0.93	0.72
disability	0.90	0.81	0.91	1.00	0.75	0.76
std	0.68	0.96	0.88	0.74	0.71	0.61
lung	0.90	0.74	0.97	0.76	0.78	0.66
heart	0.77	0.76	0.97	0.89	0.82	0.76
diabetes	0.87	0.92	0.95	0.97	0.90	0.87
allergies	0.85	0.77	1.00	0.76	0.71	0.86
arthritis	0.85	0.77	0.92	1.00	0.88	0.84
cancer	1.00	0.95	0.98	0.93	0.96	0.91
chronic kidney disease	0.82	0.82	1.00	0.93	0.86	0.86
stroke	0.70	0.77	0.93	1.00	0.80	0.77
health outcomes	0.75	0.85	0.94	0.98	0.96	0.88
mortality rates	0.77	0.77	0.90	0.95	0.92	0.96
health stats	0.82	0.82	0.95	0.91	0.84	0.81
facilities	0.82	1.00	0.63	0.86	0.57	0.53
services	0.63	0.72	0.78	0.62	0.78	0.74
facilities + services	0.73	0.86	0.71	0.74	0.68	0.63
health	0.75	0.75	0.88	0.78	0.77	0.81
enrollment	0.96	0.72	0.78	0.71	0.71	0.75
enrollment	0.96	0.72	0.78	0.71	0.71	0.75
attainment	0.72	0.85	0.91	0.84	0.72	0.88
attainment	0.72	0.85	0.91	0.84	0.72	0.88
test scores	0.83	0.79	0.91	0.82	0.88	0.71
school/education rankings	0.70	0.44	0.75	0.49	0.37	0.49

literacy + language	0.67	0.98	0.71	0.81	0.85	0.70
daily learning	0.93	0.89	1.00	0.96	0.92	0.92
quality	0.78	0.78	0.84	0.77	0.76	0.70
economic condition	0.73	0.76	0.81	0.78	0.84	0.71
health	0.76	0.74	0.91	0.74	0.83	0.79
well-being	0.67	0.80	0.95	0.80	0.74	0.57
child well-being	0.72	0.77	0.89	0.77	0.81	0.69
teachers	0.83	0.97	0.94	0.96	0.82	0.90
schools	0.22	0.53	0.46	0.47	-0.16	0.77
spending	0.71	0.84	0.47	0.63	1.00	0.28
teachers/schools/spending	0.58	0.78	0.62	0.69	0.55	0.65
education	0.75	0.78	0.81	0.76	0.71	0.74
means of transportation	-0.25	0.61	0.86	0.80	0.48	0.40
traffic	0.94	0.48	0.32	0.53	0.55	0.32
transportation	0.35	0.54	0.59	0.66	0.51	0.36
solar energy	1.00	-5.61	-2.21	-0.47	-0.60	-0.17
wind energy	-4.86	-4.46	0.83	-5.12	-1.52	0.06
other renewable energy sources	-0.17	-0.50	-0.42	0.67	0.75	0.67
energy use	0.81	0.35	0.60	0.28	0.59	0.92
energy rates	0.47	1.00	0.69	0.87	0.60	0.54
energy sources	-26.51	-1.98	-2.60	-34.86	-11.29	1.00
energy	-4.88	-1.87	-0.52	-6.44	-1.91	0.50
air pollution	-1.62	0.23	0.64	0.41	-0.12	-0.05
air pollution	-1.62	0.23	0.64	0.41	-0.12	-0.05
water quality	0.88	0.98	0.93	0.85	0.89	0.85
water use	0.61	-0.32	0.26	0.35	0.33	0.49
water	0.74	0.33	0.60	0.60	0.61	0.67
threatened + endangered species	0.17	1.00	0.26	0.83	0.14	0.14
species	0.17	1.00	0.26	0.83	0.14	0.14
climate	0.65	0.29	0.33	0.34	0.71	0.70
weather unpredictability	0.71	0.47	0.58	0.65	1.00	0.92
climate	0.68	0.38	0.45	0.50	0.85	0.81
projected climate change	0.73	0.48	0.45	0.52	0.61	0.64
projected cost	-0.50	-0.50	1.00	0.50	0.50	0.50
carbon sequestration	-3.78	0.94	0.69	0.00	-2.75	-0.33
belief, perception, support, behavior	0.84	0.93	0.98	0.92	0.91	1.00
climate change	-0.68	0.46	0.78	0.48	-0.18	0.45
sustainability/efficiency indexes	0.39	0.65	0.80	0.92	0.58	0.94
sustainability/efficiency indexes	0.39	0.65	0.80	0.92	0.58	0.94
environment	-0.61	0.22	0.45	-0.25	0.06	0.48
unemployment	0.88	0.88	0.92	1.00	0.57	0.68
job quality	0.79	0.93	0.87	1.00	0.74	0.75
job creation	0.59	0.73	0.94	0.82	0.66	0.49
job proximity	0.34	0.20	-0.03	0.75	0.25	0.45
employment + jobs	0.65	0.69	0.68	0.89	0.56	0.59
gdp	0.23	0.68	1.00	0.93	0.55	0.58
exports + trade	-1.35	-0.59	0.09	0.70	0.10	0.30
tax burden	0.73	0.83	0.59	0.83	0.61	0.61
government debt	1.00	0.90	0.54	0.90	0.80	0.58
recession recovered	0.23	0.36	1.00	0.51	0.02	0.33
city economy	0.17	0.44	0.64	0.77	0.42	0.48
poverty/food stamps	0.83	0.72	1.00	0.91	0.66	0.70
income, earnings, wages	0.63	0.87	1.00	0.93	0.80	0.95
inequality/inclusion	0.46	0.38	0.38	0.26	0.58	0.01

money management	0.40	0.55	0.92	0.61	0.72	0.38
personal/household economy	0.58	0.63	0.82	0.68	0.69	0.51
cost of living	0.91	0.95	0.75	0.85	0.81	0.74
cost of living	0.91	0.95	0.75	0.85	0.81	0.74
homelessness	0.86	0.81	0.35	0.82	0.23	0.16
money + housing	-0.33	1.00	0.46	0.11	-0.20	0.13
housing assistance	0.75	0.58	0.94	0.64	0.44	0.82
homelessness	0.43	0.80	0.58	0.52	0.16	0.37
general metrics	0.50	0.70	0.76	0.85	0.55	0.48
general metrics	0.50	0.70	0.76	0.85	0.55	0.48
economy	0.54	0.70	0.71	0.76	0.53	0.53
demographics	0.69	0.70	0.91	0.59	0.89	0.86
demographics	0.69	0.70	0.91	0.59	0.89	0.86
density	-0.42	-0.47	0.24	0.23	0.08	0.69
density	-0.42	-0.47	0.24	0.23	0.08	0.69
housing	0.72	0.60	1.00	0.81	0.70	0.73
housing	0.72	0.60	1.00	0.81	0.70	0.73
parks	-0.33	-1.15	-0.28	0.13	0.16	0.36
parks + recreation facilities	-0.61	0.23	0.87	-0.81	-0.86	-2.08
park expenditures	-3.05	0.12	0.58	0.24	0.24	1.00
parks + recreation	-1.33	-0.27	0.39	-0.15	-0.16	-0.24
arts	0.69	0.85	0.99	0.93	0.68	0.76
arts	0.69	0.85	0.99	0.93	0.68	0.76
sports	-0.60	0.80	-1.26	0.66	-1.25	0.32
other leisure	0.39	0.60	0.93	0.64	0.22	0.81
public amenity expenditures	-1.53	0.26	-0.31	1.00	-3.16	-1.33
other culture	-0.58	0.55	-0.21	0.76	-1.40	-0.07
libraries	-0.71	-0.46	-0.19	0.88	-0.03	0.13
libraries	-0.71	-0.46	-0.19	0.88	-0.03	0.13
roads + bridges	0.88	0.84	0.34	0.81	0.77	0.37
internet/computer connectivity	0.60	0.65	1.00	0.80	0.70	0.68
general infrastructure	0.11	1.00	0.32	1.00	0.37	0.21
infrastructure	0.53	0.83	0.55	0.87	0.62	0.42
existing conditions	-0.05	0.29	0.46	0.62	0.17	0.41
active demographics	0.86	0.89	0.83	0.90	0.85	0.85
voter participation	0.72	0.85	0.84	0.85	0.67	0.92
activism	0.79	0.87	0.83	0.87	0.76	0.89
pride	0.93	0.90	0.95	0.97	0.83	0.90
pride	0.93	0.90	0.95	0.97	0.83	0.90
well-being	0.99	0.23	0.56	0.80	0.52	1.00
historic well-being	0.59	0.35	0.71	0.80	0.50	0.64
other well-being metrics	1.00	0.96	0.52	0.96	0.58	0.89
well-being	0.86	0.52	0.60	0.85	0.54	0.84
google search trends	-4.62	-4.38	-1.62	-0.20	-4.26	1.00
# stats	-0.62	-1.48	0.81	0.34	-0.24	0.84
market data	0.28	0.59	0.17	0.74	0.50	0.98
trending	-1.65	-1.76	-0.21	0.29	-1.33	0.94
community	0.23	0.13	0.54	0.75	0.20	0.89
total percent normalization	0.32	0.51	0.63	0.58	0.44	0.62

SUM

	Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
violent crime	5	6	1	2	4	3
property crime	2	6	4	5	3	1
safety	3	2	4	1	5	6
police spending	1	2	6	4	3	5
crime	11	16	15	12	15	15
traffic safety	6	4	1	2	3	5
pedestrian safety	16	11	3	8	10	15
traffic + pedestrian safety	22	15	4	10	13	20
natural disasters	3	1	6	5	2	4
natural disasters	3	1	6	5	2	4
safety	36	32	25	27	30	39
physical activity	38	33	10	27	39	21
weight	22	20	8	11	24	18
physical health	60	53	18	38	63	39
mental health + illness	13	20	19	18	24	7
depression	6	16	10	11	15	5
suicide	13	13	11	8	11	3
mental health	32	49	40	37	50	15
healthy eating	9	16	5	12	11	9
food access	17	16	13	18	15	18
healthy eating	26	32	18	30	26	27
alcohol	52	52	41	71	23	92
tobacco	27	38	12	23	13	34
sleeping	5	2	1	3	6	4
teen pregnancy	6	5	2	4	1	3
drugs	72	82	70	74	39	113
lifestyle	162	179	126	175	82	246
disability	3	4	2	1	6	5
std	19	5	7	14	16	23
lung	11	22	8	20	20	24
heart	17	17	6	8	15	18
diabetes	27	17	19	11	21	31
allergies	6	8	2	10	11	5
arthritis	4	6	2	1	3	5
cancer	1	4	2	5	3	6
chronic kidney disease	4	4	1	2	3	3
stroke	5	4	2	1	3	4
health outcomes	16	16	10	5	7	9
mortality rates	57	63	35	22	34	20
health stats	170	170	96	100	142	153
facilities	5	2	8	5	11	11
services	30	30	31	38	24	36
facilities + services	35	32	39	43	35	47
health	485	515	337	423	398	527
enrollment	3	8	7	8	8	8
enrollment	3	8	7	8	8	8
attainment	81	50	48	68	69	62
attainment	81	50	48	68	69	62
test scores	36	22	18	20	32	39
school/education rankings	30	40	15	30	27	26

literacy + language	8	3	9	4	5	9
daily learning	3	5	1	2	4	4
quality	77	70	43	56	68	78
economic condition	39	43	33	46	34	46
health	85	86	58	86	74	61
well-being	166	177	105	177	159	199
child well-being	290	306	196	309	267	306
teachers	25	9	15	11	25	15
schools	14	9	8	8	12	8
spending	3	2	5	4	1	6
teachers/schools/spending	42	20	28	23	38	29
education	493	454	322	464	450	483
means of transportation	71	38	30	35	51	49
traffic	14	26	51	33	39	52
transportation	85	64	81	68	90	101
solar energy	7	34	32	21	20	16
wind energy	14	10	5	13	10	10
other renewable energy sources	5	6	6	3	3	5
energy use	4	15	10	18	10	6
energy rates	17	3	9	6	12	16
energy sources	10	6	5	10	7	2
energy	57	74	67	71	62	55
air pollution	44	25	16	24	33	29
air pollution	44	25	16	24	33	29
water quality	33	12	15	32	25	33
water use	7	7	8	6	7	7
water	40	19	23	38	32	40
threatened + endangered species	7	2	7	3	7	7
species	7	2	7	3	7	7
climate	49	72	69	60	40	37
weather unpredictability	3	6	5	4	1	2
climate	52	78	74	64	41	39
projected climate change	22	40	29	31	24	14
projected cost	3	3	1	2	2	2
carbon sequestration	14	6	7	5	10	13
belief, perception, support, behavior	80	51	28	55	54	20
climate change	119	100	65	93	90	49
sustainability/efficiency indexes	12	9	4	5	8	4
sustainability/efficiency indexes	12	9	4	5	8	4
environment	416	371	337	366	363	324
unemployment	4	3	2	1	6	5
job quality	4	2	3	1	6	5
job creation	16	8	13	6	12	20
job proximity	21	26	24	15	20	20
employment + jobs	45	39	42	23	44	50
gdp	6	3	1	2	5	4
exports + trade	41	40	29	15	22	21
tax burden	36	38	66	38	68	62
government debt	2	4	9	4	6	9
recession recovered	5	3	1	2	6	4
city economy	90	88	106	61	107	100
poverty/food stamps	7	9	2	5	10	8
income, earnings, wages	30	18	7	14	25	11
inequality/inclusion	62	63	65	78	57	68

money management	24	20	17	25	14	26
personal/household economy	123	110	91	122	106	113
cost of living	22	25	59	40	47	67
cost of living	22	25	59	40	47	67
homelessness	12	9	21	11	24	28
money + housing	11	2	6	6	8	9
housing assistance	7	10	4	7	7	7
homelessness	30	21	31	24	39	44
general metrics	38	27	21	24	36	40
general metrics	38	27	21	24	36	40
economy	348	310	350	294	379	414
demographics	15	17	7	19	8	13
demographics	15	17	7	19	8	13
density	31	32	23	16	27	18
density	31	32	23	16	27	18
housing	19	27	7	14	20	18
housing	19	27	7	14	20	18
parks	25	22	16	17	21	20
parks + recreation facilities	27	19	11	32	31	30
park expenditures	5	4	2	3	3	1
parks + recreation	57	45	29	52	55	51
arts	20	10	5	10	21	16
arts	20	10	5	10	21	16
sports	30	17	31	16	29	22
other leisure	14	13	5	7	17	7
public amenity expenditures	5	2	3	1	6	4
other culture	49	32	39	24	52	33
libraries	29	22	21	8	26	20
libraries	29	22	21	8	26	20
roads + bridges	10	10	23	12	11	26
internet/computer connectivity	24	21	5	11	19	19
general infrastructure	5	1	2	1	3	4
infrastructure	39	32	30	24	33	49
existing conditions	259	217	161	167	242	218
active demographics	10	8	13	8	9	12
voter participation	10	6	6	6	7	6
activism	20	14	19	14	16	18
pride	13	16	9	7	23	16
pride	13	16	9	7	23	16
well-being	2	6	4	3	5	1
historic well-being	29	41	24	17	34	23
other well-being metrics	2	3	7	3	6	5
well-being	33	50	35	23	45	29
google search trends	82	84	50	33	69	16
# stats	22	24	11	15	20	10
market data	17	11	19	8	13	5
trending	121	119	80	56	102	31
community	187	199	143	100	186	94
total sum	2,224	2,098	1,675	1,841	2,048	2,099

SUBCATEGORY FREQUENCY

		Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
crime	violent crime	5	6	1	2	4	3
	property crime	2	6	4	5	3	1
	safety	3	2	4	1	5	6
	police spending	1	2	6	4	3	5
traffic + ped. safety	traffic safety	6	4	1	2	3	5
	pedestrian safety	6	4	1	2	3	5
natural disasters	natural disaster risk	3	1	6	5	2	4
physical health	physical activity	5	4	1	3	6	2
	weight	4	5	1	2	6	3
mental health	mental health + illness	2	3	4	3	5	1
	depression	2	6	3	4	5	1
	suicide	4	4	3	2	3	1
healthy eating	healthy eating	4	6	1	3	5	2
	food access	4	2	1	2	3	5
lifestyle	alcohol	3	4	2	5	1	6
	tobacco	4	6	1	3	2	5
	sleeping	5	2	1	3	6	4
	teen pregnancy	6	5	2	4	1	3
	drugs	3	5	2	4	1	6
health stats	disability	3	4	2	1	6	5
	std	5	1	2	3	4	6
	lung	2	4	1	3	3	5
	heart	4	4	1	2	3	5
	diabetes	4	2	3	1	2	5
	allergies	3	4	1	5	6	2
	arthritis	4	6	2	1	3	5
	cancer	1	4	2	5	3	6
	chronic kidney disease	4	4	1	2	3	3
	stroke	5	4	2	1	3	4
	health outcomes	5	5	4	1	2	3
	mortality rates	5	6	4	2	3	1
facilities + services	facilities	2	1	3	2	4	4
	services	5	2	1	6	3	4
enrollment	enrollment	1	3	2	3	3	3
attainment	attainment	6	3	1	4	5	2
quality	test scores	6	3	1	4	5	2
	school/education rankings	5	6	1	3	4	2
	literacy + language	4	1	5	2	3	5
	daily learning	3	5	1	2	4	4
child well-being	economic condition	5	3	2	4	1	6
	health	4	5	1	5	2	3
	well-being	4	3	1	3	2	5
teachers/ schools/ spending	teachers	5	1	2	2	4	3
	schools	6	5	1	3	4	2
	spending	3	2	5	4	1	6
transportation	means of transportation	5	2	1	1	4	3
	traffic	1	6	5	3	2	4

energy	solar energy	1	6	5	4	3	2
	wind energy	6	2	1	3	5	4
	other renewable energy sources	2	3	3	1	1	2
	energy use	1	4	3	5	3	2
	energy rates	6	1	3	2	4	5
	energy sources	5	3	2	5	4	1
air pollution	air pollution	6	3	1	4	5	2
water	water quality	5	2	1	4	3	5
	water use	2	2	3	1	2	2
species	threatened + endangered species	3	1	3	2	3	3
climate	climate	3	6	5	4	2	1
	weather unpredictability	3	6	5	4	1	2
climate change	projected climate change	2	6	4	5	3	1
	projected cost	3	3	1	2	2	2
	carbon sequestration	4	1	1	2	3	3
	belief, perception, support, behavior	6	3	2	4	5	1
sust./eff. index	sustainability/efficiency indexes	5	4	1	2	3	1
employment + jobs	unemployment	4	3	2	1	6	5
	job quality	4	2	3	1	6	5
	job creation	5	2	3	1	4	6
	job proximity	3	5	4	1	2	2
city economy	gdp	6	3	1	2	5	4
	exports + trade	6	5	4	1	3	2
	tax burden	2	1	4	1	3	3
	government debt	1	2	4	2	3	4
	recession recovered	5	3	1	2	6	4
personal/ household economy	poverty/food stamps	3	5	1	2	6	4
	income, earnings, wages	6	4	1	3	5	2
	inequality/inclusion	1	4	5	6	2	3
	money management	5	4	1	3	2	4
cost of living	cost of living	2	1	5	3	4	6
homelessness	homelessness	3	1	4	2	5	6
	money + housing	5	1	2	2	3	4
	housing assistance	2	3	1	2	2	2
general metrics	general metrics	5	3	2	1	4	6
demographics	demographics	4	5	1	6	2	3
density	density	6	5	2	1	4	3
housing	housing	3	6	1	2	5	4
parks + recreation	parks	6	5	1	2	4	3
	parks + recreation facilities	3	2	1	6	5	4
	park expenditures	5	4	2	3	3	1
arts	arts	5	2	1	3	6	4
other culture	sports	5	2	6	1	4	3
	other leisure	4	3	1	2	5	2
	public amenity expenditures	5	2	3	1	6	4
libraries	libraries	6	4	3	1	5	2
infrastructure	roads + bridges	1	2	5	4	3	6
	internet/computer connectivity	6	5	1	2	4	3
	general infrastructure	5	1	2	1	3	4
activism	active demographics	3	1	5	1	2	4
	voter participation	3	1	1	1	2	1
pride	pride	3	4	2	1	5	4

well-being	well-being	2	6	4	3	5	1
	historic well-being	2	6	4	1	5	3
	other well-being metrics	1	2	5	2	4	3
trending	google search trends	6	5	3	2	4	1
	# stats	5	6	1	3	4	2
	market data	5	3	6	2	4	1
	frequency of "6"	18	17	4	4	11	12
	frequency of "5"	27	15	11	9	19	16
	frequency of "4"	17	20	13	15	21	21
	frequency of "3"	20	18	14	20	30	20
	frequency of "2"	13	20	20	32	17	21
	total frequency of "1"	10	15	43	25	7	15
	total subcategory sum	407	366	256	278	376	353
	crime	2.75	4.00	3.75	3.00	3.75	3.75
	traffic + pedestrian safety	6.00	4.00	1.00	2.00	3.00	5.00
	natural distasters	3.00	1.00	6.00	5.00	2.00	4.00
	safety	3.71	3.57	3.29	3.00	3.29	4.14
	physical health	4.50	4.50	1.00	2.50	6.00	2.50
	mental health	2.67	4.33	3.33	3.00	4.33	1.00
	healthy eating	4.00	4.00	1.00	2.50	4.00	3.50
	lifestyle	4.20	4.40	1.60	3.80	2.20	4.80
	health stats	3.75	4.00	2.08	2.25	3.42	4.17
	facilities + services	3.50	1.50	2.00	4.00	3.50	4.00
	health	3.77	3.96	1.96	2.81	3.54	3.73
	enrollment	1.00	3.00	2.00	3.00	3.00	3.00
	attainment	6.00	3.00	1.00	4.00	5.00	2.00
	quality	4.50	3.75	2.00	2.75	4.00	3.25
	child well-being	4.33	3.67	1.33	4.00	1.67	4.67
	teachers/schools/spending	4.67	2.67	2.67	3.00	3.00	3.67
	education	4.33	3.33	1.92	3.25	3.17	3.58
	transportation	3.00	4.00	3.00	2.00	3.00	3.50
	energy	3.50	3.17	2.83	3.33	3.33	2.67
	air pollution	6.00	3.00	1.00	4.00	5.00	2.00
	water	3.50	2.00	2.00	2.50	2.50	3.50
	species	3.00	1.00	3.00	2.00	3.00	3.00
	climate	3.00	6.00	5.00	4.00	1.50	1.50
	climate change	3.75	3.25	2.00	3.25	3.25	1.75
	sustainability/efficiency indexes	5.00	4.00	1.00	2.00	3.00	1.00
	environment	3.63	3.37	2.63	3.05	3.05	2.42
	employment + jobs	4.00	3.00	3.00	1.00	4.50	4.50
	city economy	4.00	2.80	2.80	1.60	4.00	3.40
	personal/household economy	3.75	4.25	2.00	3.50	3.75	3.25
	cost of living	2.00	1.00	5.00	3.00	4.00	6.00
	homelessness	3.33	1.67	2.33	2.00	3.33	4.00
	general metrics	5.00	3.00	2.00	1.00	4.00	6.00
	economy	3.78	2.89	2.67	2.00	3.94	4.00
	demographics	4.00	5.00	1.00	6.00	2.00	3.00
	density	6.00	5.00	2.00	1.00	4.00	3.00
	housing	3.00	6.00	1.00	2.00	5.00	4.00
	parks + recreation	4.67	3.67	1.33	3.67	4.00	2.67
	arts	5.00	2.00	1.00	3.00	6.00	4.00
	other culture	4.67	2.33	3.33	1.33	5.00	3.00
	libraries	6.00	4.00	3.00	1.00	5.00	2.00
	infrastructure	4.00	2.67	2.67	2.33	3.33	4.33

existing conditions	4.57	3.43	2.14	2.50	4.21	3.29
activism	3.0	1.0	3.0	1.0	2.0	2.5
pride	3.0	4.0	2.0	1.0	5.0	4.0
well-being	1.7	4.7	4.3	2.0	4.7	2.3
trending	5.3	4.7	3.3	2.3	4.0	1.3
community	3.33	3.78	3.44	1.78	3.89	2.22
total subcategory mean	3.88	3.49	2.44	2.65	3.58	3.36

phoenix

This dataset includes only data points where phoenix is projected to have the greatest relative issue for each of the four evaluative methods. This was used as a tool to determine what data to examine for the site selection dataset.

