Cultivando Comunidad: A Community-Based Approach to Study the Link between Cultural and Environmental Identities in Latinxs Living in the Seattle Metropolitan Area

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A dissertation submitted in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

University of Washington

2017

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Program Authorized to Offer Degree:

School of Environmental and Forest Sciences

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ABSTRACT

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The extent of biodiversity losses in natural ecosystems has accelerated mainly due to anthropogenic causes. The governance of natural resources and environmental policies attempting to address these losses usually reflect the economic and environmental behavior of limited groups of people in power positions. As a results, environmental policies tend not to reflect the diversity in environmental values and cultural links to environmental behaviors.

Previous studies have mostly focused on explaining psychological factors that guide pro-environmental behavior. These studies have focused on values linked to the modern environmentalism movement, which adopts a more globalized ideal of sustainability. Recent studies have started to pay attention to the human health links to nature. However, all these approaches explore these relationships at an individual level and have not attempted to address whether socially transmitted behavior patterns, such as cultural values, have an impact on attitudes and decision-making processes related to the natural environment. In fact, some researchers have postulated that some members of a group may have stronger *sense of connectedness to nature* that is expressed as stronger pro-environmental values. Furthermore, *a*

sense of connectedness to nature is affected by personal experiences, memories and habits guided by ethnic or cultural identities.

The focus of this research was to look into the strength of connections a group of people – Latinxs - have to nature through their food choices, i.e., *foodways*. Food represents the first contact many people have to nature, so *foodways* become a rich lens through which the connection to nature and pro-environmental decision-making can be analyzed. In addition, *foodways* can serve to index tendencies in the attitudes toward nature of smaller populations living at a local or regional scale.

The objective of this research was to explore the links between cultural and environmental identities through the lens of traditional *foodways*. It specifically focused on the impact of migration on day to day food practices and values in Latinxs living in the Seattle metropolitan area, to analyze if there is in fact a link between cultural and environmental identities. A mixed methods approach was used to describe extensively and intensively participants' habits related to *a sense of belonging* and *a sense of connectedness to nature* according to their own perspectives. A multidimensional analysis approach allowed data collection to occur using an iterative and multi-stage process that combined qualitative and quantitative methods.

This research supports anecdotal evidence that ethnic and cultural links may contribute to Latinxs *sense of connectedness to nature*, and therefore, environmental behavior. *Foodways* was an effective index to detect ethnic and cultural links to environment decisions that could not have been identified by correlating cultural and environmental factors. In this sense, *foodways* constituted a representation of the beliefs and values that sustain traditional forms of knowledge based on experiences and interaction with the surrounding social and bio-physical environments. This knowledge is transmitted through several generations shaping the way in which members of

determined communities interact with nature. Although, these forms of knowledge are dynamic and can be transformed through processes such as migration and transculturation. The change in values and beliefs resulted in changes of habits as a form of adaptation. The study of these adaptation processes could inform current studies in resilience and provide information at a local scale.

The relevance of adopting a more contextualized approach to understand the environmental attitudes of specific groups of people results in the potential to create more inclusive and representative environmental policies. Since Latinxs are becoming one of the largest minority groups in the United States, this study is crucial not only to promote a stronger involvement of this segment of the population in environmental decision-making, but as a way of facilitating their social integration and put in practice the principles of environmental justice.

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ACKNOWLEDGEMENTS

First and foremost, I would like to express my deepest gratitude to my dissertation committee whose constant support and feedback has been crucial in giving this project its shape. I would especially like to thank my advisor, Dr. Kristiina Vogt, for her continuous guidance and encouragement throughout my time as a graduate student at University of Washington, and especially during the graduation process. Dr. Vogt contributed to every aspect of the design, development, and conclusion of this research. She also provided invaluable suggestions and edits to this dissertation. The insightful contributions of the members of my committee, Dr. Jose Antonio Lucero, Dr. Benjamin Gardner, Dr. Juan Carlos Chavez, Dr. Clarita Lefthand-Behay, and my GSR, Dr. Lucy Jarosz, were instrumental. I appreciate your time, expertise, and dedication to this important research. Without your patience and support this project would not have been possible. Special thanks to Dr. Daniel Vogt, whose optimism and support were key in completing this dissertation. I also want to acknowledge the support of Dr. Aseem Prakash and the fellows at the Center for Environmental Politics who taught me a lot about governance systems and environmental politics. Finally, I want to acknowledge the strong mentorship of Dr. Ricardo Gomez, who introduced me to *fotohistorias*, and helped me think about how to give voice to those who have been historically silenced.

Part of this dissertation was written after hours of debate and academic exchange through the Certificate in Science, Technology, and Society Studies. Dr. Megan Finn, I have endless gratitude for your unconditional support and for our fascinating conversations trying to open spaces at University of Washington where scholars from all disciplines can talk about science through a more interdisciplinary approach.

A special acknowledgment to Rodrigo Orozco Osuna, who patiently supported me in finalizing the statistical analysis for this study.

Thank you to the faculty and staff at the School of Forest and Environmental Sciences who helped me pull through graduate school. Special thanks to Michelle Trudeau and David Campbell for answering my incessant questions and providing guidance in navigating all the intricacies of the university system.

A very special thanks goes to the members of the Washington NASA Space Grant Consortium: Robert, Juan Carlos, Erika, Irene, Roz, and Gwen, thanks for your patience and support in and outside office hours.

I also want to acknowledge the friendship of a group of graduate students in the Vogt Lab and in the Latin American and Caribbean Studies Graduate Student Group who constantly pushed me to continue. It has been wonderful to meet you all and find myself in the company of such extraordinary people.

Friendship and companionship are another transcendental part in the completion of a graduate degree. I would not have been able to come to Seattle and start a doctoral degree at the University of Washington without the love and support of the Karlin Family. Aaron, TT, MK, and David, thanks for adopting and letting me be part of your family. Gmau, I hope this achievement give you more *naches*. Thank you for all your love and caring.

My experience in Seattle would not have been the same without the support and caring of my roommate, Jen. Thanks for all these years dealing with my anxiety, *workaholism,* and stubbornness. Tina and Charlie would not have been as happy as they are without your love and attention.

I would like to thank my family and friends in Mexico for their constant love and support over the past several years. Mami and Meche, it is only through your many sacrifices that I accomplished this achievement. Thank you for teaching me all that I know and always making me feel proud of my ethnic and cultural heritage.

Thank you David Prismantas for constantly challenging me regarding the intricacies of language and logic, but mainly for loving me and staying by my side even in my lowest moments.

I owe a great deal to the support of several Latinxs; without their support this study would have been impossible. Lupita, you have been my grandmother since I arrived in Seattle, without your support I would have struggled to adapt to this new city. Thank you Julieta and Haydee for inviting other Latinxs to participate in this project.

I also want to recognize the support of El Centro de la Raza, Para los Niños, Casa Latina, and Solid Ground, especially Helen Angell, for putting me in contact with a number of the people who contributed their experiences to this study.

Finally, my biggest thanks to all the Latinxs who shared their perspectives and stories with me during the completion of my research. This dissertation is as much yours as it is mine.

As Gustavo Cerati once said: *Gracias Totales…*

DEDICATION

For all the immigrants through the ages; may your differences cause you no fear, they are the sign of the beginning of a new adventure. May your dreams bring you inspiration, and may your memories be the source of your strength.

CHAPTER 1: INTRODUCTION

In recent years, concerns about global phenomena such as climate change have drawn the attention of politicians, global economic/environmental elites, as well as the general public in many countries (Miller, 2005; Sachs, 2012; Capstick, 2015). Part of the discussions have revolved around how to reduce humanity's impact on the natural environment without affecting economic development. Some academics, social leaders, and sectors of civil society have drawn attention to the inefficiencies and inequalities that surround the discourse of sustainable development strategies. Still today economic advancement seems to be the main goal of sustainable development, while the conservation of natural resources and social needs receive less attention.

Several sustainable development policies and goals have been created worldwide that focus on promoting a positive change at a local scale (Sachs, 2012). The issue that arises in implementing these local scale strategies is that their implementation relies on a technocratic model that does not necessarily recognize the sovereignty of independent nations or address the real needs of local communities. Thus, these sustainable development strategies still end up favoring certain special interest groups (Agyeman, Bullard & Evans, 2003; Williams and Millington, 2004).

Part of the explanation for the continued favoring of special interest groups is that it is due to the difficulty of identifying single factors responsible for the deterioration and loss of biodiversity and natural environments. It is difficult to simultaneously address multiple factors (e.g., rapid growth of human population, urbanization, industrialization, and globalization) that impact the environment and species that live in them. This is compounded by the disconnect between human beings and nature, characterized by a generalized perspective of nature as an object which

humans can utilize while lacking knowledge of nature (Sobel 2012). This instrumental perspective has resulted in the commodification of nature. This does not recognize the relational values that are formed as a result of historical kinship and the co-dependence that exists between humans and nature (Chan, Balvanera, et al., 2016).

This study focuses on exploring the relational values related to the complexity of socio-ecological systems. For this research, *foodways* or food practices will as an index to understand how individuals relate to their natural environment. The main argument that supports the use of culturally meaningful *foodways* is that it reflects resilience strategies that enable immigrants to keep *a sense of belonging*, it facilitates their process of adaptation through social and cultural networks, and it also has an important role in "place-making" or how they connect to their biophysical environment. A case study approach was used as the main instrument to explore how Latinx immigrants living in the Seattle metropolitan area feel connected to nature by maintaining culturally meaningful *foodways*. The main objective of this research is to demonstrate that a *sense of connectedness to nature* depends in part on a *sense of belonging* and a *sense of place*.

At the end of Chapter 1, the problem statement and rationale for the design of this research are presented. It will be followed by Chapter 2 which presents a general background on the debates related to the current limitations of the sustainable development discourse. This chapter provides a summary of the current dominant debates regarding how the modern environmental crisis is being defined. It will also include an overview of the bio-heritage paradigm that deconstructs the issues that result when there is an artificial distinction between 'nature' and 'culture'. Also, it introduces a review that explores what it means to be connected to nature and how these connections explain environmental behavior. This is especially relevant for this research since migration should affect this sense of connectedness. This is why one of the reasons that a focus

on the specific experiences of Latinxs in the United States is an important part of this study. Chapter 3 covers the methodology used to explore how Latinxs living in the Seattle metropolitan area and to assess their connection to nature through the lens of culturally meaningful *foodways*. The results of this present study are provided in Chapters 4 and 5, respectively. This work concludes with a discussion of the practical implications of *foodways* as a potential indicator of connectedness to nature. It concludes with a set of final considerations meant to contribute to the dialogue and outlines a framework that provides a more holistic approach to explore the environmental discourse within a socio-natural framework. It should also bring justice to the experience of those who have been systemically silenced within the environmental discourse and therefore link locally-based nature values to changes occurring in the environment.

1.1 BACKGROUND

In the past century, the governance of natural resources, and especially biodiversity conservation practices, has been linked to "universal" economic development and social well-being standards such as the *Millennium Development Goals* (Suhkdev, et. al., 2012; UNFAO, UNDP, and UNEP, 2008; UN, 2008).

In 2008, *The Economics of Ecosystems and Biodiversity (TEEB)* report was published and estimated that the economic cost of biodiversity loss ranges between $2 and 4.5 trillion dollars (World Economic Forum, 2010). This Report shows that during the last century, biodiversity losses were integrated into political, economic, and social scenario assessments. This suggests that the natural and the social connections are being considered when the impacts of humans on natural environments and ecosystems are being assessed.

Despite the general adoption and use of these global sustainability models, the international community has failed to reduce biodiversity loss and to alleviate poverty, especially at the level of local communities (IPPC, 2014). Most of these assessments are not based on local level knowledge or the local scale (Vogt et al., 2016), which suggests a lack of conservation efficacy due to the use of assessment protocols which do not include the local scale where decisions need to be made. This further supports the need to abandon the idea of assessments based on standardized methods and global-based data. Several researchers have written on how universal and uniform "solutions" undermine socioeconomic and sociocultural differences that exist at the local scale and determine whether a project will succeed or fail (Chan, et. al., 2012; Hernández-Morcillo, Plieninger, Bieling, 2013). Even more, it is necessary to deconstruct apparent exclusionary dichotomies, such as culture/nature or scientific/nonscientific, to achieve more inclusive, equitable, effective and sustainable conservation practices. This would shift solutions to more closely mimic the reality of "locals" by recognizing their role in the management of natural resources.

In the face of global threats such as climate change, it is imperative to recognize that cultural systems[1] influence patterns of natural resources use and impact not only local biodiversity but also the evolution of human communities. For example, landscapes formalize the linkages between nature and cultural practices (Tengberg, et. al., 2012; Tilliger, et. al., 2015; Turner, et. al., 2014; van Berkel, Verburg, 2014). This dynamic form of interaction allows human communities to set historical references that act as a lens through which the world is perceived and conform the base under which environmental changes can be considered as acceptable.

[1] *Culture* can be defined as a set of beliefs, values, and attitudes practiced by members of a community that can serve as a base for the creation of norms that regulate human actions (Atran, Medin, Ross, 2005; Duralappa, et. al., 2014; Pröpper, Haupts, 2014).

Actually, it is crucial to recognize that this lens changes over time. This results in a diversity of forms of *cultural capital* which constitute the base of social resilience that allows individuals to cope and adapt to environmental changes (Atran, Medin, Ross, 2005; Leonard, et. al, 2013; Liu, et. al., 2007; MA, 2005; Pröpper, Haupts, 2014). In fact, *coupled human-natural systems*, even when changing over time, translate natural, human, and social capitals into new forms of knowledge or *cultural capital* (Bourdieu, 1986; Milcu, et. al., 2013).

The objective of this research project was to test an alternative approach i.e., through the lens of *traditional food practices* or *foodways*[2], to identify linkages that sensitively explain and identify linkages between cultural and environmental values. In the next section, a more in-depth discussion of the linkages between ecological and sociocultural elements will be provided using the lens of food practices, and as rationale for how researching the experiences of some Latinxs living in the Seattle metropolitan area will contribute to the understanding of these linkages.

1.2 PROBLEM STATEMENT

Most of the previous work done to gain insights into the relationships between humans and the environment have focused research on addressing simplistic and linear relationships between people and the environment they live in (Schultz, Unipan, Gamba, 2000; Stern, 2000; Kollmuss and Agyeman, 2002; Klöckner 2013; Van der Werff, Steg, and Keizer, 2013; Ardoin 2014; Iniesta-Arandia et al., 2014). In reality the complexity of the humans-nature relationships require different forms of analysis. This study utilized an interdisciplinary approach with the intention to test whether culture serves as an index to understand in more detail how humans relate to nature.

[2] Based *on local ecological knowledge*, which represents part of a "cultural adaptation to the natural environment" (Pilgrim, 2006: 32).

The main objective of this study is to look at the connection between the sense of *connectedness to nature* (environmental identity) and cultural identity through traditional *foodways*. *Foodways* refer in general to food practices that represent "the intersection of food and culture. The folklore of foods includes elements of traditional expressive culture in relation to food stories, symbolism, trends, memory and nostalgia, practices, customs, ethnicity, and the material elements of the foods themselves" (Thursby, 2008: 176). *Foodways* represents and are derived from local knowledge. They include activities, guided by cultural values, related to the production, management, preparation, and preservation of food, as well as the use of medicinal plants (D'Ambrosio and Puri, 2016).

The main assumption underlying this research is that a *sense of belonging* can increase the *sense of connectedness to nature*, which will translate into a stronger pro-environmental behavior (García-Moya et al., 2012; Krug, 2012). The central hypothesis of this research is that changes in cultural behavior, in this particular case due to migration, have an impact on environmental behavior. In particular, the present approach constitutes an attempt to unveil environmental practices of Latinx immigrants (in this case, living in the Seattle area), using *foodways* as an engaging and exploratory tool.

Foodways has the symbolic and material power to evoke memories, as well as cognitive and behavioral aspects of culture[3] (Brown and Mussell, 1984; Means, Mackenzie Davey and Dewe, 2015), which can then be used to better understand some drivers of pro-environmental behavior. According to Johnny Sanvichith (2011), as well as to Leila Scannell and Robert Gifford (2010), pro-environmental behavior is affected by ethnic and environmental identity (as used by

[3] Although, practices, beliefs and values are constantly evolving as a result of social and environmental changes (Fonte, 2008), impacting not only *foodways*, but behavior in general.

ecopsychologists to refer to the *sense of connectedness to nature*[4]). In this way, *foodways* can be used as an indicator for the relationships between cultural identity[5] and the strength of the environmental values held by a person. Furthermore, it could be used to comprehend how migration affect the *senses of belonging* and of *connectedness to nature*[6] in individuals that self-identify as Latinx.

1.3 SIGNIFICANCE OF THE STUDY

The environmental movement that started in the United States in the second half of the twentieth century has permeated the way humans in general relate to nature through different standards under the idea of being "green" (Hughes, 2001; Latour, 2004; Alkon, 2012; Akenji, 2014; Finney, 2014). Despite the continuous emergence of new global ideals of environmentalism, Western values are still the core of environmental agendas, even when these values do not necessarily represent the diverse relationships that thousands of human communities around the world develop with the natural environment (Escobar, 1998; Fischer, 2000; Gonzalez, 2001; Forsyth, 2003; Gomez-Baggethun and Ruiz-Perez, 2013; Finney, 2014). In the midst of a rapid losses in biodiversity, environmental behavior has become the core of multiple international environmental policies (Clayton, 2003; Franzen and Meyer, 2010; Manolas, Hockey and Littledyke, 2013; Connolly et al., 2015; Meijers, Lengelle, and Kopnina, 2016). Environmental behavior and its impacts in the environment transcend material scales, thus affecting notions of a

[4] Personally, I prefer the principle used by Rarámuri known as *iwigara*: The recognition of a reciprocal relationship human-nature, where humans are considered to occupy one of the multiple ecological niches in an ecosystem, but for the purposes of this academic research I will use the term "environmental identity."
[5] Understood as a dynamic "entity".
[6] Psychologists have proven that disconnection from nature has a negative effect in pro-environmental behavior (Scannell and Gifford, 2010).

person's identity, rights, legitimation, and perceptions of sovereignty (Escobar, 1998; Forsyth, 2003; Liverman, 2004; Ellis, 2005; Houde, 2007; Minkler et al., 2008; Mares, 2010).

Over the past several decades, many researchers have documented how the American environmental mainstream has been characterized by a low representation of different sociocultural groups (Stern, Dietz, and Kalof, 1993; Pulido, 1996; Stern, 2000; Ellis, 2005; Peña, 2005; Mares, 2010; Mares and Peña, 2010; West, 2010; Alkon, 2012; Finney, 2014; de la Hoz, 2016). This pattern has occurred despite the exponential demographic growth of ethnic minorities in the United States (Passel, Cohn, Lopez, 2011). Most of the research in this area has focused on researching either the environmental movement or environmental justice in terms of health issues, but not what makes a group of people living within the confines of a diverse population in a particular region more environmental and willing to make more ethical choices related to the environment. Unfortunately, little has been said about the importance of cultural differences in the construction of environmental identities. Then, how inclusive is the environmental agenda (not only in the United States, but internationally as well)?

Under a broad perspective, different studies have demonstrated that socio-psychological values, including environmental values, are correlated to factors such as age, gender, religion, and ethnicity (Stern, Dietz & Kalof, 1993; Johnson, Bowker & Cordell, 2004; Franzen & Meyer, 2010; Leirserowitz and Akerlof, 2010; Sanvichith, 2011; Boeve-de Pauw and Van Petegem, 2013; Manolas, Hockey, and Littledyke, 2013; Macias 2015 and 2016). Researchers have demonstrated that habits or behavior are highly dependent on a *sense of belonging*, either to a place, to a group professing pro-environmental behaviors or to shared identity (Gonzalez, 2001; Becker, Ghimire, 2003; Johnson, Bowker, and Cordell, 2004; Atran, et al., 2005; Gosling and Williams, 2010; Halpenny, 2010; Scanell and Gifford, 2010; Raymond, Brown, and Robinson,

2011; Ellis and Kozenny, 2012; Chan, Satterfield, and Goldstein, 2012; Ardoin, 2014; Finney, 2014; Aguilar-Santelises, Castillo, 2015; Bajamonte et al., 2015; Bronfman et al., 2015; Hunter, Luna, and Norton, 2015; Grajal et al., 2017). In this sense, it is interesting to ask whether there is a scientific basis for cultural differences among different members of society living within one country, how immigration contributes to these cultural differences, and how well cultural characteristics are retained by immigrants.

Paradoxically, several studies had suggested that Latinxs tend to show stronger pro-environmental behaviors than white Americans who are not Latinx (Schultz, Unipan, and Gamba, 2000; Bendixen & Associates, 2008; Lavallee, 2009; Carter, Silva, Guzmán, 2013; Leslie, 2013; Davenport, 2015; Segura and Pantoja, 2015; de la Hoz, 2016). Some researchers postulate that this is due to a stronger *sense of connectedness to nature* expressed in the form of environmental values (Lynch, 1993; Schultz, Unipan, Gamba, 2000; Stedman, 2002; Mayer and Frantz, 2004; Ardoin, 2014; Lokhorst et al., 2014). The issue regarding the criteria or characteristics that make someone have a stronger *sense of connectedness to nature* has been poorly addressed by researchers. Native Americans are said to have a stronger sense of connectedness to nature but understanding why these relationships exist is only recently becoming an important research area (Marchand et al., 2016). There is still a gap in the understanding of the environmental values in Latinx communities in the United States despite the evidence being anecdotal for their environmental behavior. Since Latinxs are becoming one of the biggest minorities in the United States, this study becomes crucial not only to promote a stronger involvement of this segment of the population in environmental activities, but as a way of social integration and a manner of environmental justice (Lynch, 1993; Mares, 2010; Mares and Peña, 2010; Macias, 2015).

It may seem counterintuitive to characterize Latinx who have migrated into a new environment with strong environmental behavior patterns since they need to quickly adapt to new setting and values. This raises questions about how much of an immigrant's value system survives this transition into a new environment and society, especially given that immigrants are decoupled from their past roots and traditional environmental behavior histories. Furthermore, the process of adapting to a new environment by immigrants has the potential to have negative effects on the environment. For example, migration and urbanization[7] are some of the current phenomena that negatively impact the preservation of nature since they threaten the historical environmental stewardship behavior of humans (WinklerPrins and de Souza 2009; Sanvichith, 2011). Migration causes the "loss of food production, loss of income, depletion of genetic resources, loss of ability to carry out cultural and spiritual practices, loss of cultural identity, loss of sense of place/community, loss of educational opportunities, loss of ecological knowledge, loss of social and cultural capital, loss of habitats, change in microclimates" (Tengberg et al. 2012)[8]. All these changes have the potential to negatively impact the environment as immigrants have to survive in an environment that is very different from the one they immigrated from. So the knowledge they hold from their country of origin does not work in the new environment.

On the other hand, even if it is accepted that food availability and environmental conditions are correlated (MEA, 2015; FAO, 2017; TEEB, 2017), there is a lack of understanding of the how cultural and environmental identities intersect in *foodways*. In this research *foodways* will be

[7] The variable of urbanization is being included, since in many cases the migration occurs in the borders of the same country, usually from rural to urban areas.

[8] Just to add into the relation migration-*foodways*: "Culturally based food habits are often the last practices people change through acculturation… research indicates that the consumption of new items is often independent of traditional food habits. The lack of available native ingredients may force immediate acculturation, or convenience or cost factors may speed change… Some immigrants, however, adapt the foods of the new culture to the preparation of traditional dishes" (Kittler, Sucher, Nahikian-Nelms 2001: 6-7).

used as a tangible instrument to understand the direct impacts of migration (understood as a change in social and natural environments) on the environmental and cultural identities of a group of Latinxs.

This research represents a case study of Latinxs living in the Seattle metropolitan area, who according to Teresa Mares (2010) have not been integrated in the CSA movement, but still hold higher environmental values in comparison with other ethnic groups. The result should provide some insights to the importance of cultural values in contributing to the environmental behavior held by a group that share an ethnic identity. It should show that *foodways* constitutes an important link that transfers the practices and knowledge held by a group of people who are displaced from their forefathers lands. In this sense, the results will help lead to an understanding of processes of human adaptation to new settings and illuminate how these changes determine, first a new form of interaction with the natural environment, and therefore, changes in environmental behavior. This research constitutes an attempt to incorporate an interdisciplinary and multicultural lens in the environmental sciences toolbox, by promoting the study of socio-ecological systems from a perspective that diversifies and localizes the environmental discourse. In essence, this project aims to integrate scientific practices into the context of social and environmental justice.

1.4 RESEARCH QUESTIONS AND HYPOTHESIS

The central hypothesis of this research is that a *sense of connectedness to nature* is shaped by sociocultural factors and has a direct impact on environmental behavior. Therefore, modifications in cultural identities, in this particular case due to migration, have an impact on environmental identity and behavior.

- *Primary question*: Under what conditions can *foodways* can be used as an indicator of a *sense of connectedness to nature*?
- *Secondary question*: In what ways are sociocultural identities related to a *sense of connectedness to nature* and have an impact on environmental behavior?

***Null Hypothesis*:** Cultural differences have no impact in environmental identity and pro-environmental behavior, therefore, any factor impacting cultural identity would not affect environmental identity and pro-environmental behavior.

1.5 RESEARCH OBJECTIVES

The main objective of this study is to provide a better understanding of the link between cultural and environmental values through the lens of *traditional foodways.* To address this objective, this study explores the findings of previous research that suggest that Latinxs have stronger environmental values compared to non-Latinxs in the United States. *Foodways* is being used as the lens to identify whether a group of people express an environmental identity despite the context in which they operate in order to survive. Through a case study, this research uses traditional *foodways* to determine whether environmental values are linked to a cultural identity and in consequence, are affected by migration or displacement. In this way, *foodways* can be used as an indicator of the relationships between cultural identity[9] and environmental values. Furthermore, by looking into changes in traditional *foodways*, a better understanding of how

[9] Understood as a dynamic "entity".

migration affect the *senses of belonging* and of *connectedness to natur*e in families that self-identify as Latinx can be achieved.

Other objectives include:

a) Explore in what ways cultural and ethnic identities are linked to environmental values and behavior;
b) Understand how migration affects cultural identity and a *sense of connectedness with nature*, as people build relationship in a new socio-environmental context.

This project constitutes an innovative attempt to study socio-ecological systems from an interdisciplinary perspective and integrate them into the context of social and environmental justice initiatives. This approach therefore constitutes a way to connect the broad work in environmental studies, anthropology and food studies that have showed the strong bond between food and ethnic/cultural identities.

The next chapter provides a literature review of previous research conducted on global environmentalism, local knowledge, *foodways*, and migration. These should set the context to create a general framework under which the research questions and objectives can be better understood. It is followed by a section describing the research approach and methodology.

CHAPTER 2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 THE MODERN ENVIRONMENTAL CRISIS: FROM SPECIES EXTINCTION TO CLIMATE CHANGE

In the current era, it is usual to encounter the term <<biodiversity>> in public media. Its usage has spread with such speed that it comes up constantly in radio and television. It draws the attention of scientists, conservationists, activists, politicians, economists, and the public in general, in an attempt to address the world's current environmental crises (MEA, 2005).

According to specialists, our planet is going through a "sixth mass extinction" in which dozens of species are disappearing daily due to human impact in the form of habitat destruction, land conversion, and pollution. These factors have a direct relationship to climate change (MEA, 2005) and contribute to what has been described as a "biodiversity crisis" (Koh, et al., 2004; McGill, et al., 2015):

> *"The evidence is incontrovertible that recent extinction rates are unprecedented in human history and highly unusual in Earth's history... If the currently elevated extinction pace is allowed to continue, humans will soon (in as little as three human lifetimes) be deprived of many biodiversity benefits. On human time scales, this loss would be effectively permanent because in the aftermath of past mass extinctions, the living world took hundreds of thousands to millions of years to rediversify" (Ceballos, Ehrlich, et al., 2015).*

What Paul Crutzen named in 2002 as the *Anthropocene*, represents an era characterized by an inharmonious relationship between the humans and the natural environment that has resulted in an environmental catastrophe. It has focused attention on societies need to reevaluate the impact of its destructive practices on the environment (McGill, et al., 2015; Johnson, et al., 2017).

The concept of *biodiversity* was coined in 1980 by E.A. Norse and R.E. McManus in a report called "Environmental quality 1980: The Eleventh Annual Report of the Council on

Environmental Quality," to refer to the total sum of species and their whole genetic and ecologic variations[10] (Núñez, González-Gaudiano, Barahona, 2003). In 1985 the condensed form, "*biodiversity*," was used in public media and then adopted by Malter G. Rosen for his report entitled '*National Forum on Biodiversity'*. Important figures in biology such as Jared Diamond, Paul R. Ehrlich, G. Evelyn Hutchinson, Ernst Mayr, Charles D. Michener, Harold A. Mooney, Peter R. Raven, and Edward O. Wilson assisted in this endeavor to bring public attention to the rapid destruction of natural habitats and the subsequent loss of biological species (Núñez, González-Gaudiano, Barahona, 2003). In a book entitled "Biodiversity," edited by E.O. Wilson and F.M. Peters, this term was further popularized in the lay media and used to describe species[11].

In the attempt to protect species and habitats, the United Nations Conference on Environment and Development (UNCED), also known as the *Rio Summit* (held in Brazil in 1992), elevated the term biodiversity into common use in international discourse. The main purpose of this meeting was to promote all nations' investments in the study and conservation of biodiversity. The main result of this international effort was the creation of the *Convention on Biological Diversity (CBD)*, where for the first time an official and standardized definition for the term was created:

> *"'Biological diversity' means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" (CBD, 1992).*

[10] Another authors recognized A. Lovejoy as the creator of the term, because in a lecture included in report "Global 2000," published in 1980, he used the term "biological diversity" to refer to the total number of species in the planet. (Burguess, 2001; Nuñez, González-Gaudiano, Barahona, 2003: 389).

[11] P.R. Juthro counted 14 different meanings for the concept of biodiversity by 1993 and more than 22 by 2003 (Núñez, González-Gaudiano, Barahona, 2003: 390). This increase in the number of meanings was product of its different uses, not only in biology, but also in sociopolitical and economic contexts.

At the beginning of this millennium, the concept of biodiversity began to be transformed in response to society's changing view of human impacts on the environment and biodiversity. Despite the global adoption of technocratic models for environmental sustainability, the recognition of the importance of linking economic development to human well-being permeated both the academic and political spheres. As a result, biodiversity has become a central concept in sustainable development policies around the world. It is often used as a scientific tool to assess ecosystem assets, as well as a political tool to mediate the relationship between humans and the surrounding environment (Norton, 2003; Robin, 2011):

> *"The term biodiversity is a tool for a zealous defense of particular social construction of nature that recognizes, analyzes, and rues this furious destruction of life on Earth. When they deploy the term, biologists aim to change science, conservation, cultural habits, human values, our ideas about nature, and, ultimately, nature itself" (Takacs, 1996: 1-2).*

In this sense, despite its biophysical referents, biodiversity plays a crucial role in the discourse around what are considered to be acceptable levels of exploitation of natural resources. This shows that it is not just a scientific concept, but also an important factor in the social fabric of communities (Escobar, 1998; Forsyth, 2003). As a consequence, the governance of resources with potential impacts on biodiversity has become a central point of debate at both local and international levels. Also, its impact goes beyond academic concerns and knowledge production to exploring the impact of society in the power dynamics surrounding the management of natural resources.

In the construction of the idea of environmental crisis, the concept of biodiversity has transcended the scientific realm to become a normative tool that relies on the creation and legitimation of new forms of expertise that dictate human/nature interactions. Yet, in this era or

"risk society[12]" a more critical examination of the role of scientific information in universal decision-making processes needs to be revised in order to avoid creating new forms of oppression.

Unfortunately, the use of scientific approaches developed by international and national conservation organizations over local forms of knowledge is mostly based on a lack of understanding of the impact of such heritage in local communities' sustainable practices[13] (Escobar, 1998; Berkes, Colding, Folke, 2000; Forsyth, 2003; Nazarea, 2006; Buizer, Arts, Kok, 2011). Gradually, international agencies such as UNESCO have started to recognize that some of the most effective conservation projects that have been implemented were cooperative efforts that included local people in the management of natural resources (UNESCO, 1972). It is fundamental to create environmental policies that reflect the values of the different communities in a given region and that reveal the diversity of forms of interactions that are possible in coupled human-nature ecosystems. This will increase the level of resilience of societies and environments to global threatens such as climate change.

2.2 THE SCIENCE BEHIND THE ENVIRONMENTAL CRISIS

In the midst the current environmental crisis, scientific knowledge is broadly seen as the main tool to deal with uncertainty. It is through this process of legitimation of one form of knowledge that new elites are formed and professional experts are granted a high degree of power. The highly technical nature of scientific knowledge, data usage in making environmental decisions

[12] Ulrich Beck, 1992.
[13] *Cultural landscapes* are the ideal example of how cultural heritage impacts the relationship human-nature in a determined place, being a product of adaptation

becomes highly politicized where 'science-based' facts become obscured by the inability of policy-makers to deal with complex environmental decisions and their associated risks.

In this form of 'risk society,' as defined by Ulrich Beck (1992):

> *"... given the highly technical and invisible nature of environmental risks, the politics of risk emerge as politics of knowledge, typically contested through expertise and counterexpertise… At every stage in our understanding of such risks, the mobilization of scientific knowledge is central to their description and assessment. This elevates the expertise and status of the knowledge professions to a prime political position in the discourse of risk, leaving little or no room for the layperson. The result is a growing tension between those with and those without knowledge" (Fischer, 2000, 51)*.

It is imperative to recognize that when knowledge is accepted as "truth," it becomes a tool of power that permeates political spheres, and consequently it affects decision-making within the economic and social spheres. In consequence, the needs and values attributed to nature seem to be defined by an authoritative discourse that establishes a certain social order where the position of subjects and objects is defined:

> *"For most nature researchers and environmentalists, however, nature is still an object, an external reality, from which we can take slices either for scientific study or for conservation" (Myllyntaus, Saikku, 2001, 34).*

A perfect example of this situation is the discourse on sustainable development, under which the management of natural resources conflicts with the ideals of economic growth. In the past fifty years, the idea of sustainable development has focused on the modernization of human civilization, through the pillars of economic growth, social inclusion, and environmental stewardship (UN, 2017). The fact is that sustainable development has been accompanied by processes of globalization and commodification of natural resources through approaches such as the *natural capital*. This approach has clearly resulted in the degradation of natural

environments, but also of traditional knowledge systems (Wood, et al., 2000). These negative development impacts are due to the existing limits of the biophysical constraints controlling nature and its productive capacity (Vogt et al. 2016), as well as the interests of certain actors (Teich, Porter, Gustafsson, 1997; Forsyth, 2003). Unfortunately, this position fails to recognize the reality of many communities around the world.

Most ecologists and conservationists tend to defend the idea that in order to deal with environmental issues such as climate change and the current mass extinction, humanity must be kept separate from nature since they cause environments to be less resilient. Thus natural resources need to be managed according to the values and knowledge of those in power. This position clearly reflects a Westernized archetype of reality, characterized by the human/nature division (Escobar, 1998; Fisher, 2000; Hughes, 2001; Myllyntaus, Saikku, 2001; Forsyth, 2003; Latour, 2004). However, this is only an apparent and artificial dichotomy:

> *"Humans never existed in isolation from the rest of life, and could not exist alone, because they depend on the complex and intimate associations that make life possible. To a very large extent, ecosystems have influenced human events within the context of local and regional ecosystems, and world history must in addition place them within the ecosphere; the worldwide ecosystem" (Hughes, 2001, 6)*

In other words, what we recognize as the natural environment is not merely a spatial dimension, since it has coevolved with countless of living organisms who actively interact and are interconnected, including human beings. As the result of this dynamic relation, humans have formed different representations that guide this interaction, through the naturalization of social relations and socialization/domestication of nature (Teich, Porter, Gustafsson, 1997; Fischer, 2000; Gonzalez, 2001; Forsyth, 2003; Latour, 2004; Cruikshank, 2005). This is described well by *(Soja, 1989, 80)*:

> *"If space [in this case, the natural environment] has an air of neutrality and indifference with regard to its contents and thus seems to be 'purely' formal, the epitome of rational abstraction, it is precisely because it has been occupied and used, and has already been the focus of past processes whose traces are not always evident on the landscape. Space [the natural environment] has shaped and molded from historical and natural elements, but this has been political process"*

Under this perspective, the adoption of universal approaches to define the relationships between humans and nature seems superfluous since these representations tend to be product of a "standardized" set of experiences that fail to recognize local perspectives and that are usually incorporated as part of the mainstream environmentalism (Escobar, 1998; Forsyth, 2003; Richardson, 2008).

For instance, the adoption of a scientific approach in conservation has resulted in the creation of numerous natural reserves around the world and hundreds of local and indigenous communities have been evicted from their ancestral lands (Escobar, 1998; Robin, 2011). This tendency has been part of a "civilizing process" through which standardized methods have been implemented to supposedly deal with the inefficiency and lack of accuracy of traditional forms of knowledge. The result has been a continuous erosion of cultural diversity, leading to dramatic social and biological problems (Escobar, 1998; Gonzalez, 2001; Forsyth, 2003; Houde, 2007; Maffi and Woodley, 2012).

Furthermore, in past years, experts have found that changes in biological and cultural diversity are forced by common drivers (UNESCO, 1972; Maffi, 1998; Wood et al., 2000; Folke, 2004; Pilgrim, 2006; Pilgrim and Pretty, 2010; Verschuuren et al., 2010; Maffi and Woodley, 2012; Council Alaska, 2015). According to UNESCO up to 90 per cent of languages, which are linked to traditional knowledge systems, will be endangered or extinct by 2100 (Swiderska, 2006). These local systems of knowledge are usually products of the co-evolving relationships between

local communities and their surrounding environment, often conforming adaptive management systems embedded in what has been described as *collective biocultural heritage*:

> *"Knowledge, innovations and practices of indigenous and local communities that are collectively held and inextricably linked to traditional resources and territories, local economies, the diversity of genes, species and ecosystems, cultural and spiritual values, and customary laws shapes within the socio-ecological context of communities"* (Swiderska, 2006: 3).

For example, traditional agricultural landscapes are a tangible expression of the close interaction between natural phenomena and human communities, whose practices are culturally and environmentally driven (Gonzalez, 2001; Pilgrim, 2006; Garcia-Moya et al., 2012; Salmon, 2012; ; Tenberg et al., 2012; Iniesta-Arandia et al., 2014; Pröpper and Haupts, 2014; Turner et al., 2014; Bajamonte, et al., 2015; Tilliger et al., 2015). A representative model of socio-ecological or *coupled human-natural systems* linked to *foodways* are *milpas* (Mesoamerican house-lot gardens) (Christie, 2004). These are self-sustaining agrosystems used throughout Mexico and Central America, based on many centuries where similar practices were maintained by generations within a community or region. Most of the time, *milpas* are located close to houses, becoming a place where cultural and social space is used for the performance of practices around food production and preparation. This reaffirms the *sense of place* and *sense of belonging* for the members of a community. Unfortunately, these agrosystems are being threatened by urbanization (Andersson, et. al., 2014; Calvet-Mir, Gómez-Baggethun & Reyes-García, 2012). In this way, *foodways* constitutes a form of local knowledge that underpin bio-cultural diversity based on the interaction of communities with their environment, serving as a reservoir of knowledge, language, belief systems, socioeconomic relations, and language (Gonzalez, 2001; Pilgrim, 2006; Calvet-Mir, Gómez-Baggethun, & Reyes-García, 2012; Garcia-

Moya et al., 2012; Salmon, 2012; ; Tenberg et al., 2012; Iniesta-Arandia et al., 2014; Pröpper and Haupts, 2014; Turner et al., 2014; Bajamonte, et al., 2015).

In consequence, it is fundamental to recognize that the degradation of ecosystems, together with the loss of species, the erosion of genetic diversity, and the homogenization of cultures all have a direct impact on social vulnerability to environmental factors such as climate change and nature's resilience capacity (Escobar, 1998; Gonzalez, 2001; Forsyth, 2003; Houde, 2007; Maffi and Woodley, 2012). Human beings depend on the use and extraction of natural resources. Therefore, sustainable efforts should consider sociocultural factors and incorporate local forms of knowledge towards more resilient socio-environmental systems.

2.3 BIO-CULTURAL HERITAGE AND THE VALUE OF LOCAL KNOWLEDGE

In the current era of intensified globalization, nature is more than ever an object of consumption and its definition is center in the debate of environmental governance[14]. While this phenomenon can be seen as an opportunity for the exchange of ideas and knowledge, it has also resulted in universal notions of sustainability. It characterizes the Western scientific practices that undermine a more holistic worldview because of their focus on nature as a location to provide resources consumed by society. This has resulted in the adoption of scientific approaches to assess the "civilizing process" of resource collection thresholds. As part of scientific approaches, traditional forms of knowledge have been considered in many cases inefficient (Gonzalez, 2001). This triggered the continuous erosion of the inclusion of indigenous forms of knowledge in the

[14] Defined from a pluralistic perspective as "a range of values, norms, institutions and processes, both state- and non-state-based, that shape entitlements to use or benefit from natural resources, and to control their exploitation or protection" (Richardson, 2008, 3).

decision-making process which resulted in dramatic social and biological problems (Escobar, 1998; Forsyth, 2003; Richardson, 2008).

It is imperative to recognize that many different cultural systems influence patterns of natural resources use, and thus they impact not only local biodiversity but also the evolution of human communities. But nature also constrains human activities and functions as a driver of change in cultural behavior (Turner, et. al., 2014; Tengberg, et. al., 2012). *Culture* can be defined as a set of beliefs, values, and attitudes practiced by members of a community that can serve as a basis for the creation of norms that regulate human actions (Atran, Medin, Ross, 2005; Duralappa, et. al., 2014; Pröpper, Haupts, 2014). Landscapes represent a form of materialization of the linkage of nature and cultural practices (Tengberg, et. al., 2012; Tilliger, et. al., 2015; Turner, et. al., 2014; van Berkel, Verburg, 2014). They show how humans developed historical behavior patterns based on their interaction with the natural world which then acts as lens for how they understand the world (Atran, Medin, Ross, 2005: 744; MA, 2005).

It is important to recognize that *coupled human-natural systems* are highly dynamic (Liu, et. al., 2007; Pröpper, Haupts, 2014). They change over time while translating natural, human and social capitals into new forms of knowledge or *cultural capital* (Bourdieu, 1986; Milcu, et. al., 2013). This diversity of *cultural capital* constitutes the base of social resilience that allows individuals to cope with and adapt to environmental changes (MA, 2005). This idea was summarized by *Tilliger, et. al., 2015: 891:*

> *"…humans interact with landscapes in dynamic transactional processes and cultural landscapes are at the interface between nature and culture, tangible and intangible heritage, biological and cultural diversity".*

Local knowledge systems (LKS) consist of different combinations of beliefs, knowledge, meanings, representations, practices, artifacts, and institutions shaped by cultural traditions that define specific practices through which humans relate to the natural environment (Forsyth, 2003; Pretty, 2003; Folke, 2004; Surralles and Hierro, 2005; Nazarea, 2006; Pilgrim, 2006; Pilgrim and Pretty, 2010; Bodin and Prell, 2011; Vaderbroek et al., 2011; Salmon, 2012; Tenberg et al., 2012; Hernandez-Morcillo, Plieninger, Bieling, 2013; Pröpper and Haupts, 2014). These systems are passed on for generations as a form of experiential and place-based knowledge that reflects long-term relationships between specific groups and their immediate biophysical environment, and thus they become part of the bio-cultural heritage of local communities (Gonzalez, 2001; Nazarea, 2006; Pretty et al., 2009; Verschuuren et al., 2010; Salmon, 2012). As Julie Cruikshank (2005) describes, they constitute an embodied tacit knowledge[15]. When this form of knowledge is kept for long periods of time and embedded in communities as part of each individual's identity[16], it is recognized as *traditional knowledge* (TK). Due to the strong connection that these communities have with the environment, this knowledge becomes embedded in management practices and social norms that regulate the actions of individuals in favor of the community (Gonzalez, 2001; Pulido et al., 2008; Salmon, 2012).

In this sense, TK constitutes a practice/beliefs complex dependent on constantly coevolving cultural and biophysical contexts. For example, in "*El Cultivo del Maíz*," Javier Castellanos denotes the link between identity and tradition in many Mesoamerican cultures that claim that "[their] history is that of corn" (Castellanos, 1988, 238). As a result, maize is not seen just as a crop, but as a central actor in *"the social, cultural, economic, religious, and psychological lives*

[15] *Traditional cultural expressions* or folklore are considered a source of material/tangible and intangible wealth (UNESCO, 2003).
[16] "Identities" (plural) is more accurate.

of the region's peoples" (Gonzalez, 2001: 102). It is a central natural resource in the survival of many communities in this region, but it is also a central icon in the identity of the inhabitants of the region:

> *"Throughout Mexico's history, neither the kings nor the peasants could ignore issues related to the production, distribution, and consumption of tortillas. In this capacity, the social history of the tortilla can act as guide to outside meanings, the meanings associated with the politics of cultural and economic exchange that have helped to constitute the Mexican experience"* (Lind and Barham, 2003: 54).

It is necessary to say that the relation that many local communities have with this plant is not uniform. The ways in which maize is planted, harvested, stored, processed, consumed and in general, managed, reflect a diverse set of values that respond to cultural differences.

Essentially, those agrosystems, rooted in traditional knowledge systems constitute a form of *cultural capital* (MA, 2005; Rodriguez-Ortega, et. al., 2014; Tilliger, et. al., 2015). There is evidence that high *social capital* is associated with higher levels of social well-being, facilitating collective action by creating stronger social bonds and norms that support human practices (Bourdieu, 1986; Atran, Medin, Ross, 2005). Where *social capital* is highly formalized, people have the confidence to participate in collective actions and create knowledge. In this sense, the creation of spaces that strengthen *social capital* could be a prerequisite for more sustainable practices in the management of natural resources (Atran, Medin, Ross, 2005).

Unfortunately, TK has been devaluated under the dominant Western scientific paradigms that subsume knowledge to institutionalized "objective standards," under which sociocultural factors are considered subjective and therefore, invalid (Gonzalez, 2001; Nazarea, 2006; Houde, 2007). This constitutes a form of epistemic injustice that helps perpetuate the radical distinction between nature and culture, as well as the distinction between modern, industrialized, universal,

and exact science versus the uncivilized, underdeveloped, primitive, inexact knowledge of "the others" (Latour, 1993) or "the rest" (Hall, 1992; Gonzalez, 2001; Cruishank, 2005; Salmon, 2012).

Rural and indigenous communities knowledge is often marginalized following the privatization and adoption of technocratic (top-down) forms of management for natural resources (Fischer, 2000; Minkler et al., 2008; Gomez-Baggethun and Ruiz-Perez, 2011; Vandebroek, Balick, and Nolan, 2012; Gomez-Baggethun, Corbera, and Reyes-Garcia, 2013). Technocratic forms of management are mostly powered by global forms of knowledge. In contrast, TK is local. Therefore, using only one form of forming knowledge deepens the gap between *local* and *global* forms of knowledge and which of them is used in decision-making.

Certainly, TK cannot be simply translated and generalized into scientific knowledge. TK is not static and isolated from other forms of knowledge. Actually, the resilience of those who rely on it comes from the capacity to incorporate new elements that allow them to adapt to social and natural changes (Pierotti, 2000; Gonzalez, 2001; Nazarea, 2006; Pilgrim, 2006; Pilgrim and Pretty, 2010; Garcia-Moya et al., 2012; Krug, 2012; Maffi and Woodley, 2012; Salmon, 2012; Council Alaska, 2015). Any opportunity to create spaces where *traditional knowledge* and Western science can be integrated will rely on the capacity of the researchers to legitimize this knowledge and respect the sovereignty of the community that holds it. An additional challenge will be to create effective tools to facilitate a dialogue, but overall, to recognize the imminent consequences that accompany the integration of these different worldviews. These trade-offs need to be handled in a way that respects the beliefs and values the core of distinct systems of knowledge.

On the other hand, while it is fundamental to recognize the complexity of natural systems in order to integrate *local* and *global knowledge*[17], it is also necessary to create spaces that facilitate dialogue among the different actors. In other words, it is not about favoring local over global concerns (Forsyth, 2003), nor local over scientific knowledge, but to recognize the different scales and the different styles of producing knowledge to better deal with the challenges associated to each problem. This becomes critical when dealing with *complex adaptive systems* such as ecosystems (Berkes, Colding and Folke, 2000; van Oudenhoven, Mijatovic, and Eyzaguirre, 2011; Salmon, 2012; Milcu et al., 2013; Winthrop, 2014), which are experiencing major changes due to climate change. The challenge, then, is to recognize and respect ontological, epistemic, and sociopolitical divergences to try to overcome semantic and institutional barriers that might result in unbalanced power dynamics (Ellis, 2005).

Despite the efforts of conservation organizations and international agencies to promote community involvement in environmental efforts, the management of natural resources seems to respond mostly to top-down governance structures that tend to marginalize local communities (Tandon, 2002; Swiderska, 2006; Minkler et al., 2008; Bodin and Prell, 2011; Ardoin, 2014). Participatory approaches have tried to give voice to these silenced communities by reducing the distance between experts and non-experts, recognizing that knowledge users are also knowledge producers (Tandon, 2002; Brosious, Tsing, and Zerner, 2005; Bodin and Prell, 2011).

It is important to recognize that there is a growing consensus about the need to explore the interaction of factors among multiple levels at different spatial and temporal scales (Vogt et al. 2002; Liu, 2007; Ostrom, 2009). In order to achieve this it is necessary to acknowledge the experience of multiple actors, including those who have traditionally been left out of the

[17] Forms of knowledge.

institutionalized conversation around sustainable development (Pulido, 1996; Kok, 2011). This requires the recognition that:

> *"Power relationships, processes, and policies ranging from the local to the global levels influence which pathways are accessible to groups versus being constrained. Restricted access to particular resources results in greater vulnerability. People are often excluded from accessing resources on the basis of their location, nationality, class, gender race, and ethnicity"* (Mitchell, 2006: 50).

In face of the uncertainty linked to climate change, there is an increasing sense of urgency to adopt not only more interdisciplinary study methods, but overall, a more inclusive agenda. It is well accepted in scientific and technocratic arenas that urbanization, migration, and globalization are diminishing both cultural and biological diversity, but overall, these phenomena are also reducing the capacity to make decisions that support resilient behavior (Maffi, 1998; Forsyth, 2003; WinklerPrins and Souza, 2005; Pretty et al., 2009; Gomez-Baggethun and Ruiz Perez, 2011; Maffi and Woodley, 2012; Salmón, 2012; Vandebroek, Balick and Nolan, 2012; Gomez-Baggethun, Corbera, and Reyes-Garcia, 2013; Poe et al., 2013). When dealing with such *complex adaptive systems* (Berkes, Colding and Folke, 2000; Liu, 2007), a more integrative scalable pluralist position is needed, where experts make an effort to recognize the importance of historically, culturally, and geographically situated narratives as sources of knowledge that can complement scientific knowledge (Forsyth, 2003; Norton, 2003). This effort will also require an interdisciplinary approach so as to facilitate a proper incorporation of different temporal and spatial scales to study complex systems (Vogt et al. 2002; Liu, 2007; Buizer, Arts, and Kok, 2011). In other words:

> *"Democratizing environmental explanations in favor of localities does not suggest championing 'local' over 'global' concerns. Instead, the aim is to acknowledge how existing explanations reflect different framings, and to seek ways of addressing global problems that are more relevant to the concerns of local people"* (Forsyth, 2003, 202).

2.4 SENSE OF CONNECTEDNESS TO NATURE AND ENVIRONMENTAL BEHAVIOR

In the past 30 years, environmental psychologists have proposed and debated different theories and models to explain and predict environmental behavior (Stern, Dietz & Kal7of, 1993; Clayton, 2003; Johnson, Bowker & Cordell, 2004; Franzen & Meyer, 2010; Leirserowitz and Akerlof, 2010; Sanvichith, 2011; Boeve-de Pauw and Van Petegem, 2013; Klöckner, 2013; Manolas, Hockey, and Littledyke, 2013; Connolly et al., 2015; Macias 2015 and 2016; Meijers, Lengelle, and Kopnina, 2016). These models have been designed to transcend material scales and are affecting our notions of identity, rights, legitimation, and sovereignty (Escobar, 1998; Forsyth, 2003; Liverman, 2004; Ellis, 2005; Houde, 2007; Minkler et al., 2008; Mares, 2010). Unfortunately, most of these models or theories adopted a universal/generalist approach based on the values promoted by the American environmental mainstream. These theories have permeated international environmental policies and practices as well as our understanding of the drivers of individual behavior (the personal scale) (Stern, Dietz & Kalof, 1993; Schultz, Unipan, and Gamba, 2000; Clayton, 2003; Franzen and Meyer, 2010; Klöckner, 2013; Manolas, Hockey and Littledyke, 2013; Connolly et al., 2015; de la Hoz, 2016; Meijers, Lengelle, and Kopnina, 2016). Under this perspective, environmental behavior could be predicted and modified following a causal chain of variables at an individual level, without considering other factors that shape behavior.

In the American environmental movement, there has been a tendency to relate pro-environmental behavior to material economic values (Hardin, 1968; Costanza and Daily, 1992; Costanza et al., 1998; Turner and Daily, 2008; Farley, 2012). Many indicators of environmental values are based on consumerism profiles that are partially determined by factors such as income and do not

necessarily reflect environmental values and beliefs of a local demographic group (Pettit and Sheppard, 1992; Bentley and De Leeuw, 2003; Liverman, 2004; Pedersen and Neergaard, 2006; Gomez-Baggethun and Ruiz-Perez, 2011; Akenji, 2014; Lokhorst, et al., 2014). Even more, this form of "green consumerism" is a merely an over-simplification of consumer values, attitudes, and behaviors (Pedersen and Neergaard, 2005; Akenji, 2014), or the social, political, and economic dynamics in which individuals and communities are embedded.

A perfect example of this is the Natural Capital approach. The concept of *natural capital* was introduced by the economist Ernst Schumacher in 1973 in his book "Small Is Beautiful: A Study of Economics As If People Mattered," where he explored the over-exploitation of natural resources as an effect of unsustainable management practices and that could eventually lead to resource depletion, and its associated societal costs (Costanza and Daily, 1992; Farley, 2012). Schumacher explained that if natural resources were treated as an expendable income, then decision makers would be more careful in their management and promote conservation. Natural capital was quickly adopted by ecological economists such as David Pearce and Herman Daly in the 1990s. In 1997, Robert Costanza and other eminent ecological economists and researches published an article in the journal *Nature* called "The Value of the World's Ecosystem Services and Natural Capital", where they gave an initial monetary estimation of the world's natural capital:

> *"The services of ecological systems and the natural capital stocks that produce them are critical to the functioning of the Earth's life-support system. They contribute to human welfare, both directly and indirectly, and therefore represent part of the total economic value of the planet. We have estimated the current economic value of 17 ecosystem services for 16 biomes, based on published studies and a few original calculations. For the entire biosphere, the value (most of which is outside the market) is estimated to be in the range of US$16–54 trillion per year, with an average of US$33 trillion per year. Because of the nature of the uncertainties, this must be considered a minimum estimate. Global gross national product total is around US$18 trillion per year" (Costanza, et. al., 1998: 253).*

This interface of ecology and economics has brought another layer of complexity to the conservation agenda, by equating biodiversity, especially ecosystems, to certain capital assets on which human well-being relies. Under this perspective an economic approach is seen as an alternative to promote conservation practices and to reduce environmental degradation (Turner, Daily, 2008).

The estimation of *natural capital* relies in the valuation of ecosystem services, as a strategy to reflect societal dependence on ecosystems through market and "non-market" methods to create economic incentives for the conservation of natural assets (Braat, De Groot, 2012; Chan, et. al. 2012; Gómez-Baggethun, Ruíz-Pérez, 2011; Hernández-Morcillo, Plieninger, Bieling, 2013; Iniesta-Arandia, et. al., 2014). But the integration of ecosystem services values (that have a diverse nature) in a market framework, such as the one linked to the figure of natural capital, constitutes a form of commodification (Gómez-Baggethun, Ruíz-Pérez, 2011; Pröpper, Haupts, 2014; Winthrop, 2014). In this sense, not only material goods such as timber, fibers, food, or fossil fuels, but also other ecosystem services such as clean air, climate regulation, pollination or water filtration, as well as non-material benefits including recreation, cultural heritage, and cognitive development become marketable (MA, 2005).

It is necessary to ask, who is setting the standards? Under whose value systems is nature being valued? Beneath the ideal of informative, consistent and comparable standards, a new utilitarian and materialistic approach becomes another prescriptive instrument to dominate not only nature, but also to regulate human behavior. This is a further legitimization of a Westernized ontological division between humans and nature (Pröpper, Haupts, 2014).

Unfortunately, local cultural heritage has been overlooked by international and national conservation policies due to a lack of understanding of the impacts of heritage in local

communities' sustainable practices[18]. Gradually, international agencies such as UNESCO and the World Bank have started to recognize that some of the most effective conservation projects are based on cooperative efforts that include local populations in the management of natural resources. Environmental policies need to be designed to reflect the values of the different communities they impact and the diversity of forms of human-nature interactions that determine whether these coupled systems are resilient to global threats such as climate change. Multiple scholars have demonstrated that communities in developing countries, especially rural and indigenous groups, observe nature with a different lens from that of larger urban and capitalistic societies (Escobar, 1998; Bronfam, et al.; 2015; Marchand, et al., 2016).

It has been demonstrated that the contextual circumstances that shape socio-environmental systems at a local scale give rise to particular constructs of nature that guide values, beliefs, attitudes, and as a result, behavior (Escobar, 1998; Gonzalez, 2001; Salmon, 2012). Cognitive and emotional factors also impact behavior because they produce a sense of moral commitment (Schultz, 2002).

These contextualized value and belief systems will determine whether or not a pro-environmental value is expressed as a behavioral response within a demographic group. In this sense, the process of self-identification has a stronger impact on pro-environmental behavior than attitudes simply mediated by market externalities (Dilley, 2009; Mejiers, Lengell, Kopnina, 2016). This explains why residents in nations with low GNP per capita or who emigrated from these countries tend to place a higher priority on resolving environmental problems than their counterparts in developed countries (Ellis and Korzenny, 2012; Bronfman, et al., 2015). This is

[18] *Cultural landscapes* are the ideal example of how cultural heritage impacts the relationship human-nature in a determined place, being a product of adaptation

also consistent with models such as the Value-Belief-Norms proposed by Stern to assess pro-environmental behavior (West, 2010).

> *"Identities are co-constructed by a psychological self and a social context… Identity is formed and expressed in narratives… Identity, therefore, can be defined as a 'set of meanings attached to the self that serves as a standard of reference that guide behavior in situations'… The self-meanings 'may be seen as characteristics or attributes that individuals see as representing who they are, how they feel, and what they value'… taking into account that people have a 'voice' for each of the many positions they hold on a complex society" (Mejiers, Lengelle, and Kopnina, 2016: 2).*

Consequently, a pro-environmental identity is shaped by personal values and beliefs as well as the contextual factors and connections of human-nature systems. All of these lead to feelings of stewardship and to pro-environmental behavior (Kollmuss and Agyeman, 2002; Manolas, Hockey, and Littledyke, 2013; Van Der Werff, Steg, and Keizer, 2013; Lokhorst, et al., 2014; Mejiers, Lengelle, and Kopnina, 2016; Grajal, et al., 2017). Even more, pro-environmental behavior increases with a *sense of connectedness to nature*[19] (Lynch, 1993; Schultz, Unipan, Gamba, 2000; Stedman, 2002; Mayer and Frantz, 2004; Gosling and Williams, 2010; Ardoin, 2014; Lokhorst et al., 2014). In fact, some researchers have postulated that this is due to a stronger *sense of connectedness to nature* expressed in the form of environmental values (Lynch, 1993; Schultz, Unipan, Gamba, 2000). In particular, Johnny Sanvichith (2011) as well as Leila Scannell and Robert Gifford (2010), showed that pro-environmental behavior is affected by ethnic and environmental identity (as used by eco-psychologists to refer to the *sense of connectedness to nature*). As a result, the main assumption underlying this research is that a

[19] The concept of connectedness to nature (CNS) has been defined as the extent to which an individual feels that he or she is part of nature. This sense of connectedness is directly related to place attachment,

sense of belonging can increase the *sense of connectedness to nature*, which will translate into a stronger pro-environmental behavior (García-Moya et al., 2012; Krug, 2012).

It is important to mention that processes of self-identification are temporary, dynamic, relational, and contingent upon changes in intersectional identities experienced by individuals (Bourdieu, 1990; Bourdieu and Wacquant, 1992; McCall, 2005; Davis, 2008). This means that the ways in which individuals express environmental behavior evolves with time, but not their core value for the environment do not. Social scientists have shown that cultural values and ethnicity are correlated to habits and behavioral patterns (Geertz, 1973; Bourdieu, 1990; Appadurai, 2004; Weller, 2007; Maltseva, 2016), but much more research is needed to understand how these complex factors impact human behavior towards the environment.

The goal of this research was to explore how experiences, memories and habits get materialized in *foodways*. Food represents the first contact humans have to nature which makes *foodways* a relevant lens through which the connection to nature can be analyzed. Hunters, gatherers and communities that rely on agriculture tend to have a stronger sense of community and connection to nature than those who rely on globalized and marketable products. Understanding how a person's connection to nature is retained or lost when they move into a new environment will help create a deeper understanding of how a community maintains its environmental values when no longer place-based. This research will increase our understanding of the how cultural and environmental identities intersect in *foodways* and how these can be translated into pro-environmental behavior.

For many people coming from Mexico and other countries in Latin America, their connection to food and environmental conditions is expressed through their relationship to *foodways*. In his book, "Eating the Landscape" (2012), Enrique Salmón states:

> "*My identity and culture as Mexican is reaffirmed whenever I eat tamales, but not the unique community with whom I grew up and from where my understanding of my identity and its connection to a landscape emerged. My reaffirmation of identity and connection to place is not a direct result of the tamales, but comes more from the processes that surround tamales, beans, raisins inside of tamales, and my grandmother's herbal teas. The processes interconnect family, landscape, collection knowledge, story, and an encoded library of cultural and ecological knowledge, all of which sustain and revitalize a sense of self and place*" (p. 8).

What Enrique Salmón describes is a food connection to his environmental identity. This can be viewed through the lens of cultural, social or human capital.

For Pierre Bourdieu, *cultural capital* entails certain forms of knowledge that emerge from particular worldviews mediated by culture, which depend in some extent on *social capital* (social networks that provide a *sense of identity*[20]) which allows for the development of skills, but also mediates individual behavior in the form of *human capital* (Maldonado et al., 2005). In this sense, *habitus*[21] constitutes a form of embodied *cultural capital* that somehow regulates what is accepted as "normal" in a particular community: "The habitus, product of history, produces individual and collective practices – more history – in accordance with the schemes generated by history" (Bourdieu, 1990: 54). Under this perspective, members of a community usually share a *sense of belonging* because it emerges from shared values, beliefs, norms and/or perspectives, which shape patterns of behavior. This sense of belonging is directly related to a sense of cultural identity, which is constantly being validated through social networks (Maldonado et al., 2005). In other words, behavior is culturally mediated; habits do not occur in a vacuum, neither are they universal; they result from social contexts which are also shaped by ecological conditions.

[20] "Social capital is the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" (Bourdieu, in Bourdieu & Wacquant, 1992: 119).
[21] System of habits.

Therefore, if *foodways* and food habits are modelled by sociocultural (community) and environmental factors (especially availability) (Cantarero et al., 2012), then *foodways* can serve as a window to observe socioculturally mediated preferences and behaviors that partially shape the relationships between community members and their natural environment. What defines cultural membership can be further described as:

> *"Cultural membership is defined by ethnicity. Unlike national origin, ethnicity is a social identity associated with shared behavior patterns, including food habits, dress, language, family structure, and often religious affiliation. Members of the same ethnic group usually have a common heritage through locality or history and participate together with other cultural groups in a larger social system. As part of this greater community, each ethnic group may have different status or positions of power. Diversity within each cultural group is also common due to racial, regional, or economic divisions as well as differing rates of acculturation to the majority culture" (Kittler and Sucher, 2001: 6).*

Environmental psychology has also contributed to our views of what constitutes cultural membership. Klöcker and Blöbaun proposed in 2010 the "comprehensive action determination model" (CADM), which integrates a social component by associating a person's habits at certain points in time with the widely accepted value-belief-norm theory (Stern, 2012). This approach is more holistic and summarized as:

> *"Habit strength is also assumed to moderate the relation between intention and behaviour, meaning that the intention behaviour link is weakened if habits are strong. Intentions typically integrate the influence of attitudes, social norms (or subjective norms as they are referred to in the TPB) and perceived behavioural control, but furthermore include the impacts of personal norms" (Klöckner, 2013). In recent years, some researchers have demonstrated that habits are highly dependent on a sense of belonging, either a place, environmental[22] or a community identity (Raymond, Brown and Robinson, 2011).*

[22] Understood as connectedness to nature.

This approach looks at individuals as social agents that rely on a large collective entity to develop their behavior norms. This perspective still does not address how other factors in self-identification impact environmental behavior.

It is critical for society to understand the factors affecting behavioral norms that are pro-environmental. The rapid changes in the global environment are potentially reducing the resilience of human-nature interconnections. Society is expected to increasingly live in cities, which translates into fewer connections to or to understanding nature and what maintains the structures and functions of nature. Therefore, grasping how a group maintains or retains their bio-cultural heritage can be important if this knowledge can be used to facilitate society's ability to make better decisions related to nature. It also may help to address the social injustices that are commonly found in cities today and include multiple voices in environmental decision-making.

2.5 SHAPING BIO-CULTURAL HERITAGE THROUGH MIGRATION

At the beginning of the twenty-first century, half of the world's population was living in cities and predictions suggest that about 95% of the global population will live in cities within the next 40 years (UN-Habitat, 2008). Given these dramatic population shifts into cities, it has become crucial to consider how to build social capital in these settings (Andersson et. al., 2014). For example, most of the largest cities in the United States continue to exhibit high levels of social inequality. Minorities are impacted by phenomena such as gentrification, which accentuates racial segregation (Hwand and Sampson, 2014). As a result, these issues are affecting the dynamic between social groups, but also, between humans and nature.

In fact, urbanization, migration, and globalization are destroying social networks and reducing the *social capital* needed to build *cultural capital*. Overall, diminishing both cultural and biological diversity reduces the capacity of socio-ecological systems to be resilient (Pretty et al., 2009; Salmón, 2012).

There is evidence that high *social capital* is associated with higher levels of social well-being, given that it facilitates collective action by creating stronger social bonds and norms that support human practices (Pretty, 2003). Where *social capital* is highly formalized, people have the confidence to participate in collective action and create knowledge. In this sense, the creation of spaces that strengthen *social capital* could be a prerequisite for more sustainable practices in the management of natural resources (Atran, Medin, Ross, 2005).

Migration, globalization, and urbanization[23] are some of the current phenomena that negatively impact the preservation of nature, threatening the historical environmental stewardship of people in general and Latinxs in particular (WinklerPrins and de Souza, 2009). Migration not only implies a change of setting, it also leads to a "loss of food production, loss of income, depletion of genetic resources, loss of ability to carry out cultural and spiritual practices, loss of cultural identity, loss of sense of place/community, loss of educational opportunities, loss of ecological knowledge, loss of social and cultural capital, loss of habitats, change in microclimates" (Tengberg et al., 2012)[24]. Pro-environmental groups help to mitigate these negative impacts, but their focus has been on conservation and not on complex ecosystems that include humans (Vogt

[23] I am including urbanization since in many cases the migration occurs in the borders of the same country, usually from rural to urban areas.

[24] Just to add into the relation migration-*foodways*: "Culturally based food habits are often the last practices people change through acculturation… research indicates that the consumption of new items is often independent of traditional food habits. The lack of available native ingredients may force immediate acculturation, or convenience or cost factors may speed change… Some immigrants, however, adapt the foods of the new culture to the preparation of traditional dishes" (Kittler, Sucher, Nahikian-Nelms, 2001: 6-7).

et al., 2016). Migrants and Latinxs in the United States are forming pro-environmental groups, making reference to their traditional roots through which they try to keep a connection to nature and make decisions that are good for the land.

According to transnational theories, migrants are agents of change and the basis for translocal communities that support the flow of tangible and intangible resources across geopolitical and sociocultural borders (Prado Meza, 2013). Each member of these translocal communities actively expresses his/her membership through behaviors mediated by norms, beliefs and values, on which behavior and knowledge is validated and that serve as a framework under which individuals makes sense of the world, also referred as cultural models (Maltseva, 2016). This agency is reflected in particular *foodways*, which is constantly evolving and adapting according to changes in social and environmental contexts. In fact, several researchers have studied the impact of migration in the form of *cultural adaptation*[25], *cultural transmission*[26], *cultural resilience*[27], *cultural syncretism*[28], and *cultural hybridization*[29]. But less research has focused on using traditional *foodways* to understand the direct impact of migration and cultural change on environmental and cultural identities. The main assumption here is that traditional *foodways* is linked to a *sense of connectedness to nature*, since they constitute a form of local (place-based

[25] "The process of adjustment of a population to new conditions in which individuals' genetic and ontogenetic information does have a role to play, but most important is the socially transmitted information, which forms part of the group's cultural inheritance. Thus, learning and social transmission are fundamental elements that enable cultural change" (Albuquerque, 2014: 316).

[26] "The process that allows information to be acquired and shared socially. It depends on different means of transmission: (a) vertical (parents to children), (b) horizontal (between peers), (c) oblique (unrelated adult individuals), (d) indirect (from a key individual), and (e) is dependent on the frequency of opinions (majority opinion)" (Albuquerque, 2014: 316).

[27] "The ability or capacity of a system to absorb disturbance, assimilate it and reorganize itself after the change, maintaining essential functions, structure, and identity. Depends on the level of self- organization and the ability to learn from new experiences and adapt" (Albuquerque, 2014: 316).

[28] "A process that unites two doctrines or different elements. This assimilation is generally spontaneous, a consequence of exchanges between different cultures" (Albuquerque, 2014: 316).

[29] "The ability of local populations to effectively integrate traditional or local knowledge with scientific or modern knowledge" (Albuquerque, 2014: 316).

and tacit) knowledge, which relies on a holistic/traditional perspective where humans and nature are not necessarily separated. By conserving this kind of knowledge immigrants retain a *sense of belonging* even when they have moved away from their home environment and they also are to reconnect to nature in a different setting.

2.6 LATINXS IN THE UNITED STATES

Latinxs are becoming one of the largest minority groups in the United States (U.S. Census, 2017). According to Pew Research Center, 57.5 million Latinxs[30] live in the United States, comprising almost 20% of the total U.S. population. By 2050, it is projected the total Latinx population in the U.S population will increase to 30%. From the current population, 35.3 million people come from Mexico (Pew Research Center, 2016) and an additional 11 million undocumented Latinxs live in the U.S. (Pew Research Center, 2016). The population level of Latinxs is also expanding in the U.S. because of the children born to immigrants. Since 2000, more Latinxs are also being born in the U.S. than the number of those born in foreign countries[31] (Pew Research Center, 2014).

[30] There is no universally recognized term to refer to people of Latin American descent. According to the U.S. Census Bureau (2011), "Latinx" refers to people who trace their ancestry to Latin America, while "Hispanic" refers to those who come from Spanish speaking countries. Therefore, the use of the term "Latinx" in this research does not pretend to ignore the complexity of self-identification processes. When I refer to "Latinx" I am not referring to a homogeneous group of people, but as a pan-ethnic reference that serves to describe a collective identity that is formed under certain sociopolitical circumstances in the United States. Although the term "Latinx" can also be understood as a political identity that is created to refer to the migrant communities coming from Latin America into the United States as a form of reaction to oppression and marginalization. So describing myself as Latinx has not the same meaning in Mexico, the rest of Latin America and the United States. For those who self-identify as Latinxs, this is a form of identifier that gives us a sense of belonging, but overall, certain visibility in a racist society as the American, where race and ethnicity imply different kinds of opportunities. But inside this community, we differentiate ourselves by country of origin, state or region, and even by social class. Then, it is important to acknowledge that I will be referring to Latinxs or a Latinx community as a pragmatic form of recognizing those who in some way share this collective identity, even when this approach might be limited.

[31] The fact that more Latinxs are born in the U.S., represents a new opportunity to understand processes of ethnicity and self-identification. Recently, a new concept has been proposed to better represent a cultural fluidity between

In terms of employment, about 4,841,699 Latinxs work in the food industry (comprising 23% of labor force in this sector) (Food Chain Workers Alliance and Solidarity Research Cooperative, 2016). These workers are involved in the process of production (such as fishing, agriculture, and farming), and also in processing, distribution, retail, and service (restaurants) (Food Chain Workers Alliance and Solidarity Research Cooperative, 2016).

Despite having such a strong representation in the food industry, one in five Latinx households experience food insecurity (Feeding America, 2017). Even more, one in four Latinx children are at risk of going hungry. This situation is aggravated by the fact that Latinxs are less likely to receive help from federal nutrition programs like SNAP because of their uncertain immigration status (Feeding America, 2017).

Still, Latinxs tend to spend more time and money per trip to the grocery store compared to the national average in the U.S. This is also apparent from the statistic that in 2015 the Latinx buying power increased 50 percent to a market value of $1.5 trillion dollars (Nielsen, 2014). This demonstrates the importance that food has for this specific population.

In general, Latinx shoppers prefer to purchase fresh ingredients for their meals (Nielsen, 2014). Most Latinx shoppers would pay more for food that is described as being "authentic" in comparison to other groups in the U.S. This behavior has favored the increase of "cultural foods" being sold in American markets as well as the opening of more specialized stores. In 2015, 61%

American and Latinx cultures among millions of Latinxs in the U.S. "Ambicultural" (Nielsen, 2016) overcomes the old idea of acculturation that somehow neglects the dynamic processes of self-identification and the possibility of holding several identities. At the roots of this intersectionality, at least in the case of Latinxs, rests a set of particular values that connect family and community with identity (Ethnifacts, 2013).

of Latinx Millennials declared that they shopped at Hispanic supermarkets at least once over a course of a year (Nielsen, 2016).

These data suggest for Latinxs in the U.S., food is an important element of identification that transcends the simple buying of nourishing food. It suggests that Latinxs' food buying habits help them to connect with their cultural traditions and achieve a sense of belonging. Despite these reported facts, there is no clear evidence that Latinxs feel a special connectedness to nature through their food buying behavior or that it might provide insights in their environmental behavior. In contrast, communities living in Latin America do tend to show a strong connection to nature that is based on their reliance on natural resources for their survival:

> *"Foods such as chili, piki bread, and posole[32] are contemporary markers of our human legacy. They remind us of our continued efforts to blend past and present while we reach for a future wherein our communities maintain their cultural flavors and colors. Also, it reminds Latinxs to enhance the beauty of the landscapes where we live and whose stewardship we have been bestowed while we exist on this world. The foods and dishes along which they are served and eaten are final products of processes that have dynamically reflected the human-land relationship" (Salmón, 2012: 144).*

Furthermore, in Latin America, common lands and home gardens promote social relationships based on shared work as well as knowledge exchange (Christie, 2004). These gardens are dependent not only on human and social capitals, but also on the establishment of connections to nature through the land. The *foodways* attached to these spaces represent the connection between culture and nature; they are the product of both, biological and human forces, that become tangible in the landscape and the products obtained from the lands (Kittler, Sucher, Nahikian-Nelms, 2001; Pretty et al., 2009; Salmón, 2012). In the context of Latin America, culture[33] and

[32] As spelled in the book, although in central Mexico we spell it as "pozole."
[33] Understood as a dynamic and constantly evolving set of norms, habits, values, practices and ideas (Pulido et al., 2008).

knowledge become central in the creation of social and ecological bonds, reflected in the structure of each garden (Pulido et al., 2008; Tengberg et. al., 2012; Turner et. al., 2014; van Berkel, Verburg, 2014; Tilliger et. al., 2015).

Little research has been done regarding the impact of migration on the pro-environmental behavior of people whose culture is based on valuing nature (Macias, 2015). Even when it is accepted that migration has a direct impact on individual's attitudes, beliefs, and behaviors, there is a gap in our understanding of whether a pro-environmental behavior of immigrants transfers to their descendants (Kittler and Sucher, 2001; Pilgrim and Pretty, 2013; Hunter, Luna, Norton, 2015). In the context of climate change, a better understanding of the processes of adaptation and their impact on pro-environmental behavior becomes relevant.

The environmental values of Latinx communities[34] has not been well studied in the United States. Some studies conducted during the last decade reported that Latinxs are more prone to accept climate change as an environmental problem that society needs to address in comparison with other ethnic groups in the U.S. (Lynch, 1993; Pulido, 1996; Schultz, Unipan, and Gamba, 2000; Johnson, et al., 2004; Peña, 2005; Bendixen & Associates, 2008; Leiserowitz and Akerlof, 2010; Davenport, 2015; Macias, 2015, 2016; Segura and Pantoja, 2015; de la Hoz, 2016; Sierra and Beitman, 2016). As Lynch wrote:

> *"Despite the general clamor about the environment in the United States, and despite continuing Latinx mobilization around environmental issues, the voices of diverse Latinx populations are rarely audible… The apparent absence of U.S. Latinxs from broader*

[34] By "Latinx community" I am not referring to a homogeneous group of people, but to an ethnic reference that serves to describe a collective identity that is formed under certain sociopolitical circumstances in the United States. So describing myself as Latinx has not the same meaning in Mexico, the rest of Latin America and the United States. For those who self-identify as Latinxs, this is a form of identifier that gives us a sense of belonging, but overall, certain visibility in a racist society as the American, where race and ethnicity imply different kinds of opportunities (Pulido, 1996). But inside this community, we differentiate ourselves by country of origin, state or region, and even by social class. Then, it is important to acknowledge that I will be referring to Latinxs or a Latinx community as a pragmatic form of recognizing those who in some way share this collective identity, even when I recognize the limits of this approach.