MEAN

			Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
safety	crime	violent crime	5.00	6.00	1.00	2.00	4.00	3.00
		traffic safety	6.00	4.00	1.00	2.00	3.00	5.00
	traffic + pedestrian safety	pedestrian safety	5.33	3.67	1.00	2.67	3.33	5.00
		traffic + pedestrian safety	5.67	3.83	1.00	2.33	3.17	5.00
health	physical health	physical activity	4.63	4.31	1.13	3.50	5.06	2.38
		weight	4.33	4.17	1.50	2.17	5.00	3.50
		physical health	4.48	4.24	1.31	2.83	5.03	2.94
	healthy eating	healthy eating	3.50	5.50	2.00	3.25	3.75	2.75
		food access	3.50	3.13	2.50	3.63	3.13	3.50
		healthy eating	3.50	4.31	2.25	3.44	3.44	3.13
	lifestyle	tobacco	3.90	5.45	1.50	3.20	2.35	4.60
		sleeping	5.00	2.00	1.00	3.00	6.00	4.00
		lifestyle	4.20	4.00	2.07	3.60	2.52	4.43
	health stats	lung	2.20	4.40	1.60	4.00	4.00	4.80
		heart	4.25	4.25	1.50	2.00	3.75	4.50
		allergies	3.00	4.00	1.00	5.00	5.50	2.50
		chronic kidney disease	4.00	4.00	1.00	2.00	3.00	3.00
		health stats	3.82	4.15	2.09	2.52	3.63	4.22
	facilities + services	services	4.22	3.24	2.47	4.36	3.29	3.42
	total	health	3.72	3.90	2.43	3.19	3.92	3.42
education	attainment	attainment	5.06	2.94	2.34	3.40	4.50	2.76
		attainment	5.06	2.94	2.34	3.40	4.50	2.76
	quality	test scores	3.56	2.90	1.96	2.50	2.98	4.12
		school/education rankings	3.50	5.17	2.42	3.33	3.42	3.17
		daily learning	3.00	5.00	1.00	2.00	4.00	4.00
	child well-being	health	3.24	3.53	2.17	3.53	2.76	2.94
		well-being	3.27	2.96	1.79	2.96	2.86	3.89
		child well-being	3.31	3.19	2.25	3.25	2.70	3.53
	teachers/schools/spending	schools	5.00	3.50	2.50	3.00	3.25	2.75
	total	education	3.48	3.23	2.74	3.22	3.41	3.66
environment	transportation	means of transportation	5.13	2.63	2.46	2.46	3.71	3.25
	energy	wind energy	4.33	2.67	1.17	2.83	3.33	3.00
	air pollution	air pollution	5.11	2.64	2.18	3.20	3.89	2.60
		air pollution	5.11	2.64	2.18	3.20	3.89	2.60
	water	water quality	4.50	1.71	1.50	3.57	3.50	4.50
	climate change	projected cost	3.00	3.00	1.00	2.00	2.00	2.00
		carbon sequestration	4.75	2.00	2.00	2.00	3.50	4.00
		climate change	3.87	3.26	2.11	2.79	3.02	2.24
	sustainability/efficiency indexes	sustain./efficiency indexes	6.00	4.50	2.00	2.50	4.00	2.00
		sustain./efficiency indexes	6.00	4.50	2.00	2.50	4.00	2.00
economy	city economy	gdp	6.00	3.00	1.00	2.00	5.00	4.00
		recession recovered	5.00	3.00	1.00	2.00	6.00	4.00
	personal/ household economy	poverty/food stamps	3.50	4.50	1.00	2.50	5.00	4.00
		income, earnings, wages	6.00	3.67	1.33	2.67	5.00	2.33
		money management	5.00	4.17	1.92	3.33	2.42	4.17
		personal/household econ.	4.29	3.93	2.08	3.27	3.83	3.43
	homelessness	housing assistance	3.50	5.00	2.00	3.50	3.50	3.50

existing conditions	demographics	demographics	3.75	4.25	1.75	4.75	2.00	3.25
		demographics	3.75	4.25	1.75	4.75	2.00	3.25
	housing	housing	3.63	5.25	1.38	3.13	3.88	3.75
		housing	3.63	5.25	1.38	3.13	3.88	3.75
	parks + recreation	parks	4.17	3.67	2.67	2.83	3.50	3.33
		parks + recreation facilities	3.38	2.38	1.38	4.00	3.88	3.75
		parks + recreation	4.18	3.35	2.01	3.28	3.46	2.69
	arts	arts	5.00	2.50	1.25	2.50	5.25	4.00
		arts	5.00	2.50	1.25	2.50	5.25	4.00
	other culture	other leisure	4.67	4.33	1.67	2.33	5.67	2.33
	infrastructure	internet/computer connect.	4.75	4.17	1.00	2.17	3.83	3.75
	total	existing conditions	4.29	3.57	2.29	2.58	3.86	3.46
community	activism	voter participation	5.00	3.00	3.00	3.00	3.50	3.00
	trending	# stats	4.63	5.25	1.75	3.00	4.00	2.00

PERCENT NORMALIZATION

			Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
safety	crime	violent crime	0.83	0.77	1.00	0.96	0.91	0.96
	traffic + pedestrian safety	traffic safety	0.41	0.63	1.00	0.95	0.68	0.54
		pedestrian safety	0.12	0.31	1.00	0.52	0.41	0.22
		traffic + pedestrian safety	0.26	0.47	1.00	0.74	0.54	0.38
health	physical health	physical activity	0.81	0.82	0.99	0.89	0.82	0.89
		weight	0.70	0.71	0.98	0.88	0.60	0.88
		physical health	0.75	0.77	0.99	0.88	0.71	0.88
	healthy eating	healthy eating	0.81	0.41	0.98	0.78	0.90	0.91
		food access	0.43	0.61	0.88	0.33	0.49	0.69
		healthy eating	0.62	0.51	0.93	0.55	0.69	0.80
	lifestyle	sleeping	0.83	0.96	1.00	0.96	0.78	0.89
	healthy stats	lung	0.90	0.74	0.97	0.76	0.78	0.66
		heart	0.77	0.76	0.97	0.89	0.82	0.76
		allergies	0.85	0.77	1.00	0.76	0.71	0.86
		chronic kidney disease	0.82	0.82	1.00	0.93	0.86	0.86
		health stats	0.82	0.82	0.95	0.91	0.84	0.81
	facilities + services	services	0.63	0.72	0.78	0.62	0.78	0.74
	total	health	0.75	0.75	0.88	0.78	0.77	0.81
education	attainment	attainment	0.72	0.85	0.91	0.84	0.72	0.88
		attainment	0.72	0.85	0.91	0.84	0.72	0.88
	quality	test scores	0.83	0.79	0.91	0.82	0.88	0.71
		school/education rankings	0.70	0.44	0.75	0.49	0.37	0.49
		daily learning	0.93	0.89	1.00	0.96	0.92	0.92
		quality	0.78	0.78	0.84	0.77	0.76	0.70
	child well-being	health	0.76	0.74	0.91	0.74	0.83	0.79
		well-being	0.67	0.80	0.95	0.80	0.74	0.57
		child well-being	0.72	0.77	0.89	0.77	0.81	0.69
	total	education	0.75	0.78	0.81	0.76	0.71	0.74
environment	transportation	means of transportation	-0.25	0.61	0.86	0.80	0.48	0.40
	energy	wind energy	-4.86	-4.46	0.83	-5.12	-1.52	0.06
	air pollution	air pollution	-1.62	0.23	0.64	0.41	-0.12	-0.05
		air pollution	-1.62	0.23	0.64	0.41	-0.12	-0.05
	climate change	projected cost	-0.50	-0.50	1.00	0.50	0.50	0.50
		climate change	-0.68	0.46	0.78	0.48	-0.18	0.45
economy	employment + jobs	job creation	0.59	0.73	0.94	0.82	0.66	0.49
	city economy	gdp	0.23	0.68	1.00	0.93	0.55	0.58
		recession recovered	0.23	0.36	1.00	0.51	0.02	0.33
	personal/ household economy	poverty/food stamps	0.83	0.72	1.00	0.91	0.66	0.70
		income, earnings, wages	0.63	0.87	1.00	0.93	0.80	0.95
		money management	0.40	0.55	0.92	0.61	0.72	0.38
		personal/household econ.	0.58	0.63	0.82	0.68	0.69	0.51
	homelessness	housing assistance	0.75	0.58	0.94	0.64	0.44	0.82

existing conditions	demographics	demographics	0.69	0.70	0.91	0.59	0.89	0.86
		demographics	0.69	0.70	0.91	0.59	0.89	0.86
	housing	housing	0.72	0.60	1.00	0.81	0.70	0.73
		housing	0.72	0.60	1.00	0.81	0.70	0.73
	parks + recreation	parks + recreation facilities	-0.61	0.23	0.87	-0.81	-0.86	-2.08
		parks + recreation	-1.33	-0.27	0.39	-0.15	-0.16	-0.24
	arts	arts	0.69	0.85	0.99	0.93	0.68	0.76
		arts	0.69	0.85	0.99	0.93	0.68	0.76
	other culture	other leisure	0.39	0.60	0.93	0.64	0.22	0.81
	infrastructure	internet/computer connect.	0.60	0.65	1.00	0.80	0.70	0.68
	total		0.32	0.51	0.63	0.58	0.44	0.62

SUM

			Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
safety	crime	violent crime	5	6	1	2	4	3
	traffic + pedestrian safety	traffic safety	6	4	1	2	3	5
		pedestrian safety	16	11	3	8	10	15
		traffic + pedestrian safety	22	15	4	10	13	20
	total	safety	36	32	25	27	30	39
health	physical health	physical activity	38	33	10	27	39	21
		weight	22	20	8	11	24	18
		physical health	60	53	18	38	63	39
	healthy eating	healthy eating	9	16	5	12	11	9
		food access	17	16	13	18	15	18
		healthy eating	26	32	18	30	26	27
	lifestyle	tobacco	27	38	12	23	13	34
		sleeping	5	2	1	3	6	4
	health stats	lung	11	22	8	20	20	24
		heart	17	17	6	8	15	18
		allergies	6	8	2	10	11	5
		chronic kidney disease	4	4	1	2	3	3
		health stats	170	170	96	100	142	153
	total	health	485	515	337	423	398	527
education	attainment	attainment	81	50	48	68	69	62
		attainment	81	50	48	68	69	62
	quality	test scores	36	22	18	20	32	39
		school/education rankings	30	40	15	30	27	26
		daily learning	3	5	1	2	4	4
		quality	77	70	43	56	68	78
	child well-being	economic condition	39	43	33	46	34	46
		health	85	86	58	86	74	61
		well-being	166	177	105	177	159	199
		child well-being	290	306	196	309	267	306
environment	teachers/schools/spending	schools	14	9	8	8	12	8
	total	education	493	454	322	464	450	483
	transportation	means of transportation	71	38	30	35	51	49
	energy	wind energy	14	10	5	13	10	10
	air pollution	air pollution	44	25	16	24	33	29
		air pollution	44	25	16	24	33	29
	climate change	projected cost	3	3	1	2	2	2
economy	city economy	sustainability/efficiency indexes	12	9	4	5	8	4
		sustain./efficiency indexes	12	9	4	5	8	4
	personal/household economy	gdp	6	3	1	2	5	4
		recession recovered	5	3	1	2	6	4
		poverty/food stamps	7	9	2	5	10	8
		income, earnings, wages	30	18	7	14	25	11
		personal/household econ.	123	110	91	122	106	113
economy	homelessness	housing assistance	7	10	4	7	7	7
	general metrics	general metrics	38	27	21	24	36	40
		general metrics	38	27	21	24	36	40

existing conditions	demographics	demographics	15	17	7	19	8	13
		demographics	15	17	7	19	8	13
	housing	housing	19	27	7	14	20	18
		housing	19	27	7	14	20	18
	parks + recreation	parks	25	22	16	17	21	20
		parks + recreation facilities	27	19	11	32	31	30
		parks + recreation	57	45	29	52	55	51
	arts	arts	20	10	5	10	21	16
		arts	20	10	5	10	21	16
	other culture	other leisure	14	13	5	7	17	7
	infrastructure	internet/computer connect.	24	21	5	11	19	19
	total	existing conditions	259	217	161	167	242	218
community	activism	voter participation	10	6	6	6	7	6
		total	2224	2098	1675	1841	2048	2099

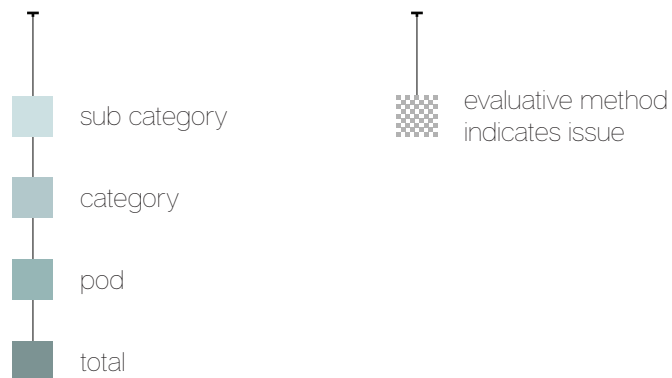
SUBCATEGORY FREQUENCY

			Seattle	San Diego	Phoenix	Sacramento	Denver	Salt Lake City
safety	crime	violent crime	5	6	1	2	4	3
		traffic safety	6	4	1	2	3	5
	traffic + ped. safety	pedestrian safety	6	4	1	2	3	5
		traffic + pedestrian safety	6.00	4.00	1.00	2.00	3.00	5.00
health	physical health	physical activity	5	4	1	3	6	2
		weight	4	5	1	2	6	3
		physical health	4.50	4.50	1.00	2.50	6.00	2.50
	healthy eating	healthy eating	4	6	1	3	5	2
		food access	4	2	1	2	3	5
		healthy eating	4.00	4.00	1.00	2.50	4.00	3.50
	lifestyle	tobacco	4	6	1	3	2	5
		sleeping	5	2	1	3	6	4
		lifestyle	4.20	4.40	1.60	3.80	2.20	4.80
	health stats	lung	2	4	1	3	3	5
		heart	4	4	1	2	3	5
		allergies	3	4	1	5	6	2
		chronic kidney disease	4	4	1	2	3	3
		health stats	3.75	4.00	2.08	2.25	3.42	4.17
	facilities + services	services	5	2	1	6	3	4
	mean	health	3.77	3.96	1.96	2.81	3.54	3.73
education	attainment	attainment	6	3	1	4	5	2
		attainment	6.00	3.00	1.00	4.00	5.00	2.00
	quality	test scores	6	3	1	4	5	2
		school/education rankings	5	6	1	3	4	2
		daily learning	3	5	1	2	4	4
		quality	4.50	3.75	2.00	2.75	4.00	3.25
	child well-being	health	4	5	1	5	2	3
		well-being	4	3	1	3	2	5
		child well-being	4.33	3.67	1.33	4.00	1.67	4.67
	teachers/schools/spending	schools	6	5	1	3	4	2
		teachers/schools/spending	4.67	2.67	2.67	3.00	3.00	3.67
	mean	education	4.33	3.33	1.92	3.25	3.17	3.58
environment	transportation	means of transportation	5	2	1	1	4	3
	energy	wind energy	6	2	1	3	5	4
	air pollution	air pollution	6	3	1	4	5	2
		air pollution	6.00	3.00	1.00	4.00	5.00	2.00
	water	water quality	5	2	1	4	3	5
		water	3.50	2.00	2.00	2.50	2.50	3.50
	climate change	projected cost	3	3	1	2	2	2
		carbon sequestration	4	1	1	2	3	3
	sust./eff. index	sustain./efficiency indexes	5	4	1	2	3	1
		sustain./efficiency indexes	5.00	4.00	1.00	2.00	3.00	1.00
economy	city economy	gdp	6	3	1	2	5	4
		recession recovered	5	3	1	2	6	4
	personal/ household economy	poverty/food stamps	3	5	1	2	6	4
		income, earnings, wages	6	4	1	3	5	2
		money management	5	4	1	3	2	4
		personal/household econ.	3.75	4.25	2.00	3.50	3.75	3.25
	homelessness	housing assistance	2	3	1	2	2	2

existing conditions	demographics	demographics	4	5	1	6	2	3
		demographics	4.00	5.00	1.00	6.00	2.00	3.00
	housing	housing	3	6	1	2	5	4
		housing	3.00	6.00	1.00	2.00	5.00	4.00
	parks + recreation	parks	6	5	1	2	4	3
		parks + recreation facilities	3	2	1	6	5	4
		parks + recreation	4.67	3.67	1.33	3.67	4.00	2.67
	arts	arts	5	2	1	3	6	4
		arts	5.00	2.00	1.00	3.00	6.00	4.00
	other culture	other leisure	4	3	1	2	5	2
	infrastructure	internet/computer connect.	6	5	1	2	4	3
	mean	existing conditions	4.6	3.4	2.1	2.5	4.2	3.3
community	activism	voter participation	3	1	1	1	2	1
	trending	# stats	5	6	1	3	4	2
		total frequency of "1"	10	15	43	25	7	15
		total subcategory sum	407	366	256	278	376	353
		total subcategory mean	3.88	3.49	2.44	2.65	3.58	3.36

phoenix

This table indicates those areas in which Phoenix is projected to have issues and compares the results across evaluative methods. This is displayed to the subcategory level.