> *environmental debates is surprising given the importance of the environment in Latin American societies and cultures. Their absence is often attributed to the fact that concern with the environment is an unaffordable luxury for groups preoccupied with livelihood and basic equity issues" (Lynch, 1993: 110)*

Latinxs have a broad knowledge of the natural environment, not only as part of their heritage, but mostly because *our* livelihoods and survival are linked to the conservation of nature (ICM personal observation). There is little recognition of nature knowledge held by Latinxs since this population has been consistently oppressed in the U.S. and, until quite recently, knowledge held by indigenous people or those living in rural areas was not considered credible by the scientific community. Latinxs interact with the environment in multiple ways:

> *"This environmental consciousness can never be divorced from the community's quest for economic and political empowerment and their desire to assert a specific cultural identity…They never lose sight of the connections between the land, culture, and economy. Sustainable environmentalism is distinguished from conservation and environmentalism in that they both are concerned with counting numbers –How many species can be saved? How many board feet of wood can be harvested?- without consideration of the larger social-ecological linkages, ignoring the role of frontline rural communities as the guardians of local resource use" (Pulido, 1996: 162).*

CHAPTER 3: METHODOLOGY

3.1 PHILOSOPHICAL BACKGROUND

For this study a sociocultural lens was combined with a mixed methods approach to describe extensively and intensively, the participants' *foodways* and their sense of connectedness to nature according to their own perspectives (Merriam, 2009). An interpretative phenomenological analysis was used to make sense of the experiences of a specific group of people under certain contextual conditions (see Merriam, 2009; Smith and Shinebourne, 2012). This framework allowed this research to connect the broad work in anthropology and food studies that has already demonstrated the strong bond between food and ethnic/cultural identities. This approach provided a basis for understanding the impact of different forms of identity on environmental behavior.

Due to the nature of this work, a critical theoretical framework that relies on dialogic methods allows for a better understanding and explanation of immigrants' personal sense of collective identity from their own perspective (Dryden-Peterson, 2010). Specifically, this study focuses on capturing the personal experiences of self-identified Latinxs in the United States. It allows the study participants to describe how their identity has an impact on their sense of belonging, as well as regarding their connections to nature. In particular, this study adopted the principles of Latinx Critical Race Theory (*LatCrit*) to gain insights into how racial, class, ethnic, and cultural differences make an impact on an individuals' environmental behavior (Anguiano et al., 2012). This theoretical framework has been used in the past to successfully gain insight into how environmental justice and cultural activism movements have countered the marginalization and criminalization of Latinxs under policies and ideals linked to the dominant mainstream environmentalism (Pulido, 1996). This approach provided a more holistic perspective in order to

examine the links between cultural meaning and the natural environment for different individuals. In sum, this research approach facilitates the framing of nonlinear relations between cultural and environmental identities in urban and immigrant (Latinx) communities in the Seattle metropolitan area. This theoretical framework was necessary to decipher how *intersectionality*[35] plays a transcendental role in people's behavior (McCall, 2005).

By combining *Latinx Critical Race* theory with the S*tandpoint Theory* principles, the research framework helped to identify factors linked to each participants *sense of belonging* while uncovering certain power dynamics that constitute forms of oppression that affect their sense of identity (Rolin, 2009). This framework relied on community-based participatory research (CBPR) approaches that allowed the author of this dissertation to pay attention to her position in the study. In doing this research, it was important for the researcher to recognize and her intervention as an investigator and participant observer. This intervention had the potential to impact the study results because of the need to engage community members in a multiphase study to better understand how their cultural values and ways of knowing impact their relationship with nature (Mertens, 2007; Minkler, 2008; Lucero et al., 2016). The research design framework was designed to minimize the researcher's influence on participants' responses.

3.2 PARTICIPANTS

Since 2009, the state of Washington has experienced an increasing influx of Latinxs. In 2014, the Latinx population in Washington was 858,000 people (about 12% of the state population) and an additional 250,000 lived in the state without proper immigration status (Pew Research Center,

[35] *Intersectionality* can be defined as "the interaction of multiple identities and experiences of exclusion and subordination" (Davis, 2008: 67).

2014). One third of this population was considered to be foreign-born, while 80% of the total of Latinxs in the state have Mexican roots (Pew Research, 2014).

According to the 2015 American Community Survey estimates derived from the U.S. Census Bureau, 365,564 Latinxs lived in the Seattle metropolitan area[36] in 2014 (U.S. Census Bureau, 2016). This represented almost 10% of the total population in the area, with a stronger presence of Latinxs in Everett, South King County, and Tacoma (Vance-Sherman, 2015). For the Latinxs population, 17.8% were born in another country with Mexico being the most common birthplace for approximately 238,395 residents (Deloitte, 2017).

In King County, nearly half of the Latinx households have reported running out of food at least once a year (Muman, 2015). This fact should be treated with caution since information is lacking for thousands of undocumented people were not surveyed (PSRC, 2016). Further, almost 40% of the Latinx population experience some form of food insecurity just in King County (Solid Ground, 2016).

This study focused on self-identified Latinxs[37] living in the Seattle Metropolitan Area who were over 18 years old. The Seattle metropolitan area includes King, Pierce and Snohomish counties; according to the U.S. Census Bureau, this area includes the cities of Seattle, Tacoma, Bellevue, and Everett.

[36] The Seattle metropolitan area comprises Everett, Seattle, Bellevue, and Tacoma (U.S. Census Bureau, 2016).
[37] By "Latinx community" I am not referring to a homogeneous group of people, but as a pan-ethnic reference that serves to describe a collective identity that is formed under certain sociopolitical circumstances in the United States. Although the term "Latinx" can also be understood as a political identity that is created to refer to the migrant communities coming from Latin America into the United States as a form of reaction to oppression and marginalization. For those who self-identify as Latinxs, this is a form of identifier that gives us a sense of belonging, but overall, certain visibility in a racist society as the American, where race and ethnicity imply different kinds of opportunities. But inside this community, we differentiate ourselves by country of origin, state or region, and even by social class. Then, it is important to acknowledge that I will be referring to Latinxs or a Latinx community as a pragmatic form of recognizing those who in some way share this collective identity, even when I recognize the limits of this approach. I do not use the word Hispanic, since it refers to people that speak Spanish, which would include people from Spain.

The Latinx population in the Seattle Metropolitan Area is highly heterogeneous and not well characterized to explain why these differences might exist. There does not exist an accurate estimate of the size of this population, mainly due to the lack of information of undocumented immigrants. Therefore, a multisite purposive sampling strategy was used in this research where participants were selected under predetermined criteria.

The recruitment of participants to be part of this research project relied on the membership lists produced by different local community organizations, including El Centro de la Raza, Casa Latina, WA-GRO, and Marra Farm which is an internal network of Latinxs held by the University of Washington (including students, staff, and faculty). Membership lists were also available through the support of some leaders recognized in this community.

3.3 GENERAL METHODS

Data collection relied on a multiphase mixed-mode methodology consisting of a concurrent strategy and a quantitative approach. The research methodology was implemented through web and paper surveys, a qualitative approach using a participatory methodology known as *fotohistorias*, and through interviews. The data collected from all approaches was correlated through triangulation to ensure a better portrait of the food practices or *foodways* in the target population. All data was collected from February to September 2017 via electronic and in person surveys, a focus group, and structured interviews.

Based on previous research and shared cultural norms with Mexican individuals, the instruments to collect data were designed to take into consideration the following generalized assumptions:

1. *Foodways* differs regionally, even in a single country,

2. Women usually in charge of buying ingredients and meals preparation, while commonly men work to be able to bring money to the household and cover the expenses related to food practices?
3. Knowledge increases with age and education level, and
4. Practices, attitudes, beliefs, and a sense of traditions differ among foreign-born and the generations born in the United States.

The particular methods used in this study derive from tools developed by scientists studying environmental justice, food studies, and ethnobiology. Methods in ethnobiology tend to be varied and context dependent, which are suitable for a case study like this one (Albuquerque, 2014). At the core of ethnobiology as an academic practice is the recognition that humans and their local environment are in an on-going co-evolutionary process, through which knowledge, norms, worldviews, beliefs and identities are shaped (Pretty et al., 2009)? Further, an ethnographic approach was used to uncover cultural models, eliciting participants' voices and perspectives (Marshall and Rossman, 2006; Merriam, 2009). This latter approach was necessary to obtain a comprehensive description that could be interpreted to determine how a particular group of Latinxs construct and negotiate meanings regarding their interaction to the natural environment through cultural practices such as *foodways* (Glesne, 2016).

3.3.1 SAMPLING STRATEGIES FOR QUANTITATIVE DATA

The extensive phase of this research was conducted using a quantitative approach based on a 10-question survey (summing 75 questions considering secondary and demographic questions)

(Appendix B). The survey was administered both online (using *SurveyMonkey*) and by filling out paper questionnaires. Both approaches used standardized recruitment text and were provided in both in English and in Spanish. For in person surveys, a flyer was created to recruit interested individuals to participate in a survey. It was distributed by the community organizations that have partnered with Casa Latina, Centro de la Raza, WA-GRO, and Para los Niños. This survey consisted of a short paragraph with the title of the project, purpose, procedures, confidentiality steps, risks and benefits. A final paragraph was included with the researcher's contact information in case there were any questions.

The main goal of the survey was to collect basic information regarding the participants interaction with nature mostly based on questions focusing on traditional *foodways.* The initial objectives were to explore the impact of migration on traditional *foodways*. The main approach is based on what in ethnobiology is referred to as having *general informants* reflect on the experience of a larger group of people, based on the principle of cultural consensus[38] (Albuquerque 2014; Vandebroek and Balick 2014).

Based on the 2015 estimates obtained during this study and the use of the *SurveyMonkey Sample Size Calculator*, a sample size of 170 participants were surveyed (with a margin of error of 8% at the 95% confidence level). However, the current sociopolitical environment resulting from the post-2017 presidential elections in the U.S., thousands of Latinx immigrants avoided sharing any personal information due to fears of being deported. This reduced the number of participants willing to be part of this study. This fact complicated the collection of data and the ability to

[38] Cultural consensus is recognized as a form of shared knowledge within a group which can be assessed by determining the frequency of coinciding responses regarding certain habits and or believes in a determined group (Vandebroek and Balick 2014).

obtain a representative sample. In addition, it is important to recognize that the use of this kind of sampling technique does not ensure a complete representation of all Latinxs' habits and therefore the results of this research cannot be generalized to the larger population of Latinxs who migrated to the U.S.

The data collected using the surveys was analyzed as a whole and analyzed according to these demographic variables. Answers to questions were measured estimating the level of agreement with statement provided using a 1 to 5 scale, in questions 1 (a, b, c), 2 (a, b), and 9 (a, b, c). The number of responses was measured for questions 3 - 8 and question 10, and expressed in percentages. The complete survey is included in Appendix B for reference. In order to comply with the ethical requirements established by the approved IRB waiver (Appendix A), participants were encouraged to answer only the question with which they were comfortable. As a result, there was a variance in the number of respondents per question. The entire set of results is included in Appendix E. This data represented the first layer of information on whether Latinxs in the Seattle metropolitan area keep a sense of cultural connection through *foodways.* Further, it identified whether this connection through *foodways* facilitates in any way a *sense of connectedness to nature*.

3.3.2 SAMPLING STRATEGIES FOR QUALITATIVE DATA

For the qualitative phase of this research, a smaller subgroup of 16 informants was consulted to characterize and develop research indicators to parameterize variables to be included in the quantitative phase of this study. To accomplish this, a multidimensional analysis approach was used which applied *fotohistorias* or photovoice methods with interviews.

It is important to mention that *fotohistorias* is extremely relevant for ethnographic work on food studies since it allows the researcher to capture experiences through photographs taken by the participants. This is a crucial step to observe other social variables that are linked to the food practices of the participants that are not possible to obtain through interviews (Cantarero et al., 2012; O'Connell, 2013; Gomez and Vannini, 2015; Glesne, 2016). In this sense, *fotohistorias* constitutes a form of Community-Based Participatory Research (CBPR) as it offers an excellent opportunity for open dialogue and empowerment (Wang and Burris, 1997; Nykiforuk et al., 2011; Lucero et al., 2016). CBPR, and especially *fotohistorias*, are rooted in a social justice framework that looks for the active involvement of participants as leaders of the research that equalizes power dynamics between the main researchers and the members of the community participating in a study to build trust (Castleden and Garvin, 2008).

A snowball sampling approach was used to recruit participants for *fotohistorias*. This recruitment began four weeks prior to the planned workshop. A non-profit organization called Solid Ground, which holds a program with immigrant families at Marra Farm, agreed to allow me to recruit participants for the *fotohistorias* workshop. Four families agreed to participate in the project, one from Sudan, one from the United States, one from Guatemala, and one from Mexico. Each family consisted of the mother and two children. Considering the limited number of Latinx participants, the invitation to participate was extended to the children. While the mothers were invited to use their cellular phones to take a maximum 10 photos, each child received a disposable 27-photo camera to answer the following question: *In what ways does food allow you to connect to your cultural roots and to the natural environment?*

All participants had a week to complete the mission and met again in a workshop. At the workshop, photos taken using cellular phones were printed on-site (while the photos of the

children were revealed after the workshop concluded, but were included in the material for image analysis and then returned to the respective families). The photos taken were discussed through an open conversation using a modified version of the "SHOWeD" method (Wang and Burris, 1997). The following questions focused the discussions:

- What did you capture in the photo? (PROBES: Can you share with us more details? Please, tell us more about what's going on in this photo? Please, tell us more about the people in this photo)
- What inspired you to take this photo?
- How do you think this photo expresses your cultural identity?
- In what way does looking at the photo of the traditional food you selected make you think about your connection with nature? (PROBE: What does the photo you selected identify about whether you have a stronger connection to nature in your country of origin or to your connections to the United States?)
- How do you believe migration has impacted your cultural identity and/or your relation with nature?

It is important to mention that the workshop was conducted in English and Spanish simultaneously, since one of the families did not understand English. The family from Sudan did not take photos to answer the questions, although they participated actively in the focus group.

All families were able to share their thoughts among the photos being discussed. For the purposes of this study, only the perspectives of the Latinx families were translated and transcribed for further analysis. These were combined with field notes, and photographs taken by the members of these families.

The data obtained through this method was later compared to the statistical trends discovered through the surveys. This allowed for a comparison between both the experimental approach and the surveys to detect whether similar patterns exist between *foodways* and a *sense of connectedness to nature* that can be translated into pro-environmental behavior.

In this particular workshop, *fotohistorias* promoted a critical dialogue among participants from different backgrounds and nationalities. This resulted in first-hand knowledge about their perspectives regarding how they perceive the ways in which food allows them to connect with their cultural identity and with the natural environment.

Further, open-ended structured interviews were conducted via email among eight individuals who consented to participate and shared their perceptions regarding how *foodways* allows them to feel connected to a broader cultural community and to the natural environment (Appendix C). The answers were triangulated with the results of surveys and *fotohistorias* in order to provide an in-depth sense of previous results.

3.4 VARIABLES MEASURED

The main variables used to analyze the collected data included *foodways* (analyzed through practices and the adoption of shared traditions, habits, and values, which rely on the individual's cultural identity that were linked to a sense of community[39] or a sense of belonging; EPA, 2002), *connectedness to nature* (expressed as pro-environmental behavior, environmental awareness, and reflected as part of a *sense of place*[40]; EPA, 2002), food sovereignty (linked to food security). Migration, as a cause of changes in sociocultural, economic, and natural environments, has an impact on all the variables previously described.

All data collected was analyzed through descriptive statistics. In the case of the data collected through qualitative methods, results were first coded under an open coding scheme that allowed

[39] Proxies include shared values, beliefs, and practices.
[40] Including social and natural environments.

for the capture of emerging themes. The triangulation of results creates a better understanding of the relationship among variables.

3.5 ETHICAL CONSIDERATIONS

For this study an IRB waiver was received six months prior to the beginning of data collection. Due to the fact that part of the Latinx population is considered vulnerable because of socioeconomic inequities and immigration status, all participation required previous and informed consent. No personal or identifiable information was requested to ensure confidentiality and anonymity. Participants were invited to share some basic demographic information such as age, gender, country of origin, education level, occupation, and zip code. This information was necessary for analysis purposes for this study.

3.6 OTHER SPECIAL CONSIDERATIONS

Several important challenges will impact the accuracy of this study. In terms of quantitative methods, it is important to consider:

a) Sampling error- Again, the category Latinx does not have an ontological standing. This category varies and depends on contextual sociopolitical dynamics in the United States that influence process of self-identification by individuals. To address this issue only those participants who identified as Latinxs were considered.

b) Coverage error- Due to the limitations of the sampling frame due to the reliance on community organizations and other individuals for purposes of data collection, there is a high probability that the variance in responses was reduced. In addition, due to the

reliance of the willingness to participate and commit time to this study, a gender imbalance was present.

c) Non-response error- Especially in surveys, the phenomenon described as social desirability, this is, the belief that there are "correct" or "adequate" answers might uncover certain participants' habits and beliefs. To address this last issue, the participants were informed that there are no correct answers and that all participation will be managed as anonymous.

Regarding the use of qualitative methods, a typical concern using an ethnographic framework is the validity of the project and generalizability due to the small sample. To secure the validity and reliability of this study, three different forms of triangulation were implemented: Multiple methods were utilized; Multiple sources of data and Multiple theoretical frameworks were used to confirm the findings (Yeasmin and Rahman 2012; Glesne 2016).

3.7 DATA ANALYSIS

The analytical phase of this study was guided by the following questions:

- Are there any trends in the answers based on frequencies estimated?
- What patterns and common themes emerged among the data collected through different methods?
- How do these patterns (or the lack thereof) help to answer the research question(s)?
- Are there any atypical results? What could explain these?
- Do any of the findings suggest that additional data may need to be collected?
- Do any of the research questions need to be revised?

This phase was guided by a triangulation strategy intended to reduce biases and to increase the validity of data by incorporating the results obtained through using different methods in the same study (Yeasmin and Rahman, 2012). The goal of using this approach was to capture a diversity of perspectives. The data collected was analyzed using a multidimensional approach in the form of an iterative and multi-stage process based on correlations among variables in the different data sets to identify a range of personal and contextual variables that may influence pro-environmental behavior. Data collected included survey responses, observation notes, photographs taken by participants, transcripts from focus groups, and written structured interviews.

Socio-demographic information was used for stratification purposes to form categories based on variables that might impact research variables such as age, gender, place of origin, number of years living in the United States, and employment (used as a proxy for level of education and socioeconomic status). Using these strata, all data was analyzed independently according to the collection method to determine means and/or percentages necessary to estimate frequencies. The demographic information, such as age, occupation, gender, and country of origin, was considered as a set of independent variables. *Foodways* links to a *sense of connectedness to nature*, sense of place, and cultural identity were considered as the dependent variables.

For qualitative data, translated transcripts and photographs were coded following a hypothesis coding approach which required the creation of a codebook (Appendix D) with the variables selected *a priori* (Saldaña, 2012). This data was stratified according to sociodemographic data and analyzed to explore correlations using the software *Dedoose*. Data collected through electronic interviews was coded using this same codebook for its analysis.

CHAPTER 4: RESULTS

4.1 RESULTS

The following sections contain a summarized version of the collected data, highlighting the most relevant results. A complete account of the survey data is displayed in Appendix E.

4.1.1 QUANTITATIVE DATA (SURVEY)

The survey data included results from 170 respondents, with a demographic profile defined by: Language, gender, age, country of origin, level of education, and geographical-populated areas[41]. In Figure 4.1, gender and the number of participants that answered in Spanish or in English are provided. The data show that a large proportion of the participants were more comfortable in responding to the survey questions in Spanish, especially males. This contrasts with the number of females for whom a larger portion of the respondents were more comfortable in answering the survey in English.

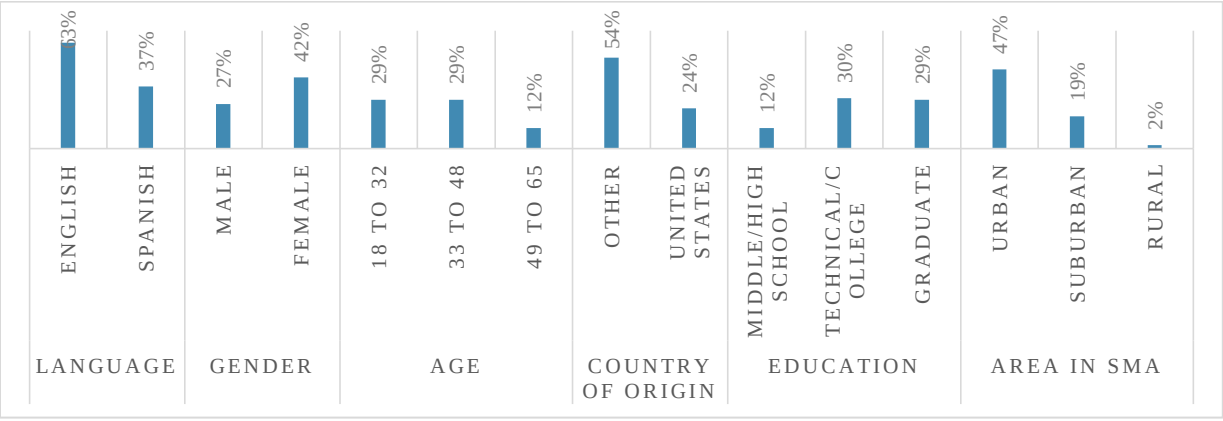

Figure 4.1. Respondents' distribution by demographic information in percentage of total by category. SP = Answered in Spanish, ENG = Answered in English. *Other* refers to any country in Latin America or the Caribbean (n = 170)

[41] According to the U.S. Census Bureau, and urban area "comprises a densely settled core of tracts and/or blocks with a population density of 50,000 or more people."

Figure 4.1 shows that age distribution of the survey participants and whether they answered in English or Spanish suggest that participants younger than 30 years of age were more familiar with using English. This contrasts the high number of participants who used Spanish to answer the survey and were over 36 years of age. In the older participant group English was not the preferred on the survey. It is also noticeable how people younger than 23 years of age prefer using English and not Spanish to answer the surveys.

Furthermore, there was a clear separation between people who were or were not born in the U.S. and what language they used to answer the survey. Participants who were born outside of the U.S. preferred answering the survey questions in Spanish. In contrast, of those participants that were born in the U.S., half of them answered the survey in the English language. Even for participants born in the U.S., half of them preferred to answer the survey in Spanish.

A considerable proportion of the survey respondents (30%) had completed college, while 29% completed a graduate degree. Only 3 – 5% of the respondents had a technical education. It is important to mention that most of the respondents of the survey who answered in Spanish had a bachelor's degree or higher. In contrast, a small fraction (4%) of the respondents who answered in English had obtained a graduate degree. The differences between respondents who answered in English or Spanish were not apparent once the respondents had only completed a Middle School and High School education levels. In fact, only a small fraction of respondents (12%) had not completed Middle or High School.

Finally, it is necessary to mention an overrepresentation of the individuals living in urban environments (47%), while about a third of the participants lived in suburban areas, and just a few declared that they live in rural areas.

On the other hand, the country of origin of most of the participants answering the survey was Mexico (Figure 4.2). Those from other countries responding to the survey were born in other former Spanish speaking countries. Those born outside of Mexico were a small fraction of the total participants.

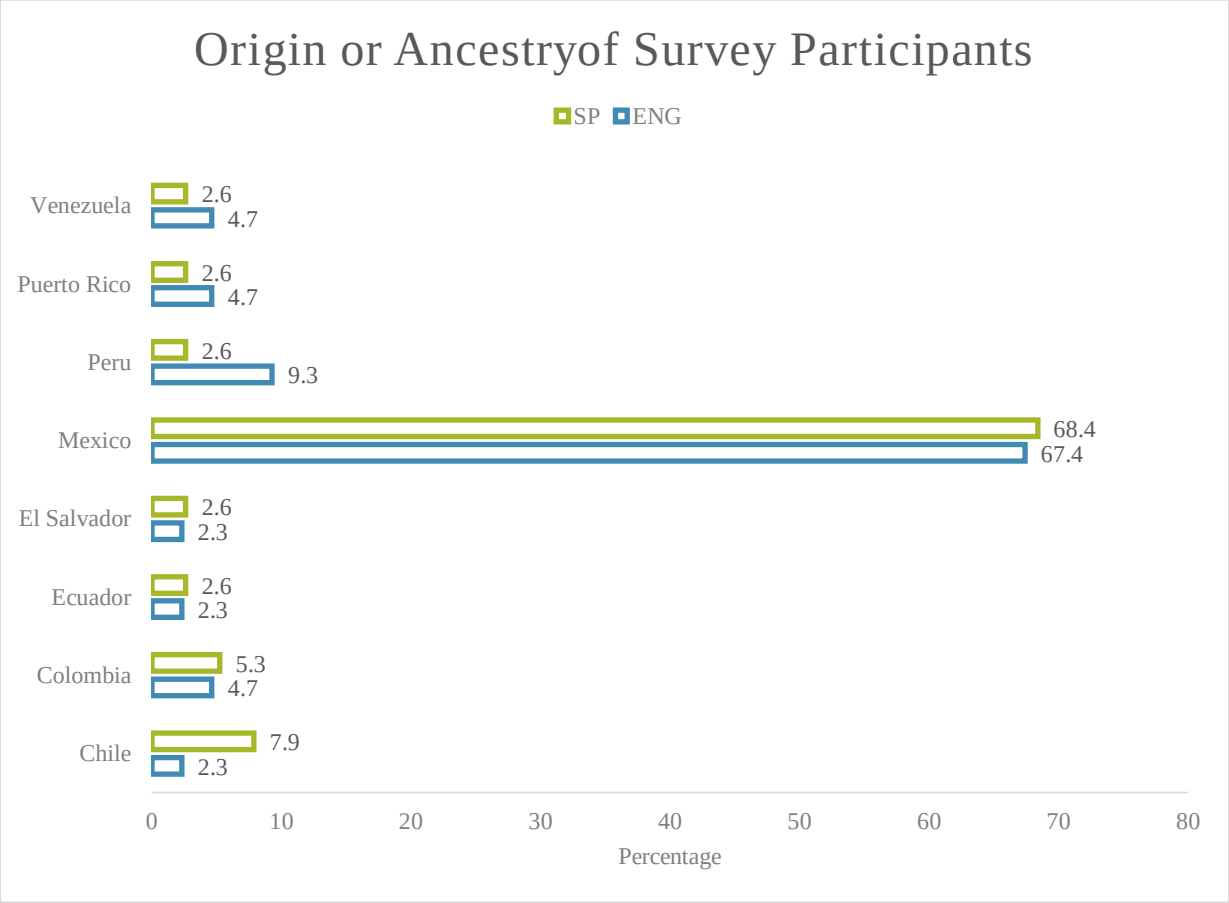

Figure 4.2. Distribution of respondents by country of origin. Other country refers to any country in Latin American and the Caribbean. SP = answering the survey using Spanish, ENG = answering the survey using the English language. (n=170)

Figure 4.3 summarizes the results of the main variables of interest for this study: Sense of place, cultural identity, and *connectedness to nature*. In general, the results show that cultural identity is more strongly related to a strong *sense of connectedness to nature*, more so than a sense of place.

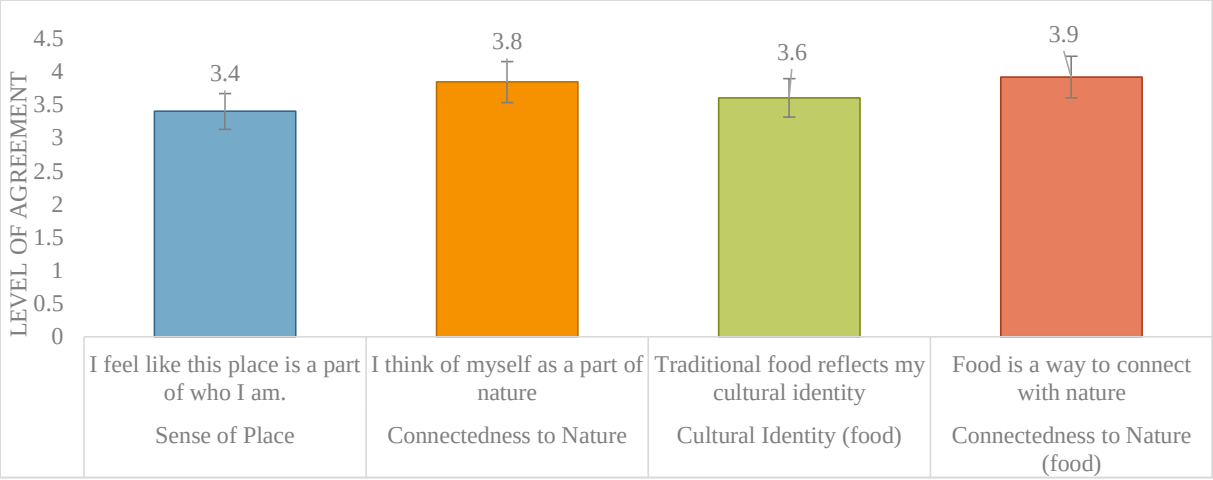

Figure 4.3. Survey participants' average level of agreement that their values focus on sense of place, *connectedness to nature*, cultural identity through food and connected to nature through food. The variables were measured based on a level of agreement with provided statement using a scale 1-5, where 1 stands for "strongly disagree" and 5 for "strongly agree." (n=170)

A comparison of sense of place, *connectedness to nature*, cultural identity, and *connectedness to nature* through foods are shown in Figure 4.3. These comparisons were conducted by language, gender, age, country of origin, education and where one lives. When a respondent answered in English, the sense of place was less significant compared to ones *connectedness to nature*. These differences did not arise for people responding to the survey in Spanish. Male respondents did not have significant differences between their sense of place, cultural identity and *connectedness to nature* (Appendix E). This contrasts female respondents who had a *stronger connectedness to nature* compared to a sense of place. The age group of the respondents does not appear to change the trend for a sense of place being less important compared to a person's *connectedness to nature*. The differences between the three variables is less pronounced, and not significant, for respondents who were born in the U.S. A *sense of connectedness to nature* shows a strong trend where a sense of place and cultural identity varies less with the educational level. For those with a technical or bachelor's degree, the *connectedness to nature* is considerably more important than for those with a middle/high school or graduate education. Compared to all the variables

explored, where a respondent lives significantly changed the importance of a sense of place. This is the only variable where a sense of place is more important compared to the *connectedness to nature*.

Table 4.1- Survey average results for the variables: Sense of place, cultural identity, and connectedness to nature. These three variables were measured based on a level of agreement with provided statement using a scale 1-5, where 1 stands for "strongly disagree" and 5 for "strongly agree." (n=170), divided by demographic clusters.

	Sub-categories	Sense of Place	Connectedness to Nature	Cultural Identity	Connectedness to Nature through Food
Language	***English***	3.1	4.1	3.7	3.8
	Spanish	3.6	3.7	3.1	4.0
Gender	***Male***	3.2	3.5	3.8	3.8
	Female	3.5	3.7	4.0	3.9
Age	***18 to 32***	3.3	3.8	3.8	3.7
	33 to 48	3.5	3.6	4.0	4.1
	49 to 65	3.5	2.1	3.8	3.9
Country of Origin	***Other***[42]	3.1	3.4	4.0	3.9
	United States	3.1	3.9	3.9	4.1
Education	***Middle/ High School***	3.3	3.8	4.2	3.8
	Technical/ College	4.0	3.9	4.2	4.4
	Graduate	3.3	3.6	3.8	4.0
Area in SMA	***Urban***	3.2	3.6	4.0	4.0
	Suburban	3.4	3.6	3.7	3.9
	Rural	4.3	2.5	3.8	3.8
Standard deviation		0.3275	0.5128	0.2526	0.1665
Variance		0.1073	0.2629	0.0638	0.0277

[42] Referring to any other country in Latin America or the Caribbean.

In Figure 4.4, 37.6% of participants reported to have changed their diet while living the Seattle metropolitan area, mainly due to health reasons (63.5), lack of time to cook (25.3%) or difficulty finding ethnic ingredients (20%). This change in diets did not vary with sense of cultural identity or connectedness with nature. This is consistent with the time that participants invest mainly working. However, the struggle to find ethnic ingredients entails a form of lack of food sovereignty that might have a stronger impact on cultural identity. There is a trend that respondents born in countries outside of the U.S. and those who live in rural areas needed to change their diets while living in the Seattle metropolitan area.

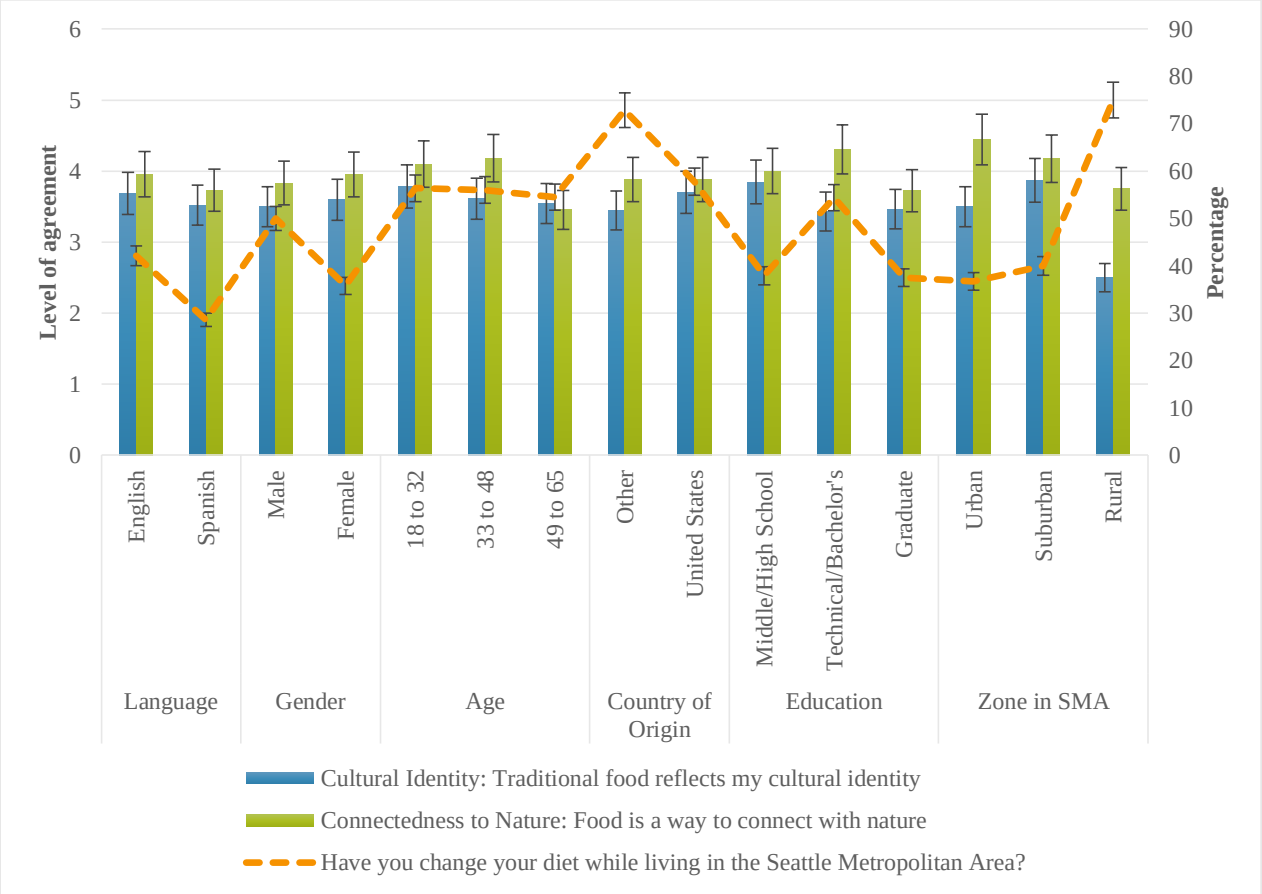

Figure 4.4. Food as main theme to measure sense of cultural identity and *sense of connectedness to nature*. These variables were contrasted with the number of people who changed their diet while living in the Seattle metropolitan area. *Other* refers to any country in Latin America or the Caribbean (n=170)

The link between food and cultural diet and the need to change ones diet are shown in Table 4.4. The data suggest that those who answered the survey in English have had to change their diets while those who answered in Spanish were not changing their diets. The changing of diet is significant since traditional foods and food as a way of connecting with nature are important. Similar differences are seen with gender but fewer females responded that they need to change their diets compared to males. Fewer of the 49 to 65 year age group felt that food is a way to connect to nature in contrast to the other two age groups. A higher number of individuals who migrated to the U.S. have had difficulty finding traditional foods. A higher number of respondents with Technical/Bachelor's degrees have had to change their diets in contrast to those with a Middle/High School or Graduate degrees. Fewer of the respondents living in rural areas felt that traditional foods reflect on their cultural identity or their connection to nature but more of them have had to change their diets while living in the Seattle Metropolitan area.

Several factors that may impact how a person feels about a sense of belonging (Figure 4.5). For example, feeling like one is part of a community and being able to maintain one's traditions and customs while identifying with the culture where one lives and feeling accepted are all identified as being important factors in determining whether a person has a sense of place. In fact, the adaptation to new social environments was reported as a stronger hardship for participants compared to a need to adapt to the environment.

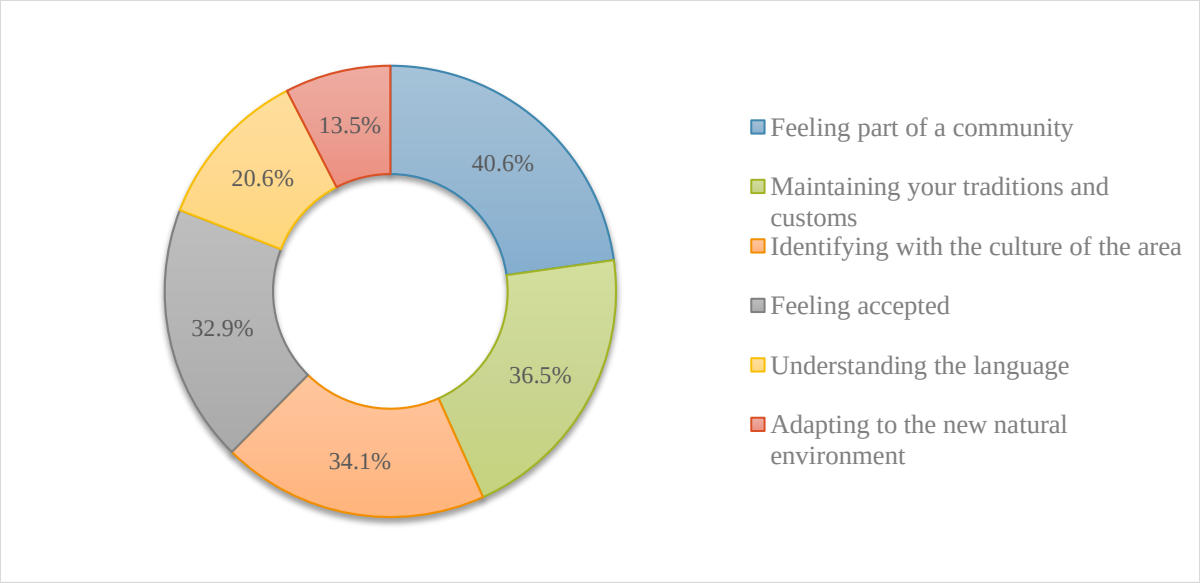

Figure 4.5. Reported hardships experienced while living in the Seattle metropolitan area. The percentages do not add up to 100% but reflect how many of the participants felt that a factor impacted their sense of place. (n=170)

In terms of pro-environmental behavior, participants were asked to select from a list all of the pro-environmental actions they are involved with. Pro-environmental behavior includes six categories broadly reported in other polls such as: Recycling, Production and/or use of compost, buying organic products, using biodegradable ("green") products, growing my own food (such as herbs, veggies, fruit, etc.), using energy-saving bulbs, and relying on public transportation and/or bicycle (Figure 4.6). When summing up the total of actions reported by all participants, it shows that 49.9% actively participate in one or more of these actions. However, when looking at each category independently, most of the participants are involved with at least two of the referred action categories.

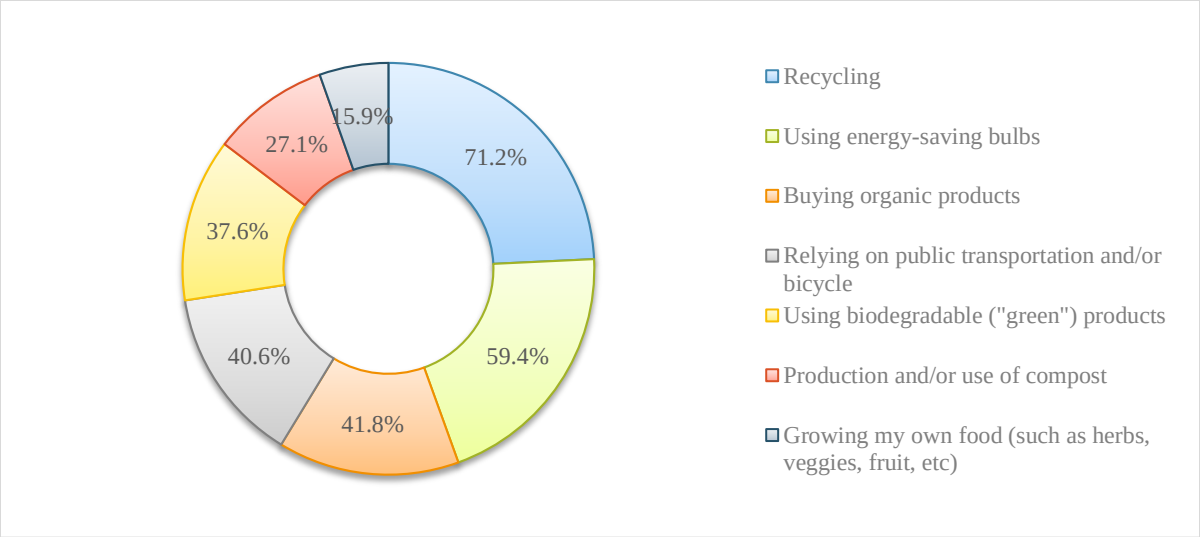

Figure 4.6. Reported pro-environmental actions. The percentages do not add up to 100% but summarizes the pro-environmental actions of each participant. (n=170)

Interestingly, only two out of the 170 respondents do not believe that climate change is real (Figure 4.7). Figure 4.7 also shows that there is generalized awareness of the impacts of climate change in biodiversity loss and extreme weather conditions.

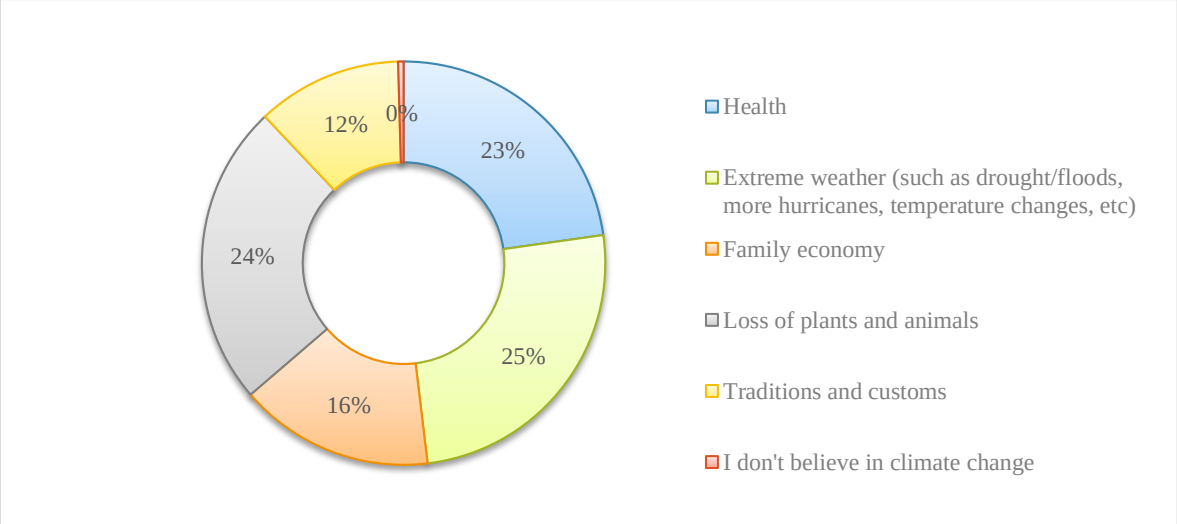

Figure 4.7. Reported answers to the survey question: In what areas do you think that climate change has an impact? The percentages do not add up to 100% but summarizes the pro-environmental actions of each participant. (n=170)

It is crucial to recognize the limitations of this analysis, since the overall rate of non-response for the survey was close to 30%, resulting in a bias. The questions not responded were at random, including some demographic information. This seems to be in part explained by the general sense of mistrust in the Latinx community after the 2016 presidential elections. No follow up alternative was possible due to the anonymity of the responses. In person surveys turned out to be a good alternative to avoid this type of bias, but this procedure requires more time commitment and resources. These results suggest, then, that additional efforts are needed to address differential survey response rates among this population. Therefore, a sequential mixed mode design with at least two modes and a triangulation of data can increase the validity of the results.

4.2.1 QUALITATIVE DATA (FOTOHISTORIAS AND INTERVIEWS)

The *fotohistorias* data (qualitative data) includes 38 photos and 4 quotes extracted from the workshop that was held in Marra Farm. It also contains the responses of two female adults who used their cell phone cameras to capture some images to answer the guiding questions, as well as the most relevant quotes introduced during the workshop (two per individual). One of the respondents presented six photos, although only two are relevant to the theme (the rest were family photos in venues that have nothing to do with food), while the second person presented 16 photos. This material was used to guide the discussion during the workshop.

Twenty-six of the 38 photos were taken by children. It is important to mention that since these photos were taken with a film camera (where the film needed to be developed), these photos could not be discussed during the workshop. I had access to these printed photos a week after the

workshop had been completed. A total of 26 photos are left out of the analysis because they are either out of focus, missed, or are duplicates shots.

Regarding the photos taken by the adults, four show a living and edible plant, five show raw food, two show a pro-environmental action, three show prepared food, three show animals (only one of these photos is used because the photos depict the same group of animals), and one displays a person in relation to nature.

A total of 17 photos depict scene at Marra Farm, seven photos displayed raw food, six display prepared food, and one display a living animal. Of the total photos, 11 present humans surrounded by or interacting with nature; seven of these 11 photos show family or community relations.

The frequencies of photo uses, the number of times a theme is presented either in a photo or in the quotes from the workshop, are included in Appendix F.

Regarding the content of the photos, the most relevant theme is food security (partial indicator of food sovereignty) and use of plants (partial indicator of *connectedness to nature*) (Table 4.4). This suggests that participants indeed have a sense of connectedness to nature via food, especially through agriculture or growing plants at home. This was consistent especially with children, although in adults "family" and "interaction with animals," another form of connectedness to nature, are relevant themes. These findings reflect the context of the *fotohistorias* workshop which focused on a community garden. Nonetheless, participants were free to take photos outside of the community garden, but still preferred this location.

Table 4.2- Correlation of frequencies of coded themes in photos

	Commercial ingredient	Food security	Plant-Harvest	Prepared food	Traditional ingredient	Family	Interaction with Animals	People in nature	Pro-environmental behavior	Use of plants	Home	Nostalgia	Total
Food sovereignty					2					1		1	**5**
Commercial ingredient		9		7	2	2				2	6	3	**31**
Food security	9		19	11	3	6		8	1	25	13	9	**106**
Plant-Harvest		19			1	3	1	8	1	17	6	7	**63**
Cultural identity		1											**1**
Traditional food		1		1	1					1	1	1	**7**
Prepared food	7	11				3				5	6	5	**38**
Traditional ingredient	2	3	1							2	1	2	**14**
Family	2	6	3	3				6	1	5	1	2	**29**
Interaction with Animals			1					1			1		**3**
People in nature		8	8			6	1			3	4	2	**32**
Pro-environmental behavior		1	1			1					1		**4**
Use of plants	2	25	17	5	2	5		3			5	6	**72**
Home	6	13	6	6	1	1	1	4	1	5		3	**48**
Nostalgia	3	9	7	5	2	2		2		6	3		**41**
Total	**31**	**106**	**63**	**38**	**14**	**29**	**3**	**32**	**4**	**72**	**48**	**41**	

As part of the *fotohistorias* workshop, four adult females and four adult males were interviewed via email and answered nine structured questions. Their answers were then coded using the same codebook as the one for the *fotohistorias* workshop and frequencies are estimated and compared according to gender (Figure 4.8). There are no significant differences between males and females regarding their sense of community.

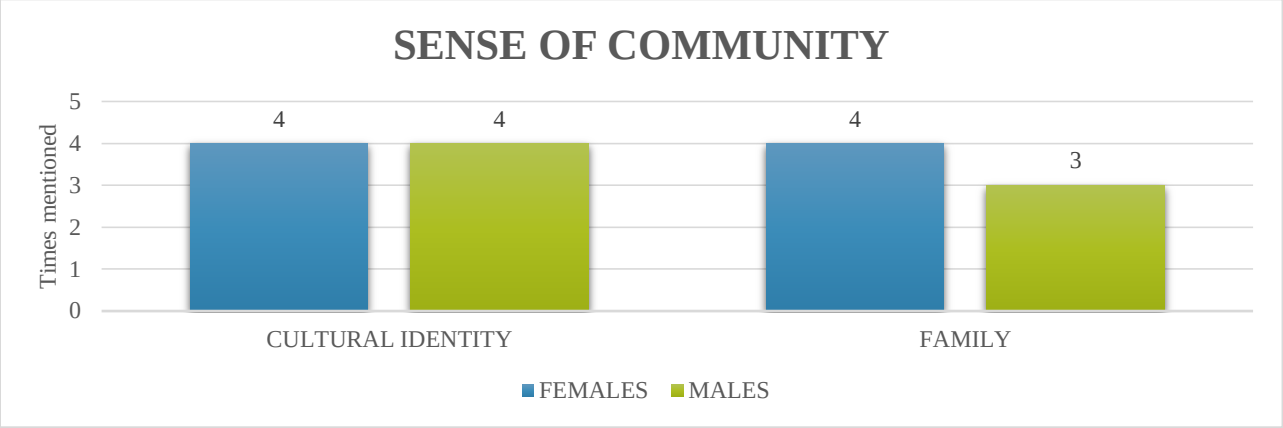

Figure 4.8. Occurrence of variables related to sense of community. (n=8)

In contrast to the sense of community, questions related to the subgroups' *sense of connectedness to nature* showed large differences exist between females and males (Figure 4.9). The small sample size precludes statistical analysis, but does suggest trends that are worth exploring. Compared to males, females perceive a greater *connectedness to nature* based on the use of plants and appear to in more pro-environmental action, while seeing a stronger connection to nature through food.

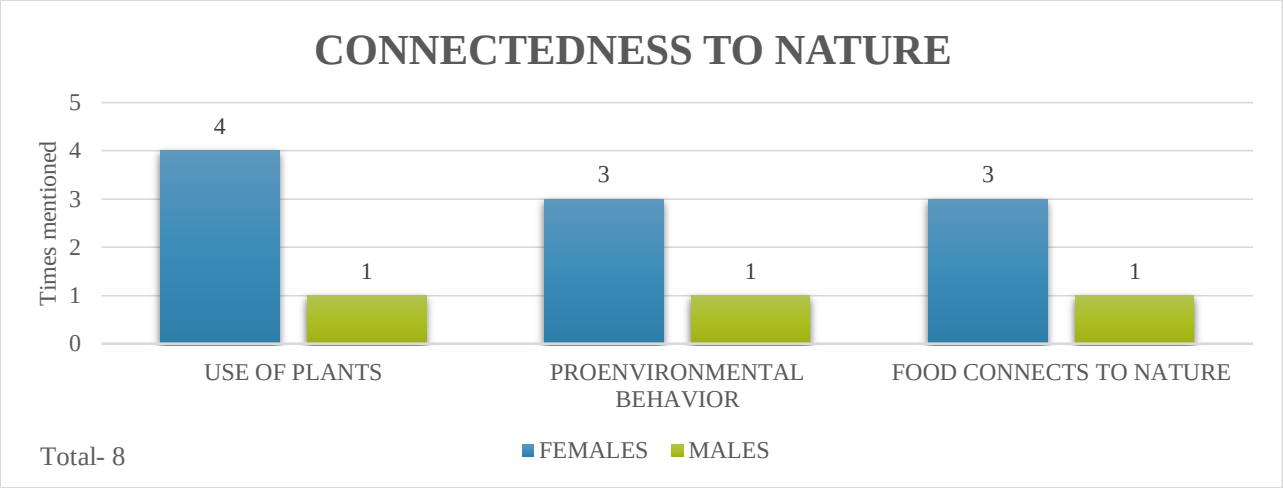

Figure 4.9. Occurrence of variables related to sense of connectedness to nature. (n=8)

This small subgroup surveyed suggests that males are more nostalgic for their home country and slightly less comfortable living in the U.S. (Figure 4.10).

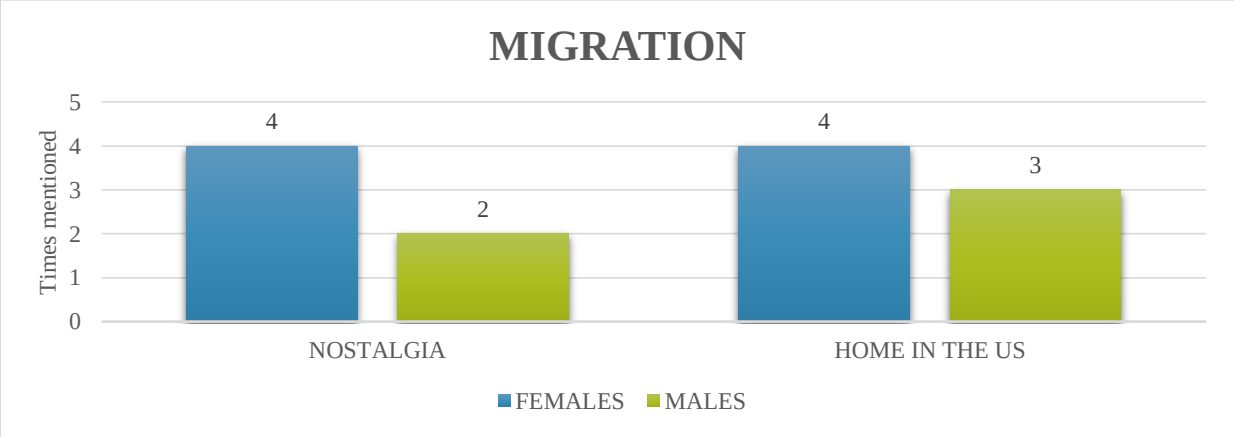

Figure 4.10. Occurrence of variables impacted by migration. (n=8)

4.1.2.1 THE STORIES BEHIND FOTOHISTORIAS/INTERVIEWS

The following paragraphs have been organized following the structure of the codebook (Appendix D) and intertwine an analysis of the qualitative data with quotes from six interviewees

as well as two of the participants who were part of the *fotohistorias* workshop. Their answers resulted in a series of interviews of four female and three male Latinx. Their interviews are used to provide supporting narrative as a way to preserve the essence of the personal accounts of these people. As a way to preserve the anonymity of the participants, pseudonyms are used.

A sense of community was studied by analyzing how many times participants made a reference to cultural identity, traditional food, prepared food, traditional ingredients, and family.

Cultural identity: All participants recognized how they feel connected to a broader cultural community with which they identify. This type of connection through *foodways* seems to be more evident than a *sense of connectedness to nature*. For example, when participants were asked: *"To what extent do you consider food as a way to connect to nature?*" a male participant answered:

> *Mateo- "For me, is a connection to my roots, not necessarily with nature. Although I do try to buy local ingredients."*
>
> *Daniel- "I try to enjoy the food as a way to learn new experiences of tasting, or even just to fill my basic needs of energy. Personally I try to have a balanced consumption of food mixing meat with vegetables and fruits in a way that I consider healthy. I avoid to eat GMOs, other very industrial processed food or other food that is known with an important impact on nature. I haven´t assume this specifically as a way to connect to nature just as a way to follow a pattern of behavior aligned to personal values.*

In general, a collective identity seems to be an important aspect of all the participants' lives.

> *Susana: "Cooking traditional food allow us to share our culture and values as well. On any event that we cook any traditional food we normally invite all family member and a few friends (around 35 people)."*
>
> *Jacinta- [How important is to you to prepare traditional plates from your country of origin?] "Very important, it is part of myself, my memories, my roots. The aromas take me to my childhood and smell like home and family. Aromas make me remember myself,*

walking by the market, enjoying the aromas of fruits and flowers. They are my identity and my origin, they are part of my family memories."

Family: Food is a central aspect in Latinx families. Recipes are in many cases passed down through the generations. This constitutes a source of knowledge, related to the transmission of cultural identity as demonstrated previously.

Sandro- "I learned how to prepare traditional food from my mom, when I was living in country of origin, this plates were my favorites and I wanted to learn how to prepare them for those times when I could be away from home."

Maria- [I still prepare a traditional plate with] "my daughters, I try to teach them how to make it."

It is important to notice that there is still a gendered division of labor in the preparation of food, where women play a central role a knowledge reservoirs, but also a pillar in the cultural continuity within the family.

Daniel-"Strictly speaking I don't cook my favorite Mexican traditional plate neither while living in Seattle nor when living in my Hometown. I eat special plates like Mole and Tamales only in parties or traditional celebration when my mom or other housewives prepare them. I am not a good cooker and my skills in this regard are very basic. However, it can be said that there is "favorite traditional plate" which is 'cookable' for me according to what I can achieve given my limitations in a kitchen, this dish is 'Enchiladas'."

Laura- "My mother-in-law, who lives in Toluca, Estado de Mexico, shared with me her recipe [for pozole], well, she prepared it and I watched her."

Photo 4.11. Susana with her kids surrounded by corn plants in Marra Farm. Photo taken for the *Fotohistorias* workshop in Marra Farm by Susana.

Traditional food and traditional ingredients are part of the diet of immigrants, although time is consistently a reason for which more difficult traditional recipes are only prepared for special occasions, *fiestas* (parties), or when sharing with family and/or friends, as referred in the focus group and in the interviews.

More supermarkets and specialized stores sell ethnic food, making it easier to prepare traditional recipes. It also means that Latinx are able to integrate basic ingredients that are commonly available in the United States, such as beans and other vegetables (see Photo 4.12ab).

> *Jacinta- "Some time we prepare [a traditional plate] for special occasions, birthdays, and reunions, etc. Other times I prepare it at home with my family, but the lifestyle in this country fast, work takes most of my time and by when I get home there's no time to really cook, so we end up eating in a pragmatic way which does not require too much time in the preparation of food."*

Daniel- [What are the greatest barriers that limit you to prepare traditional foods?] "Definitely time. This is a thing I don´t want to take much time since my priorities are focused on my work. When I want to eat Mexican food I go to restaurants."

a

b

Figure 4.12a. Refried beans prepared by Gloria. 4.12b. *Jalapeños* presented by Gloria. Photo taken for the *Fotohistorias* workshop in Marra Farm by Gloria.

Daily food preparation might integrate food that is commonly available in the area as well as using some traditional ways to prepare food. Traditional food preparation may consist of either combining ingredients, cooking methods, or the use of some traditional ingredients to season the meals (Photo 4.13).

Photo 4.13. A prepared meal of a Latinx family in Seattle. Photo taken for the *Fotohistorias* workshop in Marra Farm by Gloria.

However, the reliance in commodified food creates a form of disconnection with the natural landscapes; this is then perceived as a form of loss and it is a clear indicator of lack of food sovereignty.

> *Daniel- "I discovered that some Safeway markets sometimes have shelves of Mexican ingredients. I rely in this place for most of my cooking. Other important ingredients are kind of standard for different dishes so is relatively easy to find them in different places, such as tomatoes, onions, garlic, etc."*

Photo 4.14. Cucumber with "Tajin" (a chili powder produced in Mexico and used broadly to season vegetables and fruits. Tajin is available in *Safeway*®). Photo taken for the *Fotohistorias* workshop in Marra Farm by Gloria.

Other traditional dishes require some specific ingredients that are hard or impossible to acquire in Seattle. The limited availability of traditional ingredients has a direct impact in the food sovereignty of Latinx families and individuals. The lack of these ingredients can be ameliorated through certain substitutions, but doing so usually impedes the traditional preparation of these dishes.

> *Sandro- "Sometimes I have to drive to another city, far away from home, in order to get an ingredient; other times I have to replace an ingredient for a similar one or simply take out of the recipe."*

> *Jacinta- "It is very difficult to find ingredients like epazote (wormseed), which is an herb from the region I come from. In Guerrero [Mexico] we often use epazote to season broths, chilaquiles (traditional dish make out with dried tortillas and hot sauce), it is delicious. It is also hard to find fresh ingredients to prepare pozole verde or elopozole. A person has to re-invent the recipe to try to prepare a traditional plate similar to the one in our region of origin."*

In many cases, a change in diet has to do with the lack of availability of fresh ingredients, which affects the preservation of traditional *foodways*. This change also impacts how individuals relate to nature. This is common in people who have lived in urban environments and who do not necessarily have access, interest, or time to work the land. Such separation translates into a degree of cultural separation of traditional forms of life, which ultimately results in a weaker *sense of connectedness to nature* due to lower sense of reliance on nature for the acquisition of basic goods and also translates into the commodification of food.

> *Susana- "The food over there [Guatemala] is not like the one in here [Seattle], in there we can get everything fresh: Meat, vegetables, fruits. Here it's different, but we can prepare our food. Although over there we drink atol, a corn-based beverage that requires many spices that cannot be found in here, so my mom sends me those spices."*

> *Gloria- [a difficult ingredient to find in Seattle] "is cajeta. Here we can buy cajeta, but it does not taste the same, the one over there [Mexico] tastes better. The thing is that in there everything is fresher: Vegetables and fruits."*

In the case of Latinxs in the United States, the process of adaptation to new sociocultural and biophysical environments, has a direct impact in the diet of individuals and that results in an increase of food-related chronic diseases such as obesity and diabetes in this population (Ayala, 2008; Satia, 2009; Perez-Escamilla, 2011).

A strong sense of place results from the interaction of humans with the biophysical environment. Migration can be accompanied by a sense of displacement, especially when there is a lack of stability in the new place. One way in which some migrants begin to establish a new sense of place is by the intentional transformation of their immediate environment. Growing plants at home, even just herbs in the kitchen, is an alternative in which immigrants connect with the space and they can even reconnect with their country of origin.

As an alternative, some Latinx individuals introduce plants that are native to their country of origin as Gloria did with the cactus she planted in her house.

> *Jacinta- [When I'm unable to find an ingredient] "I have to re-create the recipe. This year my husband and I created a kitchen garden in our backyard, it was a nice experience. We even shared our harvest with some friends."*

Immigrants tend to transform their immediate environment as a form of adaptation. For example, Gloria's husband decided to plant a *nopal* (cactus) in their backyard as a way to have access to this source of food, but also to reconnect with the flora that is common in Mexico (Figure 4.15).

Gloria- "I took the photo of a nopal (cactus), because it reminds me of over there [referring to Mexico], that is what we eat."

Photo 4.15. *Nopal* (cactus). Photo taken for the *Fotohistorias* workshop in Marra Farm by Gloria.

Even when cultural identity seems to be the principal association individuals make in relation to a cultural identity, several participants see a direct connection to nature through food.

Maria- "Most of the ingredients have to have a season and you have to wait for the season to cook with them, this is really connected with nature!"

Sandro- "I believe that nature is connected to the food we eat and therefore, we need to take care of it. There is a particular species called "azafran", which is obtained of a flower and give a unique flavor to plates. This species is very expensive and it is common in Spain. If any regional climate change occurs in that zone it would be almost impossible to obtain azafran, so it would need to be vanished from many recipes, changing completely the flavor of those plates."

Photo 4.16. Mexican rice. This recipe requires *azafran* to give the color and flavor to the rice. Because of the price of this spices it has to be substituted frequently. Photo taken for the *Fotohistorias* workshop in Marra Farm by Gloria.

The relation between immigrants and the natural environment denotes a certain continuity between culture and nature:

> *Jacinta- "Food is part of human beings since we are born. Flavors connect us with our memories. We are connected to nature because we are part of nature. We are what we eat and we live for that."*

Photo 4.17. Susana's son. Photo taken for the Fotohistorias workshop in Marra Farm by Susana.

Within the categories underlying *foodways* such as sense of belonging (sense of community-cultural identity and sense of place-connectedness to nature and migration), two main themes emerged: Food sovereignty and sense of belonging. These themes are recurrent in both quantitative and qualitative data.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.1 DISCUSSION

The results presented in this research provide insight regarding a *sense of connectedness to nature* present in some Latinx individuals living in the Seattle metropolitan area and how this sense can be traced through particular *foodways*. The first step in testing the initial hypothesis was to determine the worldviews of the individual respondents based on values and practices. The results showed that even when respondents have a heterogeneous distribution of ideals and actions in relation to the natural environment, cultural factors related to language, age, and gender account for more significant variation. In fact, language turned out to be a distinctive factor in the participants' responses. For example, in the *fotohistorias* workshop, even when some of the participants were born in the United States and descended from Mexican families, they constantly use words in Spanish to refer to certain plants, food practices, and even emotional links to nature. This is consistent with studies that have demonstrated how language is an important factor that directs human perceptions, cognition, and actions (Costa, el al., 2014; Brekhus, 2015; Sedivy, 2016), but it also accounts for differences in how individuals relate to their bio-physical and social environments (Boroditsky, 2009; Deutscher, 2010). In this sense, different languages have diverse rules that guide perception and cognition inside human communities (Wittgenstein, 1967; Chomsky, 1975; Kripke, 1980; Saussure, et al., 1983; Searle, 1995).

Despite the fact that some groups were overrepresented in the sampled population (including Mexicans[43]) and the non-response factor, survey results displayed a consistent pattern of correlation between cultural

[43] This overrepresentation might be in fact due to the shared nationality with the researcher, which translates into shared networks, although, according to the US Census Bureau, Mexicans are in fact the largest Latinx group in the Seattle metropolitan area.

identity and *connectedness with nature,* rather than a *sense of place* and *connectedness to nature*. For more fine differences a more representative sample will be needed as well as a strategy to reduce the non-response error in addition to the triangulation with qualitative methods, and the inclusion of parametric analysis would be required for further research.

In addition, the data gathered through survey indicated that, even when migration seemed to have had an impact on how some individuals relate with their natural environment, the most reported change was a restricted access to fresh and ethnic ingredients, as well as to certain plants that grow profusely in other countries, which affected in general a sense of cultural identity linked to traditional food practices. This effect was more evident in female participants those living in urban areas, and those whose sense of cultural identity is closely related to traditional *foodways* as in the case of second generation Latinxs. All these suggest that indeed, changes in environmental behavior are mediated by sociocultural factors, including migration.

It is important to recognize that migration and urbanization are major factors that affect food sovereignty and the capacity to ensure "culturally appropriate" food. The networks that emerge between producers and consumers are affected not only by social, political, and economic factors, but also by the creation of new material and symbolic spaces within communities that share certain beliefs and practices. Furthermore, this study demonstrates that immigrants, while adapting to their new lives in the United States, have an important role transforming the local social, cultural, economic, and even natural environments. They function as active agents of change who apply their traditional knowledge forming processes related to the environment, as a form of resilience and adaptation to new social and natural environments

How immigrants adapt to new environments and new societies is apparent from how they acquire alternative foods to replace traditional ingredients that are no longer available in the

lands they have immigrated to. They transform the landscape by introducing foreign species, such as *nopal,* that were part of ingredients typically available to make traditional foods by creating networks of commercial distribution outlets to supply these ingredients to the community through ethnic stores. A strong *sense of connectedness to nature* relies on immigrant accessibility to fresh ingredients, which in many cases are native to other ecosystems and are intentionally introduced in new environments as a way to strengthen a community's *sense of place*. Through this process, Latinxs exercise their agency, securing access to ingredients for traditional recipes linked to their cultural identity. Furthermore, they transform their biophysical environment as an alternative to conserve a sense of community, while creating a sense of place.

Throughout this research, a *sense of place* was explored in relation to a *sense of connectedness to nature* in Latinxs through use of plants, interaction with animals, reference to forms of pro-environmental behavior, in contrast with elements that are related to the effects of migration such as a sense of nostalgia (referring to the country of origin) or an established home in the United States.

In this way, humans co-evolve with their immediate natural environment as a result of an adaptive behavior that transcends biological needs, such as nutritional needs, to satisfy their yearning for foods that are culturally relevant for them and based on traditional links between nature and culture. Thus adaptation by immigrants begins to demystify the artificial division between nature and culture as communities maintain their link to nature through their *foodways* to maintain food security. In this way, a *sense of connectedness to nature* entails in part the adoption of relational values under which it is possible to recognize not only the inter-dependence between humans and nature, but also to recognize that humans are part of nature. This is the first step towards adopting a more pro-environmental behavior.

Furthermore, this approximation shows that, food sovereignty constitutes a way of linking nature to the environment in a way that plays a crucial role in the transformation of landscapes through cultural norms. This is what Devon Peña has described as *autotopographic* processes (Peña, 2005).

On the other hand, a person's age was identified as one of the most relevant and significant variables in this study. The younger generations showed both, a higher *sense of connectedness to nature* and a higher sense of cultural identity. This might be due to the fact that public awareness in environmental issues has increased in the past twenty years thanks to an increase in the coverage of these themes in public media and their incorporation in curricula in basic education, especially in the United States (Capstick et al., 2014; United Nations Framework on Climate Change, 2014). This could suggest that cultural identity has nothing to do with environmental behavior and a sense of urgency regarding the protection of biodiversity (and nature in general), but this study showed that for Latinxs, environmental issues are of great concern, since only a small number of respondents (two people out of the 170 survey respondents) did not believe that climate change is real. These results are consistent with other studies which have shown that Latinxs are the largest minority in the United States concerned with the effects and impacts of climate change (Bendixen & Associates, 2008; Davenport, 2015: Macias, 2016).

Furthermore, *foodways* supports and denotes the links between a community's retention of traditional knowledge of nature maintained through traditional food practices and what they inform the immigrant about the environment and how it is changing due to climate change. Maintaining a distinctive cultural identity seems to be associated to a stronger *sense of connectedness to nature* among the immigrant communities that need to adapt to a new environment and society. This phenomenon might be related to the relatively recent changes in

racial dynamics as practiced by immigrants during the first half of the twentieth century (Omi, 2001; Smelser et al., 2001). In the past decades, racial and ethnic politics in the United States have become a more open and debated arena, one in which acculturation or assimilation are not seen as appropriate modes of adaptation as a means to provide a safer environment for immigrants and their descendants. Although, the strong *sense of place* reported for immigrants (e.g., especially those speaking English, those born in The United States, or those who have lived for more than five years in this area) suggests that the Latinx identity is a dynamic process. This identity is shaped by an ethnic background that allows individuals to stay connected with what they recognize as their roots in other countries, as well as by local factors in new environments that shape life-styles.

Through the triangulation of quantitative and qualitative data, the strong correlation between cultural identity and *connectedness with nature* became evident. In this study, participants expressed a need to feel part of a community as a way to preserve a cultural identity, but also as a way to adapt to the social environment. By identifying with a local community, immigrants were able to find material resources as well as emotional support, which translated to a form of resilience expressed in different degrees of transculturation. This suggests that a *sense of belonging*, expressed mainly in the form cultural values, can be useful in future research on environmental attitudes. However, it is important recognized that a *sense of belonging* might vary among gender, age, level of education, and even nationality, as shown in this study. These demographic variables have a direct impact on those experiences that shape beliefs, values, and therefore lifestyles and habits, which translate in the notions of the relationship humans and nature. In many cases, these changes might promote the loss of traditional knowledge and a disconnection from nature due to the commodification of nature as in the case of food. Overall, a

need to look into local cases rather than theoretical generalizations seems necessary. Certainly future research should look into this correlation and into the factors that impact a *sense of connectedness to nature*.

This study exploring *foodways* supports the presence of dual identities as an integral part of Latinx culture and practices which helps to maintain a connection to the natural environmental. Also, Latinx born in the United States tend to have a stronger need to maintain their cultural heritage, especially through *foodways*. Some of the respondents of this group expressed a stronger need to protect the natural environment in both surveys and *fotohistorias*. This might also suggest that since these people are more attached to the local environment, they might have a stronger *sense of place* that also may account for the adoption of positive environmental behavior.

In contrast with polls that suggested that religious beliefs can be a reason why Latinxs advocate for stronger policies in order to reduce the impact of humans on the global climate (Quant, 2015), religion did not arise as an important determinant of participant values and practices. It appeared that it was more important to pass their values for nature and the environment to younger generations.

In this sense, self-determination results from a continuous negotiation of memories, values, and habits transmitted among generations and linked in part to a certain cultural background that serves to keep a sense of belonging, as well as sociocultural, political, and economic conditions. This entails a form of adaptation, directly associated to biophysical and human factors. Therefore, a *sense of connectedness to nature* arises from such adjustments, is strongly correlated to self-identity, and entails a form of belonging that proves that the division between nature and culture is artificial.

As a result, *foodways* is an excellent indicator of sociocultural identities and therefore can be used to uncover values and beliefs that guide certain forms of behavior, including pro-environmental behavior which is partially defined by *a sense of connectedness to nature* and by local or regional standards. *Foodways* constitutes an excellent entry point to talk about environmental practices, since it is related to daily actions that connect people to nature, not only as a source of food, but as a realm of action.

This is consistent with previous research that suggests that lived experiences, gender, age, and sociocultural background all have an impact on an individuals' beliefs and in their *sense of connectedness to nature*. However, the connection between this sense and pro-environmental behavior is not direct and is often mediated by a normative understanding of pro-environmental behavior, which is dictated by policies or validated actions set by other authorities such as scientists that are considered appropriate and even necessary to "protect the environment." This is the case for the parameters used in the survey to measure pro-environmental behavior, including recycling, composting, use of energy-saving bulbs, and consumption of organic and/or biodegradable products, that reflect a Westernized perspective, constrained by capitalistic conditions, and in many cases enforced by local authorities as in the case of the city of Seattle that has imposed a system for managing waste, including recycling and composting. Even more, those who cannot afford to buy organic or biodegradable products and energy-saving bulbs are not necessarily less environmental than those who can. This approach perpetuates structural inequalities that are the source of environmental injustices. As such, this study cannot determine the level of connection between a *sense of connectedness to nature* and pro-environmental behavior, although it can be suggested that those who feel more connected to nature will feel a need to protect it and will take actions to do so. There is a need to extend the definition of pro-

environmental behavior to one that is not restricted by a technocratic framework and that recognizes the experiences and knowledge of different communities around the world. This reflection is not new for some Latinx academics and environmentalists; Laura Pulido already described how problematic a technocractic environmentalism can be:

> *"This environmental consciousness [present in Latinxs] can never be divorced from the community's quest for economic and political empowerment and their desire to assert a specific cultural identity…They never lose sight of the connections between the land, culture, and economy" (Pulido, 1996: 162).*

This form of what Pulido described as sustainable environmentalism was captured through *fotohistorias*. In contrast with the surveys, ethnographic methods give account of socio-cultural processes linked to the construction of identity that are reflected in the interactions of individuals with the surrounding natural environment. With this information it is possible to make sense of these communities' perspectives and to uncover associations and meanings within particular perspectives, attitudes, preferences that translate into actions. It is through repeated observations and direct dialogue that researchers will be able to grasp an idea of what qualifies as environmentally friendly in order to be able to construct more inclusive and representative environmental policies.

Environmental practices cannot and should not been disassociated from the needs, values, and beliefs of local communities. This type of environmentalism results in an oppressive framework, and so its effectiveness diminishes. Results in this study clearly show that pro-environmental behavior, when measured only through practices that are not necessarily part of the habits of communities, can provide a very limited understanding of the *sense of connectedness to nature* that directs in part how individuals relate to nature. Furthermore, environmental practices are dependent on specific contexts and rely heavily on the processes of self-identification that

determine personal values and beliefs. Therefore, in order for people to truly adopt and incorporate environmental practices in their daily life, these practices must account for sociocultural factors, otherwise their effectiveness will be reduced significantly.

Results in this study demonstrate that a *sense of connectedness to nature* emerges not only through the recognition of the dependence on food production for human survival, but through the resulting co-evolution between humans and nature through an active interaction guided by sociocultural, political, economic, and environmental factors. This sense of connectedness does not directly translate into a pro-environmental behavior. In theory, a stronger *sense of connectedness to nature* denotes a higher pro-environmental behavior, but when pro-environmental behavior is defined by actions linked to specific markets that entail the acquisition of certain goods and services, sociocultural and economic factors become determinant. People should not be considered less environmental if structural barriers limit their access to "green" markets; who is more environmental conscious, a person that adopts an organic diet because of egotistic considerations such as his/her personal health, or a person that teaches his/her children to take care of animals and plants because they are "siblings" and our survival is interconnected? In this way, *foodways* can be used as a relational indicator of *connectedness to nature*.

5.2 *FOODWAYS* AS AN INDICATOR OF "CONNECTEDNESS"

For centuries, *foodways* has been an iconic indicator of ethnicity, recognized as a form of cultural marker that promote symbolic social binding forces (Kittler, Sucher, Nahikian-Nelms, 2001). In addition, *foodways* constitutes the materialization of a place-based cultural and evolutionary history that forges group identities (Salmón, 2012). In this sense, *foodways* underpins bio-cultural diversity based on the interaction of communities with their environment,

serving as a reservoirs of knowledge, language, belief systems, socioeconomic relations, and language.