	mean	% normal.	sum	frequency	#
violent crime					4
property crime					
safety					
police spending					
crime					
traffic safety					4
pedestrian safety					4
traffic + pedestrian safety					4
natural disasters					
natural disasters					
safety					1
physical activity					4
weight					4
physical health					4
mental health + illness					
depression					
suicide					
mental health					
healthy eating					4
food access					4
healthy eating					4
alcohol					
tobacco					3
sleeping					4
teen pregnancy					
drugs					
lifestyle					2
disability					
std					
lung					4
heart					4
diabetes					
allergies					4
arthritis					
cancer					
chronic kidney disease					4
stroke					
health outcomes					
mortality rates					
health stats					4
facilities					
services					3
facilities + services					
health					4
enrollment					
enrollment					
attainment					4

attainment					4
test scores					4
school/education rankings					4
literacy + language					
daily learning					4
quality					3
economic condition					1
health					4
well-being					4
child well-being					4
teachers					
schools					3
spending					
teachers/schools/spending					1
education					4
means of transport					4
traffic					
transportation					
solar energy					
wind energy					4
other renewable energy sources					
energy use					
energy rates					
energy sources					
energy					
air pollution					4
air pollution					4
water quality					2
water use					
water					1
threatened + endangered species					
species					
climate					
weather unpredictability					
climate					
projected climate change					
projected cost					4
carbon sequestration					2
belief, perception, support, behavior					
climate change					2
sustainability/efficiency indexes					3
sustainability/efficiency indexes					3
environment					
unemployment					
job quality					
job creation					1
job proximity					
employment + jobs					

gdp					4
exports + trade					
tax burden					
government debt					
recession recovered					4
city economy					
poverty/food stamps					4
income, earnings, wages					4
inequality/inclusion					
money management					3
personal/household economy					4
cost of living					
cost of living					
homelessness					
money + housing					
housing assistance					4
homelessness					
general metrics					1
general metrics					1
economy					
demographics					4
demographics					4
density					
density					
housing					4
housing					4
parks					3
parks + recreation facilities					4
park expenditures					
parks + recreation					4
arts					4
arts					4
sports					
other leisure					4
public amenity expenditures					
other culture					
libraries					
libraries					
roads + bridges					
internet/computer connectivity					4
general infrastructure					
infrastructure					
existing conditions					3
active demographics					
voter participation					3
activism					
pride					
pride					

well-being					
historic well-being					
other well-being metrics					
well-being					
google search trends					
# stats					2
market data					
trending					
community					
total					3

site selection dataset

Key

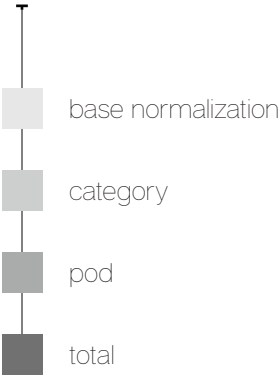
$\bar{X}$

Mean



%

Percent
Normalization



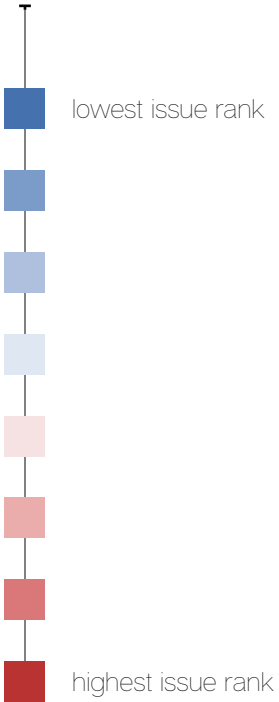
+

Sum



f

Subcategory
Frequency



GENERAL DATA *

*data does not factor into calculations

	source	data category	geographic unit
identifier name	n/a	n/a	point
longitude	ArcMap	n/a	point
latitude	ArcMap	n/a	point
address	Google Maps	n/a	point
street view notes	Google Maps	n/a	n/a
future building/construction	Phoenix Business Journal (8/8/2018)	n/a	point
village name	City of Phoenix (2018)	n/a	village
zip code	City of Phoenix (2018)	n/a	zip code
census tract ID	American Community Survey (2017)	n/a	census tract
census block group ID	American Community Survey (2017)	n/a	census block group
estimated minimum size (sq ft)	Google Earth	n/a	designated region
estimated maximum size (sq ft)	Google Earth	n/a	designated region
population	American Community Survey (2017)	demographics	census tract
white (%)	American Community Survey (2017)	demographics	census tract
white (non-hispanic) (%)	American Community Survey (2017)	demographics	census tract
hispanic (%)	American Community Survey (2017)	demographics	census tract
black (%)	American Community Survey (2017)	demographics	census tract
asian (%)	American Community Survey (2017)	demographics	census tract
american indian/alaska native (%)	American Community Survey (2017)	demographics	census tract
2+ races (%)	American Community Survey (2017)	demographics	census tract

GENERAL DATA *

	#1	#2	#3	#4	#5
identifier name	south mountain	cemetery	large waterfront	downtown view	undeveloped park
longitude	111°59'12.577"W	111°59'29.429"W	112°3'11.344"W	112°5'15.713"W	112°14'42.065"W
latitude	33°19'43.223"N	33°23'50.028"N	33°23'1.025"N	33°23'38.432"N	33°25'35.774"N
address	13431 S 44th St	5244 S 42nd Pl	1201-1317 E Vineyard Rd	1118 W Hidalgo Dr	2041 S 86th Dr
street view notes	no trespass	fence/ no trespass/ open	open	open/ private	fence/ no trespass
future building/construction	no construction	no construction	no construction	no construction	no construction
village name	ahwatukee foothills	south mountain	south mountain	south mountain	estrella
zip code	85044	85040	85042	85041	85353
census tract ID	4013116718	4013116204	4013116400	4013115700	4013082205
census block group ID	40131167181	40131162041	40131164003	40131157001	40130822052
estimated minimum size (sq ft)	2,012,925	668,862	1,258,992	382,719	623,545
estimated maximum size (sq ft)	2,012,925	668,862	3,911,888	592,059	8,420,020
population	2,941	4,090	6,242	7,216	5,749
white (%)	62.41	41.09	38.30	40.90	45.10
white (non-hispanic) (%)	52.87	13.46	3.71	0.54	12.83
hispanic (%)	18.04	63.40	75.50	84.63	66.13
black (%)	13.08	12.55	14.09	7.72	11.90
asian (%)	6.95	3.58	1.49	0.99	2.48
american indian/alaska native (%)	4.05	4.74	2.15	2.11	1.34
2+ races (%)	6.64	6.09	4.10	4.35	5.86

GENERAL DATA *

	#6	#7	#8	#9	#10
identifier name	farm conversion	dense west	water temple	outer flash flood	lonely house
longitude	112°13'56.921"W	112°14'51.187"W	112°12'30.654"W	112°9'5.166"W	112°7'9.689"W
latitude	33°28'32.531"N	33°29'48.894"N	33°29'59.341"N	33°39'48.776"N	33°39'12.355"N
address	2550 N 79th Ave	4225 N 88th Ave	6920 W Heatherbrae Dr	19605 N 43rd Dr	2817 W Union Hills Dr
street view notes	farm/ fence	fence	fence	fence/ open/ private/ flood	no trespass
future building/construction	no construction	no construction	no construction	no construction	no construction
village name	maryvale	maryvale	maryvale	deer valley	deer valley
zip code	85035	85037	85033	85308	85053
census tract ID	4013112509	4013082007	4013109602	4013616300	4013618400
census block group ID	40131125091	40130820072	40131096022	40136163001	40136184002
estimated minimum size (sq ft)	2,851,609	461,409	256,932	316,398	178,748
estimated maximum size (sq ft)	2,851,609	461,409	2,051,848	2,539,132	178,748
population	7,738	4,550	6,355	2,252	4,324
white (%)	35.40	49.49	55.99	81.88	77.42
white (non-hispanic) (%)	6.78	14.42	6.24	74.39	65.72
hispanic (%)	70.05	71.74	78.72	13.41	23.94
black (%)	14.45	5.82	7.44	2.57	1.81
asian (%)	2.28	1.17	1.08	4.62	2.10
american indian/alaska native (%)	3.18	2.70	2.52	0.78	1.81
2+ races (%)	6.02	4.17	5.25	4.75	5.17

GENERAL DATA *

	#11	#12	#13	#14	#15
identifier name	massive northeast	green gap	strip mall patch	pond and island	telecom tower
longitude	111°58'20.168"W	111°58'2.086"W	112°7'24.913"W	112°6'12.035"W	112°7'20.622"W
latitude	33°38'43.508"N	33°34'49.789"N	33°36'27.464"N	33°33'23.393"N	33°32'1.205"N
address	5001-5199 E Grovers Ave	5235 E Shea Blvd	3045 W Thunderbird Rd	2050 W Northern Ave	3002 W Maryland Ave
street view notes	fence/ farm	open/ flood	fence	open/ flood / fence	fence/ no trespass
future building/construction	no construction	no construction	no construction	no construction	no construction
village name	paradise valley	paradise valley	north mountain	north mountain	alhambra
zip code	85254	85253	85029	85021	85017
census tract ID	4013619900	4013103209	4013104000	4013105503	4013106900
census block group ID	40136199002	40131032094	40131040002	40131055032	40131069001
estimated minimum size (sq ft)	2,528,633	606,188	394,411	1,793,912	1,089,878
estimated maximum size (sq ft)	5,130,644	606,188	985,457	2,004,487	1,089,878
population	6,643	5,964	7,546	3,645	7,908
white (%)	78.56	91.63	65.63	50.66	52.54
white (non-hispanic) (%)	74.91	88.04	54.19	34.03	25.19
hispanic (%)	5.43	5.14	29.03	34.54	57.07
black (%)	1.70	1.28	5.61	15.34	4.78
asian (%)	15.20	3.68	4.00	3.06	6.09
american indian/alaska native (%)	0.53	0.56	2.87	9.39	2.73
2+ races (%)	2.58	1.82	4.97	7.70	4.48

GENERAL DATA *

	#16	#17	#18	#19	#20
identifier name	small waterfront	hotel lot	warehouse adjacent	downtown	central city
longitude	112°6'7.891"W	112°6'39.478"W	112°7'44.792"W	112°4'5.092"W	112°2'42.986"W
latitude	33°29'56.224"N	33°28'58.649"N	33°28'2.014"N	33°27'25.643"N	33°27'51.797"N
address	2001 W Turney Ave	3020 N 24th Dr	3347 W Granada Rd	801 N 4th St	1641 E Brill St
street view notes	open	fence	fence/ barbed	open	open
future building/construction	no construction	no construction	no construction	no construction	no construction
village name	alhambra	encanto	maryvale	central city	central city
zip code	85015	85015	85009	85004	85006
census tract ID	4013109003	4013117000	4013112100	4013113100	4013113300
census block group ID	40131090032	40131170003	40131121002	40131131002	40131133001
estimated minimum size (sq ft)	211,897	124,389	476,276	94,191	82,337
estimated maximum size (sq ft)	607,849	124,389	476,276	278,569	190,710
population	6,159	6,298	4,328	3,245	5,826
white (%)	51.05	46.64	43.01	63.69	42.91
white (non-hispanic) (%)	5.30	19.38	0.98	52.59	6.95
hispanic (%)	78.43	50.50	89.51	20.44	76.64
black (%)	6.62	8.32	2.32	13.92	9.22
asian (%)	1.00	13.07	0.27	3.91	0.66
american indian/alaska native (%)	5.17	4.38	3.46	4.97	3.68
2+ races (%)	4.14	6.54	5.21	5.55	4.59

GENERAL DATA *

	#21	#22
identifier name	commercial strip	cluster
longitude	112°0'22.939"W	111°59'57.379"W
latitude	33°28'1.265"N	33°29'17.272"N
address	3502 E McDowell Rd	3401 N 38th St
street view notes	fence/ no trespass	fence/ private/ open
future building/construction	no construction	no construction
village name	camelback east	camelback east
zip code	85008	85018
census tract ID	4013111401	4013110902
census block group ID	40131114012	40131109021
estimated minimum size (sq ft)	251,170	132,182
estimated maximum size (sq ft)	353,313	406,694
population	4,844	4,734
white (%)	56.88	57.99
white (non-hispanic) (%)	10.48	34.80
hispanic (%)	77.24	48.34
black (%)	3.68	5.47
asian (%)	1.01	1.77
american indian/alaska native (%)	2.63	5.13
2+ races (%)	5.26	5.51

SITE

	source	data category	geographic unit
city owned property	City of Phoenix (2018)	n/a	designated region
city owned property rank		n/a	designated region
city owned property % norm.		n/a	designated region
river/water (within 2 miles)	Maricopa County (2018)	n/a	point
river/water rank		n/a	point
river/water % norm.		n/a	point
topographic challenges	Maricopa County (2018)	n/a	designated region
overall zip code grade	Niche	n/a	zip code
overall zip code grade rank		n/a	zip code
overall zip code grade % norm.		n/a	zip code
SITE MEAN			
SITE SUM			
SITE PERCENT NORMALIZATION			

SITE

	#1	#2	#3	#4	#5
city owned property					x
city owned property rank	1	1	1	1	3
city owned property % norm.	1.00	1.00	1.00	1.00	-1.00
river/water (within 2 miles)	x	x	x	x	
river/water rank	2	2	2	2	1
river/water % norm.	0.00	0.00	0.00	0.00	1.00
topographic challenges					
overall zip code grade	a+	b+	a-	b+	b
overall zip code grade rank	7	4	5	4	3
overall zip code grade % norm.	-5.00	-2.00	-3.00	-2.00	-1.00
SITE MEAN	3.33	2.33	2.67	2.33	2.33
SITE SUM	10	7	8	7	7
SITE PERCENT NORMALIZATION	-1.33	-0.33	-0.67	-0.33	-0.33

SITE

	#6	#7	#8	#9	#10
city owned property	x*			x*	
city owned property rank	2	1	1	2	1
city owned property % norm.	0.00	1.00	1.00	0.00	1.00
river/water (within 2 miles)	x	x	x	x	x
river/water rank	2	2	2	2	2
river/water % norm.	0.00	0.00	0.00	0.00	0.00
topographic challenges					
overall zip code grade	c+	b	b-	a	a-
overall zip code grade rank	1	3	2	6	5
overall zip code grade % norm.	1.00	-1.00	0.00	-4.00	-3.00
SITE MEAN	1.67	2.00	1.67	3.33	2.67
SITE SUM	5	6	5	10	8
SITE PERCENT NORMALIZATION	0.33	0.00	0.33	-1.33	-0.67

SITE

	#11	#12	#13	#14	#15
city owned property		x*			
city owned property rank	1	2	1	1	1
city owned property % norm.	1.00	0.00	1.00	1.00	1.00
river/water (within 2 miles)	x	x	x	x	
river/water rank	2	2	2	2	1
river/water % norm.	0.00	0.00	0.00	0.00	1.00
topographic challenges					
overall zip code grade	a	a	a-	a-	b
overall zip code grade rank	6	6	5	5	3
overall zip code grade % norm.	-4.00	-4.00	-3.00	-3.00	-1.00
SITE MEAN	3.00	3.33	2.67	2.67	1.67
SITE SUM	9	10	8	8	5
SITE PERCENT NORMALIZATION	-1.00	-1.33	-0.67	-0.67	0.33

SITE

	#16	#17	#18	#19	#20
city owned property	x		x	x	
city owned property rank	3	1	3	3	1
city owned property % norm.	-1.00	1.00	-1.00	-1.00	1.00
river/water (within 2 miles)	x	x			
river/water rank	2	2	1	1	1
river/water % norm.	0.00	0.00	1.00	1.00	1.00
topographic challenges					
overall zip code grade	b	b	b-	a-	b
overall zip code grade rank	3	3	2	5	3
overall zip code grade % norm.	-1.00	-1.00	0.00	-3.00	-1.00
SITE MEAN	2.67	2.00	2.00	3.00	1.67
SITE SUM	8	6	6	9	5
SITE PERCENT NORMALIZATION	-0.67	0.00	0.00	-1.00	0.33

SITE

	#21	#22	issue (highest)	issue (lowest)	average
city owned property				x	
city owned property rank	1	1			
city owned property % norm.	1.00	1.00			
river/water (within 2 miles)	x	x		x	x
river/water rank	2	2			
river/water % norm.	0.00	0.00			
topographic challenges			x		
overall zip code grade	b+	a	c+	a+	b+
overall zip code grade rank	4	6			
overall zip code grade % norm.	-2.00	-4.00			
SITE MEAN	2.33	3.00	1.67	3.33	2.47
SITE SUM	7	9	5	10	7.41
SITE PERCENT NORMALIZATION	-0.33	-1.00	0.33	-1.33	-0.47

SAFETY

	source	data category	geographic unit
EASi total crime index (higher = more crime)	EASi (2017)	crime	zip code
EASi total crime index rank		crime	zip code
EASi total crime index % norm.		crime	zip code
crime mean		crime	n/a
crime % norm		crime	n/a
nearest fire station (miles)	City of Phoenix (2018)	n/a	point
nearest fire station rank		n/a	point
nearest fire station % norm		n/a	point
nearest hospital (miles)	City of Phoenix (2018)	n/a	point
nearest hospital rank		n/a	point
nearest hospital % norm.		n/a	point
nearest police station (miles)	City of Phoenix (2018)	n/a	point
nearest police station rank		n/a	point
nearest police station % norm.		n/a	point
services mean		n/a	n/a
services % norm.		n/a	n/a
SAFETY MEAN			
SAFETY SUM			
SAFETY PERCENT NORMALIZATION			

SAFETY

	#1	#2	#3	#4	#5
EASi total crime index (higher = more crime)	88	145	109	85	32
EASi total crime index rank	13	3	10	15	21
EASi total crime index % norm.	0.54	0.88	0.66	0.52	0.20
crime mean	13.00	3.00	10.00	15.00	21.00
crime % norm	0.54	0.88	0.66	0.52	0.20
nearest fire station (miles)	0.3	1.5	0.6	1.0	3.5
nearest fire station rank	12	4	11	7	1
nearest fire station % norm	0.09	0.43	0.17	0.29	1.00
nearest hospital (miles)	2.6	4.4	5.2	6.4	4.3
nearest hospital rank	9	4	2	1	5
nearest hospital % norm.	0.41	0.69	0.81	1.00	0.67
nearest police station (miles)	9.2	5.5	1.8	0.5	2.1
nearest police station rank	1	3	15	18	13
nearest police station % norm.	1.00	0.60	0.20	0.05	0.23
services mean	7.33	3.67	9.33	8.67	6.33
services % norm.	0.50	0.57	0.39	0.45	0.63
SAFETY MEAN	10.17	3.33	9.67	11.83	13.67
SAFETY SUM	35	14	38	41	40
SAFETY PERCENT NORMALIZATION	0.52	0.73	0.53	0.48	0.41

SAFETY

	#6	#7	#8	#9	#10
EASi total crime index (higher = more crime)	86	77	78	70	101
EASi total crime index rank	14	17	16	18	12
EASi total crime index % norm.	0.52	0.47	0.48	0.43	0.62
crime mean	14.00	17.00	16.00	18.00	12.00
crime % norm	0.52	0.47	0.48	0.43	0.62
nearest fire station (miles)	0.8	0.8	1.0	1.5	0.9
nearest fire station rank	9	9	7	4	8
nearest fire station % norm	0.23	0.23	0.29	0.43	0.26
nearest hospital (miles)	1.2	1.8	2.4	2.6	0.8
nearest hospital rank	17	13	10	9	19
nearest hospital % norm.	0.19	0.28	0.38	0.41	0.13
nearest police station (miles)	2.1	4.7	2.7	5.0	5.4
nearest police station rank	13	7	12	5	4
nearest police station % norm.	0.23	0.51	0.29	0.54	0.59
services mean	13.00	9.67	9.67	6.00	10.33
services % norm.	0.21	0.34	0.32	0.46	0.32
SAFETY MEAN	13.50	13.33	12.83	12.00	11.17
SAFETY SUM	53	46	45	36	43
SAFETY PERCENT NORMALIZATION	0.37	0.40	0.40	0.44	0.47

SAFETY

	#11	#12	#13	#14	#15
EASi total crime index (higher = more crime)	57	38	113	139	132
EASi total crime index rank	19	20	9	6	8
EASi total crime index % norm.	0.35	0.23	0.69	0.85	0.80
crime mean	19.00	20.00	9.00	6.00	8.00
crime % norm	0.35	0.23	0.69	0.85	0.80
nearest fire station (miles)	1.6	2.0	1.6	0.6	0.7
nearest fire station rank	3	2	3	11	10
nearest fire station % norm	0.46	0.57	0.46	0.17	0.19
nearest hospital (miles)	1.4	4.8	3.3	2.2	1.6
nearest hospital rank	16	3	7	11	15
nearest hospital % norm.	0.22	0.75	0.52	0.34	0.25
nearest police station (miles)	1.9	3.9	1.7	4.6	4.8
nearest police station rank	14	9	16	8	6
nearest police station % norm.	0.21	0.42	0.18	0.50	0.52
services mean	11.00	4.67	8.67	10.00	10.33
services % norm.	0.29	0.58	0.39	0.34	0.32
SAFETY MEAN	15.00	12.33	8.83	8.00	9.17
SAFETY SUM	52	34	35	36	39
SAFETY PERCENT NORMALIZATION	0.32	0.41	0.54	0.59	0.56

SAFETY

	#16	#17	#18	#19	#20
EASi total crime index (higher = more crime)	143	143	108	137	164
EASi total crime index rank	4	4	11	7	1
EASi total crime index % norm.	0.87	0.87	0.66	0.84	1.00
crime mean	4.00	4.00	11.00	7.00	1.00
crime % norm	0.87	0.87	0.66	0.84	1.00
nearest fire station (miles)	1.0	0.2	0.2	0.9	1.3
nearest fire station rank	7	13	13	8	6
nearest fire station % norm	0.29	0.06	0.06	0.26	0.37
nearest hospital (miles)	1.7	1.9	4.0	1.1	0.8
nearest hospital rank	14	12	6	18	19
nearest hospital % norm.	0.27	0.30	0.63	0.17	0.13
nearest police station (miles)	4.6	3.8	3.9	0.8	2.8
nearest police station rank	8	10	9	17	11
nearest police station % norm.	0.50	0.41	0.42	0.09	0.30
services mean	9.67	11.67	9.33	14.33	12.00
services % norm.	0.35	0.26	0.37	0.17	0.27
SAFETY MEAN	6.83	7.83	10.17	10.67	6.50
SAFETY SUM	33	39	39	50	37
SAFETY PERCENT NORMALIZATION	0.61	0.56	0.51	0.50	0.63

SAFETY

	#21	#22	issue (highest)	issue (lowest)	average
EASi total crime index (higher = more crime)	147	142	164	32	106.09
EASi total crime index rank	2	5			
EASi total crime index % norm.	0.90	0.87			
crime mean	2.00	5.00			
crime % norm	0.90	0.87			
nearest fire station (miles)	1.4	1.5	3.50	0.20	1.13
nearest fire station rank	5	4			
nearest fire station % norm	0.40	0.43			
nearest hospital (miles)	1.6	2.8	6.4	0.8	2.68
nearest hospital rank	15	8			
nearest hospital % norm.	0.25	0.44			
nearest police station (miles)	5.0	6.9	9.2	0.5	3.80
nearest police station rank	5	2			
nearest police station % norm.	0.54	0.75			
services mean	8.33	4.67			
services % norm.	0.40	0.54			
SAFETY MEAN	5.17	4.83	3.33	15.00	9.86
SAFETY SUM	27	19	14	53	37.77
SAFETY PERCENT NORMALIZATION	0.65	0.70	0.73	0.32	0.52

HEALTH

	source	data category	geographic unit
some sport/exercise a week (agree a lot) (%)	Simmons (2016)	physical health	census tract
some sport/exercise a week rank		physical health	census tract
some sport/exercise a week % norm.		physical health	census tract
exercise regularly (agree a lot) (%)	Simmons (2016)	physical health	census tract
exercise regularly rank		physical health	census tract
exercise regularly % norm.		physical health	census tract
30+ lbs overweight (%)	Simmons (2016)	physical health	census tract
30+ lbs overweight rank		physical health	census tract
30+ lbs overweight % norm.		physical health	census tract
physical health mean		physical health	n/a
physical health % norm.		physical health	n/a
healthy/balanced diet (agree a lot) (%)	Simmons (2016)	healthy eating	census tract
healthy/balanced diet rank		healthy eating	census tract
healthy/balanced diet % norm.		healthy eating	census tract
farmer's market (miles)	Google Maps	healthy eating	point
farmer's market rank		healthy eating	point
farmer's market % norm.		healthy eating	point
healthy eating mean		healthy eating	n/a
healthy eating % norm.		healthy eating	n/a
smokes cigarettes (%)	Simmons (2016)	lifestyle	census tract
smokes cigarettes rank		lifestyle	census tract
smokes cigarettes % norm.		lifestyle	census tract
deaths from opioids (2016)	Arizona Department of Health Services	lifestyle	neighborhood
population (2016)	Arizona Department of Health Services	lifestyle	neighborhood
opiod deaths (per 100,000)	Arizona Department of Health Services	lifestyle	neighborhood
opiod deaths rank		lifestyle	neighborhood
opiod deaths % norm.		lifestyle	neighborhood
lifestyle mean		lifestyle	n/a
lifestyle % norm.		lifestyle	n/a
heart attack/stroke (%)	Simmons (2016)	health stats	census tract
heart attack/stroke rank		health stats	census tract
heart attack/stroke % norm.		health stats	census tract
health stats mean		health stats	n/a
health stats % norm.		health stats	n/a
HEALTH MEAN			
HEALTH SUM			
HEALTH PERCENT NORMALIZATION			

HEALTH

	#1	#2	#3	#4	#5
some sport/exercise a week (agree a lot) (%)	25.14	9.31	42.80	29.42	31.35
some sport/exercise a week rank	13	4	22	17	20
some sport/exercise a week % norm.	-1.24	0.80	-3.52	-1.80	-2.04
exercise regularly (agree a lot) (%)	10.43	10.86	25.02	25.52	24.33
exercise regularly rank	2	4	18	19	16
exercise regularly % norm.	-3.67	-3.90	-11.60	-11.87	-11.22
30+ lbs overweight (%)	3.56	9.12	1.49	7.19	15.36
30+ lbs overweight rank	14	11	18	12	1
30+ lbs overweight % norm.	0.23	0.59	0.10	0.47	1.00
physical health mean	9.67	6.33	19.33	16.00	12.33
physical health % norm.	-1.56	-0.84	-5.01	-4.40	-4.09
healthy/balanced diet (agree a lot) (%)	11.20	16.28	15.04	22.09	15.16
healthy/balanced diet rank	5	10	8	14	9
healthy/balanced diet % norm.	0.84	0.31	0.44	-0.30	0.42
farmer's market (miles)	0.4	1.6	2.9	0.9	12.0
farmer's market rank	21	19	17	20	1
farmer's market % norm.	0.03	0.13	0.24	0.08	1.00
healthy eating mean	13.00	14.50	12.50	17.00	5.00
healthy eating % norm.	0.43	0.22	0.34	-0.11	0.71
smokes cigarettes (%)	14.77	11.84	23.56	4.95	6.74
smokes cigarettes rank	13	16	6	22	21
smokes cigarettes % norm.	0.45	0.36	0.73	0.15	0.21
deaths from opioids (2016)	5 to 9	10 to 16	10 to 16	10 to 16	10 to 16
population (2016)	80,062	127,461	127,461	127,461	106,677
opiod deaths (per 100,000)	11.24	12.55	12.55	12.55	15.00
opiod deaths rank	10	8	8	8	5
opiod deaths % norm.	0.43	0.48	0.48	0.48	0.57
lifestyle mean	11.50	12.00	7.00	15.00	13.00
lifestyle % norm.	0.44	0.42	0.60	0.32	0.39
heart attack/stroke (%)	7.43	0.00	0.00	1.22	0.00
heart attack/stroke rank	1	12	12	11	12
heart attack/stroke % norm.	1.00	0.00	0.00	0.16	0.00
health stats mean	1.00	12.00	12.00	11.00	12.00
health stats % norm.	1.00	0.00	0.00	0.16	0.00
HEALTH MEAN	8.79	11.21	12.71	14.75	10.58
HEALTH SUM	79	84	109	123	85
HEALTH PERCENT NORMALIZATION	0.08	-0.05	-1.02	-1.01	-0.75

HEALTH

	#6	#7	#8	#9	#10
some sport/exercise a week (agree a lot) (%)	17.86	8.19	22.68	17.65	29.98
some sport/exercise a week rank	7	2	10	6	19
some sport/exercise a week % norm.	-0.30	0.94	-0.93	-0.28	-1.87
exercise regularly (agree a lot) (%)	10.61	14.98	13.61	24.97	13.56
exercise regularly rank	3	10	8	17	7
exercise regularly % norm.	-3.77	-6.14	-5.40	-11.57	-5.37
30+ lbs overweight (%)	1.15	15.22	1.19	14.98	2.24
30+ lbs overweight rank	21	2	20	3	16
30+ lbs overweight % norm.	0.07	0.99	0.08	0.98	0.15
physical health mean	10.33	4.67	12.67	8.67	14.00
physical health % norm.	-1.33	-1.40	-2.08	-3.62	-2.36
healthy/balanced diet (agree a lot) (%)	19.45	10.76	36.65	23.75	10.95
healthy/balanced diet rank	12	2	21	15	4
healthy/balanced diet % norm.	-0.02	0.88	-1.81	-0.47	0.86
farmer's market (miles)	10.8	5.2	4.3	4.4	4.8
farmer's market rank	2	5	10	9	7
farmer's market % norm.	0.90	0.43	0.36	0.37	0.40
healthy eating mean	7.00	3.50	15.50	12.00	5.50
healthy eating % norm.	0.44	0.66	-0.73	-0.05	0.63
smokes cigarettes (%)	25.22	32.47	12.76	9.87	27.20
smokes cigarettes rank	4	1	15	17	2
smokes cigarettes % norm.	0.78	1.00	0.39	0.30	0.84
deaths from opioids (2016)	10 to 16	10 to 16	10 to 16	17 to 24	17 to 24
population (2016)	211,414	211,414	211,414	178,248	178,248
opiod deaths (per 100,000)	7.57	7.57	7.57	13.46	13.46
opiod deaths rank	11	11	11	7	7
opiod deaths % norm.	0.29	0.29	0.29	0.51	0.51
lifestyle mean	7.50	6.00	13.00	12.00	4.50
lifestyle % norm.	0.53	0.64	0.34	0.41	0.68
heart attack/stroke (%)	0.00	0.00	0.00	4.94	2.48
heart attack/stroke rank	12	12	12	6	8
heart attack/stroke % norm.	0.00	0.00	0.00	0.66	0.33
health stats mean	12.00	12.00	12.00	6.00	8.00
health stats % norm.	0.00	0.00	0.00	0.66	0.33
HEALTH MEAN	9.21	6.54	13.29	9.67	8.00
HEALTH SUM	72	45	107	80	70
HEALTH PERCENT NORMALIZATION	-0.09	-0.02	-0.62	-0.65	-0.18

HEALTH

	#11	#12	#13	#14	#15
some sport/exercise a week (agree a lot) (%)	34.48	26.60	24.21	8.63	28.34
some sport/exercise a week rank	21	15	12	3	16
some sport/exercise a week % norm.	-2.45	-1.43	-1.12	0.89	-1.66
exercise regularly (agree a lot) (%)	17.81	12.24	12.63	18.87	17.57
exercise regularly rank	13	5	6	14	12
exercise regularly % norm.	-7.68	-4.65	-4.87	-8.25	-7.55
30+ lbs overweight (%)	9.25	12.55	13.73	9.77	3.13
30+ lbs overweight rank	10	5	4	9	15
30+ lbs overweight % norm.	0.60	0.82	0.89	0.64	0.20
physical health mean	14.67	8.33	7.33	8.67	14.33
physical health % norm.	-3.18	-1.76	-1.70	-2.24	-3.00
healthy/balanced diet (agree a lot) (%)	25.22	32.31	14.06	9.62	27.97
healthy/balanced diet rank	17	20	7	1	19
healthy/balanced diet % norm.	-0.62	-1.36	0.54	1.00	-0.91
farmer's market (miles)	4.9	3.1	7.5	4.1	3.5
farmer's market rank	6	16	3	12	14
farmer's market % norm.	0.41	0.26	0.63	0.34	0.29
healthy eating mean	11.50	18.00	5.00	6.50	16.50
healthy eating % norm.	-0.11	-0.55	0.58	0.67	-0.31
smokes cigarettes (%)	23.76	19.98	23.07	22.14	6.82
smokes cigarettes rank	5	10	7	8	20
smokes cigarettes % norm.	0.73	0.62	0.71	0.68	0.21
deaths from opioids (2016)	17 to 24	17 to 24	25 to 36	25 to 36	17 to 24
population (2016)	173,469	173,469	164,971	164,971	132,557
opiod deaths (per 100,000)	13.84	13.84	21.82	21.82	18.11
opiod deaths rank	6	6	2	2	3
opiod deaths % norm.	0.53	0.53	0.83	0.83	0.69
lifestyle mean	5.50	8.00	4.50	5.00	11.50
lifestyle % norm.	0.63	0.57	0.77	0.76	0.45
heart attack/stroke (%)	2.52	5.67	1.43	5.93	0.00
heart attack/stroke rank	7	5	10	4	12
heart attack/stroke % norm.	0.34	0.76	0.19	0.80	0.00
health stats mean	7.00	5.00	10.00	4.00	12.00
health stats % norm.	0.34	0.76	0.19	0.80	0.00
HEALTH MEAN	9.67	9.83	6.71	6.04	13.58
HEALTH SUM	85	82	51	53	111
HEALTH PERCENT NORMALIZATION	-0.58	-0.24	-0.04	0.00	-0.71

HEALTH

	#16	#17	#18	#19	#20
some sport/exercise a week (agree a lot) (%)	21.05	22.92	7.75	14.39	19.28
some sport/exercise a week rank	9	11	1	5	8
some sport/exercise a week % norm.	-0.72	-0.96	1.00	0.14	-0.49
exercise regularly (agree a lot) (%)	25.79	29.11	1.84	20.11	17.38
exercise regularly rank	20	22	1	15	11
exercise regularly % norm.	-12.01	-13.82	1.00	-8.93	-7.45
30+ lbs overweight (%)	1.26	4.64	0.00	11.03	2.07
30+ lbs overweight rank	19	13	22	8	17
30+ lbs overweight % norm.	0.08	0.30	0.00	0.72	0.14
physical health mean	16.00	15.33	8.00	9.33	12.00
physical health % norm.	-4.22	-4.83	0.67	-2.69	-2.60
healthy/balanced diet (agree a lot) (%)	38.07	24.96	10.86	11.89	27.75
healthy/balanced diet rank	22	16	3	6	18
healthy/balanced diet % norm.	-1.96	-0.59	0.87	0.76	-0.89
farmer's market (miles)	3.2	4.2	3.8	0.4	2.2
farmer's market rank	15	11	13	21	18
farmer's market % norm.	0.27	0.35	0.32	0.03	0.18
healthy eating mean	18.50	13.50	8.00	13.50	18.00
healthy eating % norm.	-0.85	-0.12	0.59	0.40	-0.35
smokes cigarettes (%)	15.46	9.46	19.93	20.76	13.59
smokes cigarettes rank	12	18	11	9	14
smokes cigarettes % norm.	0.48	0.29	0.61	0.64	0.42
deaths from opioids (2016)	17 to 24	5 to 9	10 to 16	10 to 16	10 to 16
population (2016)	132,557	57,814	211,414	60,976	60,976
opiod deaths (per 100,000)	18.11	15.57	7.57	26.24	26.24
opiod deaths rank	3	4	11	1	1
opiod deaths % norm.	0.69	0.59	0.29	1.00	1.00
lifestyle mean	7.50	11.00	11.00	5.00	7.50
lifestyle % norm.	0.58	0.44	0.45	0.82	0.71
heart attack/stroke (%)	6.80	0.00	0.00	0.00	2.07
heart attack/stroke rank	3	12	12	12	9
heart attack/stroke % norm.	0.91	0.00	0.00	0.00	0.28
health stats mean	3.00	12.00	12.00	12.00	9.00
health stats % norm.	0.91	0.00	0.00	0.00	0.28
HEALTH MEAN	11.25	12.96	9.75	9.96	11.63
HEALTH SUM	103	107	74	77	96
HEALTH PERCENT NORMALIZATION	-0.89	-1.13	0.43	-0.37	-0.49

HEALTH

	#21	#22	issue (highest)	issue (lowest)	average
some sport/exercise a week (agree a lot) (%)	25.94	29.86	7.75	42.80	22.63
some sport/exercise a week rank	14	18			
some sport/exercise a week % norm.	-1.35	-1.85			
exercise regularly (agree a lot) (%)	14.71	27.82	1.84	29.11	17.72
exercise regularly rank	9	21			
exercise regularly % norm.	-6.00	-13.12			
30+ lbs overweight (%)	11.50	11.75	15.36	0.00	7.37
30+ lbs overweight rank	7	6			
30+ lbs overweight % norm.	0.75	0.76			
physical health mean	10.00	15.00			
physical health % norm.	-2.20	-4.74			
healthy/balanced diet (agree a lot) (%)	19.36	19.69	9.62	38.07	20.14
healthy/balanced diet rank	11	13			
healthy/balanced diet % norm.	-0.01	-0.05			
farmer's market (miles)	4.5	6.4	12.0	0.4	4.32
farmer's market rank	8	4			
farmer's market % norm.	0.38	0.53			
healthy eating mean	9.50	8.50			
healthy eating % norm.	0.18	0.24			
smokes cigarettes (%)	9.16	25.87	32.47	4.95	17.24
smokes cigarettes rank	19	3			
smokes cigarettes % norm.	0.28	0.80			
deaths from opioids (2016)	10 to 16	10 to 16			
population (2016)	139,887	139,887			
opiod deaths (per 100,000)	11.44	11.44	26.24	7.57	14.52
opiod deaths rank	9	9			
opiod deaths % norm.	0.44	0.44			
lifestyle mean	14.00	6.00			
lifestyle % norm.	0.36	0.62			
heart attack/stroke (%)	0.00	7.04	7.43	0.00	2.16
heart attack/stroke rank	12	2			
heart attack/stroke % norm.	0.00	0.95			
health stats mean	12.00	2.00			
health stats % norm.	0.00	0.95			
HEALTH MEAN	11.38	7.88	6.04	14.75	10.24
HEALTH SUM	89	76	45	123	84.45
HEALTH PERCENT NORMALIZATION	-0.41	-0.73	0.43	-1.13	-0.43

EDUCATION

	source	data category	geographic unit
college/masters/doctorate degree (%)	American Community Survey (2017)	attainment	census tract
college/masters/doctorate degree rank		attainment	census tract
college/masters/doctorate degree % norm.		attainment	census tract
bachelors degree (%)	American Community Survey (2017)	attainment	census tract
< high school degree (%)	American Community Survey (2017)	attainment	census tract
attainment mean		attainment	n/a
attainment % norm.		attainment	n/a
public school (grade)	Niche	quality	zip code
public school rank		quality	zip code
public school % norm.		quality	zip code
quality mean		quality	n/a
quality % norm.		quality	n/a
nearest k-12 school (miles)	City of Phoenix (2018)	teachers/schools/spending	point
nearest k-12 school rank		teachers/schools/spending	point
nearest k-12 school % norm.		teachers/schools/spending	point
nearest head start (miles)	City of Phoenix (2018)	teachers/schools/spending	point
nearest head start rank		teachers/schools/spending	point
nearest head start % norm.		teachers/schools/spending	point
teachers/schools/spending mean		teachers/schools/spending	n/a
teachers/schools/spending % norm.		teachers/schools/spending	n/a
EDUCATION MEAN			
EDUCATION SUM			
EDUCATION PERCENT NORMALIZATION			

EDUCATION

	#1	#2	#3	#4	#5
college/masters/doctorate degree (%)	40.62	23.83	8.17	8.05	10.19
college/masters/doctorate degree rank	20	17	8	7	9
college/masters/doctorate degree % norm.	-50.75	-28.95	-8.62	-8.45	-11.23
bachelors degree (%)	26.08	21.35	5.55	6.40	6.61
< high school degree (%)	5.13	20.33	38.97	46.80	6.61
attainment mean	20.00	17.00	8.00	7.00	9.00
attainment % norm.	-50.75	-28.95	-8.62	-8.45	-11.23
public school (grade)	a-	b	b+	c+	c+
public school rank	6	4	5	2	2
public school % norm.	-4.00	-2.00	-3.00	0.00	0.00
quality mean	6.00	4.00	5.00	2.00	2.00
quality % norm.	-4.00	-2.00	-3.00	0.00	0.00
nearest k-12 school (miles)	0.3	0.8	0.1	0.2	0.1
nearest k-12 school rank	5	1	7	6	7
nearest k-12 school % norm.	0.38	1.00	0.13	0.25	0.13
nearest head start (miles)	10.2	3.5	0.1	1.2	8.2
nearest head start rank	2	10	18	16	6
nearest head start % norm.	1.00	0.34	0.01	0.12	0.80
teachers/schools/spending mean	3.50	5.50	12.50	11.00	6.50
teachers/schools/spending % norm.	0.69	0.67	0.07	0.18	0.46
EDUCATION MEAN	9.83	8.83	8.50	6.67	5.83
EDUCATION SUM	33	32	38	31	24
EDUCATION PERCENT NORMALIZATION	-18.02	-10.09	-3.85	-2.76	-3.59

EDUCATION

	#6	#7	#8	#9	#10
college/masters/doctorate degree (%)	18.65	7.19	2.37	24.12	15.61
college/masters/doctorate degree rank	14	5	2	18	12
college/masters/doctorate degree % norm.	-22.22	-7.33	-1.08	-29.32	-18.27
bachelors degree (%)	11.95	3.67	1.43	17.45	13.98
< high school degree (%)	24.75	30.92	40.80	6.29	8.78
attainment mean	14.00	5.00	2.00	18.00	12.00
attainment % norm.	-22.22	-7.33	-1.08	-29.32	-18.27
public school (grade)	c	c+	c	a-	b
public school rank	1	2	1	6	4
public school % norm.	1.00	0.00	1.00	-4.00	-2.00
quality mean	1.00	2.00	1.00	6.00	4.00
quality % norm.	1.00	0.00	1.00	-4.00	-2.00
nearest k-12 school (miles)	0.1	0.4	0.1	0.4	0.3
nearest k-12 school rank	7	4	7	4	5
nearest k-12 school % norm.	0.13	0.50	0.13	0.50	0.38
nearest head start (miles)	6.7	8.7	6.7	12.3	9.0
nearest head start rank	7	5	7	1	4
nearest head start % norm.	0.66	0.85	0.66	1.21	0.88
teachers/schools/spending mean	7.00	4.50	7.00	2.50	4.50
teachers/schools/spending % norm.	0.39	0.68	0.39	0.85	0.63
EDUCATION MEAN	7.33	3.83	3.33	8.83	6.83
EDUCATION SUM	29	16	17	29	25
EDUCATION PERCENT NORMALIZATION	-6.94	-2.22	0.10	-10.82	-6.55

EDUCATION

	#11	#12	#13	#14	#15
college/masters/doctorate degree (%)	61.62	48.34	13.50	21.89	12.19
college/masters/doctorate degree rank	22	21	11	16	10
college/masters/doctorate degree % norm.	-78.03	-60.78	-15.53	-26.43	-13.84
bachelors degree (%)	44.21	29.62	10.00	16.18	10.77
< high school degree (%)	2.08	2.13	13.72	26.92	23.81
attainment mean	22.00	21.00	11.00	16.00	10.00
attainment % norm.	-78.03	-60.78	-15.53	-26.43	-13.84
public school (grade)	a-	a-	b	b+	c+
public school rank	6	6	4	5	2
public school % norm.	-4.00	-4.00	-2.00	-3.00	0.00
quality mean	6.00	6.00	4.00	5.00	2.00
quality % norm.	-4.00	-4.00	-2.00	-3.00	0.00
nearest k-12 school (miles)	0.4	0.4	0.4	0.2	0.3
nearest k-12 school rank	4	4	4	6	5
nearest k-12 school % norm.	0.50	0.50	0.50	0.25	0.38
nearest head start (miles)	9.8	8.2	6.0	2.8	5.5
nearest head start rank	3	6	8	12	9
nearest head start % norm.	0.96	0.80	0.59	0.27	0.54
teachers/schools/spending mean	3.50	5.00	6.00	9.00	7.00
teachers/schools/spending % norm.	0.73	0.65	0.54	0.26	0.46
EDUCATION MEAN	10.50	10.67	7.00	10.00	6.33
EDUCATION SUM	35	37	27	39	26
EDUCATION PERCENT NORMALIZATION	-27.10	-21.38	-5.66	-9.72	-4.46