Food, in the context of modern urban and globalized food markets, is usually seen as the nutritious substance necessary to sustain life (Kittle and Sucher, 2001; Pretty, et al., 2009; Crowther, 2013). In fact, current public policies that address agricultural practices (a form of natural resource management) provide limited guidance on the recognition of cultural values and generally favor large industrial scale production of food for global markets (De Solier, 2013). These larger agricultural production systems are assumed to be needed because they can secure food sources for an exponentially growing human population. The problem with this perspective is that industrial agriculture is a highly polluting enterprise, and one wherein food is reduced to a commodity (De Solier, 2013; Bray and Nelson, 2015) that it is measured using economic standards and grown to feed "universal citizens" (Chan et. al., 2012; Hernández-Morcillo, Plieninger, Bieling, 2013; Iniesta-Arandia et. al., 2014). It does not recognize that the act of eating fulfills more needs than the economic or physiological, transcending into psychological and sociocultural realms. Food is connected to a *sense of belonging* (linked to a *sense of place* and a *sense of community*); it is integral to the formation of cultural identities that result from historical processes shaped by social practices adapted to environmental settings (Brown and Mussell, 1984; Kittler, Sucher, Nahikian-Nelms, 2001; Koc and Welsh, 2002; Dilley, 2009; Klinkenborg, 2009; Mares and Peña, 2010; Weller and Turkon, 2014; Clarke and Jenerette, 2015).

By examining the relationships that different groups of people have with food it is possible to uncover not only cultural markers, but also how they have historically related and adapted to their natural environment (Salmón, 2012). Therefore, changes in food practices might be an

indicator for modifications in cultural beliefs and attitudes (Koc and Welsh, 2002), as well as to adaptation processes to changes in the natural environment of a community. The innumerable stories of migrants reflect such dynamic changes and offer a glimpse into processes of change, resistance, integration, adaptation, and resilience (Brown and Mussell, 1984; Kittle and Sucher, 2001; Koc and Welsh, 2002; Mares, 2010; Mares, 2012; Salmón, 2012; Weller and Turkon, 2014; Smith-Morris, 2016). In fact, the ability or inability to keep a certain food identity can mean for a migrant the capacity to keep a connection with his/her homeland, but most importantly, to understand a social position in reference to others (Brown and Mussell, 1984; Ayala, et al., 2005; Dilley, 2009; Koc and Welsh, 2002; Miller and Deutsch, 2010; Mares, 2010; Alkon and Agyeman, 2011; Mares, 2012; Salmón, 2012; Weller and Turkon, 2014; Smith-Morris, 2016):

> *"My identity and culture as Mexican is reaffirmed whenever I eat tamales, but not the unique community with whom I grew up and from where my understanding of my identity and its connection to a landscape emerged. My reaffirmation of identity and connection to place is not a direct result of the tamales, but comes more from the processes that surround tamales, beans, raisins inside of tamales, and my grandmother's herbal teas. The processes interconnect family, landscape, collection knowledge, story, and an encoded library of cultural and ecological knowledge, all of which sustain and revitalize a sense of self and place" (Salmón, 2012: 8)*

In this way, access to food constitutes more than the capacity to nourish our bodies. Food justice constitutes two relevant processes: Food access and food sovereignty. Food access is broadly defined as the ability to consume healthy food in sufficient amounts and it is related to the concept of food security. On the other hand, food sovereignty is refers to *"the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts those who produce, distribute and consume food at the heart of food systems and policies rather than the*

demands of markets and corporations" (Declaration of Nyéléni, 2007). Both processes are directly affected by social, economic, and political aspects (Alkon and Agyeman, 2011). Food justice can only be achieved by addressing structural inequalities linked to food systems and practices (Alkon, 2012, Patel, 2012).

Currently, 793 million people throughout the world are chronically undernourished in the world (FAO, 2017). Although, food systems and food security constitute complex socio-ecological entities, not only related to production and consumption patterns, shaped not only by capitalist endeavors, but also by historical interactions of humans with their natural environment. In fact, changes in traditional *foodways* and the adoption of more "Westernized diets" have been linked to increasing prevalence of health problems such as obesity, diabetes, and cancer (CGIAR Consortium, 2015).

Under this frame, the present research looks into the link between cultural and environmental values through the lens of *traditional foodways*[44]. The main assumption underlying this research is that a *sense of belonging*, mediated by sociocultural factors and experiences, has a direct impact in a *sense of connectedness to nature*, which will translate into a stronger pro-environmental behavior (García-Moya et al., 2012; Johnson, Bowker, and Cordell, 2004; Krug, 2012; Pretty et al., 2009; Scannel and Gifford, 2010; Schultz, Unipan, and Gamba, 2000). The fact is that, under a broad perspective, different studies have demonstrated that socio-psychological values, including environmental values, are correlated to factors such as age, gender, religion, and ethnicity (Stern, Dietz & Kalof 1993; Johnson, Bowker & Cordell 2004; Franzen & Meyer 2010; Aguilar-Santelises and Castillo 2015). In this sense, environmental

[44] Based *on local ecological knowledge*, which represents part of a "cultural adaptation to the natural environment" (Pilgrim, 2006: 32).

behavior cannot be understood simply by describing and regulating the interaction between individuals and their natural environment; it is crucial to look into sociocultural relations and political dynamics that impact the processes through which identity is shaped (Pulido 1996; Peña 2005; Alkon 2006; Aguilar-Santelises and Castillo 2015). Humans protect not only what they know, but mostly what they have emotional connections with (Ardoin 2014). In fact, historically, local communities have relied on the surrounding natural environment, not only to sustain their needs and also to create meanings that help them better understand reality (Townsend 2000; Myllyntaus and Saikku 2001).

In consequence, *foodways* can be used as an indicator of the relationship between cultural identity[45] and environmental values. Furthermore, it could be used to comprehend how migration affect the *senses of belonging* and of *connectedness to nature*[46].

In reality, experiences, memories and habits get materialized in *foodways*. As a result, food represents in some extent the first contact humans have to nature so *foodways* becomes as a rich lens through which the connection to nature can be analyzed. The process of adaptation after migration entails a process of transculturation, which through new identities and new habits are developed in response to a different social and environmental settings. In this sense, habits (and in extension, *foodways*) constitute a form of embodied *cultural capital* that somehow regulates what is accepted as "normal" in a particular community:

> "*The habitus, product of history, produces individual and collective practices – more history – in accordance with the schemes generated by history"* (Bourdieu 1990: 54).

[45] Understood as a dynamic "entity".
[46] Psychologists have proven that disconnection from nature has a negative effect in pro-environmental behavior (Scannell and Gifford, 2010).

Actually, it is necessary to acknowledge that contemporary traditional and local forms of knowledge are affected by social, cultural, political, economic and even environmental factors, acquiring an additional layer of complexity in the case of migration (either rural-urban or across political borders) (Pierroti and Wildcat 2000; García Moya et. al. 2012). The strong relationship between certain groups and the natural environment can be devised through a *sense of identity*[47] (Pretty et al., 2009). If *foodways* and food habits are modelled by sociocultural and environmental factors (especially availability) (Cantarero et al., 2012), then *foodways* can serve as a window to observe sociocultural mediated preferences and behaviors that mediate in part the relation of community members with their natural environment. In this sense, *foodways* have the symbolic and material power to evoke memories, as well as cognitive and behavioral aspects of culture[48] (Brown and Mussell, 1984; Means, Mackenzie Davey and Dewe, 2015), which can then be used to analyze pro-environmental behavior based on the recognition of certain habits.

It is important to recognize that due to the complexity inherent in food systems, simple development or ecological indicators cannot capture the complexity of dynamic socio-ecological systems, which properties change at different tempo-spatial scales. Therefore the need for new indicators that can complement the information provided by existing indicators such as availability, distribution, and utilization of food, the environmental footprint of food production, the market share of sustainable produce food, and food consumption patterns.

[47] It is important to notice that individuals have multiple identities that are in constant change as a response to socio-environmental factors and entails a sense of "membership" or attachment to a broader collective (Pulido, 1996).
[48] Although, practices, beliefs and values are constantly evolving as a result of social and environmental changes, impacting not only *foodways*, but behavior in general.

5.4 CONCLUSION

In recent decades, following what experts have described as a modern environmental crisis characterized by massive biodiversity loss and imminent climate change, the governance of natural resources has been restricted to groups in power who set universal standards to define pro-environmental behavior. This approach is usually restricted to consumerist considerations that do not account for local or regional practices that might be the product of centuries of co-evolution between human populations and their surrounding natural environment. Even more, this form of governance is based on a dichotomized understanding of humans and nature that has proven to result in inappropriate and not necessarily effective implementation of conservation strategies.

The failure of environmental policies based on this framework is mostly the result of the environmental and social injustices that come as a result of overseeing cultural factors that shape human beliefs and actions. More efficient an effective environmental policies require a better understanding of the needs and value systems that guide individuals' behavior. For this reason, there is a need to closely study the complex link between cultural practices and environmental behavior, recognizing that human behavior is dynamic and multifactorial.

In fact, there is increasing evidence that suggests that people who behave in more environmentally friendly manners tends to hold certain values that reflect culturally transmitted patterns that account for a closer sense of connectedness to nature that not necessarily responds to a dichotomized perspective. Culture, in this sense, becomes an important driver for environmental behaviors. However, cultural identities are relational

and contextual, therefore dynamic, which result in the difficultness to understand to what degree sociocultural factors can account for environmental attitudes.

It is time to abandon technocratic notions of sustainability based on Western paradigms that misrepresent the realities of many communities and their bio-cultural heritage at a local scale. To do so, it is important to recognize the pluralistic character of the relationship humans-nature, promoting a dialogue rather than a simple authoritarian approach that tend to exacerbate inequalities to foster an active agency of local communities based in the acknowledgement of local systems of values, needs, and rights, within an agreed notion of a future recognizing the limits of the ecosystems. This is what Julie Agyeman has defined as a "just sustainability."

This study proposes the use of *foodways* as a tool to explore how cultural background reflected in the form of values and attitudes, translates into a sense of belonging and a sense of connectedness to nature that can account for a more diverse range of pro-environmental actions.

The specific role that *foodways* plays during identity formation processes is dependent on a number of sociocultural, economic, and even political factors that affect the process of adaptation to new social and environmental settings, impacting the individual sense of belonging, both to a community and to place. Nonetheless, the trends described in this study suggest a general pattern that do not entail a normative or prescriptive model, but a contingent description that seeks to better understand some of the sociocultural factors that impact environmental behavior. More research in the area is needed to determine the level of dependence between the proposed variables. Work among immigrant population seems to facilitate these kind of studies, since changes in this factors become more noticeable. The used of mixed methods is strongly suggested for these purposes. Although it is recognized the limited scale of the present study, it can serve to demonstrate the value of adopting more holistic methodologies that better describe

the relationship between individuals and their surrounding natural environment, while recognizing sociocultural and historical conditions. The sole dependence on quantitative approaches, common in environmental sciences, rarely captures the complexity of social factors that guide environmental behavior. It is recommended to combine quantitative with qualitative approaches for a better understanding of the factors that impact the relationship between humans and nature. Furthermore, this methodology could give insight into the dynamic co-evolution of local communities and landscapes. *Foodways,* in particular, shows not only the connection between people and food, but how this dynamic relationship has an on ecosystems. The findings of this research suggest that *foodways* entails dynamic practices guided by complex socio-ecological factors including sociocultural values, class, age, gender, education, and daily activities that respond to surrounding social and environmental boundaries. These contexts shape individual identities, guiding particular behaviors. Therefore, *foodways* can be used as an indicator to better understand how people feel connected (or disconnected) to nature and then, to better understand their particular environmental behavior. At the core of this rests the reflexive and relational nature of food practices that not only echo the micropolitics of food, but also the complex interaction between humans and the natural environment, without dismissing globalizing forces.

In this way, this study seeks to address the limited methods used in environmental sciences and offer some suggestions on how to study complex socio-ecological systems through a participatory approach that recognizes the realities of individuals and communities at a local scale, without assuming a naive perspective of localism that denies the fact that human communities has never been completely isolated from each other. This study proposes a more

holistic approach in environmental sciences to integrate analysis of sociocultural elements in the study of ecosystems, their transformation, conservation, and even restoration.

As people are getting disconnected to nature due to urbanization, migration, globalization, but also employment and adaptation to changing socioenvironmental factors, result in lifestyles that tend to be disconnected from the land, and therefore, from nature. Under this perspective food seems to be just a sustenance commodity that reinforces the false dichotomy nature-culture. It is necessary to recover the sense of cultural meaningful *foodways* that embraces relational values under which individuals and communities develop a sense of community and a sense of place, pillars of a sense of belonging that will allow them to develop a sense of connectedness of nature under which pro-environmental behavior arises.

Unfortunately, local cultural heritage has been overlooked by international and national conservation policies based on a lack of understanding of the impact of such heritage in local communities' sustainable practices[49]. In consequence, it is necessary to recognize that the degradation of ecosystems, together with the loss of species, the erosion of genetic diversity, and the homogenization of culture have a direct impact not only in the nature's resilience capacity, but also on social vulnerability to environmental factors such as climate change. This would facilitate the comprehension of trade-offs in the exploitation of natural resources and could avoid the rise of conflicts between different stakeholders, but could also denote more effective and inclusive conservation strategies. Therefore, sustainable efforts should consider sociocultural and ecological factors in the generation and application of knowledge towards more resilient socio-ecological systems.

[49] *Cultural landscapes* are the ideal example of how cultural heritage impacts the relationship human-nature in a determined place, being a product of adaptation

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APPENDICES

APPENDIX A- ETHICS APPROVAL

UNIVERSITY of WASHINGTON
HUMAN SUBJECTS DIVISION

DETERMINATION OF EXEMPT STATUS

November 21, 2016

Maria Carrera Zamanillo
352100
Seattle, WA

847-903-2819
micz@uw.edu

Dear Maria Carrera Zamanillo:

On 11/21/2016, the University of Washington Human Subjects Division (HSD) reviewed the following application:

Type of Review:	Initial Study
Title of Study:	Cultivando Comunidad: A Community-Based Approach to Study the Link between Cultural and Environmental Identities in Latinos Living in the Seattle Metropolitan Area
Investigator:	Maria Carrera Zamanillo
IRB ID:	STUDY00000519
Funding:	None

Exempt Status
HSD determined that your proposed activity is human subjects research that qualifies for exempt status (Categories 2 and 7).

- This determination is valid for the duration of your research.
- This means that your research is exempt from the federal human subjects regulations, including the requirement for IRB approval and continuing review.
- If you obtain federal funding or other support for this research, inform HSD immediately.
- You requested that Casa Latina and Centro de la Raza employees conducting human subjects research rely on the UW's IRB review. However, the UW does not review for non-UW employees when a study is exempt from IRB review.

If you consider changes to this activity in the future and know that the changes will require review (or you are not certain), you may request a review or a new determination by submitting a Modification to this application.

Thank you for your commitment to ethical and responsible research. We wish you great success!
Sincerely,

Neena Makhija I 206-543-1926 I neena@uw.edu

APPENDIX B- SURVEY QUESTIONS

Sense of Place:

The following questions look into how connected do you feel to the Seattle Metropolitan Area.

1. Regarding your sense of connection to the Seattle Metropolitan Area, to what extent do you agree or disagree with the following statements?

Please slide the bar to indicate the level in which you agree or disagree with each statement.

I feel like this place is a part of who I am.

Strongly Disagree | Neutral | Strongly Agree

I identify with the culture that characterized the area.

(Culture, meaning when you think about the values, history, traditions, customs)

Strongly Disagree | Neutral | Strongly Agree

I feel connected to the natural environment and living forms of this area.

Strongly Disagree | Neutral | Strongly Agree

2. Culturally, do you feel a sense of connection with any of the following geographic areas?

Please choose the option or options with which you help you feel connected , in relation to values, history, traditions, and customs.

- [ ] Your current neighborhood
- [ ] Seattle Metropolitan Area
- [ ] Pacific Northwest
- [ ] United States
- [ ] Your country of origin or where your family comes from

3. Ecologically, do you feel a sense of connection with any of the following geographic areas?

Please choose the option or options with which you help you feel connected, in relation to the plants, animals, and natural landscape.

- [ ] Your current neighborhood
- [ ] Seattle Metropolitan Area
- [ ] Pacific Northwest
- [ ] United States
- [ ] Your country of origin or where your family comes from

Cultural Identity:

The following questions focus more on your traditions and cultural background.

4. To what extent do you agree or disagree with the following statements?

Traditional food reflects my cultural identity

Strongly Disagree | Neutral | Strongly Agree

I spend time trying to connect to my ethnic group through traditions and customs.

Strongly Disagree | Neutral | Strongly Agree

I have a strong sense of belonging to my ethnic group

Strongly Disagree | Neutral | Strongly Agree

I use plant remedies to treat ailments because this is the traditional way to do it in my ethnic group

Strongly Disagree | Neutral | Strongly Agree

Life in the United States:

The following questions look into your experiences in the United States, but in particular in the Seattle Metropolitan Area.

5. Have you experienced any hardship while living in the Seattle Metropolitan Area in any of the following realms?

Please mark all those options that relate to any hardship you might have faced while living in this area.

- [ ] Making new friends
- [ ] Adapting to the new natural environment
- [ ] Understanding the culture
- [ ] Feeling accepted
- [ ] Understanding the language
- [ ] Maintaining your traditions
- [ ] Making yourself understood

Other (please specify)

6. To what extent do you agree or disagree with the following statements?

It is important for me that my family speaks Spanish

Strongly Disagree — Neutral — Strongly Agree

It is important to me to share and transmit my cultural traditions new generations

Strongly Disagree — Neutral — Strongly Agree

I feel that Latino/a immigrants should adopt the American cultural traditions and not maintain those of our own

Strongly Disagree — Neutral — Strongly Agree

Environmental Behavior:

The next questions look into environmental practices.

7. To what extent you agree or disagree with the following statements?

I am worried about climate change

Strongly Disagree | Neutral | Strongly Agree

I am concerned about environmental problems because of the consequences for my family

Strongly Disagree | Neutral | Strongly Agree

Protecting the natural environment should be given top priority

Strongly Disagree | Neutral | Strongly Agree

I would call myself an environmentalist

(Meaning a person whose actions are oriented *to protect the natural environment)*

Strongly Disagree | Neutral | Strongly Agree

Connectedness to Nature:

The following questions look into the relationship between humans and nature.

8. To what extent do you agree or disagree with the following statements?

I love to be outdoors and in contact with nature

Strongly Disagree | Neutral | Strongly Agree

I think of myself as a part of nature, not separate from it

Strongly Disagree | Neutral | Strongly Agree

I often feel that my identity is linked to nature, animals or plants

Strongly Disagree | Neutral | Strongly Agree

9. Do you feel that your cultural traditions and habits connect you in some way to the natural environment?

◯ Yes ◯ No

If YES, How? (please specify)

10. Finally, could you shortly describe in what other ways you feel connected to nature.

(For example: Through personal beliefs, actions, elements like traditions, food or clothes, etc.)

Demographic information:

* Please check all boxes to confirm that you:

- ☐ Live in the Seattle Metropolitan Area, which officially covers city of Seattle, Bellevue, Everett, and Tacoma
- ☐ Are over 18 years old

What is your gender?

◯ Male ◯ Female ◯ Other

In what year were you born?

[ ]

Where you born in the United States?

◯ Yes ◯ No

If NO, how many years have you lived in the United States?

[ ]

If you were born outside of the United States, where do you come from?

IF BORN IN THE UNITED STATES: What country in Latin America does most of your family come from?

- ☐ Argentina
- ☐ Bolivia
- ☐ Belize
- ☐ Chile
- ☐ Colombia
- ☐ Costa Rica
- ☐ Cuba
- ☐ Dominican Republic
- ☐ Ecuador
- ☐ El Salvador
- ☐ Honduras
- ☐ Mexico
- ☐ Nicaragua
- ☐ Panama
- ☐ Paraguay
- ☐ Peru
- ☐ Puerto Rico
- ☐ Uruguay
- ☐ Venezuela

Other (please specify)

[ ]

How long have you lived in the Seattle Metropolitan Area?

[ ]

What is the highest level of education you have completed?

- ◯ Elementary (or less)
- ◯ Middle School
- ◯ High School
- ◯ Technical Education
- ◯ Bachelor's Degree
- ◯ Graduate Degree

Regarding your current main occupation, are you a student, retired, unemployed, employed, or a housewife?

- ◯ Student
- ◯ Retired
- ◯ Unemployed
- ◯ Employed
- ◯ Housewife

If retired, unemployed or employed, please indicate your most recent occupation

Do you currently live in an urban, suburban, or rural area?

◯ Urban ◯ Suburban ◯ Rural

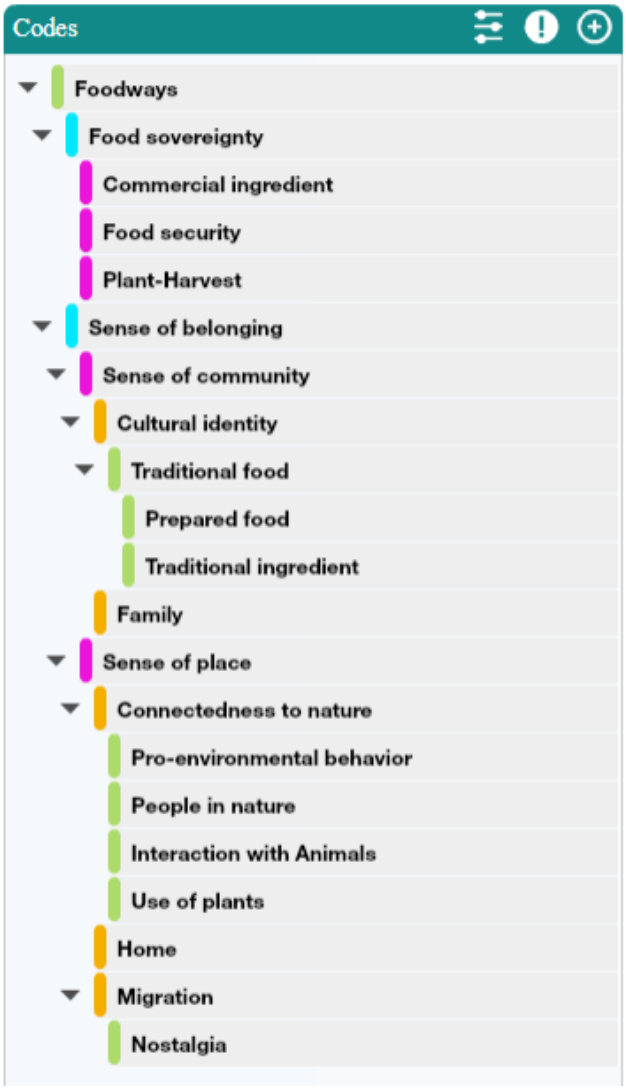
APPENDIX C- INTERVIEW QUESTIONS

Please, think about your favorite traditional plate, one that helps you connect with your ethnic roots. You can write as much as you want to answer each of the following questions:

1. Do you still prepare this plate at home?
2. If you still prepare it, does anyone help you to prepare it? If so, who?
    - If you do not prepare it anymore, when is the last time you ate it and who prepared it?
3. If you still prepare it, how did you learn to prepare this dish?
4. Do you prepare or eat it just for special occasions or as common part of your weekly meals?
5. How difficult is to obtain the ingredients for this plate in Seattle?
6. If you are unable to find authentic or traditional ingredients in Seattle, what other alternatives do you have to get the necessary ingredients for this recipe? (For example: Do you grow anything at home? Do you exchange ingredients with other people?)
7. How important is to you to prepare traditional plates from your country of origin?
8. What are the greatest barriers that limit you to prepare traditional foods? (Maybe time, availability of ingredients, or lack of knowledge?)
9. To what extent do you consider food as a way to connect to nature? Why yes or no?

These are all of the questions that I have. Do you have any final thoughts about this interview or about your experiences preparing traditional food?

APPENDIX D- CODEBOOK



APPENDIX E- SURVEY RESULTS DIVIDED ACCORDING TO DEMOGRAPHIC VARIABLES

Sense of place

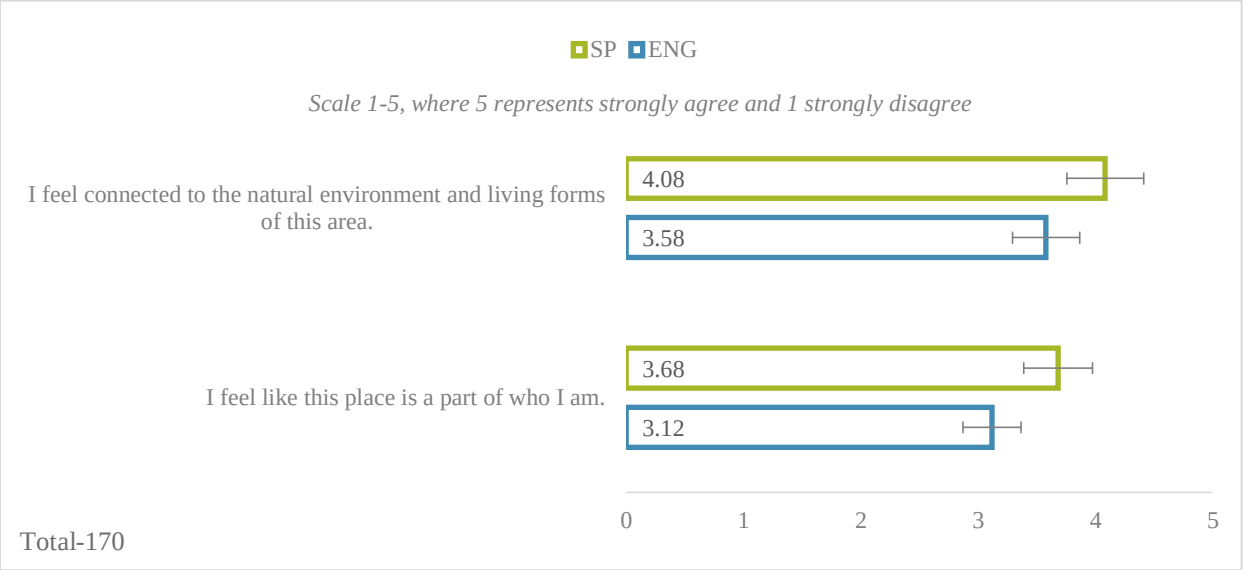


Figure E1- Data distribution among survey answers in Spanish and English

Figure E2- Data distribution among survey answers by gender

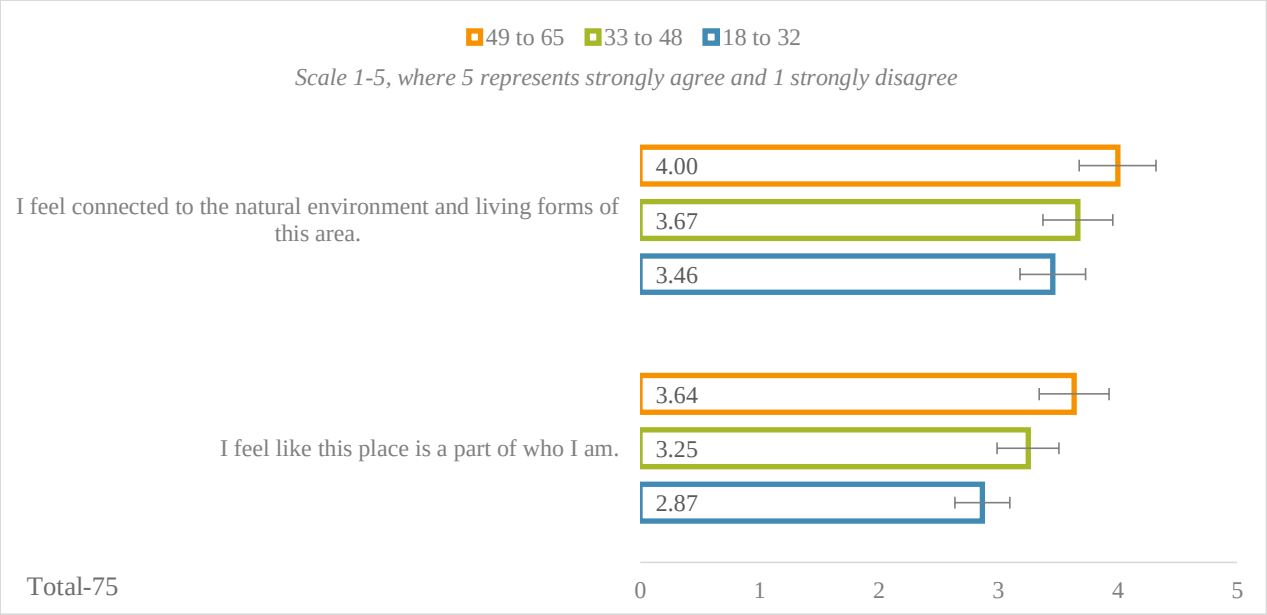


Figure E3- Data distribution among survey answers

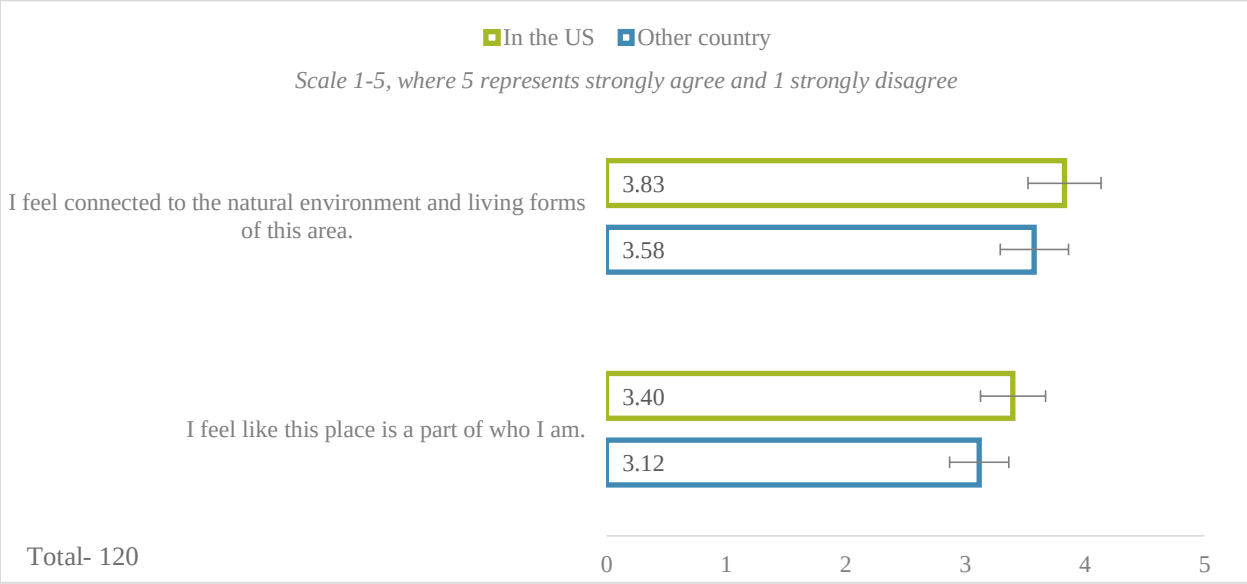


Figure E4- Data distribution among survey answers by country of origin. Other country refers to any country in Latin American and the Caribbean

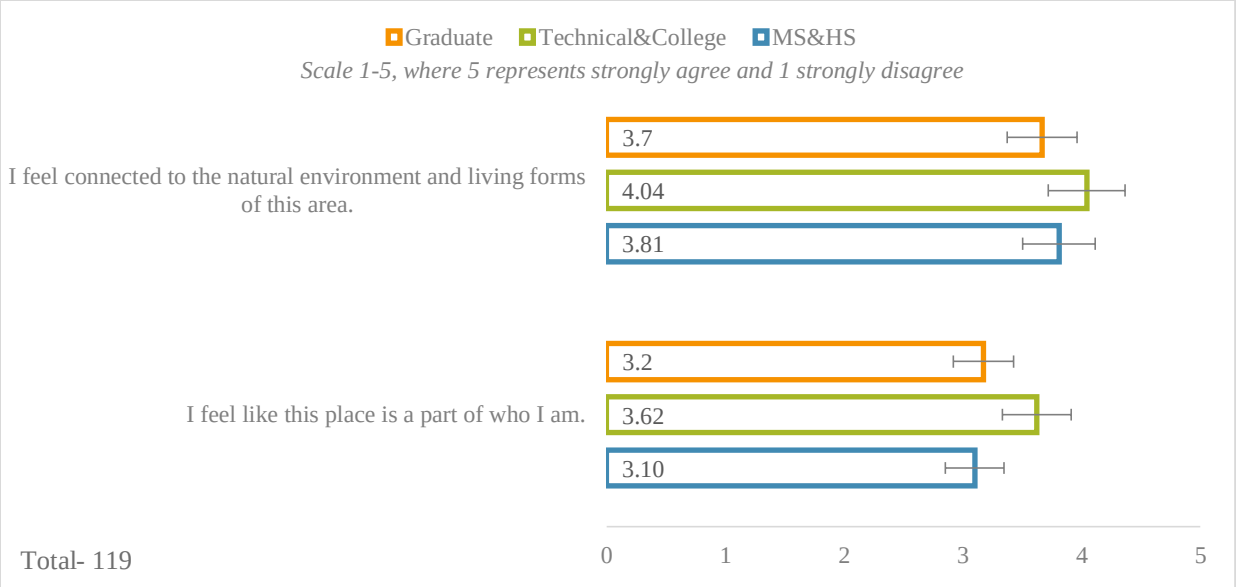


Figure E5- Data distribution among survey answers by level of education: Middle School and High School, Technical education and Bachelor's Degree, Graduate Degree

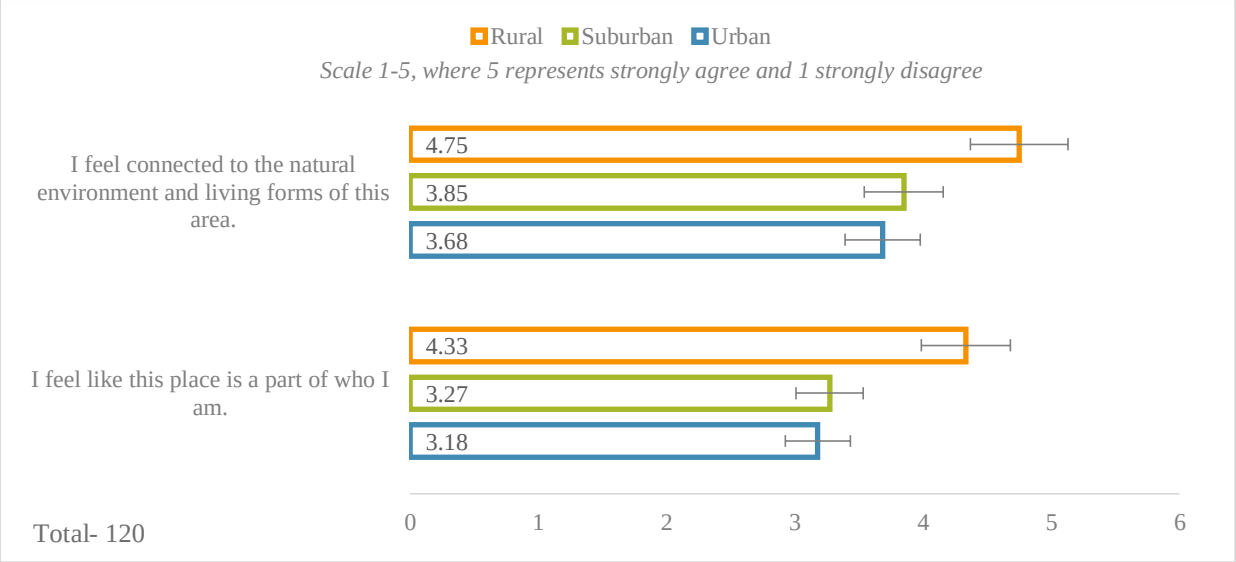


Figure E6- Data distribution among survey answers by current living area inside the Seattle metropolitan area