EDUCATION

	#16	#17	#18	#19	#20
college/masters/doctorate degree (%)	3.09	18.75	0.77	27.26	7.35
college/masters/doctorate degree rank	3	15	1	19	6
college/masters/doctorate degree % norm.	-2.01	-22.35	1.00	-33.40	-7.55
bachelors degree (%)	1.75	11.18	0.77	16.10	4.35
< high school degree (%)	51.23	26.37	61.48	16.05	44.57
attainment mean	3.00	15.00	1.00	19.00	6.00
attainment % norm.	-2.01	-22.35	1.00	-33.40	-7.55
public school (grade)	c+	c+	c+	c+	b-
public school rank	2	2	2	2	3
public school % norm.	0.00	0.00	0.00	0.00	-1.00
quality mean	2.00	2.00	2.00	2.00	3.00
quality % norm.	0.00	0.00	0.00	0.00	-1.00
nearest k-12 school (miles)	0.6	0.2	0.2	0.1	0.6
nearest k-12 school rank	2	6	6	7	2
nearest k-12 school % norm.	0.75	0.25	0.25	0.13	0.75
nearest head start (miles)	2.8	2.6	0.8	1.6	1.2
nearest head start rank	12	13	17	14	16
nearest head start % norm.	0.27	0.25	0.08	0.16	0.12
teachers/schools/spending mean	7.00	9.50	11.50	10.50	9.00
teachers/schools/spending % norm.	0.51	0.25	0.16	0.14	0.43
EDUCATION MEAN	4.00	8.83	4.83	10.50	6.00
EDUCATION SUM	19	36	26	42	27
EDUCATION PERCENT NORMALIZATION	-0.50	-7.36	0.39	-11.09	-2.70

EDUCATION

	#21	#22	issue (highest)	issue (lowest)	average
college/masters/doctorate degree (%)	3.74	17.18	0.77	61.62	17.93
college/masters/doctorate degree rank	4	13			
college/masters/doctorate degree % norm.	-2.86	-20.32			
bachelors degree (%)	2.43	12.27			
< high school degree (%)	34.62	28.00			
attainment mean	4.00	13.00			
attainment % norm.	-2.86	-20.32			
public school (grade)	b-	b-	c	a-	b-
public school rank	3	3			
public school % norm.	-1.00	-1.00			
quality mean	3.00	3.00			
quality % norm.	-1.00	-1.00			
nearest k-12 school (miles)	0.5	0.5	0.8	0.1	0.33
nearest k-12 school rank	3	3			
nearest k-12 school % norm.	0.63	0.63			
nearest head start (miles)	1.5	3.4	12.3	0.1	5.13
nearest head start rank	15	11			
nearest head start % norm.	0.15	0.33			
teachers/schools/spending mean	9.00	7.00			
teachers/schools/spending % norm.	0.39	0.48			
EDUCATION MEAN	5.33	7.67	3.33	10.67	7.34
EDUCATION SUM	25	30	16	42	29.23
EDUCATION PERCENT NORMALIZATION	-1.16	-6.95	0.39	-27.10	-7.38

ENVIRONMENT

	source	data category	geographic unit
public transit to work (%)	American Community Survey (2017)	means of transportation	census tract
public transit to work rank		means of transportation	census tract
public transit to work % norm.		means of transportation	census tract
light rail stop (within .5 miles)	City of Phoenix (2018)	means of transportation	point
light rail stop rank		means of transportation	point
light rail stop % norm.		means of transportation	point
bike path (within .2 miles)	City of Phoenix (2018)	means of transportation	point
bike path rank		means of transportation	point
bike path % norm.		means of transportation	point
bus stop (within .2 miles)	City of Phoenix (2018)	means of transportation	point
bus stop rank		means of transportation	point
bus stop % norm.		means of transportation	point
walk score	Walk Score	means of transportation	point
walk score rank		means of transportation	point
walk score % norm.		means of transportation	point
transit score	Walk Score	means of transportation	point
transit score rank		means of transportation	point
bike score	Walk Score	means of transportation	point
bike rank		means of transportation	point
bike % norm.		means of transportation	point
arterial (within .5 miles)	Maricopa County (2018)	means of transportation	point
highway (within 2 miles)	Maricopa County (2018)	means of transportation	point
highway rank		means of transportation	point
highway % norm.		means of transportation	point
means of transportation mean		means of transportation	n/a
means of transportation % norm.		means of transportation	n/a
ozone (kg/yr)	EPA EnviroAtlas (2018)	air pollution	census block group
ozone rank		air pollution	census block group
ozone % norm.		air pollution	census block group
particulate matter (PM 2.5) (kg/yr)	EPA EnviroAtlas (2018)	air pollution	census block group
particulate matter (PM 2.5) rank		air pollution	census block group
particulate matter (PM 2.5) % norm.		air pollution	census block group
particulate matter (PM 10) (kg/yr)	EPA EnviroAtlas (2018)	air pollution	census block group
particulate matter (PM 10) rank		air pollution	census block group
particulate matter (PM 10) % norm.		air pollution	census block group
air pollution mean		air pollution	n/a
air pollution % norm.		air pollution	n/a
daily domestic water use (gal/day)	EPA EnviroAtlas (2018)	water	census block group
daily domestic water use rank		water	census block group
daily domestic water use % norm.		water	census block group
water mean		water	n/a
water % norm.		water	n/a
total carbon sequestered (kg/yr)	EPA EnviroAtlas (2018)	climate change	census block group
total carbon sequestered rank		climate change	census block group
total carbon sequestered % norm.		climate change	census block group
climate change mean		climate change	census block group
climate change % norm.		climate change	census block group
ENVIRONMENT MEAN			
ENVIRONMENT SUM			
ENVIRONMENT PERCENT NORMALIZATION			

ENVIRONMENT

	#1	#2	#3	#4	#5
public transit to work (%)	1.94	2.09	1.21	6.08	0.00
public transit to work rank	9	10	7	15	1
public transit to work % norm.	-0.94	-1.09	-0.21	-5.08	1.00
light rail stop (within .5 miles)					
light rail stop rank	1	1	1	1	1
light rail stop % norm.	1.00	1.00	1.00	1.00	1.00
bike path (within .2 miles)	x	x	x	x	x
bike path rank	2	2	2	2	2
bike path % norm.	0.00	0.00	0.00	0.00	0.00
bus stop (within .2 miles)	x	x	x	x	
bus stop rank	2	2	2	2	1
bus stop % norm.	0.00	0.00	0.00	0.00	1.00
walk score	59	24	33	52	26
walk score rank	16	2	7	13	3
walk score % norm.	-0.68	0.91	0.50	-0.36	0.82
transit score	38	40	42	44	n/a
transit score rank	6	7	9	11	1
bike score	70	61	47	58	46
bike rank	13	9	2	8	1
bike % norm.	0.48	0.67	0.98	0.74	1.00
arterial (within .5 miles)	x	x	x	x	x
highway (within 2 miles)	x	x			x
highway rank	2	2	1	1	2
highway % norm.	0.00	0.00	1.00	1.00	0.00
means of transportation mean	6.38	4.38	3.88	6.63	1.50
means of transportation % norm.	-0.02	0.21	0.47	-0.39	0.69
ozone (kg/yr)	631.91	635.73	267.27	229.76	604.95
ozone rank	4	3	11	15	5
ozone % norm.	0.62	0.63	0.26	0.23	0.60
particulate matter (PM 2.5) (kg/yr)	15.28	16.91	6.01	5.19	12.89
particulate matter (PM 2.5) rank	4	2	13	16	5
particulate matter (PM 2.5) % norm.	0.67	0.74	0.26	0.23	0.57
particulate matter (PM 10) (kg/yr)	896.72	629.19	326.10	280.07	1013.14
particulate matter (PM 10) rank	3	4	7	12	1
particulate matter (PM 10) % norm.	0.89	0.62	0.32	0.28	1.00
air pollution mean	3.67	3.00	10.33	14.33	3.67
air pollution % norm.	0.73	0.66	0.28	0.24	0.72
daily domestic water use (gal/day)	522,000	324,000	513,000	529,000	633,000
daily domestic water use rank	3	16	4	2	1
daily domestic water use % norm.	0.82	0.51	0.81	0.84	1.00
water mean	3.00	16.00	4.00	2.00	1.00
water % norm.	0.82	0.51	0.81	0.84	1.00
total carbon sequestered (kg/yr)	51,755.51	52,069.51	19,106.09	16,426.31	44,047.51
total carbon sequestered rank	19	20	11	7	18
total carbon sequestered % norm.	-7.03	-7.09	-1.33	-0.87	-5.69
climate change mean	19.00	20.00	11.00	7.00	18.00
climate change % norm.	-7.03	-7.09	-1.33	-0.87	-5.69
ENVIRONMENT MEAN	8.01	10.84	7.30	7.49	6.04
ENVIRONMENT SUM	84	80	77	105	42
ENVIRONMENT PERCENT NORMALIZATION	-1.37	-1.42	0.06	-0.04	-0.82

ENVIRONMENT

	#6	#7	#8	#9	#10
public transit to work (%)	0.00	2.29	2.42	1.07	0.98
public transit to work rank	1	11	12	6	5
public transit to work % norm.	1.00	-1.29	-1.42	-0.07	0.02
light rail stop (within .5 miles)					
light rail stop rank	1	1	1	1	1
light rail stop % norm.	1.00	1.00	1.00	1.00	1.00
bike path (within .2 miles)	x	x	x	x	x
bike path rank	2	2	2	2	2
bike path % norm.	0.00	0.00	0.00	0.00	0.00
bus stop (within .2 miles)	x	x	x		x
bus stop rank	2	2		1	2
bus stop % norm.	0.00	0.00	0.00	1.00	0.00
walk score	59	32	34	29	29
walk score rank	16	6	8	5	5
walk score % norm.	-0.68	0.55	0.45	0.68	0.68
transit score	47	37	41	32	37
transit score rank	12	5	8	2	5
bike score	51	55	65	51	52
bike rank	3	6	12	3	4
bike % norm.	0.89	0.80	0.59	0.89	0.87
arterial (within .5 miles)	x	x	x	x	x
highway (within 2 miles)	x	x		x	x
highway rank	2	2	1	2	2
highway % norm.	0.00	0.00	1.00	0.00	0.00
means of transportation mean	4.88	4.38	5.75	2.75	3.25
means of transportation % norm.	0.32	0.15	0.23	0.50	0.37
ozone (kg/yr)	235.30	227.76	240.88	361.33	524.09
ozone rank	14	16	13	7	6
ozone % norm.	0.23	0.22	0.24	0.36	0.52
particulate matter (PM 2.5) (kg/yr)	5.27	6.59	5.61	10.19	11.88
particulate matter (PM 2.5) rank	15	11	14	7	6
particulate matter (PM 2.5) % norm.	0.23	0.29	0.25	0.45	0.52
particulate matter (PM 10) (kg/yr)	233.51	289.75	237.04	320.38	364.86
particulate matter (PM 10) rank	14	10	13	8	6
particulate matter (PM 10) % norm.	0.23	0.29	0.23	0.32	0.36
air pollution mean	14.33	12.33	13.33	7.33	6.00
air pollution % norm.	0.23	0.27	0.24	0.37	0.47
daily domestic water use (gal/day)	385,000	417,000	431,000	411,000	392,000
daily domestic water use rank	12	8	7	9	11
daily domestic water use % norm.	0.61	0.66	0.68	0.65	0.62
water mean	12.00	8.00	7.00	9.00	11.00
water % norm.	0.61	0.66	0.68	0.65	0.62
total carbon sequestered (kg/yr)	17,133.60	21,217.34	17,543.53	33,662.92	38,641.58
total carbon sequestered rank	8	12	9	16	17
total carbon sequestered % norm.	-0.99	-1.70	-1.06	-3.87	-4.74
climate change mean	8.00	12.00	9.00	16.00	17.00
climate change % norm.	-0.99	-1.70	-1.06	-3.87	-4.74
ENVIRONMENT MEAN	9.80	9.18	8.77	8.77	9.31
ENVIRONMENT SUM	102	92	102	69	72
ENVIRONMENT PERCENT NORMALIZATION	0.04	-0.16	0.02	-0.59	-0.82

ENVIRONMENT

	#11	#12	#13	#14	#15
public transit to work (%)	1.44	0.46	0.49	11.39	6.79
public transit to work rank	8	3	4	19	16
public transit to work % norm.	-0.44	0.54	0.51	-10.39	-5.79
light rail stop (within .5 miles)				x	
light rail stop rank	1	1	1	2	1
light rail stop % norm.	1.00	1.00	1.00	0.00	1.00
bike path (within .2 miles)	x	x	x	x	x
bike path rank	2	2	2	2	2
bike path % norm.	0.00	0.00	0.00	0.00	0.00
bus stop (within .2 miles)	x	x	x	x	x
bus stop rank	2	2	2	2	2
bus stop % norm.	0.00	0.00	0.00	0.00	0.00
walk score	63	49	44	27	22
walk score rank	17	12	10	4	1
walk score % norm.	-0.86	-0.23	0.00	0.77	1.00
transit score	33	34	40	37	41
transit score rank	3	4	7	5	8
bike score	56	61	61	53	52
bike rank	7	9	9	5	4
bike % norm.	0.78	0.67	0.67	0.85	0.87
arterial (within .5 miles)	x	x	x	x	x
highway (within 2 miles)	x		x	x	x
highway rank	2	1	2	2	2
highway % norm.	0.00	1.00	0.00	0.00	0.00
means of transportation mean	5.25	4.25	4.63	5.13	4.50
means of transportation % norm.	0.07	0.43	0.31	-1.25	-0.42
ozone (kg/yr)	711.55	1014.44	88.23	119.55	83.67
ozone rank	2	1	20	19	21
ozone % norm.	0.70	1.00	0.09	0.12	0.08
particulate matter (PM 2.5) (kg/yr)	15.32	22.70	2.12	3.00	2.03
particulate matter (PM 2.5) rank	3	1	20	19	21
particulate matter (PM 2.5) % norm.	0.67	1.00	0.09	0.13	0.09
particulate matter (PM 10) (kg/yr)	503.16	897.26	59.33	77.73	52.80
particulate matter (PM 10) rank	5	2	20	19	21
particulate matter (PM 10) % norm.	0.50	0.89	0.06	0.08	0.05
air pollution mean	3.33	1.33	20.00	19.00	21.00
air pollution % norm.	0.62	0.96	0.08	0.11	0.07
daily domestic water use (gal/day)	321,000	333,000	202,000	230,000	278,000
daily domestic water use rank	17	15	21	20	18
daily domestic water use % norm.	0.51	0.53	0.32	0.36	0.44
water mean	17.00	15.00	21.00	20.00	18.00
water % norm.	0.51	0.53	0.32	0.36	0.44
total carbon sequestered (kg/yr)	52,467.76	71,881.12	6,504.75	8,813.18	5,997.82
total carbon sequestered rank	21	22	3	4	2
total carbon sequestered % norm.	-7.16	-10.54	0.86	0.46	0.95
climate change mean	21.00	22.00	3.00	4.00	2.00
climate change % norm.	-7.16	-10.54	0.86	0.46	0.95
ENVIRONMENT MEAN	11.65	10.65	12.16	12.03	11.38
ENVIRONMENT SUM	90	75	121	122	119
ENVIRONMENT PERCENT NORMALIZATION	-1.49	-2.16	0.39	-0.08	0.26

ENVIRONMENT

	#16	#17	#18	#19	#20
public transit to work (%)	9.33	16.70	10.49	3.33	13.65
public transit to work rank	17	21	18	14	20
public transit to work % norm.	-8.33	-15.70	-9.49	-2.33	-12.65
light rail stop (within .5 miles)				x	
light rail stop rank	1	1	1	2	1
light rail stop % norm.	1.00	1.00	1.00	0.00	1.00
bike path (within .2 miles)	x	x	x	x	
bike path rank	2	2	2	2	1
bike path % norm.	0.00	0.00	0.00	0.00	1.00
bus stop (within .2 miles)	x	x	x	x	x
bus stop rank	2	2	2	2	2
bus stop % norm.	0.00	0.00	0.00	0.00	0.00
walk score	63	41	58	72	57
walk score rank	17	9	15	19	14
walk score % norm.	-0.86	0.14	-0.64	-1.27	-0.59
transit score	43	44	41	63	48
transit score rank	10	11	8	14	13
bike score	81	64	62	76	73
bike rank	16	11	10	15	14
bike % norm.	0.24	0.61	0.65	0.35	0.41
arterial (within .5 miles)	x	x	x	x	x
highway (within 2 miles)	x	x	x	x	x
highway rank	2	2	2	2	2
highway % norm.	0.00	0.00	0.00	0.00	0.00
means of transportation mean	8.38	7.38	7.25	8.75	8.38
means of transportation % norm.	-1.14	-1.99	-1.21	-0.47	-1.55
ozone (kg/yr)	79.94	318.48	145.07	145.88	311.73
ozone rank	22	9	18	17	10
ozone % norm.	0.08	0.31	0.14	0.14	0.31
particulate matter (PM 2.5) (kg/yr)	1.95	7.76	3.55	3.74	8.01
particulate matter (PM 2.5) rank	22	10	18	17	9
particulate matter (PM 2.5) % norm.	0.09	0.34	0.16	0.16	0.35
particulate matter (PM 10) (kg/yr)	49.91	198.53	163.56	131.81	281.43
particulate matter (PM 10) rank	22	16	17	18	11
particulate matter (PM 10) % norm.	0.05	0.20	0.16	0.13	0.28
air pollution mean	22.00	11.67	17.67	17.33	10.00
air pollution % norm.	0.07	0.28	0.15	0.15	0.31
daily domestic water use (gal/day)	265,000	437,000	369,000	407,000	371,000
daily domestic water use rank	19	6	14	10	13
daily domestic water use % norm.	0.42	0.69	0.58	0.64	0.59
water mean	19.00	6.00	14.00	10.00	13.00
water % norm.	0.42	0.69	0.58	0.64	0.59
total carbon sequestered (kg/yr)	5,730.91	22,832.65	10,564.42	11,045.51	23,602.95
total carbon sequestered rank	1	13	5	6	14
total carbon sequestered % norm.	1.00	-1.98	0.16	0.07	-2.12
climate change mean	1.00	13.00	5.00	6.00	14.00
climate change % norm.	1.00	-1.98	0.16	0.07	-2.12
ENVIRONMENT MEAN	12.59	9.51	10.98	10.52	11.34
ENVIRONMENT SUM	153	113	130	138	124
ENVIRONMENT PERCENT NORMALIZATION	0.09	-0.75	-0.08	0.10	-0.69

ENVIRONMENT

	#21	#22	issue (highest)	issue (lowest)	average
public transit to work (%)	2.97	0.43	0.00	16.70	4.34
public transit to work rank	13	2			
public transit to work % norm.	-1.97	0.57			
light rail stop (within .5 miles)				x	
light rail stop rank	1	1			
light rail stop % norm.	1.00	1.00			
bike path (within .2 miles)	x			x	x
bike path rank	2	1			
bike path % norm.	0.00	1.00			
bus stop (within .2 miles)				x	x
bus stop rank	1	1			
bus stop % norm.	1.00	1.00			
walk score	70	46	22	72	44.95
walk score rank	18	11			
walk score % norm.	-1.18	-0.09			
transit score	40	43	n/a	63	41.19
transit score rank	7	10			
bike score	61	62	46	81	59.91
bike rank	9	10			
bike % norm.	0.67	0.65			
arterial (within .5 miles)	x	x			
highway (within 2 miles)	x			x	x
highway rank	2	1			
highway % norm.	0.00	1.00			
means of transportation mean	6.63	4.63			
means of transportation % norm.	-0.07	0.73			
ozone (kg/yr)	330.01	242.00	1014.44	79.94	343.16
ozone rank	8	12			
ozone % norm.	0.33	0.24			
particulate matter (PM 2.5) (kg/yr)	8.49	6.27	22.70	1.95	8.22
particulate matter (PM 2.5) rank	8	12			
particulate matter (PM 2.5) % norm.	0.37	0.28			
particulate matter (PM 10) (kg/yr)	298.31	218.67	1013.14	49.91	341.97
particulate matter (PM 10) rank	9	15			
particulate matter (PM 10) % norm.	0.29	0.22			
air pollution mean	8.33	13.00			
air pollution % norm.	0.33	0.24			
daily domestic water use (gal/day)	472,000	472,000	633,000	202,000	396,090.91
daily domestic water use rank	5	5			
daily domestic water use % norm.	0.75	0.75			
water mean	5.00	5.00			
water % norm.	0.75	0.75			
total carbon sequestered (kg/yr)	24,987.09	18,324.10	5,730.91	71,881.12	26,107.10
total carbon sequestered rank	15	10			
total carbon sequestered % norm.	-2.36	-1.20			
climate change mean	15.00	10.00			
climate change % norm.	-2.36	-1.20			
ENVIRONMENT MEAN	8.74	8.16	6.04	12.59	9.78
ENVIRONMENT SUM	98	91	42	153	99.95
ENVIRONMENT PERCENT NORMALIZATION	-0.34	0.13	0.39	-2.16	-0.44

ECONOMY

	source	data category	geographic unit
unemployed (%)	American Community Survey (2017)	employment + jobs	census tract
unemployed rank		employment + jobs	census tract
unemployed % norm.		employment + jobs	census tract
jobs (grade)	Niche	employment + jobs	zip code
jobs rank		employment + jobs	zip code
jobs % norm.		employment + jobs	zip code
nearest career center (miles)	City of Phoenix (2018)	employment + jobs	point
nearest career center rank		employment + jobs	point
nearest career center % norm.		employment + jobs	point
employment + jobs mean		employment + jobs	n/a
employment + jobs % norm.		employment + jobs	n/a
poverty (%)	American Community Survey (2017)	personal/household economy	census tract
poverty rank		personal/household economy	census tract
poverty % norm.		personal/household economy	census tract
average household income (\$)	American Community Survey (2017)	personal/household economy	census tract
average household income rank		personal/household economy	census tract
average household income % norm.		personal/household economy	census tract
median household income (\$)	American Community Survey (2017)	personal/household economy	census tract
personal/household economy mean		personal/household economy	n/a
personal/household economy % norm.		personal/household economy	n/a
median housing value (\$)	American Community Survey (2017)	cost of living	census tract
median housing value rank		cost of living	census tract
median housing value % norm.		cost of living	census tract
median rent (\$)	American Community Survey (2017)	cost of living	census tract
median rent rank		cost of living	census tract
median rent % norm.		cost of living	census tract
cost of living (grade)	Niche	cost of living	zip code
cost of living rank		cost of living	zip code
cost of living % norm.		cost of living	zip code
low income/low access (1 mile)	USDA (2015)	cost of living	census tract
low income/low access (.5 mile)	USDA (2015)	cost of living	census tract
low income/low access w/o vehicle access	USDA (2015)	cost of living	census tract
food desert	USDA (2015)	cost of living	census tract
food desert rank		cost of living	census tract
food desert % norm.		cost of living	census tract
cost of living mean		cost of living	n/a
cost of living % norm.		cost of living	n/a
ECONOMY MEAN			
ECONOMY SUM			
ECONOMY PERCENT NORMALIZATION			

ECONOMY

	#1	#2	#3	#4	#5
unemployed (%)	4.329	4.333	4.259	4.266	4.334
unemployed rank	7	6	21	20	5
unemployed % norm.	0.99	0.99	0.98	0.98	0.99
jobs (grade)	b+	c+	c+	b-	b-
jobs rank	5	3	3	4	4
jobs % norm.	-3.00	-1.00	-1.00	-2.00	-2.00
nearest career center (miles)	8.3	2.5	0.7	0.7	2.8
nearest career center rank	4	9	16	16	7
nearest career center % norm.	0.66	0.20	0.06	0.06	0.22
employment + jobs mean	5.33	6.00	13.33	13.33	5.33
employment + jobs % norm.	-0.45	0.06	0.01	-0.32	-0.26
poverty (%)	12.10	25.94	32.70	31.78	16.33
poverty rank	20	13	9	10	17
poverty % norm.	0.18	0.38	0.49	0.47	0.24
average household income (\$)	77,411	72,500	56,583	55,260	65,423
average household income rank	19	18	11	10	15
average household income % norm.	-1.74	-1.50	-0.73	-0.67	-1.16
median household income (\$)	69,406	53,248	44,757	40,556	58,403
personal/household economy mean	19.50	15.50	10.00	10.00	16.00
personal/household economy % norm.	-0.78	-0.56	-0.12	-0.10	-0.46
median housing value (\$)	234,694	96,818	130,208	96,966	113,147
median housing value rank	19	7	17	8	12
median housing value % norm.	-1.31	0.63	0.16	0.63	0.40
median rent (\$)	851	652	652	687	1,088
median rent rank	17	8	8	11	20
median rent % norm.	-0.54	0.05	0.05	-0.05	-1.25
cost of living (grade)	c+	b-	b-	b-	b-
cost of living rank	3	4	4	4	4
cost of living % norm.	-1.00	-2.00	-2.00	-2.00	-2.00
low income/low access (1 mile)				x	
low income/low access (.5 mile)			x	x	x
low income/low access w/o vehicle access				x	
food desert			x	x	x
food desert rank	2	2	1	1	1
food desert % norm.	0.00	0.00	1.00	1.00	1.00
cost of living mean	10.25	5.25	7.50	6.00	9.25
cost of living % norm.	-0.71	-0.33	-0.20	-0.10	-0.46
ECONOMY MEAN	11.69	8.92	10.28	9.78	10.19
ECONOMY SUM	96	70	90	84	85
ECONOMY PERCENT NORMALIZATION	-0.65	-0.27	-0.10	-0.17	-0.39

ECONOMY

	#6	#7	#8	#9	#10
unemployed (%)	4.322	4.318	4.307	4.355	4.288
unemployed rank	11	13	15	4	17
unemployed % norm.	0.99	0.99	0.99	1.00	0.98
jobs (grade)	c	c+	c	b+	b-
jobs rank	2	3	2	5	4
jobs % norm.	0.00	-1.00	0.00	-3.00	-2.00
nearest career center (miles)	2.3	2.8	0.7	10.4	9.8
nearest career center rank	11	7	16	2	3
nearest career center % norm.	0.18	0.22	0.06	0.83	0.78
employment + jobs mean	8.00	7.67	11.00	3.67	8.00
employment + jobs % norm.	0.39	0.07	0.35	-0.39	-0.08
poverty (%)	45.53	16.11	40.50	6.93	17.88
poverty rank	4	18	7	21	16
poverty % norm.	0.68	0.24	0.60	0.10	0.27
average household income (\$)	42,832	68,340	47,041	100,094	61,685
average household income rank	4	16	6	20	13
average household income % norm.	-0.07	-1.30	-0.27	-2.83	-0.98
median household income (\$)	41,118	55,321	36,512	81,071	53,269
personal/household economy mean	4.00	17.00	6.50	20.50	14.50
personal/household economy % norm.	0.30	-0.53	0.17	-1.36	-0.36
median housing value (\$)	103,767	89,028	70,843	242,529	112,343
median housing value rank	9	4	1	20	10
median housing value % norm.	0.54	0.74	1.00	-1.42	0.41
median rent (\$)	777	724	668	813	801
median rent rank	14	13	9	16	15
median rent % norm.	-0.32	-0.16	0.01	-0.43	-0.39
cost of living (grade)	b-	b-	b-	c+	b-
cost of living rank	4	4	4	3	4
cost of living % norm.	-2.00	-2.00	-2.00	-1.00	-2.00
low income/low access (1 mile)					
low income/low access (.5 mile)	x	x	x		x
low income/low access w/o vehicle access	x				
food desert	x	x	x		x
food desert rank	1	1	1	2	1
food desert % norm.	1.00	1.00	1.00	0.00	1.00
cost of living mean	7.00	5.50	3.75	10.25	7.50
cost of living % norm.	-0.20	-0.10	0.00	-0.71	-0.24
ECONOMY MEAN	6.33	10.06	7.08	11.47	10.00
ECONOMY SUM	60	79	61	93	83
ECONOMY PERCENT NORMALIZATION	0.17	-0.19	0.17	-0.82	-0.23

ECONOMY

	#11	#12	#13	#14	#15
unemployed (%)	4.277	4.284	4.359	4.294	4.367
unemployed rank	19	18	3	16	1
unemployed % norm.	0.98	0.98	1.00	0.98	1.00
jobs (grade)	b+	a-	c+	c+	c
jobs rank	5	6	3	3	2
jobs % norm.	-3.00	-4.00	-1.00	-1.00	0.00
nearest career center (miles)	2.4	12.6	4.2	1.6	3.4
nearest career center rank	10	1	5	14	6
nearest career center % norm.	0.19	1.00	0.33	0.13	0.27
employment + jobs mean	11.33	8.33	3.67	11.00	3.00
employment + jobs % norm.	-0.61	-0.67	0.11	0.04	0.42
poverty (%)	5.49	14.86	21.53	36.10	28.76
poverty rank	22	19	14	8	12
poverty % norm.	0.08	0.22	0.32	0.54	0.43
average household income (\$)	163,369	158,047	63,583	43,352	61,565
average household income rank	22	21	14	5	12
average household income % norm.	-5.88	-5.63	-1.07	-0.09	-0.97
median household income (\$)	128,656	121,241	58,921	24,634	55,339
personal/household economy mean	22.00	20.00	14.00	6.50	12.00
personal/household economy % norm.	-2.90	-2.70	-0.37	0.22	-0.27
median housing value (\$)	460,364	583,686	117,215	84,615	113,030
median housing value rank	21	22	14	3	11
median housing value % norm.	-4.50	-6.24	0.35	0.81	0.40
median rent (\$)	1,069	1,104	635	596	859
median rent rank	19	21	7	4	18
median rent % norm.	-1.19	-1.30	0.10	0.22	-0.56
cost of living (grade)	c	c-	b-	c+	b
cost of living rank	2	1	4	3	5
cost of living % norm.	0.00	1.00	-2.00	-1.00	-3.00
low income/low access (1 mile)					
low income/low access (.5 mile)					x
low income/low access w/o vehicle access					
food desert					x
food desert rank	2	2	2	2	1
food desert % norm.	0.00	0.00	0.00	0.00	1.00
cost of living mean	11.00	11.50	6.75	3.00	8.75
cost of living % norm.	-1.42	-1.63	-0.39	0.01	-0.54
ECONOMY MEAN	14.78	13.28	8.14	6.83	7.92
ECONOMY SUM	122	111	66	58	68
ECONOMY PERCENT NORMALIZATION	-1.64	-1.67	-0.22	0.09	-0.13

ECONOMY

	#16	#17	#18	#19	#20
unemployed (%)	4.321	4.316	4.324	4.334	4.326
unemployed rank	12	14	9	5	8
unemployed % norm.	0.99	0.99	0.99	0.99	0.99
jobs (grade)	c	c	c+	c+	c-
jobs rank	2	2	3	3	1
jobs % norm.	0.00	0.00	-1.00	-1.00	1.00
nearest career center (miles)	2.5	2.7	2.7	0.5	1.3
nearest career center rank	9	8	8	17	15
nearest career center % norm.	0.20	0.21	0.21	0.04	0.10
employment + jobs mean	7.67	8.00	6.67	8.33	8.00
employment + jobs % norm.	0.40	0.40	0.07	0.01	0.70
poverty (%)	61.62	40.79	48.87	31.03	67.40
poverty rank	2	6	3	11	1
poverty % norm.	0.91	0.61	0.73	0.46	1.00
average household income (\$)	33,321	70,860	38,208	49,353	20,724
average household income rank	2	17	3	8	1
average household income % norm.	0.39	-1.42	0.16	-0.38	1.00
median household income (\$)	22,325	43,182	33,279	32,215	14,274
personal/household economy mean	2.00	11.50	3.00	9.50	1.00
personal/household economy % norm.	0.65	-0.41	0.44	0.04	1.00
median housing value (\$)	122,000	121,667	76,607	92,273	89,412
median housing value rank	16	15	2	6	5
median housing value % norm.	0.28	0.28	0.92	0.70	0.74
median rent (\$)	573	625	719	505	335
median rent rank	3	5	12	2	1
median rent % norm.	0.29	0.13	-0.15	0.49	1.00
cost of living (grade)	c+	c+	b	c	c+
cost of living rank	3	3	5	2	3
cost of living % norm.	-1.00	-1.00	-3.00	0.00	-1.00
low income/low access (1 mile)		x	x	x	
low income/low access (.5 mile)	x	x	x	x	
low income/low access w/o vehicle access	x	x		x	
food desert	x	x	x	x	
food desert rank	1	1	1	1	2
food desert % norm.	1.00	1.00	1.00	1.00	0.00
cost of living mean	5.75	6.00	5.00	2.75	2.75
cost of living % norm.	0.14	0.10	-0.31	0.55	0.18
ECONOMY MEAN	5.14	8.50	4.89	6.86	3.92
ECONOMY SUM	50	71	46	55	37
ECONOMY PERCENT NORMALIZATION	0.40	0.03	0.07	0.20	0.63

ECONOMY

	#21	#22	issue (highest)	issue (lowest)	average
unemployed (%)	4.363	4.323	4.367	4.259	4.318
unemployed rank	2	10			
unemployed % norm.	1.00	0.99			
jobs (grade)	c+	b-	c-	a-	c+
jobs rank	3	4			
jobs % norm.	-1.00	-2.00			
nearest career center (miles)	1.7	2.1	12.6	0.5	3.6
nearest career center rank	13	12			
nearest career center % norm.	0.13	0.17			
employment + jobs mean	6.00	8.67			
employment + jobs % norm.	0.04	-0.28			
poverty (%)	18.13	45.27	67.40	5.49	30.26
poverty rank	15	5			
poverty % norm.	0.27	0.67			
average household income (\$)	54,342	47,376	163,369	20,724	65,966.77
average household income rank	9	7			
average household income % norm.	-0.62	-0.29			
median household income (\$)	42,723	34,837			
personal/household economy mean	12.00	6.00			
personal/household economy % norm.	-0.18	0.19			
median housing value (\$)	115,466	165,820	70,843	583,686	156,022.64
median housing value rank	13	18			
median housing value % norm.	0.37	-0.34			
median rent (\$)	678	626	335	1,104	728.95
median rent rank	10	6			
median rent % norm.	-0.02	0.13			
cost of living (grade)	b-	c	c-	b	c+
cost of living rank	4	2			
cost of living % norm.	-2.00	0.00			
low income/low access (1 mile)					
low income/low access (.5 mile)		x			
low income/low access w/o vehicle access		x			
food desert		x	x		x
food desert rank	2	1			
food desert % norm.	0.00	1.00			
cost of living mean	7.25	6.75			
cost of living % norm.	-0.41	0.20			
ECONOMY MEAN	8.42	7.14	3.92	14.78	8.71
ECONOMY SUM	71	65	37	122	73.68
ECONOMY PERCENT NORMALIZATION	-0.18	0.04	0.63	-1.67	-0.22

EXISTING CONDITIONS

	source	data category	geographic unit
population	American Community Survey (2017)	demographics	census tract
population rank		demographics	census tract
population % norm.		demographics	census tract
population growth (2010-2017) (%)	American Community Survey (2017)	demographics	census tract
population growth rank		demographics	census tract
population growth % norm.		demographics	census tract
population forecast (2017-2022) (%)	American Community Survey (2017)	demographics	census tract
population forecast rank		demographics	census tract
population forecast % norm.		demographics	census tract
demographics mean		demographics	census tract
demographics % norm.		demographics	census tract
population density (per sq. mile)	American Community Survey (2017)	density	census tract
population density rank		density	census tract
population density % norm.		density	census tract
density mean		density	census tract
density % norm.		density	census tract
housing built 2010 or later (%)	American Community Survey (2017)	housing	census tract
vacant units (%)	American Community Survey (2017)	housing	census tract
vacant units rank		housing	census tract
vacant units % norm.		housing	census tract
housing (grade)	Niche	housing	zip code
housing rank		housing	zip code
housing rank		housing	zip code
housing mean		housing	n/a
housing % norm.		housing	n/a
TFPL optimal point (within 1 mile)	The Trust for Public Land ParkServe (2017)	parks + recreation	point
TFPL optimal point rank		parks + recreation	point
TFPL optimal point % norm.		parks + recreation	point
TFPL park need	The Trust for Public Land ParkServe (2017)	parks + recreation	designated region
TFPL park need rank		parks + recreation	designated region
TFPL park need % norm.		parks + recreation	designated region
residential pop within 500m of park (%)	EPA EnviroAtlas (2018)	parks + recreation	census block group
residential pop within 500m of park rank		parks + recreation	census block group
residential pop within 500m of park % norm.		parks + recreation	census block group
nearest park (miles)	City of Phoenix (2018)	parks + recreation	point
nearest park rank		parks + recreation	point
nearest park % norm.		parks + recreation	point
trail (within 1 mile)	City of Phoenix (2018)	parks + recreation	point
trail rank		parks + recreation	point
trail % norm.		parks + recreation	point
nearest recreation center (miles)	City of Phoenix (2018)	parks + recreation	point
nearest recreation center rank		parks + recreation	point
nearest recreation center % norm.		parks + recreation	point
nearest swimming pool (miles)	City of Phoenix (2018)	parks + recreation	point
nearest swimming pool rank		parks + recreation	point
nearest swimming pool % norm.		parks + recreation	point
nearest dog park (miles)	City of Phoenix (2018)	parks + recreation	point
nearest dog park rank		parks + recreation	point
nearest dog park % norm.		parks + recreation	point
green space per capita (m2/person)	EPA EnviroAtlas (2018)	parks + recreation	census block group
green space per capita rank		parks + recreation	census block group
green space per capita % norm.		parks + recreation	census block group
green space (%)	EPA EnviroAtlas (2018)	parks + recreation	census block group
green space rank		parks + recreation	census block group
green space % norm.		parks + recreation	census block group
tree cover (%)	EPA EnviroAtlas (2018)	parks + recreation	census block group
tree cover rank		parks + recreation	census block group
tree cover % norm.		parks + recreation	census block group
tree cover per capita (m2/person)	EPA EnviroAtlas (2018)	parks + recreation	census block group
tree cover rank		parks + recreation	census block group
tree cover % norm.		parks + recreation	census block group
impervious area per capita (m2/person)	EPA EnviroAtlas (2018)	parks + recreation	census block group
impervious area per capita rank		parks + recreation	census block group
impervious area per capita % norm.		parks + recreation	census block group
residential pop with minimal views of trees (%)	EPA EnviroAtlas (2018)	parks + recreation	census block group
residential pop with minimal views of trees rank		parks + recreation	census block group
residential pop with minimal views of trees % norm.		parks + recreation	census block group

EXISTING CONDITIONS

	#1	#2	#3	#4	#5
population	2,941	4,090	6,242	7,216	5,749
population rank	21	18	8	4	12
population % norm.	0.37	0.52	0.79	0.91	0.73
population growth (2010-2017) (%)	13.16	12.42	11.38	12.28	12.20
population growth rank	2	6	16	9	11
population growth % norm.	0.85	0.80	0.73	0.79	0.78
population forecast (2017-2022) (%)	4.32	4.45	4.44	4.57	4.45
population forecast rank	15	10	11	3	10
population forecast % norm.	0.93	0.95	0.95	0.98	0.95
demographics mean	12.67	11.33	11.67	5.33	11.00
demographics % norm.	0.71	0.76	0.82	0.89	0.82
population density (per sq. mile)	7,665.7	4,100.9	6,158.2	7,221.4	5,930.4
population density rank	9	19	14	12	15
population density % norm.	0.46	0.25	0.37	0.43	0.36
density mean	9.00	19.00	14.00	12.00	15.00
density % norm.	0.46	0.25	0.37	0.43	0.36
housing built 2010 or later (%)	13.77	14.68	13.24	14.99	12.64
vacant units (%)	6.30	6.69	9.91	9.76	10.90
vacant units rank	18	17	13	14	11
vacant units % norm.	0.28	0.30	0.45	0.44	0.49
housing (grade)	b+	b-	b	b-	b-
housing rank	7	5	6	5	5
housing rank	-5.00	-3.00	-4.00	-3.00	-3.00
housing mean	12.50	11.00	9.50	9.50	8.00
housing % norm.	-2.36	-1.35	-1.78	-1.28	-1.25
TFPL optimal point (within 1 mile)					
TFPL optimal point rank	2	2	2	2	2
TFPL optimal point % norm.	0.00	0.00	0.00	0.00	0.00
TFPL park need	very high	very high	very high/ service area	very high/ service area	very high
TFPL park need rank	1	1	2	2	1
TFPL park need % norm.	1.00	1.00	0.00	0.00	1.00
residential pop within 500m of park (%)	39.67	0.00	0.86	42.97	35.68
residential pop within 500m of park rank	12	1	2	13	11
residential pop within 500m of park % norm.	-38.67	1.00	0.14	-41.97	-34.68
nearest park (miles)	0.2	0.9	0.9	0.5	2.5
nearest park rank	14	7	7	11	1
nearest park % norm.	0.08	0.36	0.36	0.20	1.00
trail (within 1 mile)	x	x	x	x	x
trail rank	2	2	2	2	2
trail % norm.	0.00	0.00	0.00	0.00	0.00
nearest recreation center (miles)	1.6	2.8	1.1	1.3	6.4
nearest recreation center rank	11	7	14	13	1
nearest recreation center % norm.	0.25	0.44	0.17	0.20	1.00
nearest swimming pool (miles)	4.8	2.8	0.8	0.9	5.2
nearest swimming pool rank	2	5	14	13	1
nearest swimming pool % norm.	0.92	0.54	0.15	0.17	1.00
nearest dog park (miles)	2.6	0.9	3.2	3.8	12.1
nearest dog park rank	15	20	13	11	2
nearest dog park % norm.	0.21	0.07	0.26	0.31	0.99
green space per capita (m2/person)	117.67	196.41	68.74	106.05	113.47
green space per capita rank	17	20	12	15	16
green space per capita % norm.	-2.55	-5.60	-0.66	-2.10	-2.39
green space (%)	31.94	15.97	13.65	21.82	28.49
green space rank	21	10	7	17	20
green space % norm.	-3.78	-0.89	-0.47	-1.95	-3.15
tree cover (%)	15.27	7.42	4.20	3.63	9.93
tree cover rank	22	12	8	5	15
tree cover % norm.	-3.90	-0.86	0.38	0.60	-1.83
tree cover per capita (m2/person)	56.25	91.25	21.17	17.63	39.54
tree cover rank	19	20	7	5	16
tree cover % norm.	-2.60	-5.46	0.27	0.56	-1.23
impervious area per capita (m2/person)	182.91	764.48	172.54	135.57	156.53
impervious area per capita rank	12	22	11	5	8
impervious area per capita % norm.	0.52	-4.17	0.61	0.91	0.74
residential pop with minimal views of trees (%)	0.04	0.25	0.90	0.87	1.37
residential pop with minimal views of trees rank	15	13	6	7	5
residential pop with minimal views of trees % norm.	0.00	0.03	0.09	0.09	0.14