Cultural identity

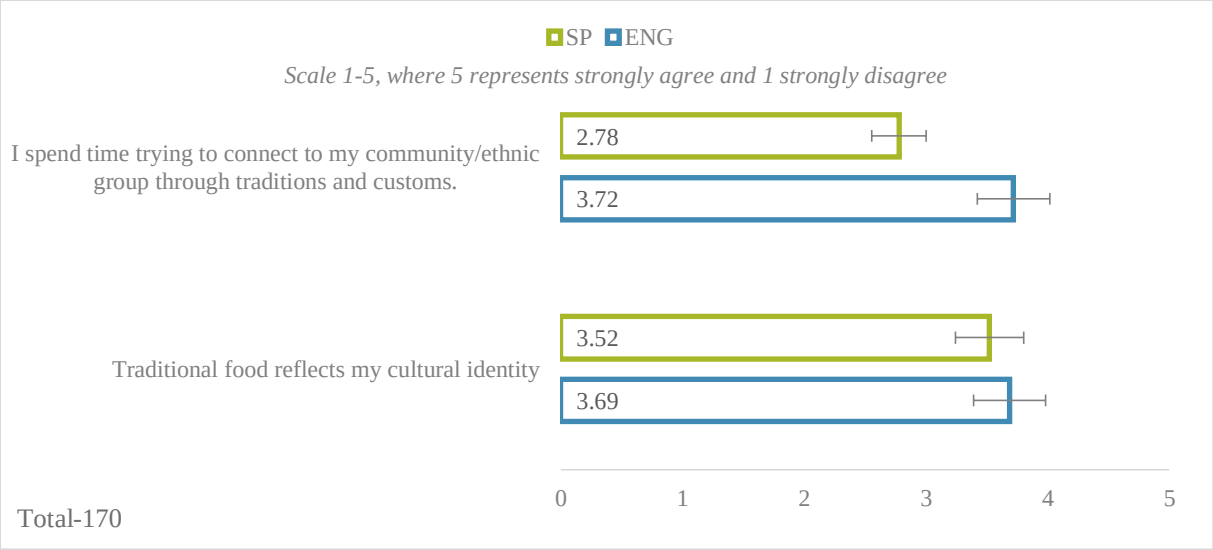


Figure E7- Data distribution among survey answers in Spanish and English

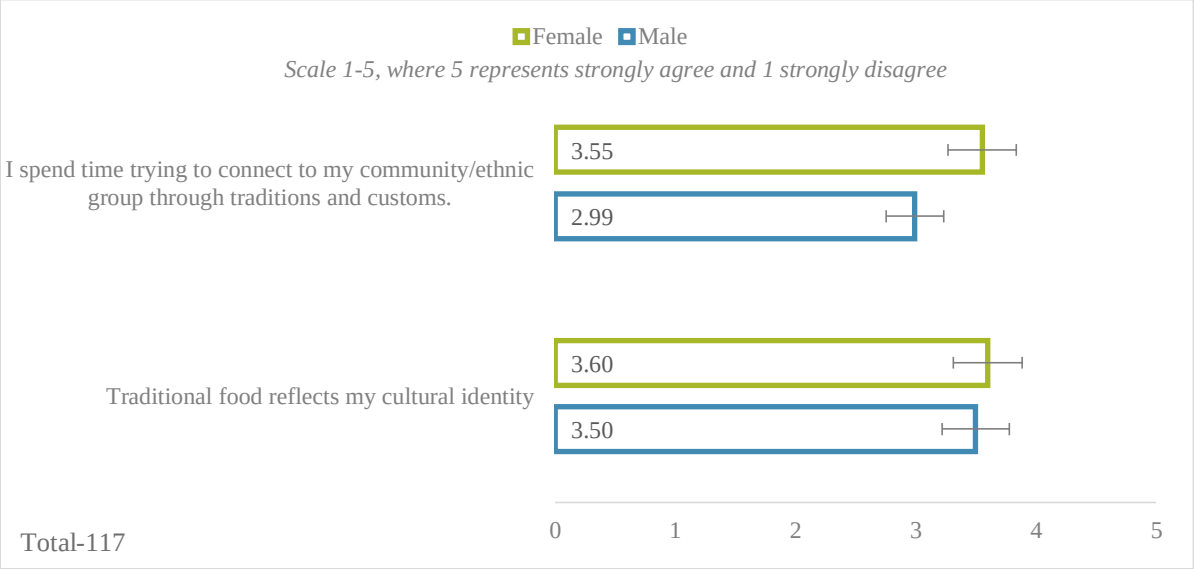


Figure E8- Data distribution among survey answers by gender

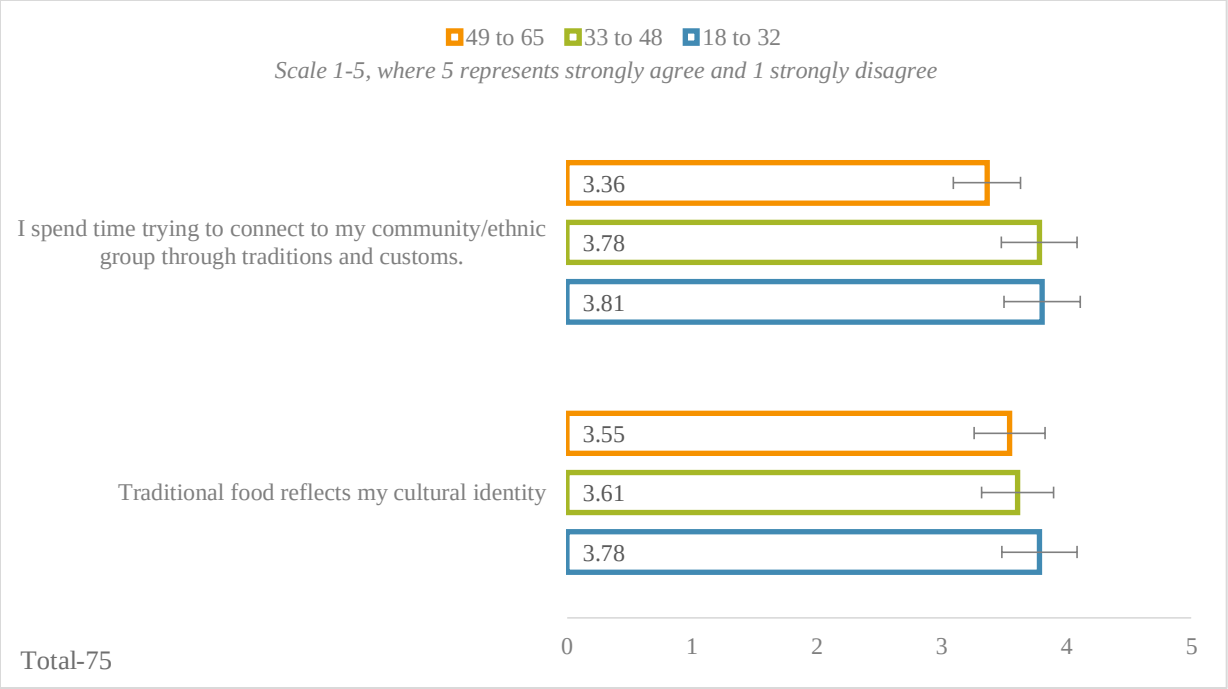


Figure E9- Data distribution among survey answers by age

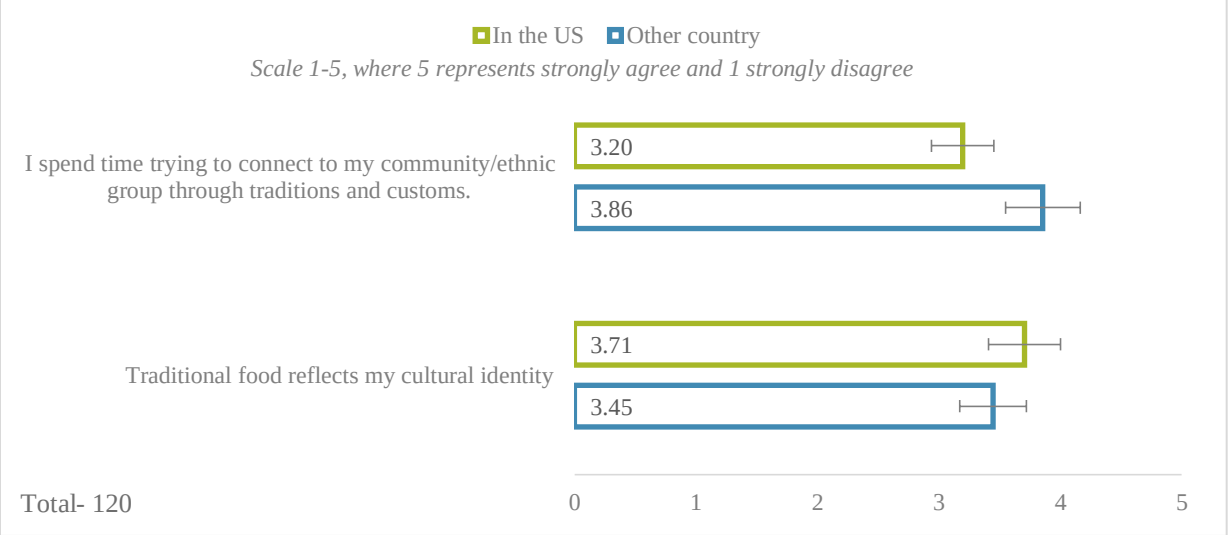


Figure E10- Data distribution among survey answers by country of origin. Other country refers to any country in Latin American and the Caribbean

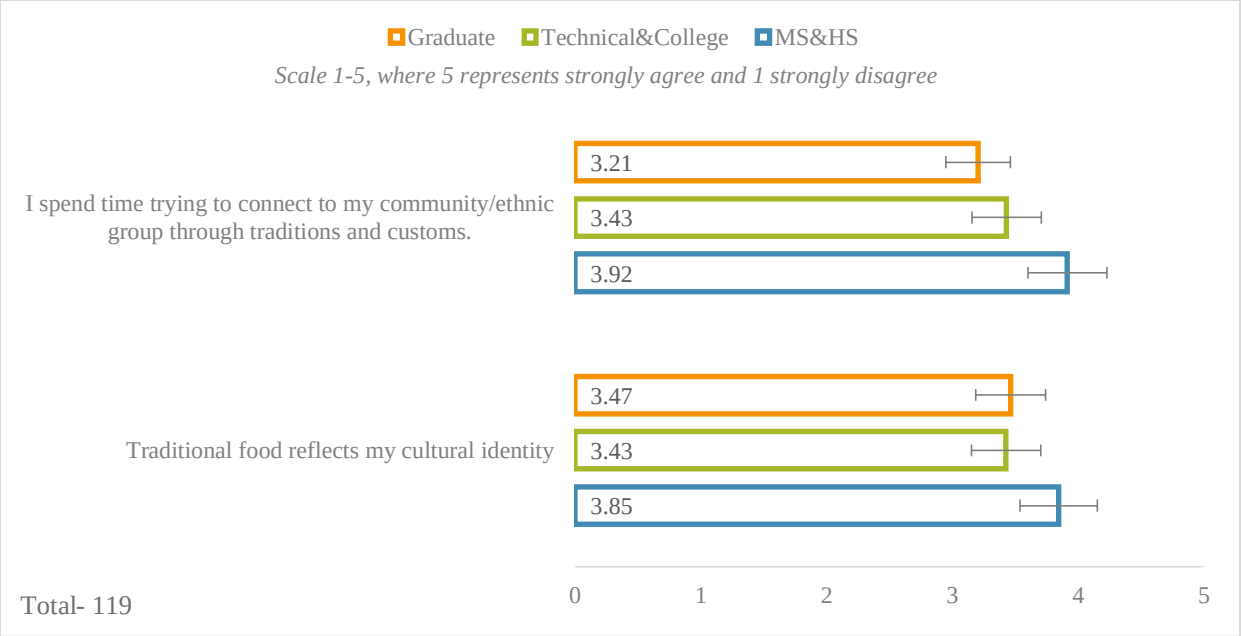


Figure E11- Data distribution among survey answers by level of education: Middle School and High School, Technical education and Bachelor's Degree, Graduate Degree

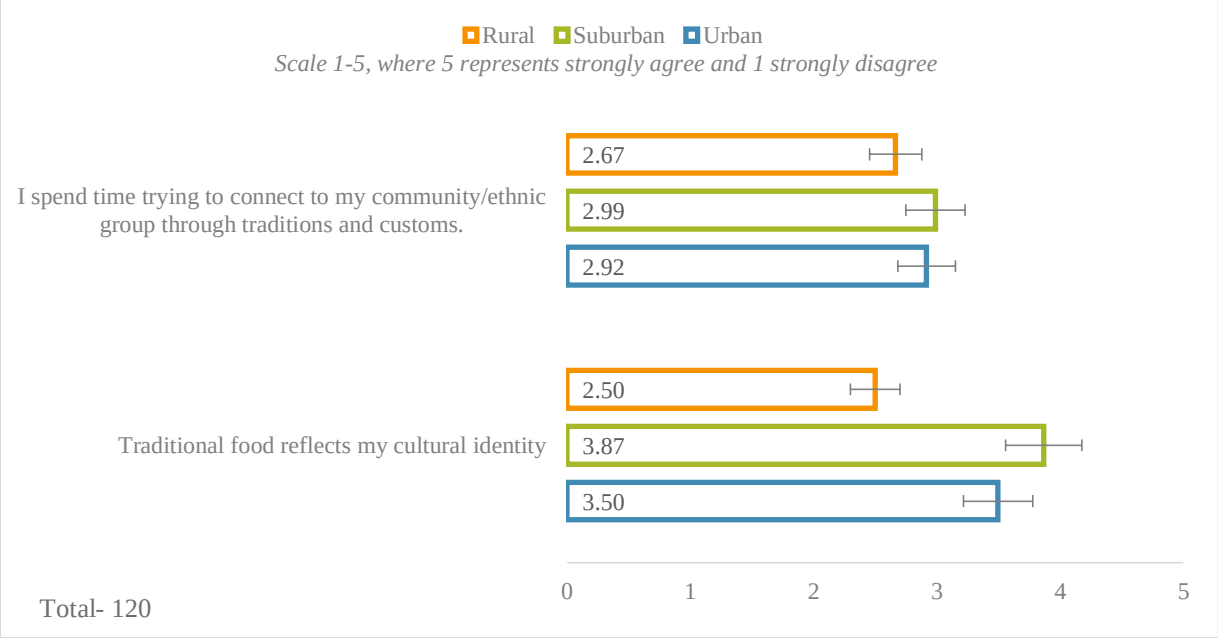


Figure E12- Data distribution among survey answers by current living area inside the Seattle metropolitan area

Life in the United States

Question: Have you experienced any hardship while living in the Seattle Metropolitan Area in any of the following realms? Please mark all those options that relate to any hardship you might have faced while living in this area.

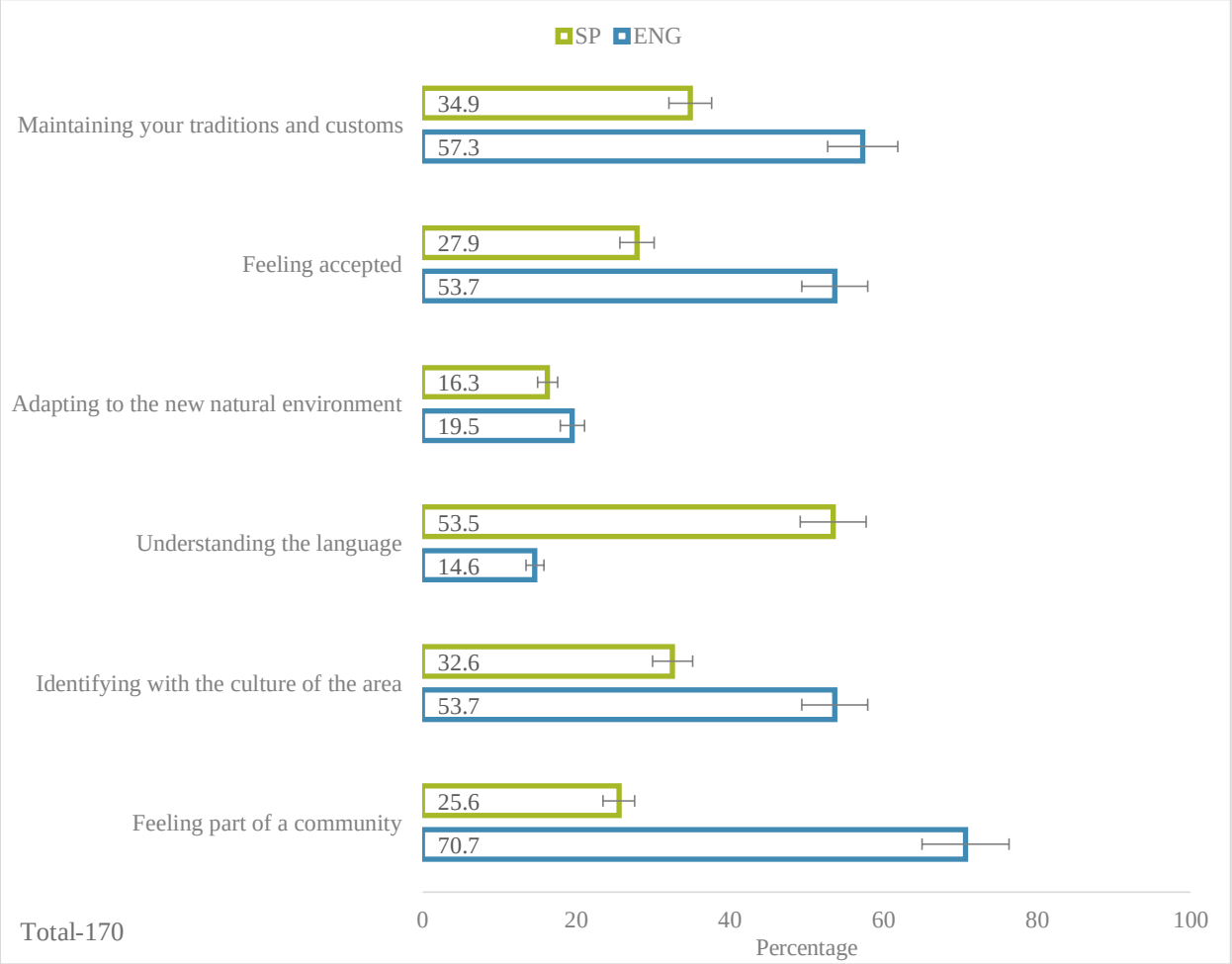


Figure E13- Data distribution among survey answers in Spanish and English

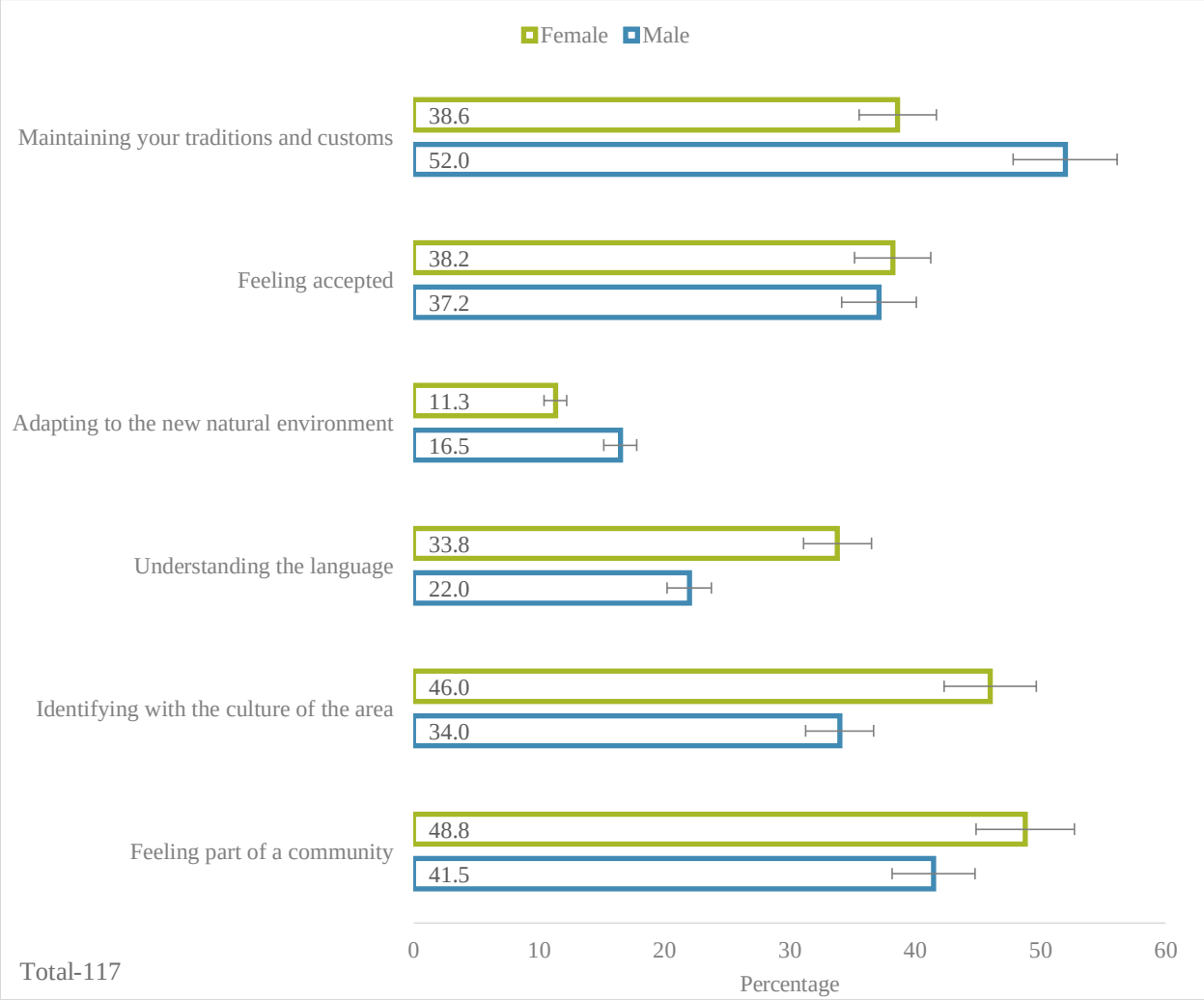


Figure E14- Data distribution among survey answers by gender

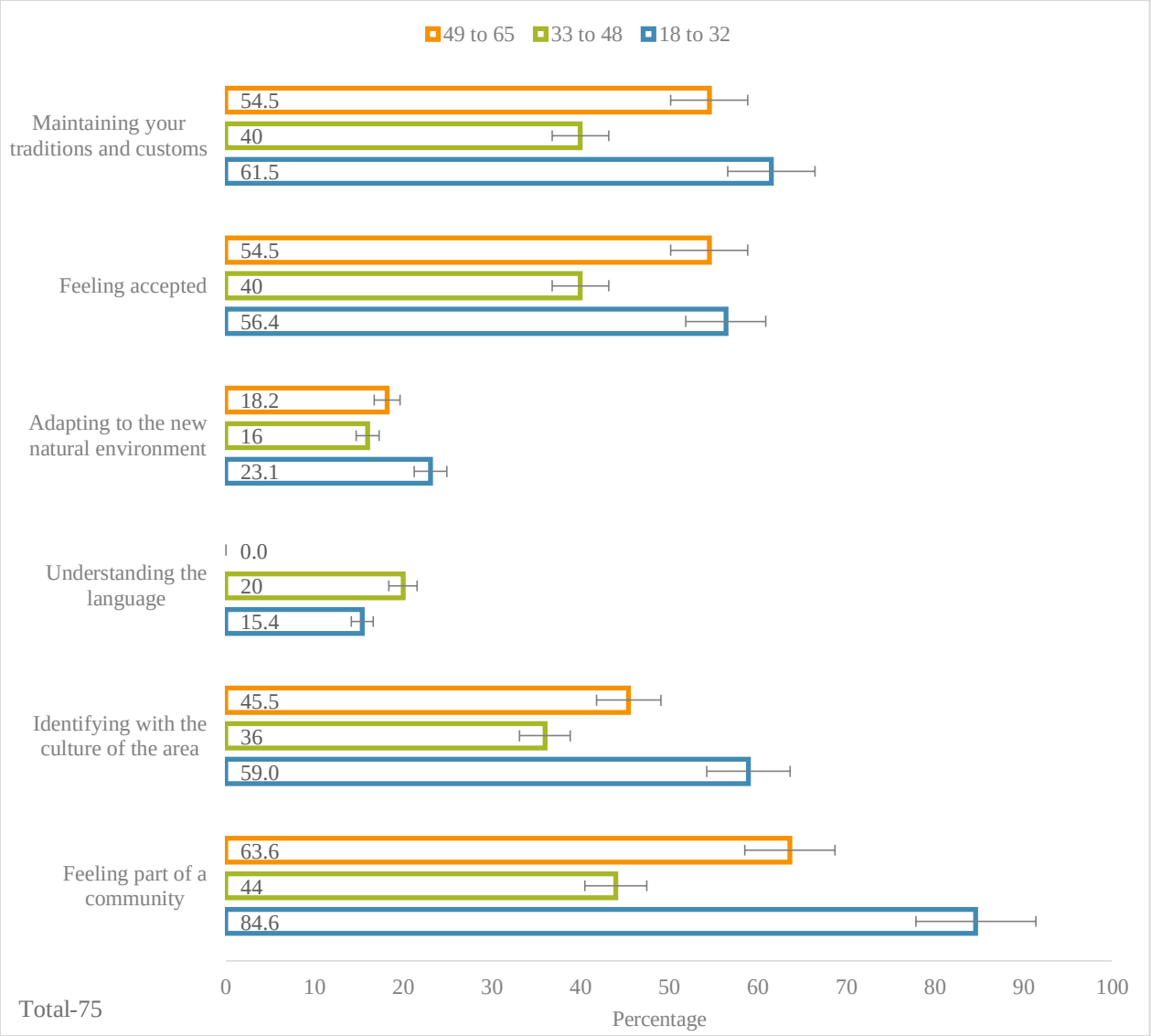


Figure E15- Data distribution among survey answers by age

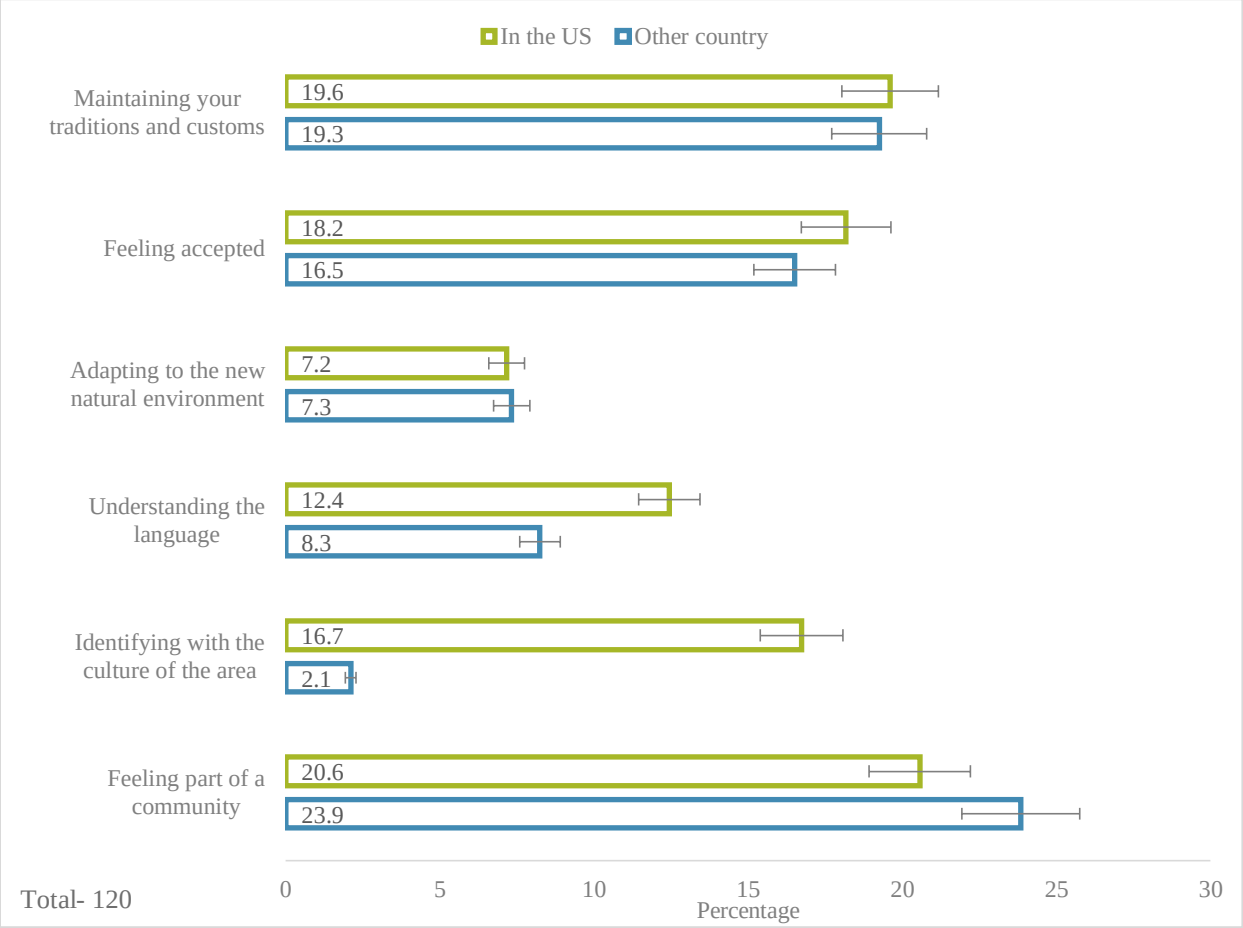


Figure E16- Data distribution among survey answers by country of origin. Other country refers to any country in Latin American and the Caribbean

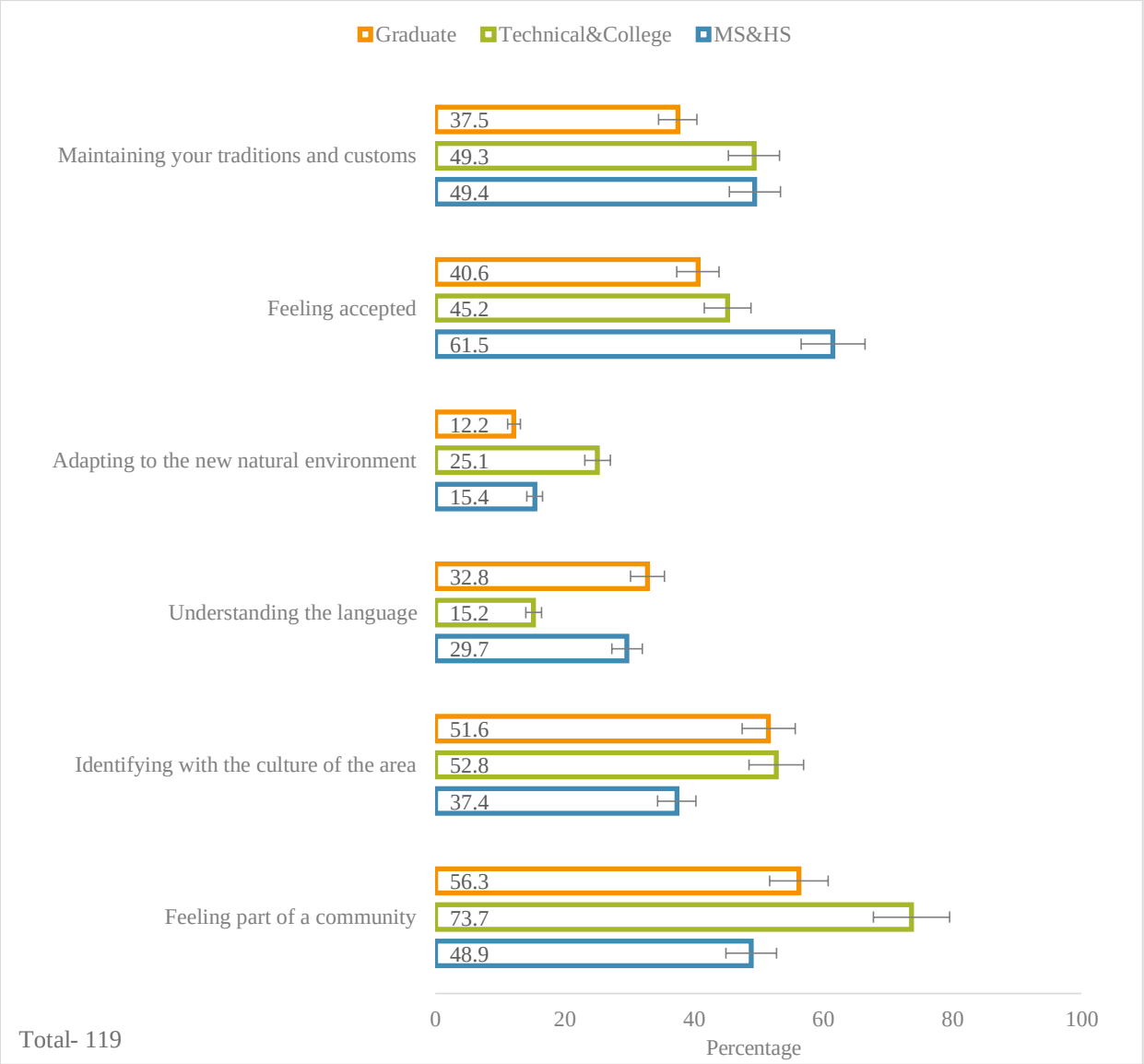


Figure E17- Data distribution among survey answers by level of education: Middle School and High School, Technical education and Bachelor's Degree, Graduate Degree

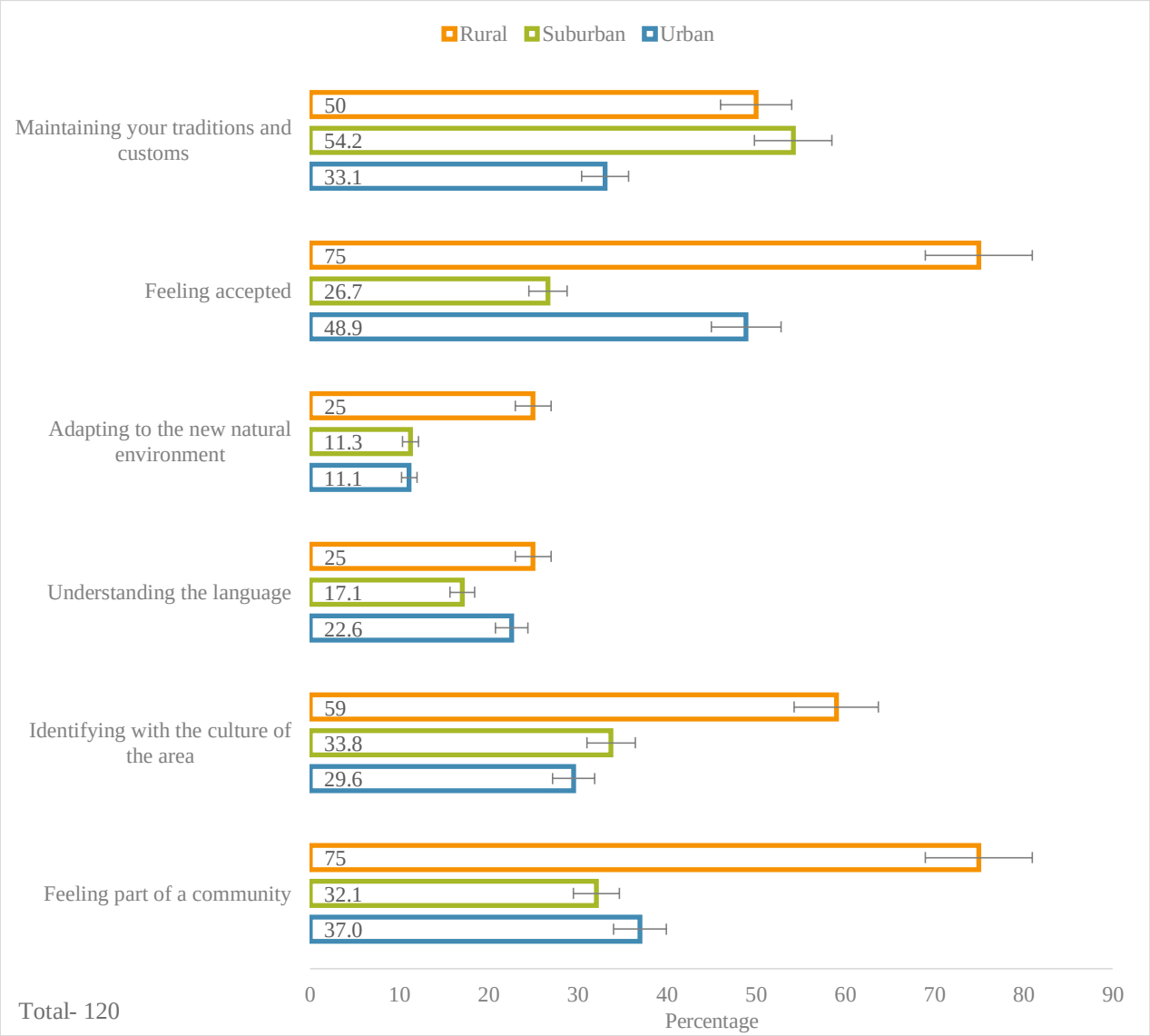
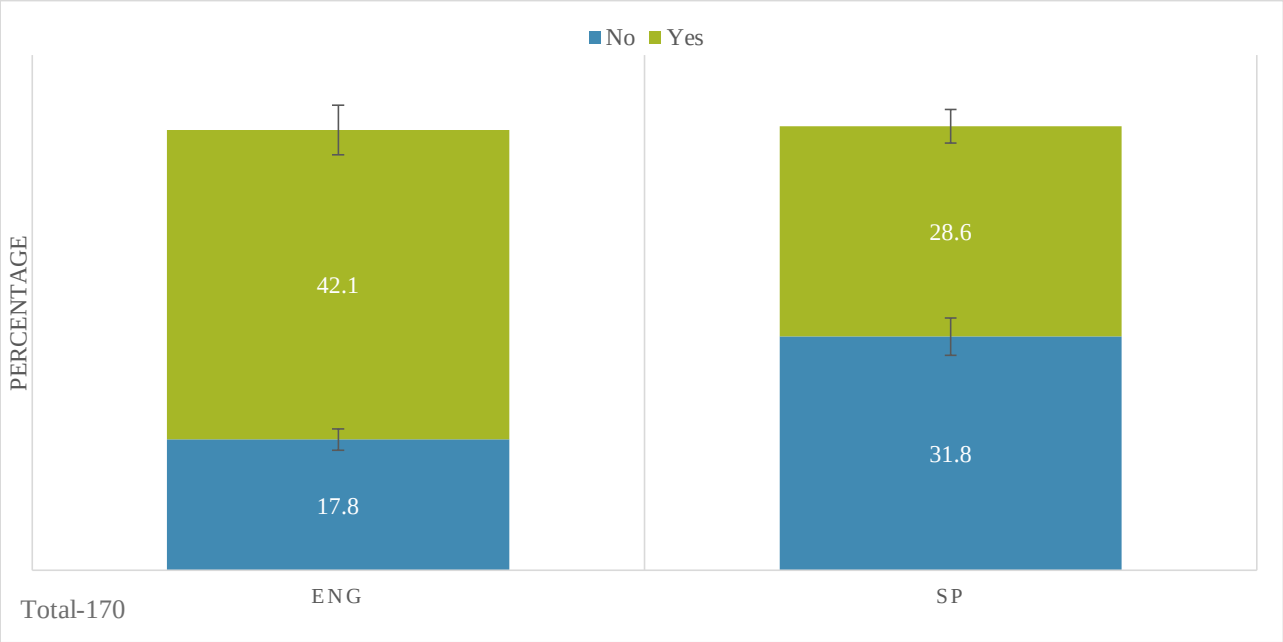


Figure E18- Data distribution among survey answers by current living area inside the Seattle metropolitan area

Question: Have you change your diet while living in the Seattle Metropolitan Area?
If your last answer was YES, then, what are the most important factors that lead you to a change in your diet?



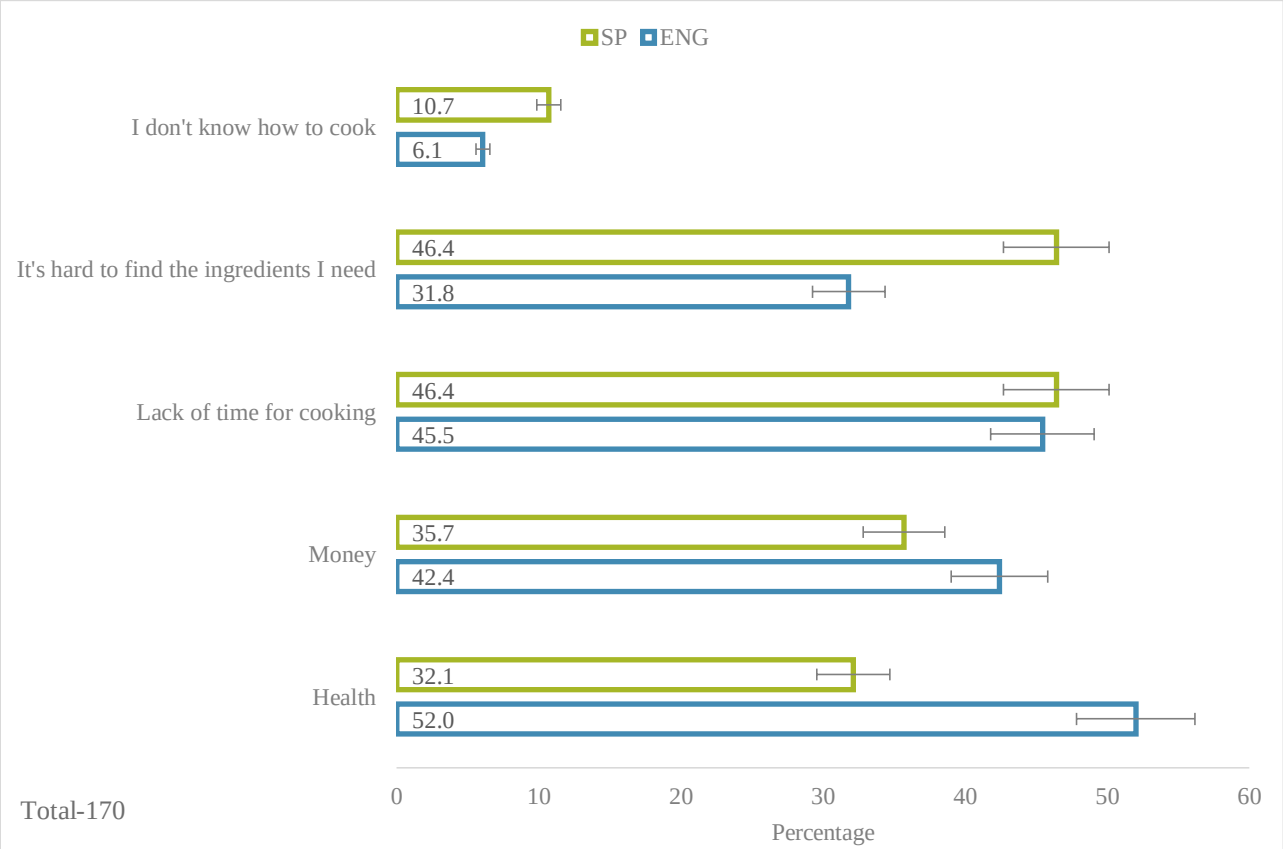


Figure E19- Data distribution among survey answers in Spanish and English

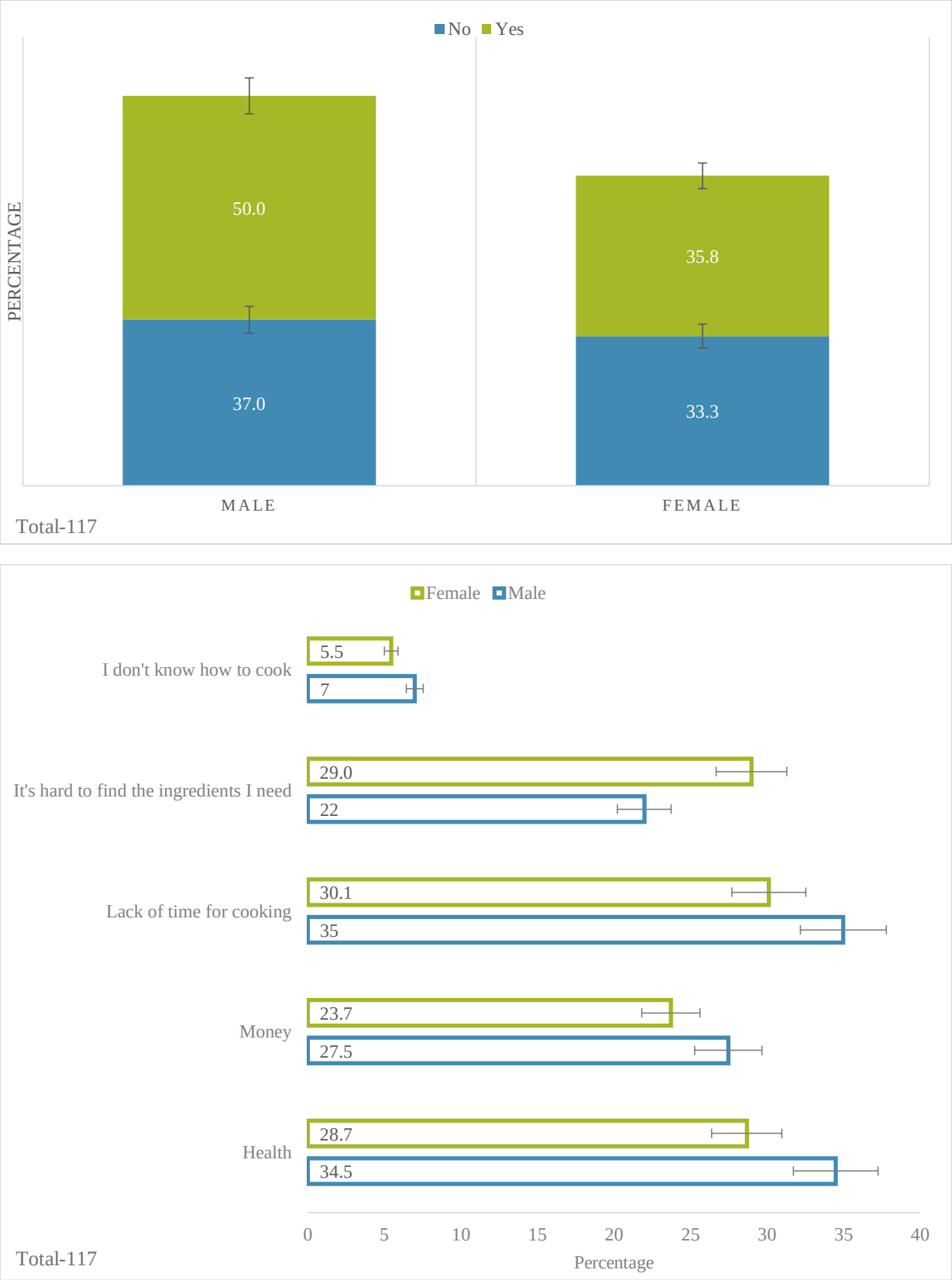
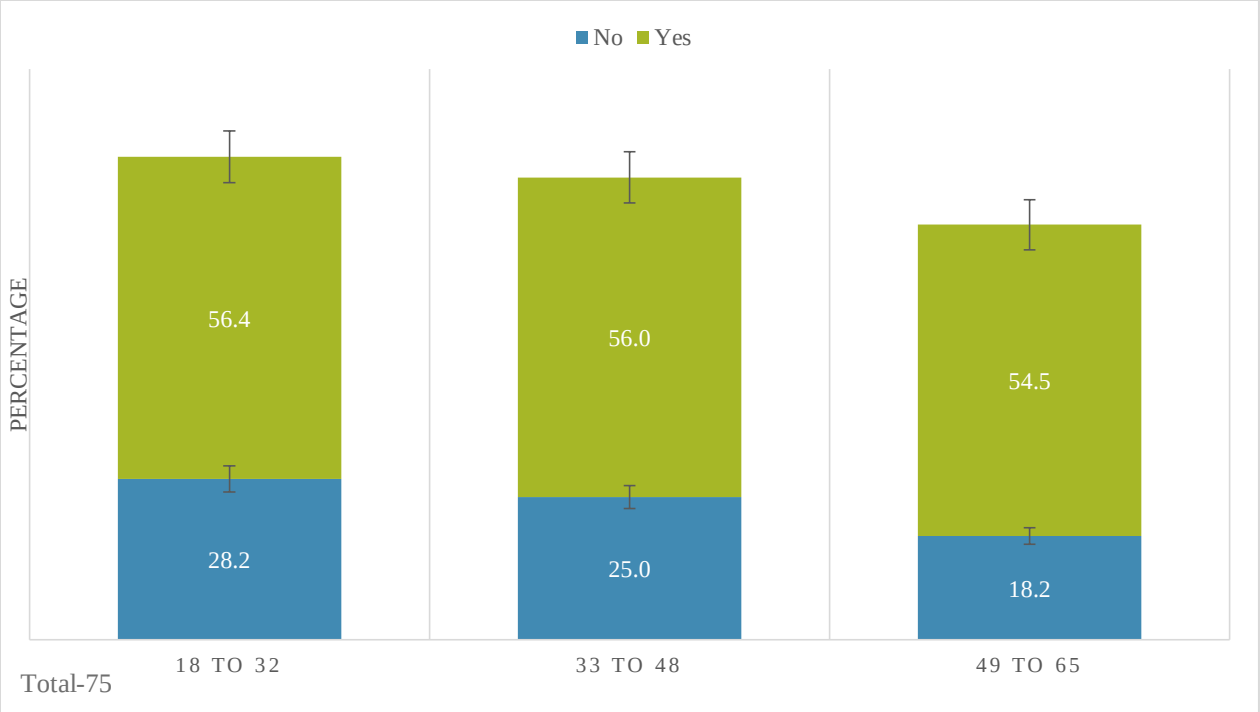


Figure E20- Data distribution among survey answers by gender



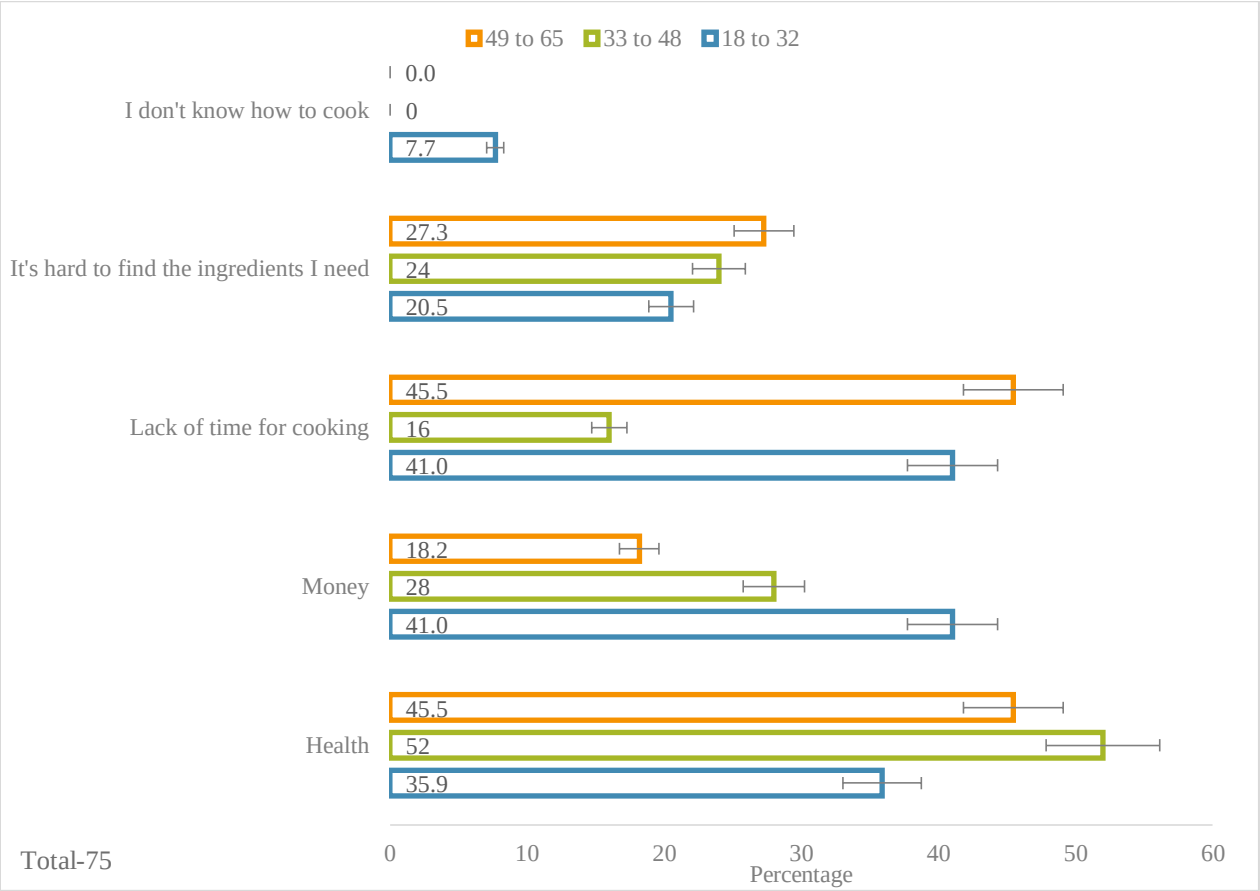
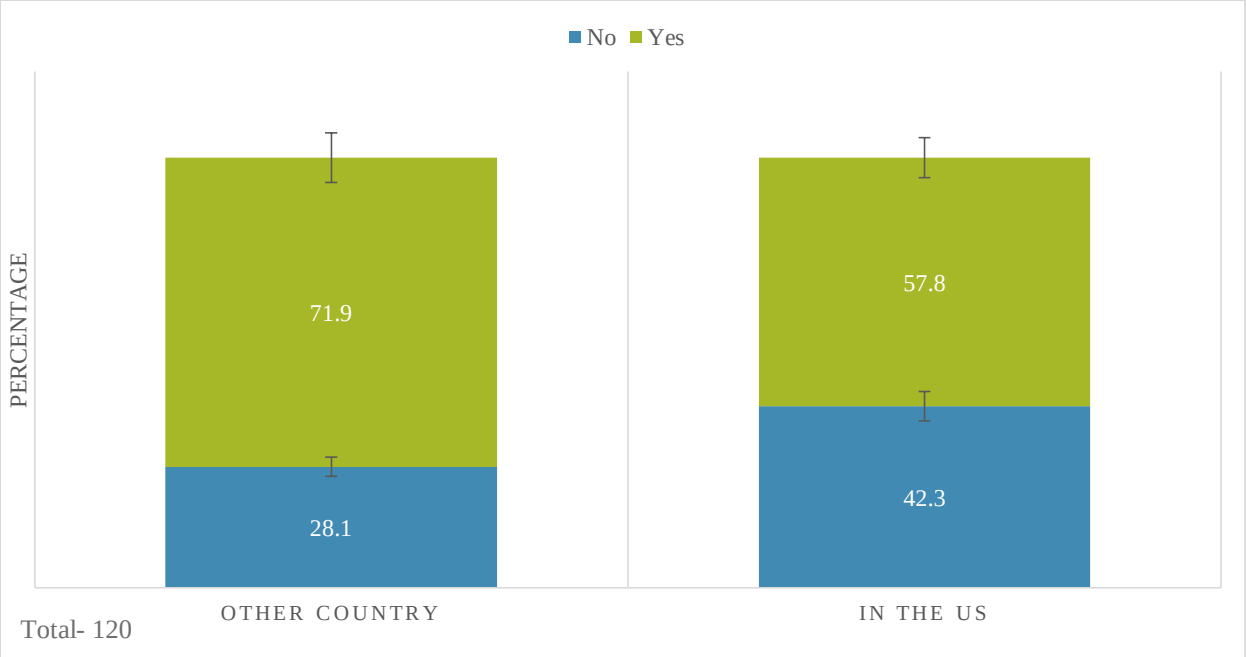


Figure E21- Data distribution among survey answers by age



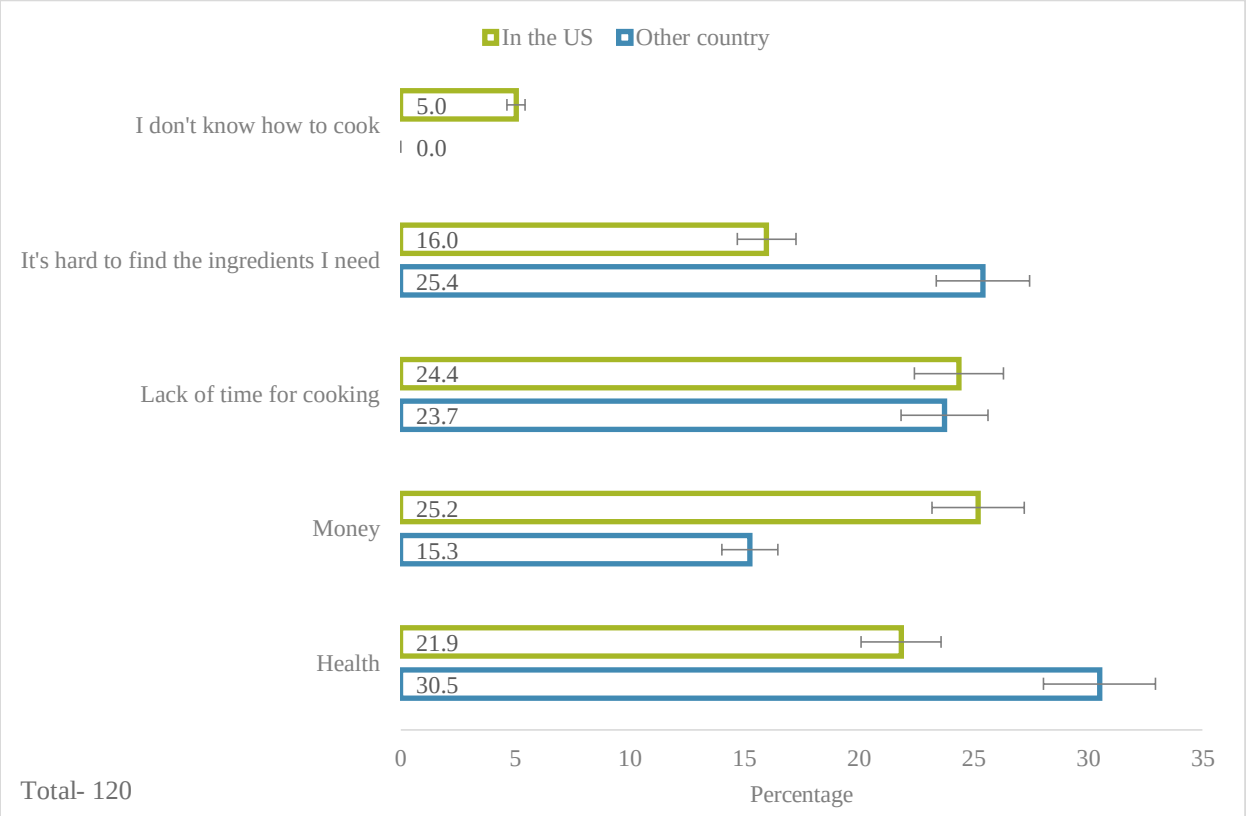
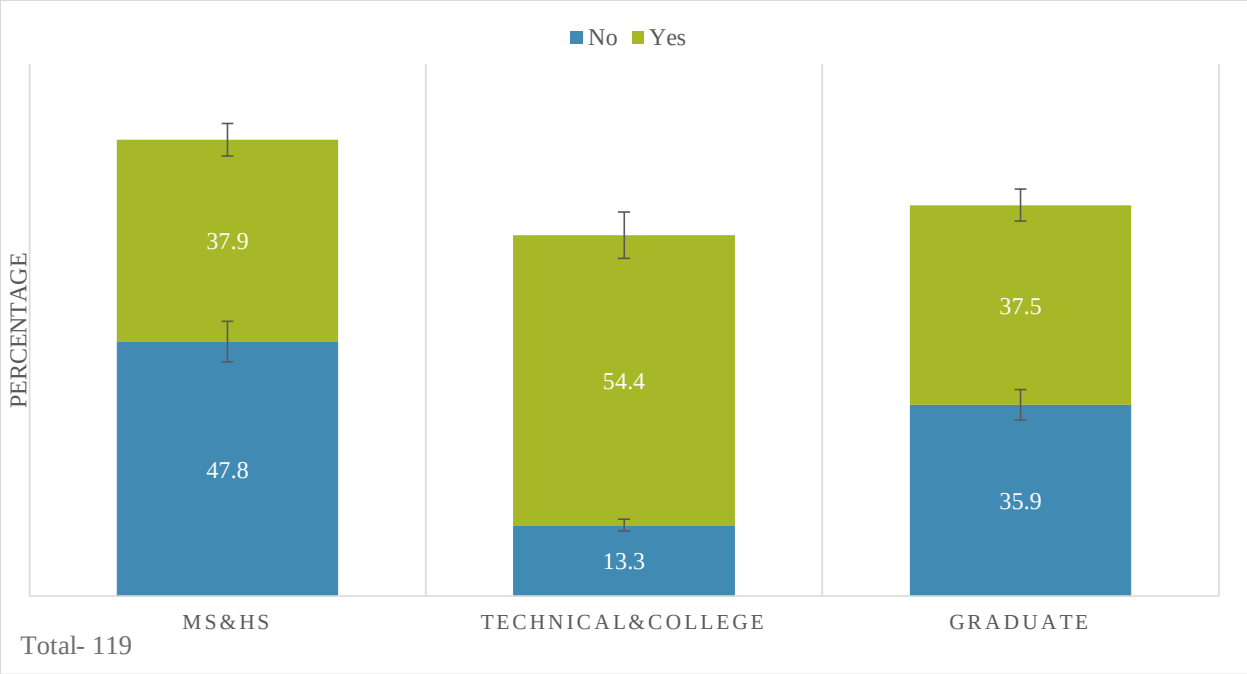


Figure E22- Data distribution among survey answers by country of origin. Other country refers to any country in Latin American and the Caribbean



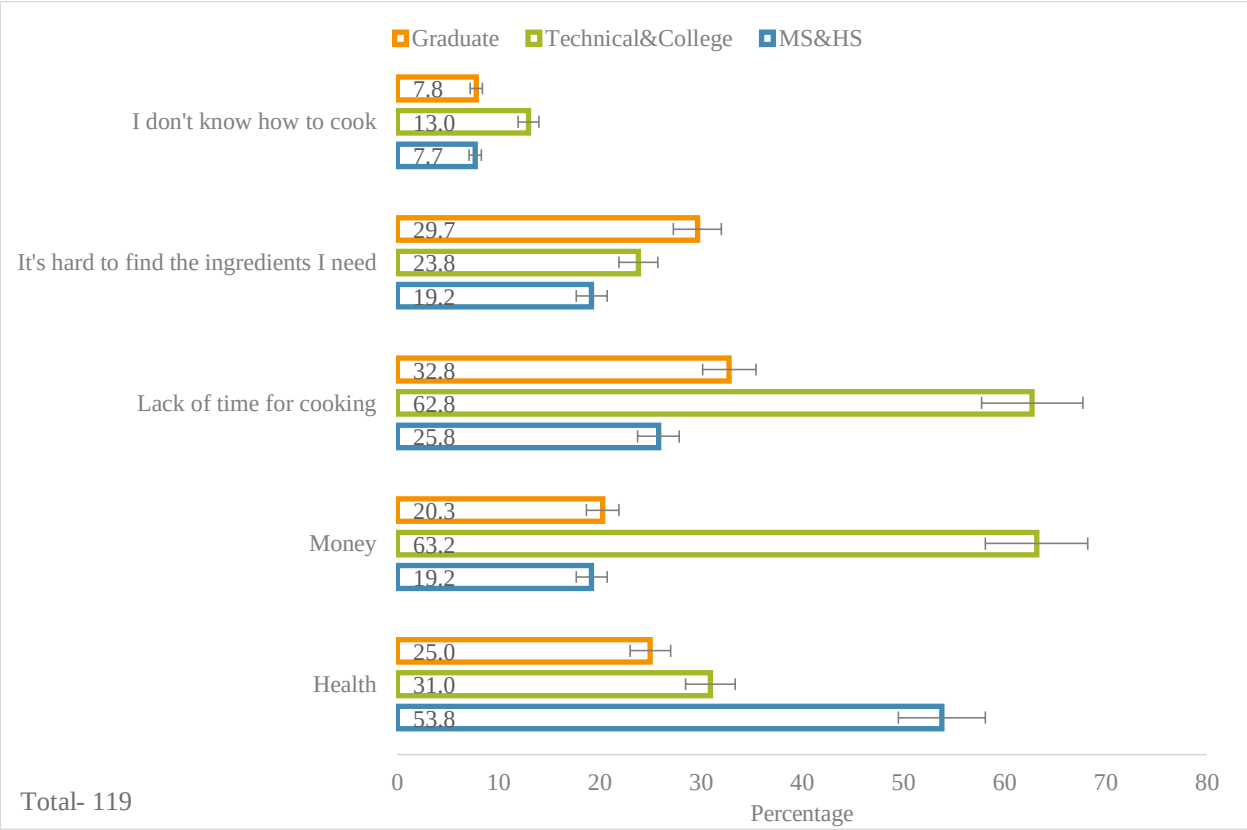
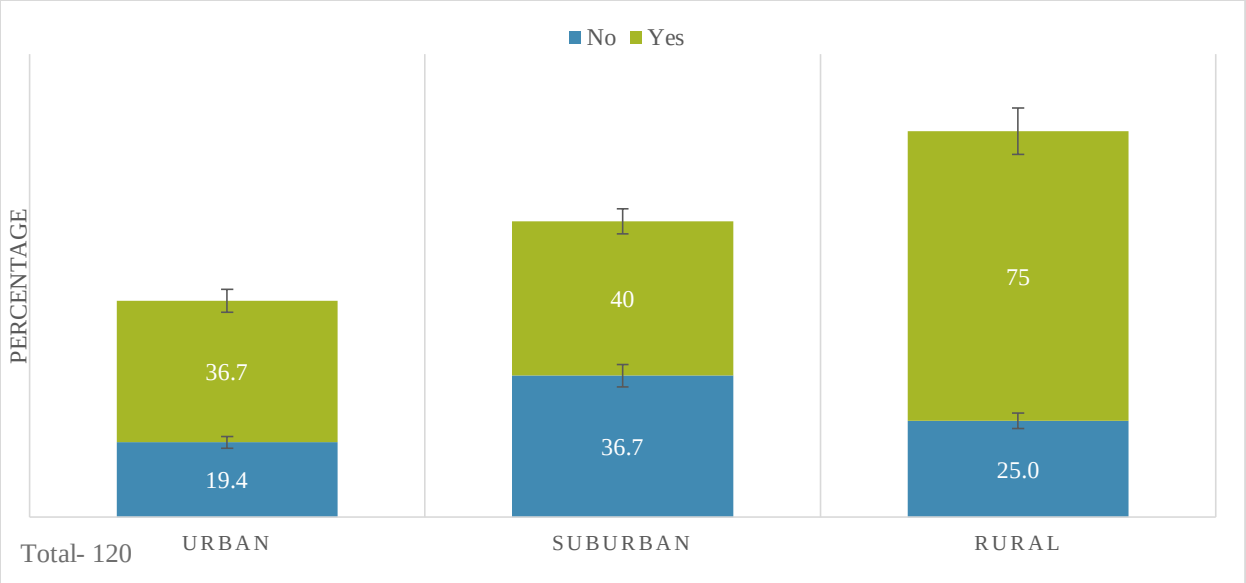


Figure E23- Data distribution among survey answers by level of education: Middle School and High School, Technical education and Bachelor's Degree, Graduate Degree



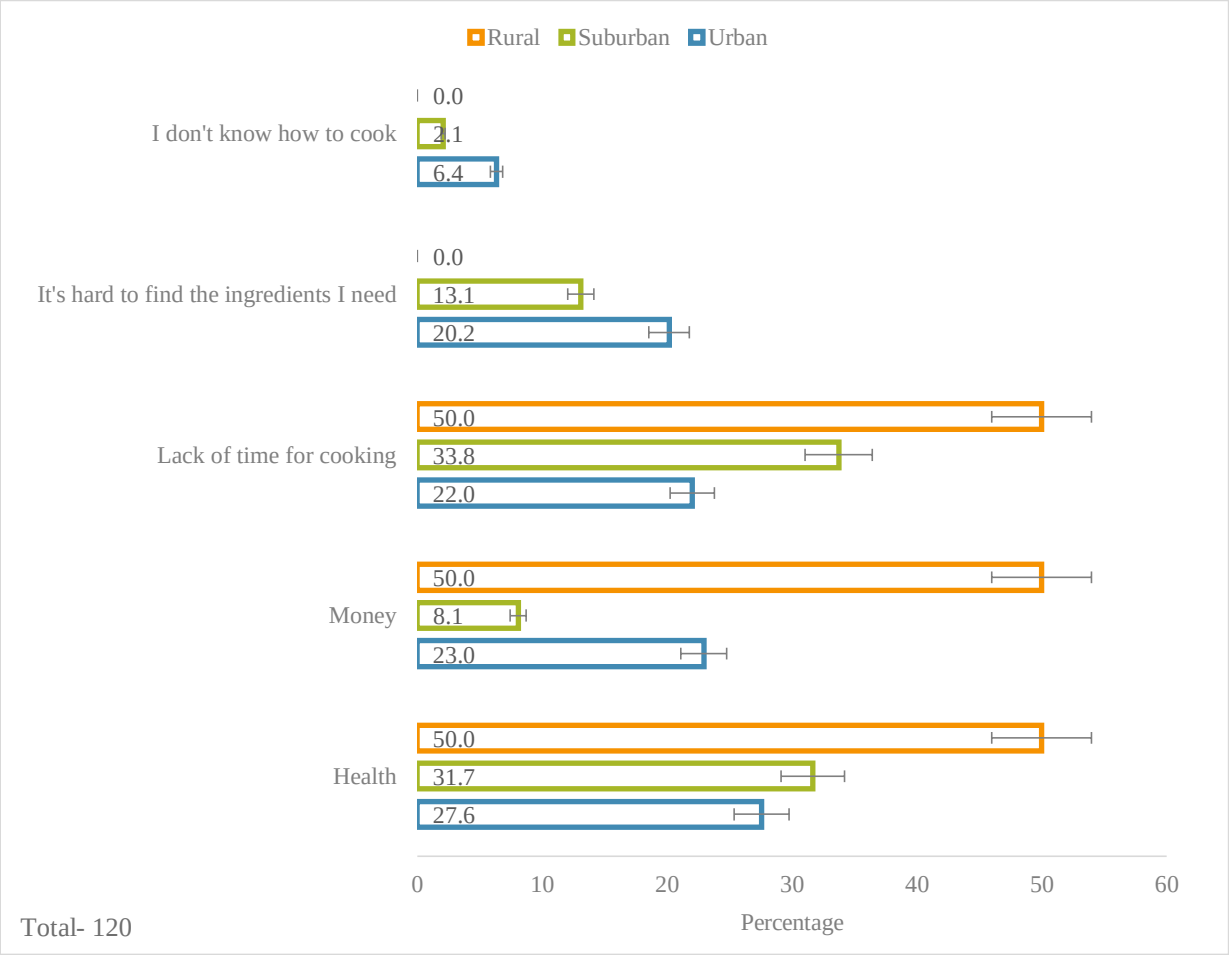


Figure E24- Data distribution among survey answers by current living area inside the Seattle metropolitan area

Question: What things should be taught to children and youth?

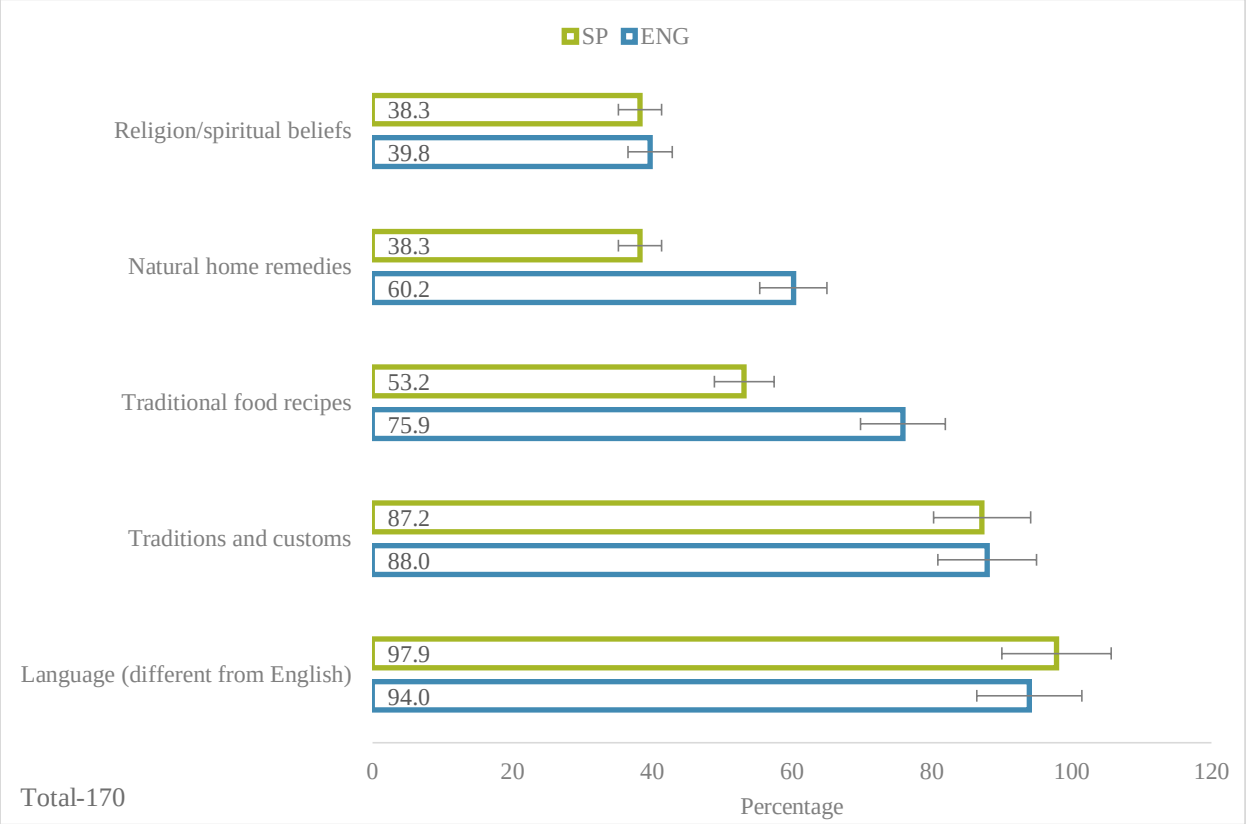


Figure E25- Data distribution among survey answers in Spanish and English

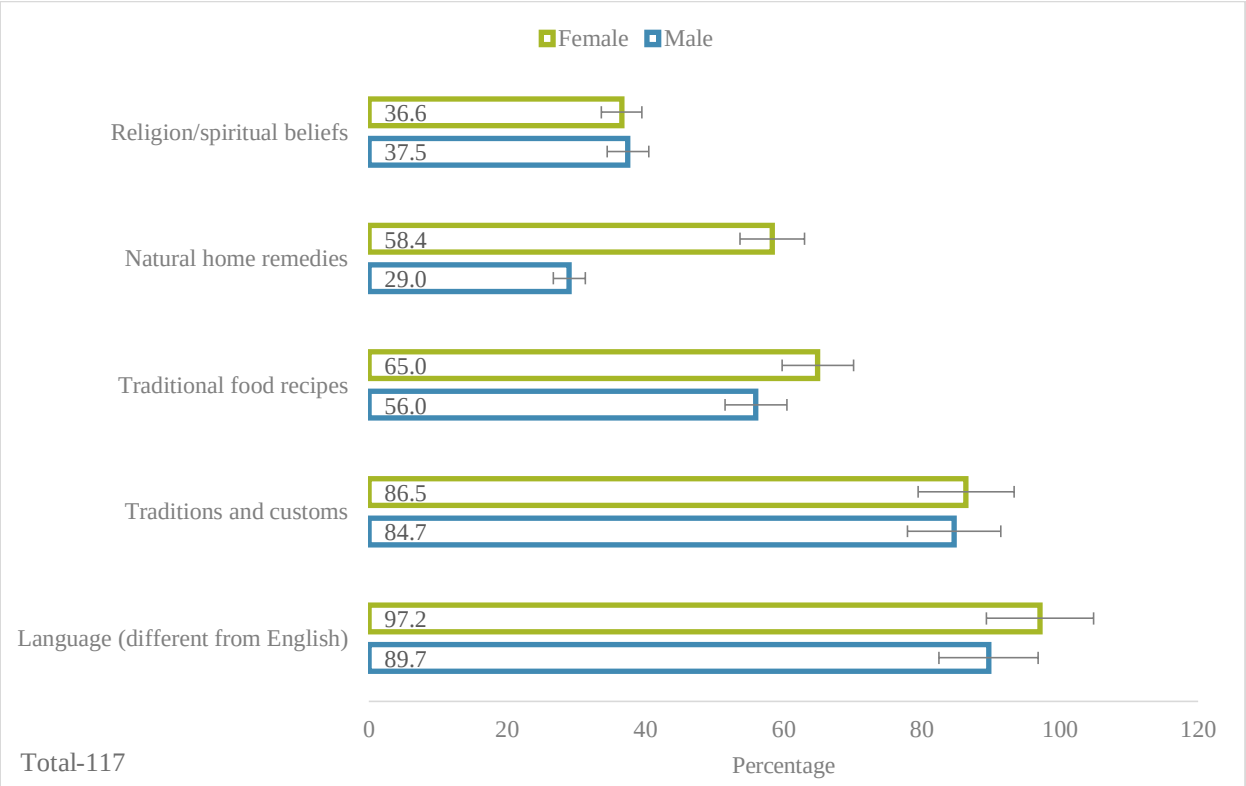


Figure E26- Data distribution among survey answers by gender

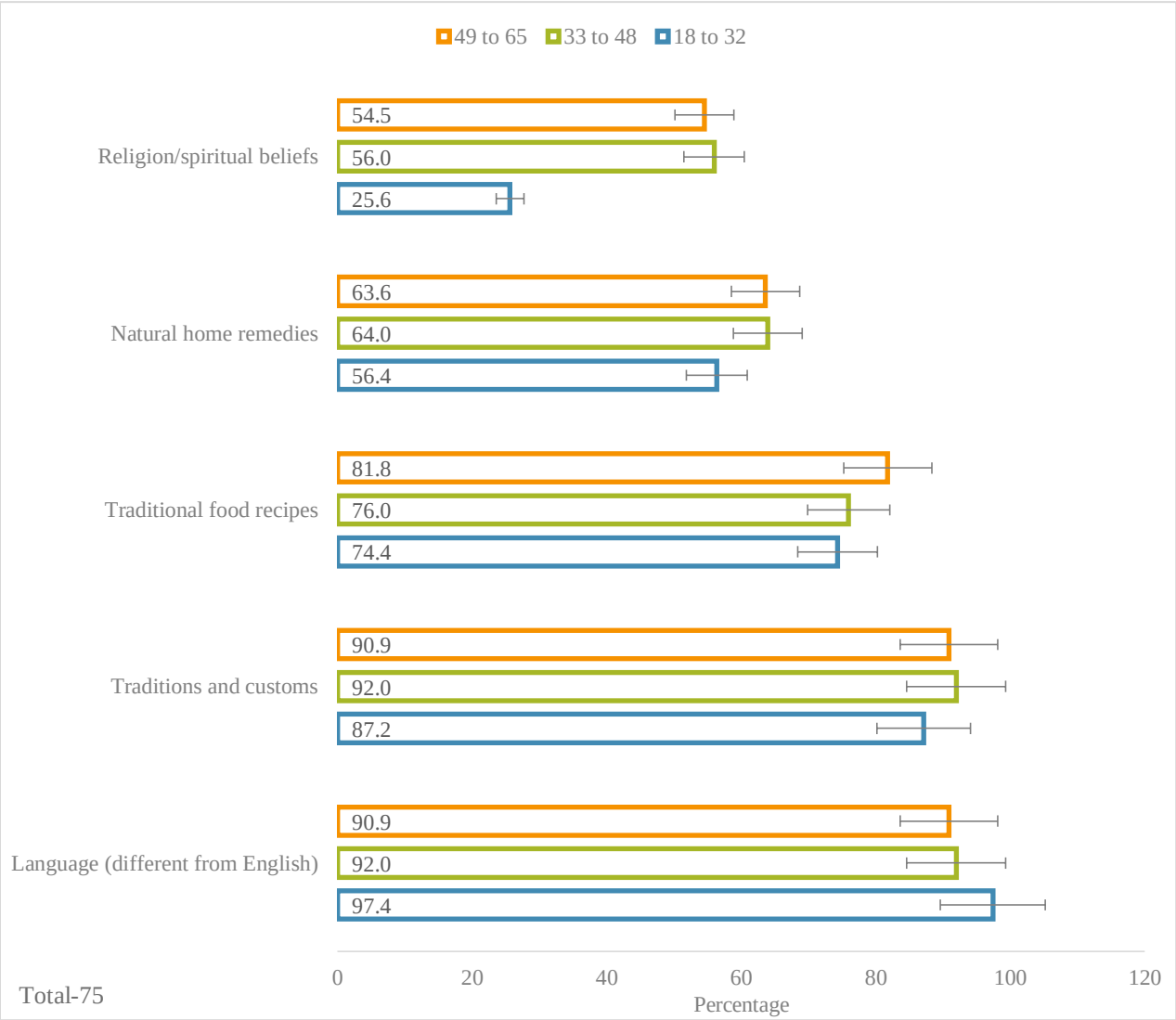


Figure E27- Data distribution among survey answers by age

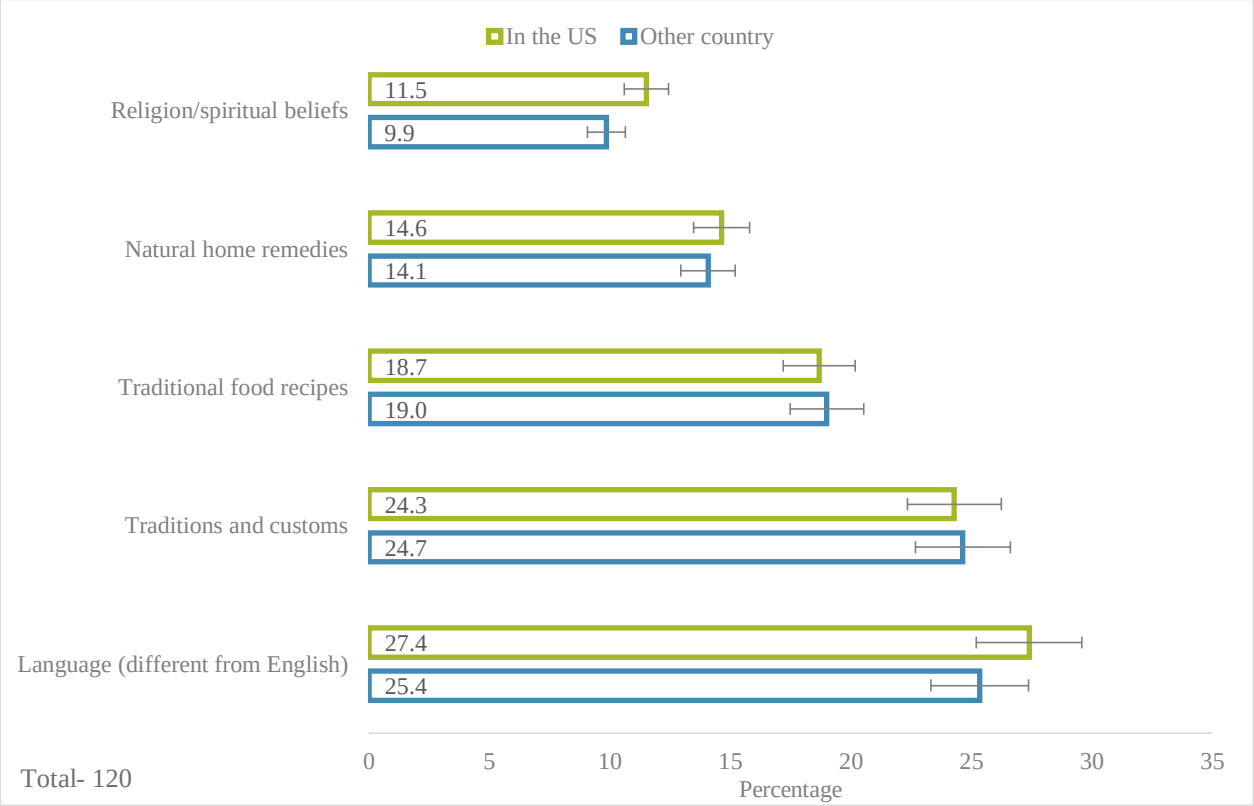


Figure E28- Data distribution among survey answers by country of origin. Other country refers to any country in Latin American and the Caribbean