EXISTING CONDITIONS

	#6	#7	#8	#9	#10
population	7,738	4,550	6,355	2,252	4,324
population rank	2	15	6	22	17
population % norm.	0.98	0.58	0.80	0.28	0.55
population growth (2010-2017) (%)	12.00	11.60	11.12	10.18	12.34
population growth rank	12	14	18	21	8
population growth % norm.	0.77	0.75	0.71	0.65	0.79
population forecast (2017-2022) (%)	4.47	4.33	4.67	4.62	4.49
population forecast rank	9	14	1	2	8
population forecast % norm.	0.96	0.93	1.00	0.99	0.96
demographics mean	7.67	14.33	8.33	15.00	11.00
demographics % norm.	0.90	0.75	0.84	0.64	0.77
population density (per sq. mile)	3,576.5	9,161.0	11,046.1	2,173.7	7,526.1
population density rank	20	6	3	22	11
population density % norm.	0.21	0.55	0.66	0.13	0.45
density mean	20.00	6.00	3.00	22.00	11.00
density % norm.	0.21	0.55	0.66	0.13	0.45
housing built 2010 or later (%)	11.22	13.59	12.47	12.73	14.96
vacant units (%)	21.01	10.85	21.20	5.90	5.19
vacant units rank	3	12	2	19	20
vacant units % norm.	0.94	0.49	0.95	0.27	0.23
housing (grade)	c	b-	c+	b	b-
housing rank	3	5	4	6	5
housing rank	-1.00	-3.00	-2.00	-4.00	-3.00
housing mean	3.00	8.50	3.00	12.50	12.50
housing % norm.	-0.03	-1.26	-0.52	-1.87	-1.38
TFPL optimal point (within 1 mile)			x		x
TFPL optimal point rank	2	2	1	2	1
TFPL optimal point % norm.	0.00	0.00	1.00	0.00	1.00
TFPL park need	service area/ very high	very high	service area	moderate	very high
TFPL park need rank	3	1	6	5	1
TFPL park need % norm.	-1.00	1.00	-4.00	-3.00	1.00
residential pop within 500m of park (%)	1.83	0.00	2.47	3.03	0.00
residential pop within 500m of park rank	4	1	5	6	1
residential pop within 500m of park % norm.	-0.83	1.00	-1.47	-2.03	1.00
nearest park (miles)	0.6	1.6	0.3	2.4	1.6
nearest park rank	10	4	13	2	4
nearest park % norm.	0.24	0.64	0.12	0.96	0.64
trail (within 1 mile)			x	x	x
trail rank	1	1	2	2	2
trail % norm.	1.00	1.00	0.00	0.00	0.00
nearest recreation center (miles)	1.6	3.2	0.6	3.5	2.1
nearest recreation center rank	11	6	16	5	8
nearest recreation center % norm.	0.25	0.50	0.09	0.55	0.33
nearest swimming pool (miles)	1.2	1.6	0.6	3.5	1.4
nearest swimming pool rank	11	7	15	3	9
nearest swimming pool % norm.	0.23	0.31	0.12	0.67	0.27
nearest dog park (miles)	10.4	12.2	10.2	9.0	6.9
nearest dog park rank	3	1	4	5	6
nearest dog park % norm.	0.85	1.00	0.84	0.74	0.57
green space per capita (m2/person)	287.23	51.45	53.60	169.03	90.02
green space per capita rank	22	6	9	18	14
green space per capita % norm.	-9.12	0.01	-0.07	-4.54	-1.48
green space (%)	42.56	16.69	20.68	12.87	20.93
green space rank	22	11	13	5	14
green space % norm.	-5.70	-1.02	-1.74	-0.33	-1.78
tree cover (%)	3.75	9.39	8.92	3.54	13.02
tree cover rank	6	14	13	4	20
tree cover % norm.	0.55	-1.63	-1.44	0.63	-3.03
tree cover per capita (m2/person)	25.30	28.96	23.13	46.52	55.98
tree cover rank	11	12	10	17	18
tree cover % norm.	-0.07	-0.37	0.11	-1.80	-2.58
impervious area per capita (m2/person)	236.4	132.67	129.17	434.67	183.91
impervious area per capita rank	15	3	2	20	13
impervious area per capita % norm.	0.09	0.93	0.96	-1.51	0.52
residential pop with minimal views of trees (%)	8.00	0.48	0.33	3.57	0.00
residential pop with minimal views of trees rank	2	9	10	3	16
residential pop with minimal views of trees % norm.	0.80	0.05	0.03	0.36	0.00

EXISTING CONDITIONS

	#11	#12	#13	#14	#15
population	6,643	5,964	7,546	3,645	7,908
population rank	5	10	3	19	1
population % norm.	0.84	0.75	0.95	0.46	1.00
population growth (2010-2017) (%)	10.90	11.41	12.21	11.16	11.74
population growth rank	20	15	10	17	13
population growth % norm.	0.70	0.73	0.78	0.72	0.75
population forecast (2017-2022) (%)	4.43	4.51	4.52	4.44	4.53
population forecast rank	12	7	6	11	5
population forecast % norm.	0.95	0.97	0.97	0.95	0.97
demographics mean	12.33	10.67	6.33	15.67	6.33
demographics % norm.	0.83	0.82	0.90	0.71	0.91
population density (per sq. mile)	5,004.8	2,391.6	7,622.6	14,974.2	7,862.9
population density rank	17	21	10	2	8
population density % norm.	0.30	0.14	0.46	0.90	0.47
density mean	17.00	21.00	10.00	2.00	8.00
density % norm.	0.30	0.14	0.46	0.90	0.47
housing built 2010 or later (%)	12.94	12.92	13.95	12.25	14.90
vacant units (%)	4.12	13.24	6.75	16.30	8.22
vacant units rank	21	9	16	7	15
vacant units % norm.	0.19	0.60	0.30	0.73	0.37
housing (grade)	b-	c	b-	c-	c
housing rank	5	3	5	2	3
housing rank	-3.00	-1.00	-3.00	0.00	-1.00
housing mean	13.00	6.00	10.50	4.50	9.00
housing % norm.	-1.41	-0.20	-1.35	0.37	-0.32
TFPL optimal point (within 1 mile)	x	x	x	x	x
TFPL optimal point rank	2	1	2	1	2
TFPL optimal point % norm.	0.00	1.00	0.00	1.00	0.00
TFPL park need	high	moderate	very high	very high	very high
TFPL park need rank	4	5	1	1	1
TFPL park need % norm.	-2.00	-3.00	1.00	1.00	1.00
residential pop within 500m of park (%)	0.00	0.00	11.74	0.00	9.24
residential pop within 500m of park rank	1	1	8	1	7
residential pop within 500m of park % norm.	1.00	1.00	-10.74	1.00	-8.24
nearest park (miles)	1.1	1.6	0.4	0.2	0.8
nearest park rank	6	4	12	14	8
nearest park % norm.	0.44	0.64	0.16	0.06	0.32
trail (within 1 mile)	x	x	x	x	x
trail rank	2	2	2	2	1
trail % norm.	0.00	0.00	0.00	0.00	1.00
nearest recreation center (miles)	1.3	5.9	3.7	1.6	1.8
nearest recreation center rank	13	2	4	11	10
nearest recreation center % norm.	0.20	0.92	0.58	0.25	0.28
nearest swimming pool (miles)	1.3	3.2	1.6	1.6	1.5
nearest swimming pool rank	10	4	7	7	8
nearest swimming pool % norm.	0.25	0.62	0.31	0.31	0.29
nearest dog park (miles)	1.3	6.0	3.4	1.2	1.8
nearest dog park rank	18	7	12	19	17
nearest dog park % norm.	0.11	0.49	0.28	0.10	0.15
green space per capita (m2/person)	179.78	261.17	40.98	59.52	26.09
green space per capita rank	19	21	4	11	2
green space per capita % norm.	-4.96	-8.11	0.41	-0.30	0.99
green space (%)	28.16	22.53	6.44	14.54	5.53
green space rank	19	18	2	8	1
green space % norm.	-3.09	-2.07	0.84	-0.63	1.00
tree cover (%)	14.53	10.59	2.87	5.32	2.59
tree cover rank	21	17	2	11	1
tree cover % norm.	-3.61	-2.09	0.89	-0.05	1.00
tree cover per capita (m2/person)	92.75	122.69	18.28	21.76	12.23
tree cover rank	21	22	6	8	1
tree cover % norm.	-5.58	-8.03	0.51	0.22	1.00
impervious area per capita (m2/person)	151.82	385.75	516.61	170.19	252.44
impervious area per capita rank	7	19	21	10	16
impervious area per capita % norm.	0.78	-1.11	-2.17	0.63	-0.04
residential pop with minimal views of trees (%)	0.00	0.00	9.95	0.26	2.67
residential pop with minimal views of trees rank	16	16	1	12	4
residential pop with minimal views of trees % norm.	0.00	0.00	1.00	0.03	0.27

EXISTING CONDITIONS

	#16	#17	#18	#19	#20
population	6,159	6,298	4,328	3,245	5,826
population rank	9	7	16	20	11
population % norm.	0.78	0.80	0.55	0.41	0.74
population growth (2010-2017) (%)	12.51	10.92	12.77	15.56	12.58
population growth rank	5	19	3	1	4
population growth % norm.	0.80	0.70	0.82	1.00	0.81
population forecast (2017-2022) (%)	4.24	4.51	4.41	2.93	4.10
population forecast rank	16	7	13	18	17
population forecast % norm.	0.91	0.97	0.94	0.63	0.88
demographics mean	10.00	11.00	10.67	13.00	10.67
demographics % norm.	0.83	0.82	0.77	0.68	0.81
population density (per sq. mile)	16,661.1	8,475.6	4,327.1	6,444.2	5,825.2
population density rank	1	7	18	13	16
population density % norm.	1.00	0.51	0.26	0.39	0.35
density mean	1.00	7.00	18.00	13.00	16.00
density % norm.	1.00	0.51	0.26	0.39	0.35
housing built 2010 or later (%)	13.72	13.88	15.51	16.74	16.38
vacant units (%)	22.24	19.46	13.07	18.69	14.62
vacant units rank	1	4	10	5	8
vacant units % norm.	1.00	0.88	0.59	0.84	0.66
housing (grade)	c-	c-	c	d+	c-
housing rank	2	2	3	1	2
housing rank	0.00	0.00	-1.00	1.00	0.00
housing mean	1.50	3.00	6.50	3.00	5.00
housing % norm.	0.50	0.44	-0.21	0.92	0.33
TFPL optimal point (within 1 mile)					
TFPL optimal point rank	2	2	2	2	2
TFPL optimal point % norm.	0.00	0.00	0.00	0.00	0.00
TFPL park need	service area	very high	very high	service area/ very high	very high
TFPL park need rank	6	1	1	3	1
TFPL park need % norm.	-4.00	1.00	1.00	-1.00	1.00
residential pop within 500m of park (%)	1.82	0.00	0.00	18.91	28.25
residential pop within 500m of park rank	4	1	1	9	10
residential pop within 500m of park % norm.	-0.82	1.00	1.00	-17.91	-27.25
nearest park (miles)	0.6	1.7	0.7	0.3	0.7
nearest park rank	10	3	9	13	9
nearest park % norm.	0.24	0.68	0.28	0.12	0.28
trail (within 1 mile)	x				
trail rank	2	1	1	1	1
trail % norm.	0.00	1.00	1.00	1.00	1.00
nearest recreation center (miles)	0.6	2.0	3.2	0.7	1.4
nearest recreation center rank	16	9	6	15	12
nearest recreation center % norm.	0.09	0.31	0.50	0.11	0.22
nearest swimming pool (miles)	1.8	1.8	0.9	1.3	0.8
nearest swimming pool rank	6	6	13	10	14
nearest swimming pool % norm.	0.35	0.35	0.17	0.25	0.15
nearest dog park (miles)	3.0	3.0	3.9	0.9	2.2
nearest dog park rank	14	14	10	20	16
nearest dog park % norm.	0.25	0.25	0.32	0.07	0.18
green space per capita (m2/person)	25.84	53.17	55.09	40.21	89.74
green space per capita rank	1	8	10	3	13
green space per capita % norm.	1.00	-0.06	-0.13	0.44	-1.47
green space (%)	8.62	21.38	15.65	8.67	12.96
green space rank	3	16	9	4	6
green space % norm.	0.44	-1.87	-0.83	0.43	-0.34
tree cover (%)	4.09	11.92	4.62	3.32	5.21
tree cover rank	7	19	9	3	10
tree cover % norm.	0.42	-2.60	0.22	0.72	-0.01
tree cover per capita (m2/person)	12.26	29.64	16.26	15.41	36.08
tree cover rank	2	13	4	3	15
tree cover % norm.	1.00	-0.42	0.67	0.74	-0.95
impervious area per capita (m2/person)	201.97	135.48	159.66	302.42	305.61
impervious area per capita rank	14	4	9	17	18
impervious area per capita % norm.	0.37	0.91	0.71	-0.44	-0.47
residential pop with minimal views of trees (%)	0.30	0.78	0.00	0.00	0.05
residential pop with minimal views of trees rank	11	8	16	16	14
residential pop with minimal views of trees % norm.	0.03	0.08	0.00	0.00	0.01

EXISTING CONDITIONS

	#21	#22	issue (highest)	issue (lowest)	average
population	4,844	4,734	7,908	2,252	5,390.77
population rank	13	14			
population % norm.	0.61	0.60			
population growth (2010-2017) (%)	12.39	9.99	15.56	9.99	11.95
population growth rank	7	22			
population growth % norm.	0.80	0.64			
population forecast (2017-2022) (%)	4.44	4.56	4.67	2.93	4.38
population forecast rank	11	4			
population forecast % norm.	0.95	0.98			
demographics mean	10.33	13.33			
demographics % norm.	0.79	0.74			
population density (per sq. mile)	9,466.4	9,276.5	16,661.1	2,173.7	7,404.19
population density rank	4	5			
population density % norm.	0.57	0.56			
density mean	4.00	5.00			
density % norm.	0.57	0.56			
housing built 2010 or later (%)	15.33	12.39			
vacant units (%)	10.90	18.15	22.24	4.12	12.43
vacant units rank	12	6			
vacant units % norm.	0.49	0.82			
housing (grade)	c+	c	d+	b+	c+
housing rank	4	3			
housing rank	-2.00	-1.00			
housing mean	8.00	4.50			
housing % norm.	-0.75	-0.09			
TFPL optimal point (within 1 mile)			x		
TFPL optimal point rank	2	2			
TFPL optimal point % norm.	0.00	0.00			
TFPL park need	very high/ service area	very high	very high	service area	very high/ service area
TFPL park need rank	2	1			
TFPL park need % norm.	0.00	1.00			
residential pop within 500m of park (%)	1.53	0.00	0.00	42.97	9.00
residential pop within 500m of park rank	3	1			
residential pop within 500m of park % norm.	-0.53	1.00			
nearest park (miles)	1.1	1.4	2.50	0.15	1.00
nearest park rank	6	5			
nearest park % norm.	0.44	0.56			
trail (within 1 mile)	x			x	x
trail rank	2	1			
trail % norm.	0.00	1.00			
nearest recreation center (miles)	4.6	3.5	6.4	0.6	2.48
nearest recreation center rank	3	5			
nearest recreation center % norm.	0.72	0.55			
nearest swimming pool (miles)	1.1	1.4	5.2	0.6	1.87
nearest swimming pool rank	12	9			
nearest swimming pool % norm.	0.21	0.27			
nearest dog park (miles)	4.4	4.6	12.2	0.9	4.86
nearest dog park rank	9	8			
nearest dog park % norm.	0.36	0.38			
green space per capita (m2/person)	51.51	46.44	25.84	287.23	99.24
green space per capita rank	7	5			
green space per capita % norm.	0.01	0.20			
green space (%)	18.25	21.26	5.53	42.56	18.62
green space rank	12	15			
green space % norm.	-1.30	-1.84			
tree cover (%)	10.65	10.10	2.59	15.27	7.49
tree cover rank	18	16			
tree cover % norm.	-2.11	-1.90			
tree cover per capita (m2/person)	30.04	22.05	12.23	122.69	37.96
tree cover rank	14	9			
tree cover % norm.	-0.46	0.20			
impervious area per capita (m2/person)	137.94	123.94	123.94	764.48	244.21
impervious area per capita rank	6	1			
impervious area per capita % norm.	0.89	1.00			
residential pop with minimal views of trees (%)	0.00	0.00	9.95	0.00	1.36
residential pop with minimal views of trees rank	16	16			
residential pop with minimal views of trees % norm.	0.00	0.00			

EXISTING CONDITIONS

	source	data category	geographic unit
parks + recreation mean		parks + recreation	n/a
parks + recreation % norm.		parks + recreation	n/a
arts/culture (within 2 miles)	City of Phoenix (2018)	arts	point
arts/culture rank		arts	point
arts/culture % norm.		arts	point
arts mean		arts	n/a
arts % norm.		arts	n/a
points of pride (within 2 miles)	City of Phoenix (2018)	other culture	point
points of pride rank		other culture	point
points of pride % norm.		other culture	point
historic property (within 2 miles)	City of Phoenix (2018)	other culture	point
historic property rank		other culture	point
historic property % norm.		other culture	point
other culture mean		other culture	n/a
other culture % norm.		other culture	n/a
nearest library (miles)	City of Phoenix (2018)	libraries	point
nearest library rank		libraries	point
nearest library % norm.		libraries	point
library mean		libraries	n/a
library % norm.		libraries	n/a
broadband subscription rates (%)	City of Phoenix (2018)	infrastructure	census tract
broadband subscription rates rank		infrastructure	census tract
broadband subscription rates % norm.		infrastructure	census tract
infrastructure mean		infrastructure	n/a
infrastructure % norm.		infrastructure	n/a
EXISTING CONDITIONS MEAN			
EXISTING CONDITIONS SUM			
EXISTING CONDITIONS PERCENT NORM.			

EXISTING CONDITIONS

	#1	#2	#3	#4	#5
parks + recreation mean	11.79	10.14	7.64	8.64	7.21
parks + recreation % norm.	-3.46	-0.97	0.09	-3.07	-2.67
arts/culture (within 2 miles)	x	x	x	x	
arts/culture rank	2	2	2	2	1
arts/culture % norm.	0.00	0.00	0.00	0.00	1.00
arts mean	2.00	2.00	2.00	2.00	1.00
arts % norm.	0.00	0.00	0.00	0.00	1.00
points of pride (within 2 miles)				x	
points of pride rank	1	1	1	2	1
points of pride % norm.	1.00	1.00	1.00	0.00	1.00
historic property (within 2 miles)		x	x	x	
historic property rank	1	2	2	2	1
historic property % norm.	1.00	0.00	0.00	0.00	1.00
other culture mean	1.00	1.50	1.50	2.00	1.00
other culture % norm.	1.00	0.50	0.50	0.00	1.00
nearest library (miles)	2.7	3.0	1.6	0.7	4.8
nearest library rank	6	5	11	13	1
nearest library % norm.	0.56	0.63	0.33	0.15	1.00
library mean	6.00	5.00	11.00	13.00	1.00
library % norm.	0.56	0.63	0.33	0.15	1.00
broadband subscription rates (%)	60-80	40-60	20-40	20-40	40-60
broadband subscription rates rank	3	2	1	1	2
broadband subscription rates % norm.	-1.00	0.00	1.00	1.00	0.00
infrastructure mean	3.00	2.00	1.00	1.00	2.00
infrastructure % norm.	-1.00	0.00	1.00	1.00	0.00
EXISTING CONDITIONS MEAN	7.24	7.75	7.29	6.68	5.78
EXISTING CONDITIONS SUM	250	229	192	188	171
EXISTING CONDITIONS PERCENT NORM.	-0.51	-0.02	0.17	-0.23	0.03

EXISTING CONDITIONS

	#6	#7	#8	#9	#10
parks + recreation mean	8.79	5.57	8.50	6.93	9.07
parks + recreation % norm.	-0.91	0.24	-0.39	-0.66	-0.25
arts/culture (within 2 miles)					
arts/culture rank	1	1	1	1	1
arts/culture % norm.	1.00	1.00	1.00	1.00	1.00
arts mean	1.00	1.00	1.00	1.00	1.00
arts % norm.	1.00	1.00	1.00	1.00	1.00
points of pride (within 2 miles)	x				x
points of pride rank	2	1	1	1	2
points of pride % norm.	0.00	1.00	1.00	1.00	0.00
historic property (within 2 miles)	x				x
historic property rank	2	1	2	1	1
historic property % norm.	0.00	1.00	0.00	1.00	1.00
other culture mean	2.00	1.00	1.50	1.00	1.50
other culture % norm.	0.00	1.00	0.50	1.00	0.50
nearest library (miles)	0.5	3.1	2.5	3.5	1.2
nearest library rank	15	4	7	3	12
nearest library % norm.	0.10	0.65	0.52	0.73	0.25
library mean	15.00	4.00	7.00	3.00	12.00
library % norm.	0.10	0.65	0.52	0.73	0.25
broadband subscription rates (%)	40-60	40-60	20-40	60-80	40-60
broadband subscription rates rank	2	2	1	3	2
broadband subscription rates % norm.	0.00	0.00	1.00	-1.00	0.00
infrastructure mean	2.00	2.00	1.00	3.00	2.00
infrastructure % norm.	0.00	0.00	1.00	-1.00	0.00
EXISTING CONDITIONS MEAN	7.43	5.30	4.17	8.05	7.51
EXISTING CONDITIONS SUM	194	153	165	198	214
EXISTING CONDITIONS PERCENT NORM.	0.16	0.37	0.45	0.00	0.17

EXISTING CONDITIONS

	#11	#12	#13	#14	#15
parks + recreation mean	11.36	9.93	6.00	8.29	5.64
parks + recreation % norm.	-1.18	-1.41	-0.50	0.26	-0.07
arts/culture (within 2 miles)	x	x		x	x
arts/culture rank	2	2	1	2	2
arts/culture % norm.	0.00	0.00	1.00	0.00	0.00
arts mean	2.00	2.00	1.00	2.00	2.00
arts % norm.	0.00	0.00	1.00	0.00	0.00
points of pride (within 2 miles)					
points of pride rank	1	1	1	1	1
points of pride % norm.	1.00	1.00	1.00	1.00	1.00
historic property (within 2 miles)			x	x	x
historic property rank	1	1	2	2	2
historic property % norm.	1.00	1.00	0.00	0.00	0.00
other culture mean	1.00	1.00	1.50	1.50	1.50
other culture % norm.	1.00	1.00	0.50	0.50	0.50
nearest library (miles)	3.0	2.5	2.4	3.0	2.5
nearest library rank	5	7	8	5	7
nearest library % norm.	0.63	0.52	0.50	0.63	0.52
library mean	5.00	7.00	8.00	5.00	7.00
library % norm.	0.63	0.52	0.50	0.63	0.52
broadband subscription rates (%)	80-100	80-100	40-60	40-60	40-60
broadband subscription rates rank	4	4	2	2	2
broadband subscription rates % norm.	-2.00	-2.00	0.00	0.00	0.00
infrastructure mean	4.00	4.00	2.00	2.00	2.00
infrastructure % norm.	-2.00	-2.00	0.00	0.00	0.00
EXISTING CONDITIONS MEAN	8.21	7.70	5.67	5.12	5.18
EXISTING CONDITIONS SUM	252	219	148	186	138
EXISTING CONDITIONS PERCENT NORM.	-0.23	-0.14	0.19	0.42	0.25

EXISTING CONDITIONS

	#16	#17	#18	#19	#20
parks + recreation mean	7.00	7.50	7.14	8.50	10.07
parks + recreation % norm.	-0.05	0.04	0.35	-1.10	-1.98
arts/culture (within 2 miles)	x	x	x	x	x
arts/culture rank	2	2	2	2	2
arts/culture % norm.	0.00	0.00	0.00	0.00	0.00
arts mean	2.00	2.00	2.00	2.00	2.00
arts % norm.	0.00	0.00	0.00	0.00	0.00
points of pride (within 2 miles)	x	x		x	x
points of pride rank	2	2	1	2	2
points of pride % norm.	0.00	0.00	1.00	0.00	0.00
historic property (within 2 miles)	x	x	x	x	x
historic property rank	2	2	2	2	2
historic property % norm.	0.00	0.00	0.00	0.00	0.00
other culture mean	2.00	2.00	1.50	2.00	2.00
other culture % norm.	0.00	0.00	0.50	0.00	0.00
nearest library (miles)	1.9	3.5	4.2	0.6	1.9
nearest library rank	10	3	2	14	10
nearest library % norm.	0.40	0.73	0.88	0.13	0.40
library mean	10.00	3.00	2.00	14.00	10.00
library % norm.	0.40	0.73	0.88	0.13	0.40
broadband subscription rates (%)	20-40	40-60	20-40	40-60	20-40
broadband subscription rates rank	1	2	1	2	1
broadband subscription rates % norm.	1.00	0.00	1.00	0.00	1.00
infrastructure mean	1.00	2.00	1.00	2.00	1.00
infrastructure % norm.	1.00	0.00	1.00	0.00	1.00
EXISTING CONDITIONS MEAN	4.31	4.69	6.10	7.19	7.09
EXISTING CONDITIONS SUM	149	162	171	199	216
EXISTING CONDITIONS PERCENT NORM.	0.46	0.32	0.44	0.13	0.11

EXISTING CONDITIONS

	#21	#22	issue (highest)	issue (lowest)	average
parks + recreation mean	8.00	6.71			
parks + recreation % norm.	-0.13	0.17			
arts/culture (within 2 miles)	x	x		x	x
arts/culture rank	2	2			
arts/culture % norm.	0.00	0.00			
arts mean	2.00	2.00			
arts % norm.	0.00	0.00			
points of pride (within 2 miles)				x	
points of pride rank	1	1			
points of pride % norm.	1.00	1.00			
historic property (within 2 miles)	x	x		x	x
historic property rank	2	2			
historic property % norm.	0.00	0.00			
other culture mean	1.50	1.50			
other culture % norm.	0.50	0.50			
nearest library (miles)	2.3	1.6	4.80	0.50	2.41
nearest library rank	9	11			
nearest library % norm.	0.48	0.33			
library mean	9.00	11.00			
library % norm.	0.48	0.33			
broadband subscription rates (%)	40-60	40-60	20-40	80-100	40-60
broadband subscription rates rank	2	2			
broadband subscription rates % norm.	0.00	0.00			
infrastructure mean	2.00	2.00			
infrastructure % norm.	0.00	0.00			
EXISTING CONDITIONS MEAN	5.60	5.76	4.17	8.21	6.36
EXISTING CONDITIONS SUM	179	166	138	252	188.14
EXISTING CONDITIONS PERCENT NORM.	0.18	0.28	0.46	-0.51	0.14

totals

The site selection totals include additional evaluative methods for further comparison between site options.



indicates top 4
issue rank

SITE SELECTION TOTALS

	#1	#2	#3	#4	#5
identifier name	south mountain	cemetery	large waterfront	downtown view	undeveloped park
total mean	8.44	7.60	8.34	8.51	7.78
total mean rank	18	10	16	19	12
total median	7.00	5.50	8.00	8.00	5.00
total median rank	6	3	7	7	2
total sum	587	516	552	579	454
total sum rank	16	9	12	15	2
total percent normalization	-3.04	-1.64	-0.70	-0.58	-0.78
total percent normalization rank	20	17	9	8	10
frequency of "5-18"	24	32	38	34	30
frequency of "22"	14	12	12	11	8
frequency of "21"	7	1	5	6	3
frequency of "20"	4	6	3	5	5
frequency of "19"	8	3	2	5	0
frequency of "19-22"	33	22	22	27	16
frequency of "19-22" rank	12	9	9	11	3
frequency of "4"	3	5	1	1	0
frequency of "3"	2	4	1	1	2
frequency of "2"	4	3	4	3	3
frequency of "1"	7	6	6	6	20
frequency of "1" rank	6	7	7	7	1
frequency of "1-4"	16	18	12	11	25
frequency of "1-4" rank	8	6	10	11	1
ratio of "1-4" to "19-22"	0.48	0.82	0.55	0.41	1.56
ratio of "1-4" to "19-22" rank	19	14	18	20	3
average ranking	13.13	9.38	11.00	12.25	4.25
average ranking rank	18	13	15	17	3
	0	1	0	0	7

SITE SELECTION TOTALS

	#6	#7	#8	#9	#10
identifier name	farm conversion	dense west	water temple	outer flash flood	lonely house
total mean	7.90	7.18	7.31	8.88	7.93
total mean rank	14	6	8	20	15
total median	7.00	5.00	7.00	5.00	6.00
total median rank	6	2	6	2	4
total sum	515	437	502	515	515
total sum rank	8	1	6	8	8
total percent normalization	-0.85	-0.26	0.12	-1.97	-1.12
total percent normalization rank	12	5	2	19	14
frequency of "5-18"	32	41	38	32	37
frequency of "22"	13	7	11	9	8
frequency of "21"	2	1	4	6	2
frequency of "20"	3	1	1	5	6
frequency of "19"	1	0	0	1	2
frequency of "19-22"	19	9	16	21	18
frequency of "19-22" rank	6	1	3	8	5
frequency of "4"	3	2	1	3	5
frequency of "3"	6	4	1	5	1
frequency of "2"	5	5	5	4	2
frequency of "1"	7	11	11	6	8
frequency of "1" rank	6	3	3	7	5
frequency of "1-4"	21	22	18	18	16
frequency of "1-4" rank	4	3	6	6	8
ratio of "1-4" to "19-22"	1.11	2.44	1.13	0.86	0.89
ratio of "1-4" to "19-22" rank	7	1	6	13	12
average ranking	7.88	2.75	5.00	10.38	8.88
average ranking rank	9	1	4	14	12
	1	7	4	1	1

SITE SELECTION TOTALS

	#11	#12	#13	#14	#15
identifier name	massive northeast	green gap	strip mall patch	pond and island	telecom tower
total mean	10.40	9.68	7.31	7.24	7.89
total mean rank	22	21	9	7	13
total median	6.50	6.00	5.00	5.50	6.00
total median rank	5	4	2	3	4
total sum	645	568	456	502	506
total sum rank	17	13	3	6	7
total percent normalization	-4.53	-3.79	-0.78	-1.34	-0.56
total percent normalization rank	22	21	11	16	7
frequency of "5-18"	26	28	32	33	31
frequency of "22*"	15	14	9	10	8
frequency of "21*"	7	7	2	4	3
frequency of "20*"	8	1	9	3	2
frequency of "19*"	4	3	0	5	5
frequency of "19-22*"	34	25	20	22	18
frequency of "19-22*" rank	13	10	7	9	5
frequency of "4"	0	3	4	4	2
frequency of "3"	4	3	6	3	3
frequency of "2"	2	3	4	4	5
frequency of "1"	5	9	6	6	13
frequency of "1" rank	8	4	7	7	2
frequency of "1-4"	11	18	20	17	23
frequency of "1-4" rank	11	6	5	7	2
ratio of "1-4" to "19-22"	0.32	0.72	1.00	0.77	1.28
ratio of "1-4" to "19-22" rank	21	16	9	15	5
average ranking	14.88	11.88	6.63	8.75	5.63
average ranking rank	19	16	8	11	6
	0	2	2	1	3

SITE SELECTION TOTALS

	#16	#17	#18	#19	#20
identifier name	small waterfront	hotel lot	warehouse adjacent	downtown	central city
total mean	6.69	7.76	6.96	8.38	6.88
total mean rank	2	11	5	17	4
total median	4.50	7.00	6.00	7.00	8.50
total median rank	1	6	4	6	8
total sum	515	534	492	570	542
total sum rank	8	10	4	14	11
total percent normalization	-0.07	-1.19	0.25	-1.65	-0.31
total percent normalization rank	3	15	1	18	6
frequency of "5-18"	28	39	33	30	36
frequency of "22"	17	12	13	18	8
frequency of "21"	0	1	2	6	4
frequency of "20"	4	1	1	2	4
frequency of "19"	1	2	1	1	3
frequency of "19-22"	22	16	17	27	19
frequency of "19-22" rank	9	3	4	11	6
frequency of "4"	2	4	1	1	1
frequency of "3"	6	3	6	5	2
frequency of "2"	7	4	4	4	2
frequency of "1"	7	6	11	6	13
frequency of "1" rank	6	7	3	7	2
frequency of "1-4"	22	17	22	16	18
frequency of "1-4" rank	3	7	3	8	6
ratio of "1-4" to "19-22"	1.00	1.06	1.29	0.59	0.95
ratio of "1-4" to "19-22" rank	9	8	4	17	10
average ranking	5.13	8.38	3.50	12.25	6.63
average ranking rank	5	10	2	17	8
	4	1	8	0	2

SITE SELECTION TOTALS

identifier name	#21	#22	issue (highest) issue (lowest)		average
total mean	6.71	6.35	6.35	10.40	7.82
total mean rank	3	1			
total median	7.00	5.00	4.50	8.50	6.25
total median rank	6	2			
total sum	496	456	437	645	520.64
total sum rank	5	3			
total percent normalization	-0.23	-1.08	0.25	-4.53	-1.19
total percent normalization rank	4	13			
frequency of "5-18"	41	39			
frequency of "22"	10	6			
frequency of "21"	2	2			
frequency of "20"	1	2			
frequency of "19"	3	0	8	0	2.27
frequency of "19-22"	16	10	34.00	9.00	20.41
frequency of "19-22" rank	3	2			
frequency of "4"	2	3			
frequency of "3"	5	4			
frequency of "2"	4	5			
frequency of "1"	4	11	20	4	8.41
frequency of "1" rank	9	3			
frequency of "1-4"	15	23	25	11	18.14
frequency of "1-4" rank	9	2			
ratio of "1-4" to "19-22"	0.94	2.30			
ratio of "1-4" to "19-22" rank	11	2			
average ranking	6.25	3.50			
average ranking rank	7	2			
	3	8			

top 4

This dataset is meant to evaluate the four potential sites that were visited. These sites were chosen due to the results from the totals section. The second part of this dataset indicates those categories that are above average in issue for each of the four sites. Finally, the data trends section suggests topics that could potentially lead to a programmatic response.

SITE SELECTION VISIT SITES

	#5	#7	#18	#22	issue (highest)	issue (lowest)	average
identifier name	undeveloped park	dense west	warehouse adjacent	cluster			
longitude	112°14'42.065"W	112°14'51.187"W	112°7'44.792"W	111°59'57.379"W			
latitude	33°25'35.774"N	33°29'48.894"N	33°28'2.014"N	33°29'17.272"N			
address	2041 S 86th Dr	4225 N 88th Ave	3347 W Granada Rd	3401 N 38th St			
street view notes	fence/ no trespass	fence	fence/ barbed	fence/ private/ open			
future building/construction	no construction	no construction	no construction	no construction			
village name	estrella	maryvale	maryvale	camelback east			
zip code	85353	85037	85009	85018			
census tract ID	4013082205	4013082007	4013112100	4013110902			
census block group ID	40130822052	40130820072	40131121002	40131109021			
estimated minimum size (sq ft)	623,545	461,409	476,276	132,182			
estimated maximum size (sq ft)	8,420,020	461,409	476,276	406,694			
population	5,749	4,550	4,328	4,734			
white (%)	45.10	49.49	43.01	57.99			
white (non-hispanic) (%)	12.83	14.42	0.98	34.80			
hispanic (%)	66.13	71.74	89.51	48.34			
black (%)	11.90	5.82	2.32	5.47			
asian (%)	2.48	1.17	0.27	1.77			
american indian/alaska native (%)	1.34	2.70	3.46	5.13			
2+ races (%)	5.86	4.17	5.21	5.51			
total mean	7.78	7.18	6.96	6.35	6.35	9.68	7.53
total mean rank	12	6	5	1			
total median	5.00	5.00	6.00	5.00	4.50	8.50	5.94
total median rank	2	2	4	2			
total sum	454	437	492	456	437	568	501.24
total sum rank	2	1	4	3			
total percent normalization	-0.78	-0.26	0.25	-1.08	0.25	-3.79	-0.92
total percent normalization rank	10	5	1	13			
frequency of "5-18"	30	41	33	39			
frequency of "22"	8	7	13	6			
frequency of "21"	3	1	2	2			
frequency of "20"	5	1	1	2			
frequency of "19"	0	0	1	0	5	0	1.76
frequency of "19-22"	16	9	17	10	25.00	9.00	18.00
frequency of "19-22" rank	3	1	4	2			
frequency of "4"	0	2	1	3			
frequency of "3"	2	4	6	4			
frequency of "2"	3	5	4	5			
frequency of "1"	20	11	11	11	20	4	9.12
frequency of "1" rank	1	3	3	3			
frequency of "1-4"	25	22	22	23	25	15	19.59
frequency of "1-4" rank	1	3	3	2			
ratio of "1-4" to "19-22"	1.56	2.44	1.29	2.30			
ratio of "1-4" to "19-22" rank	3	1	4	2			
average totals ranking	4.25	2.75	3.50	3.50			
average totals ranking rank	3	1	2	2			
	7	7	8	8			

SITE

	#5	#7	#18	#22	issue (highest)	issue (lowest)	average
city owned property						x	
river/water (within 2 miles)						x	x
overall zip code grade	b	b	b-		c+	a+	b+
total site issue > average	2	2	2	1			

SAFETY

	#5	#7	#18	#22	issue (highest)	issue (lowest)	average
EASI total crime index (higher = more crime)			108	142	164	32	106.09
nearest fire station (miles)	3.5			1.5	3.50	0.20	1.13
nearest hospital (miles)	4.3		4.0	2.8	6.4	0.8	2.68
nearest police station (miles)		4.7	3.9	6.9	9.2	0.5	3.80
total safety issue > average	2	1	3	4			

HEALTH

	#5	#7	#18	#22	issue (highest)	issue (lowest)	average
some sport/exercise a week (agree a lot) (%)		8.19	7.75		7.75	42.80	22.63
exercise regularly (agree a lot) (%)		14.98	1.84		1.84	29.11	17.72
30+ lbs overweight (%)	15.36	15.22		11.75	15.36	0.00	7.37
healthy/balanced diet (agree a lot) (%)	15.16	10.76	10.86	19.69	9.62	38.07	20.14
farmer's market (miles)	12.0	5.2		6.4	12.0	0.4	4.32
smokes cigarettes (%)		32.47	19.93	25.87	32.47	4.95	17.24
opioid deaths (per 100,000)	15.00				26.24	7.57	14.52
heart attack/stroke (%)				7.04	7.43	0.00	2.16
total health issue > average	4	6	4	5			

EDUCATION

	#5	#7	#18	#22	issue (highest)	issue (lowest)	average
college/masters/doctorate degree (%)	10.19	7.19	0.77	17.18	0.77	61.62	17.93
public school (grade)	c+	c+	c+	b-	c	a-	b-
nearest k-12 school (miles)		0.4		0.5	0.8	0.1	0.33
nearest head start (miles)	8.2	8.7			12.3	0.1	5.13
total education issue > average	3	4	2	3			

ENVIRONMENT

	#5	#7	#18	#22	issue (highest)	issue (lowest)	average
public transit to work (%)	0.00	2.29		0.43	0.00	16.70	4.34
light rail stop (within .5 miles)						x	
bike path (within .2 miles)						x	x
bus stop (within .2 miles)						x	x
walk score	26	32			22	72	44.95
transit score	n/a	37	41		n/a	63	41.19
bike score	46	55			46	81	59.91
highway (within 2 miles)						x	x
ozone (kg/yr)	604.95				1014.44	79.94	343.16
particulate matter (PM 2.5) (kg/yr)	12.89				22.70	1.95	8.22
particulate matter (PM 10) (kg/yr)	1013.14				1013.14	49.91	341.97
daily domestic water use (gal/day)	633,000				633,000	202,000	396,090.91
total carbon sequestered (kg/yr)		21,217.34	10,564.42	18,324.10	5,730.91	71,881.12	26,107.10
total environment issue > average	10	7	4	7			

ECONOMY

	#5	#7	#18	#22	issue (highest)	issue (lowest)	average
unemployed (%)	4.334	4.318	4.324	4.323	4.367	4.259	4.318
jobs (grade)		c+	c+		c-	a-	c+
nearest career center (miles)					12.6	0.5	3.6
poverty (%)			48.87	45.27	67.40	5.49	30.26
average household income (\$)		68,340	38,208		163,369	20,724	65,966.77
median housing value (\$)		89,028	76,607		70,843	583,686	156,022.64
median rent (\$)		724	719	626	335	1,104	728.95
cost of living (grade)				c	c-	b	c+
food desert	x	x	x	x	x		x
total economy issue > average	2	6	7	5			

EXISTING CONDITIONS

	#5	#7	#18	#22	issue (highest)	issue (lowest)	average
population	5,749				7,908	2,252	5,390.77
population growth (2010-2017) (%)	12.20		12.77		15.56	9.99	11.95
population forecast (2017-2022) (%)	4.45		4.41	4.56	4.67	2.93	4.38
population density (per sq. mile)		9,161.0		9,276.5	16,661.1	2,173.7	7,404.19
vacant units (%)			13.07	18.15	22.24	4.12	12.43
housing (grade)			c	c	d+	b+	c+
TFPL optimal point (within 1 mile)					x		
TFPL park need	very high	very high	very high	very high	very high	service area	very high/ service area
residential pop within 500m of park (%)		0.00	0.00	0.00	0.00	42.97	9.00
nearest park (miles)	2.5	1.6		1.4	2.50	0.15	1.00

trail (within 1 mile)						x	x
nearest recreation center (miles)	6.4	3.2	3.2	3.5	6.4	0.6	2.48
nearest swimming pool (miles)	5.2				5.2	0.6	1.87
nearest dog park (miles)	12.1	12.2			12.2	0.9	4.86
green space per capita (m2/person)		51.45	55.09	46.44	25.84	287.23	99.24
green space (%)		16.69	15.65		5.53	42.56	18.62
tree cover (%)			4.62		2.59	15.27	7.49
tree cover per capita (m2/person)		28.96	16.26	22.05	12.23	122.69	37.96
impervious area per capita (m2/person)	156.53	132.67	159.66	123.94	123.94	764.48	244.21
residential pop with minimal views of trees (%)					9.95	0.00	1.36
arts/culture (within 2 miles)						x	x
points of pride (within 2 miles)						x	
historic property (within 2 miles)						x	x
nearest library (miles)	4.8	3.1	4.2		4.80	0.50	2.41
broadband subscription rates (%)	40-60	40-60	20-40	40-60	20-40	80-100	40-60
total existing conditions issue > average	14	16	16	14			
total issue > average	37	42	38	39			

DATA TRENDS

	#5	#7	#18	#22
data with program implications	fire station	sport/exercise	crime	crime
	overweight	overweight	sport/exercise	police station
	healthy diet	healthy diet	healthy diet	overweight
	farmer's market	cigarettes	college+	farmer's market
	college+	college+	public school	cigarettes
	public school	public school	carbon sequestered	heart attack/stroke
	headstart	headstart	ecnonmy/jobs	college+
	walk	walk	poverty	public school
	public transit	public transit	income	water use
	bike	bike	housing/rent value	poverty
	air polluton	water use	food desert	cost of living
	water use	jobs	population growth	food desert
	food desert	housing/rent value	population forecast	population forecast
	population growth	food desert	vancant units	density
	populaton forecast	density	housing	vacant units
	park	park	park	housing
	recreation center	dog park	green space/trees	park
	swimming pool	green space/trees	point of pride	green space/trees
	dog park	arts/culture	library	point of pride
	arts/culture	point of pride	broadband	broadband
	point of pride	library		
	library	broadband		
	broadband			