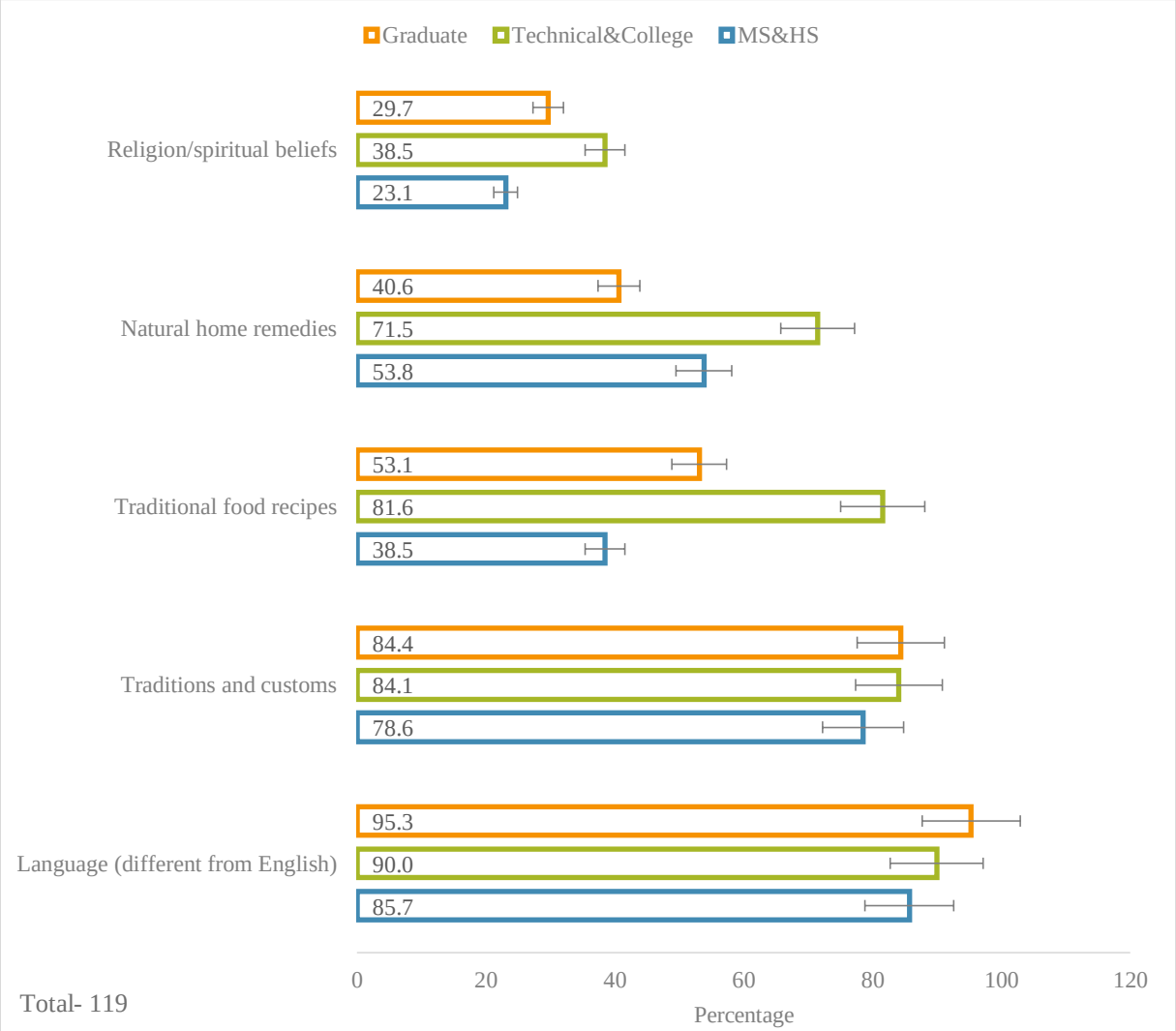


Figure E29- Data distribution among survey answers by level of education: Middle School and High School, Technical education and Bachelor's Degree, Graduate Degree

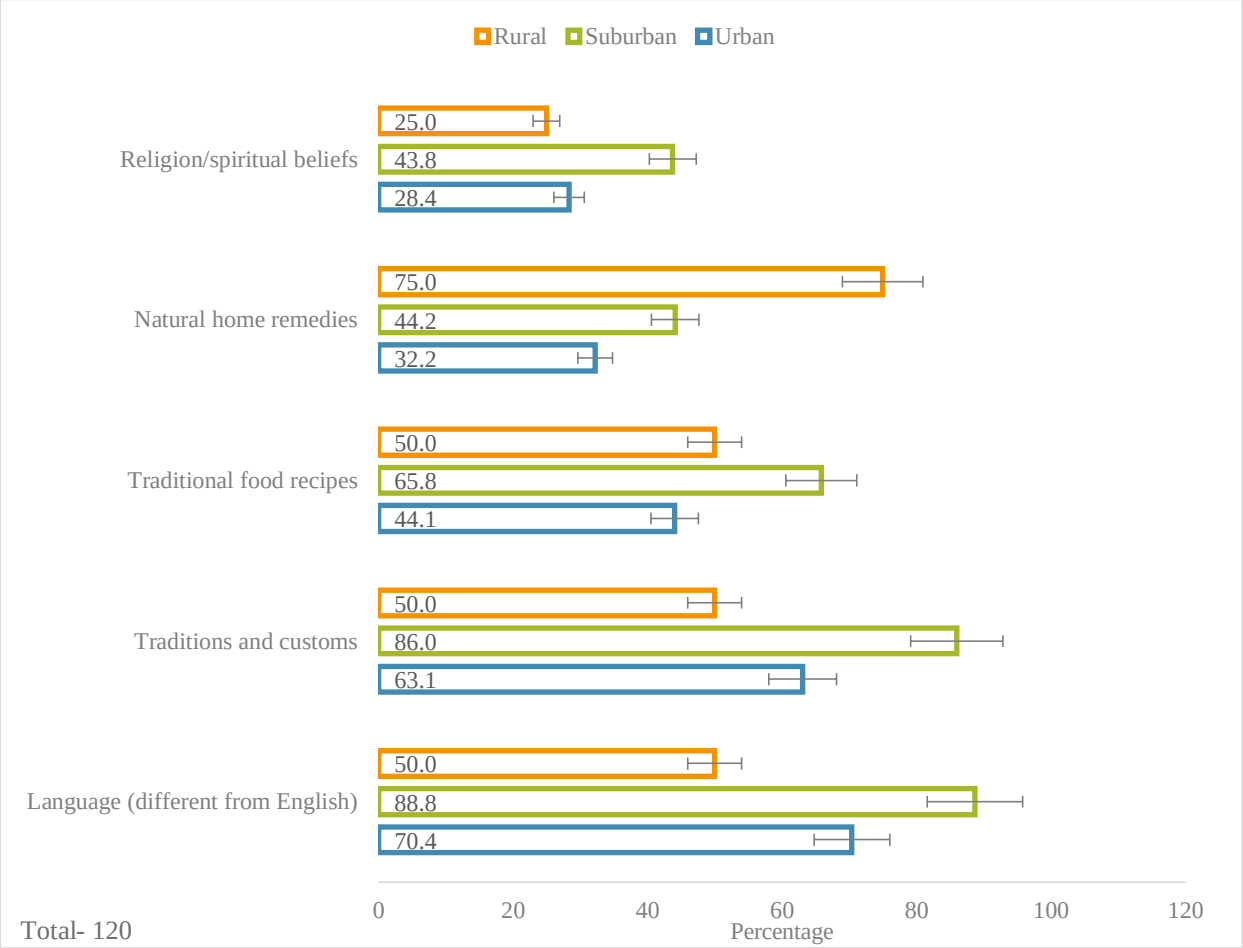


Figure E30- Data distribution among survey answers by current living area inside the Seattle metropolitan area

Environmental behavior

Question: In what areas of your life do you spend more time?

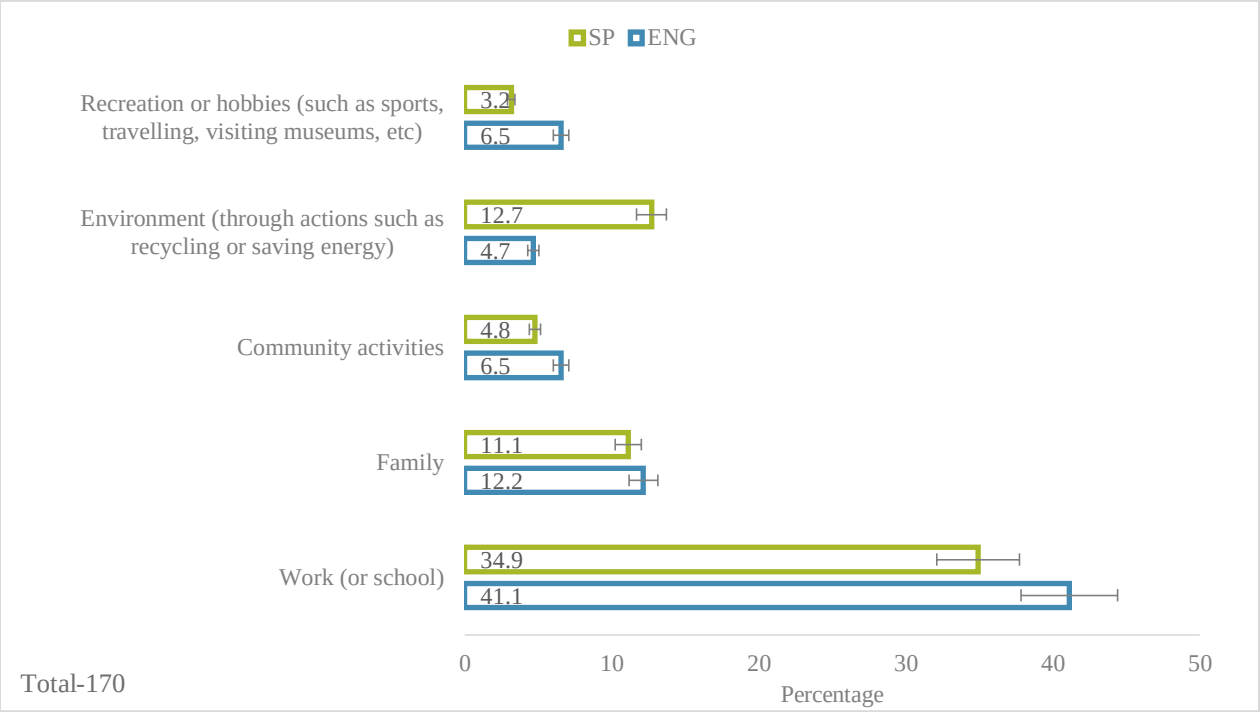


Figure E31- Data distribution among survey answers in Spanish and English

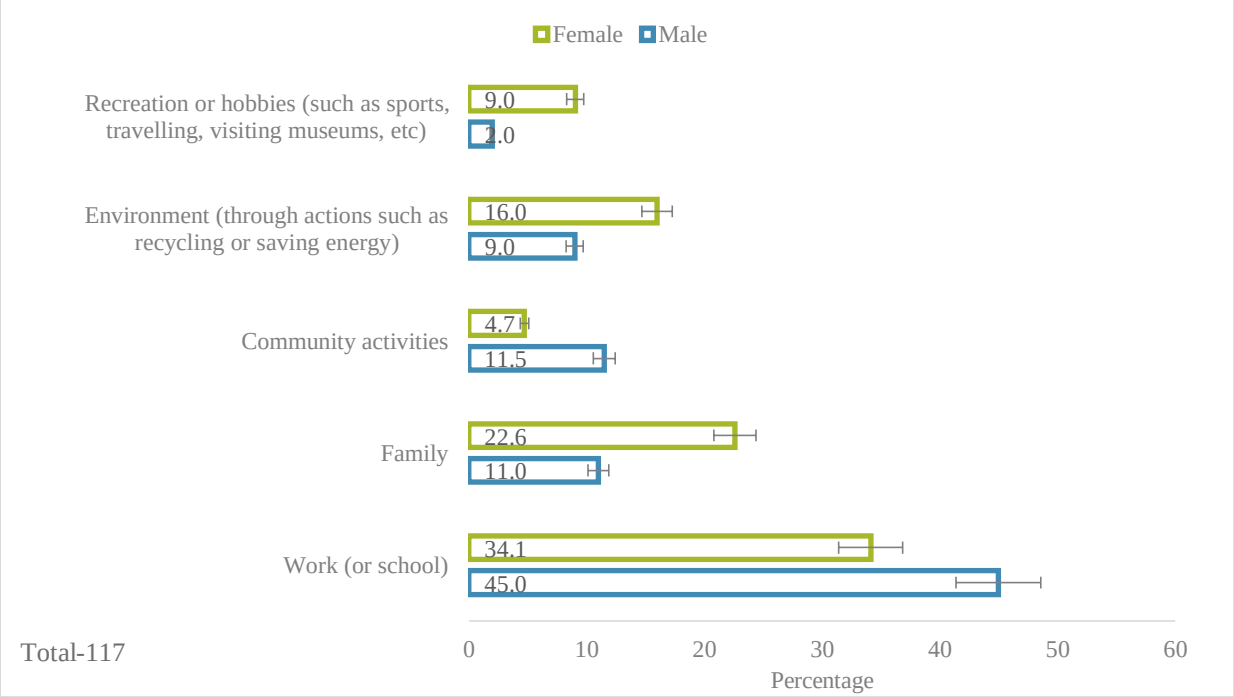


Figure E32- Data distribution among survey answers by gender

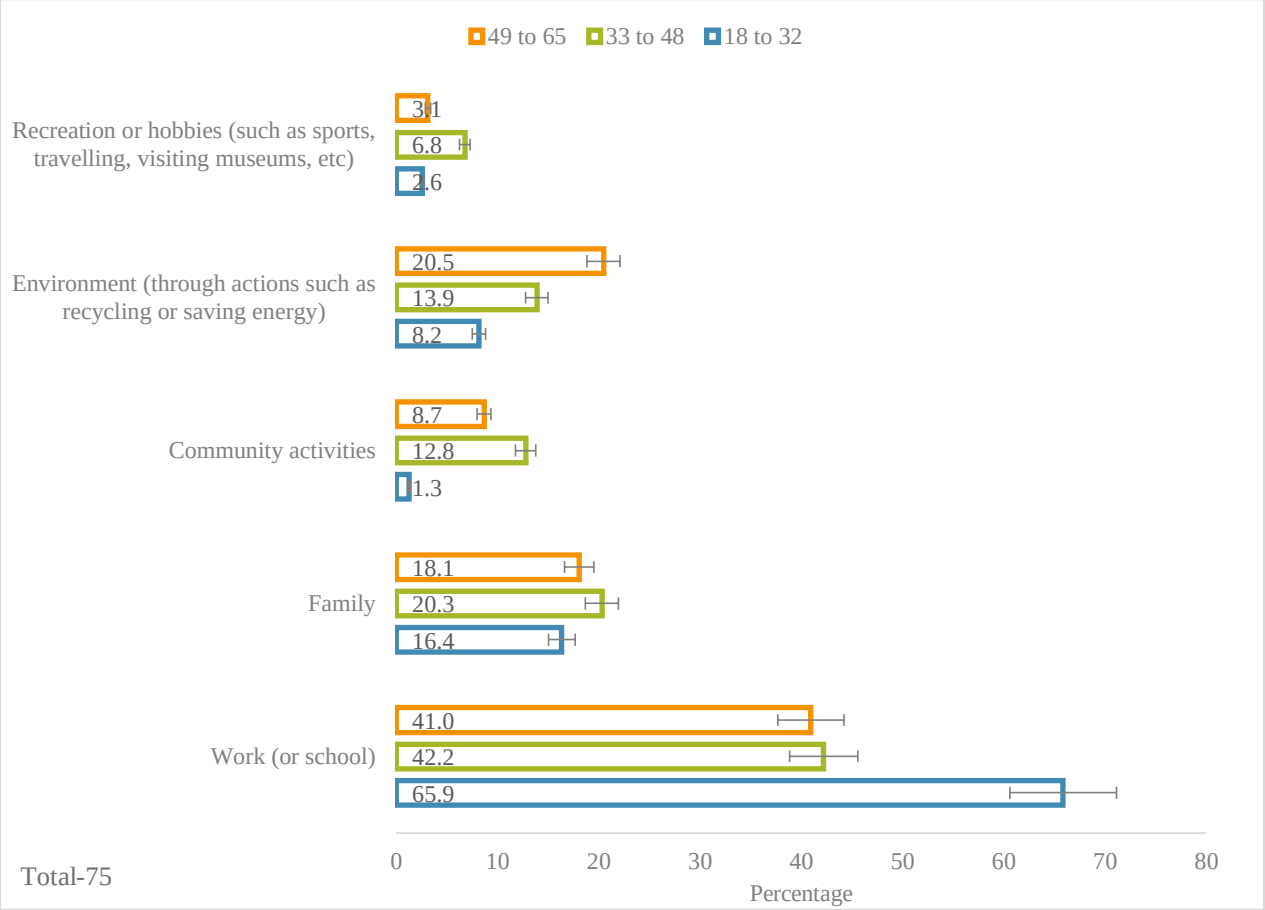


Figure E33- Data distribution among survey answers by age

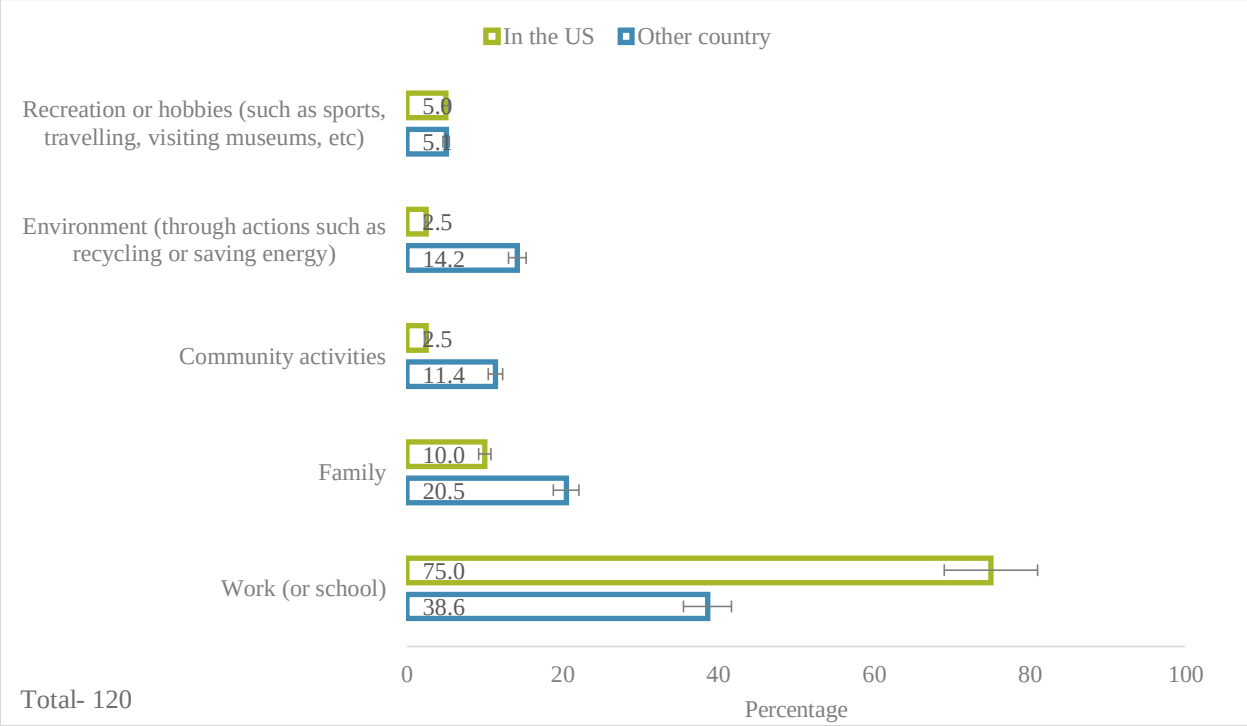


Figure E34- Data distribution among survey answers by country of origin. Other country refers to any country in Latin American and the Caribbean

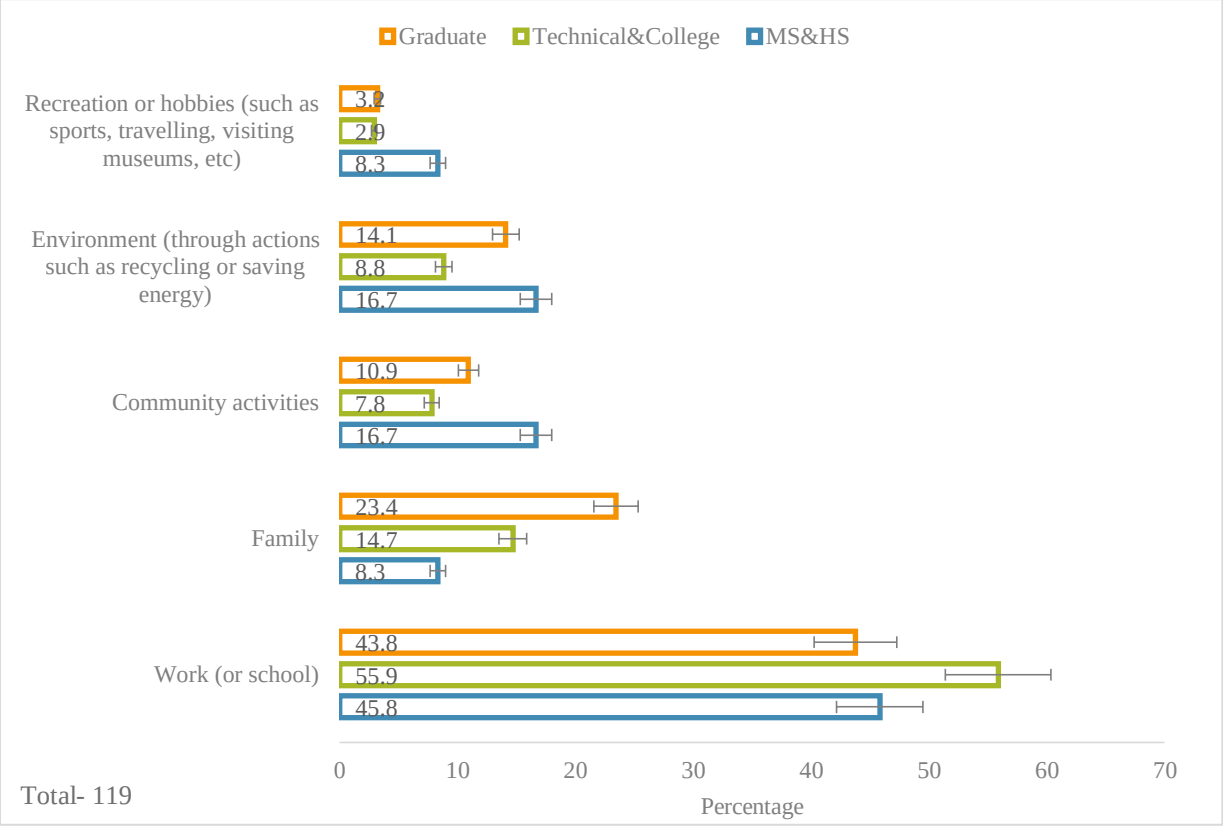


Figure E35- Data distribution among survey answers by level of education: Middle School and High School, Technical education and Bachelor's Degree, Graduate Degree

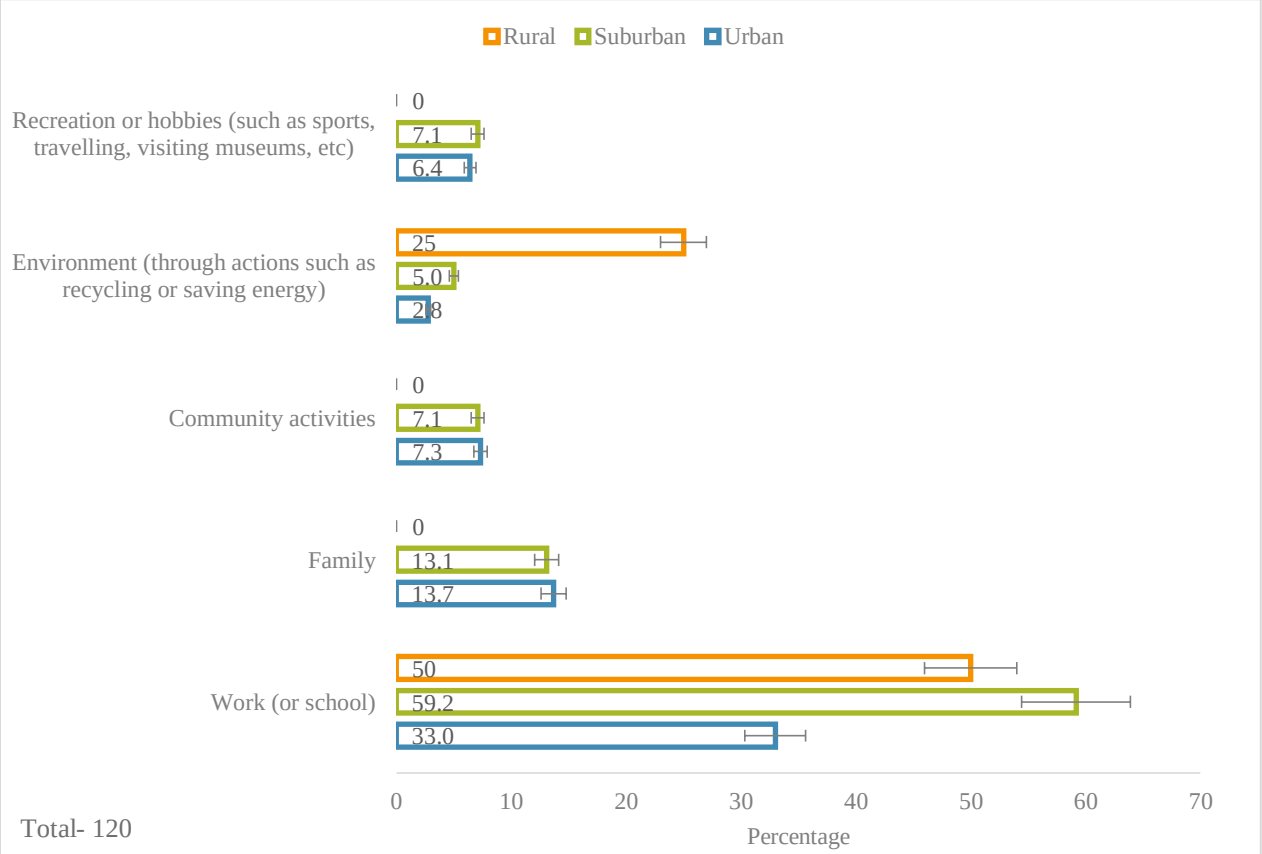


Figure E36- Data distribution among survey answers by current living area inside the Seattle metropolitan area

Question: What kind of environmental actions do you practice?

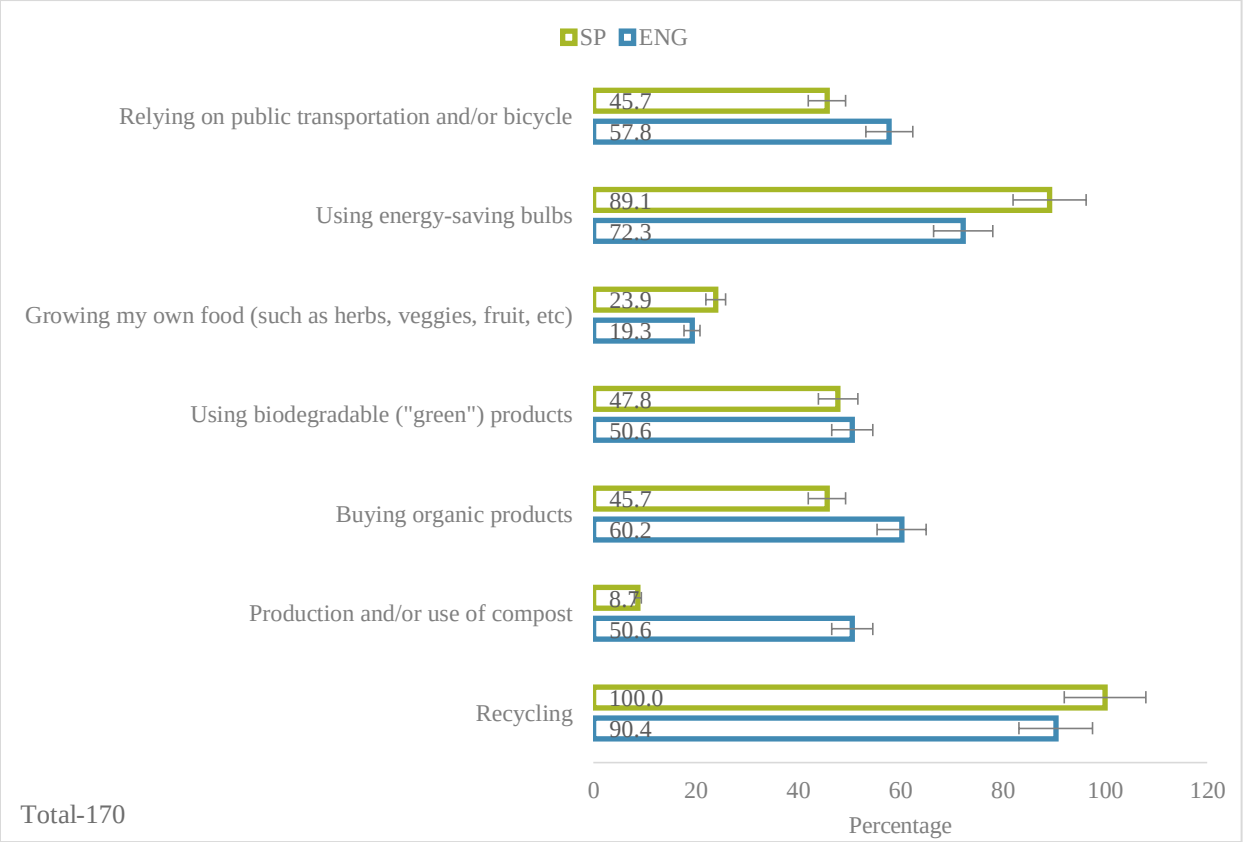


Figure E37- Data distribution among survey answers in Spanish and English

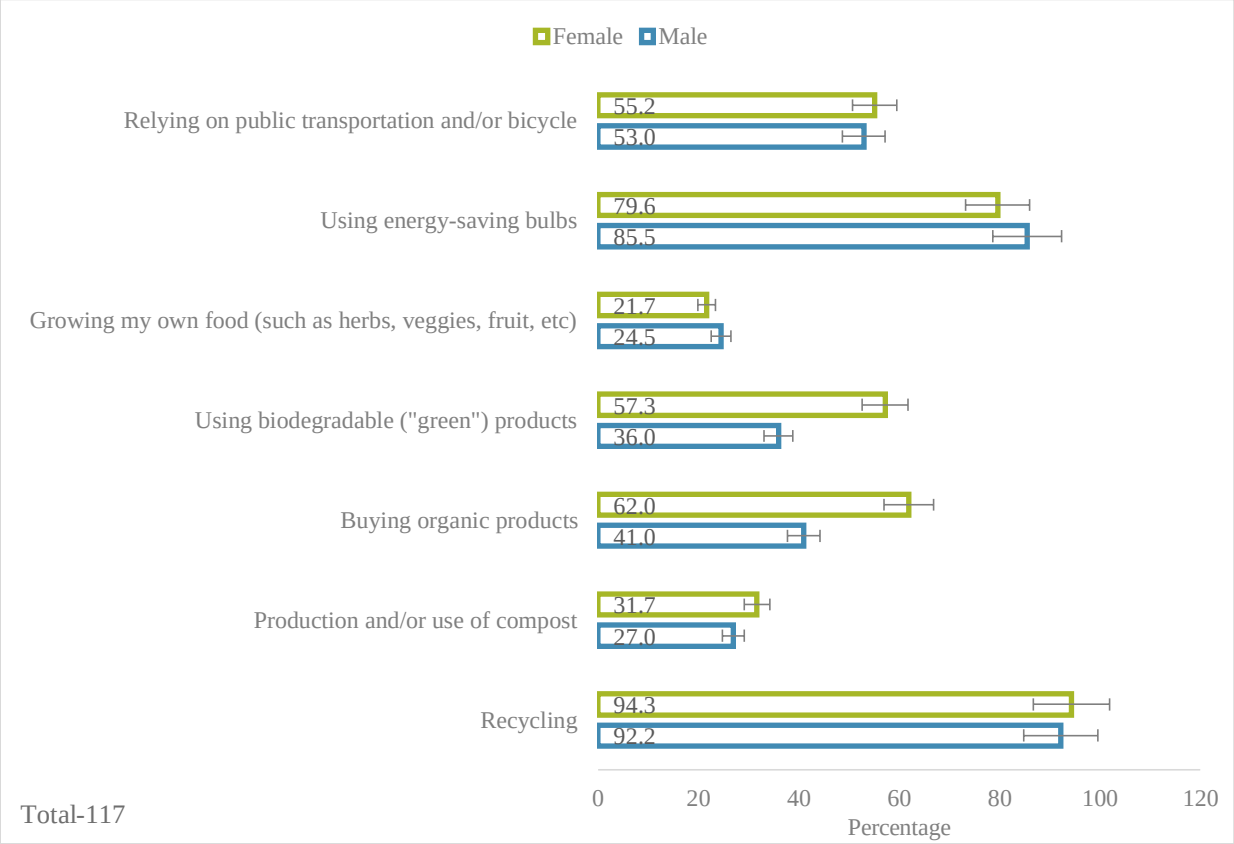


Figure E38- Data distribution among survey answers by gender

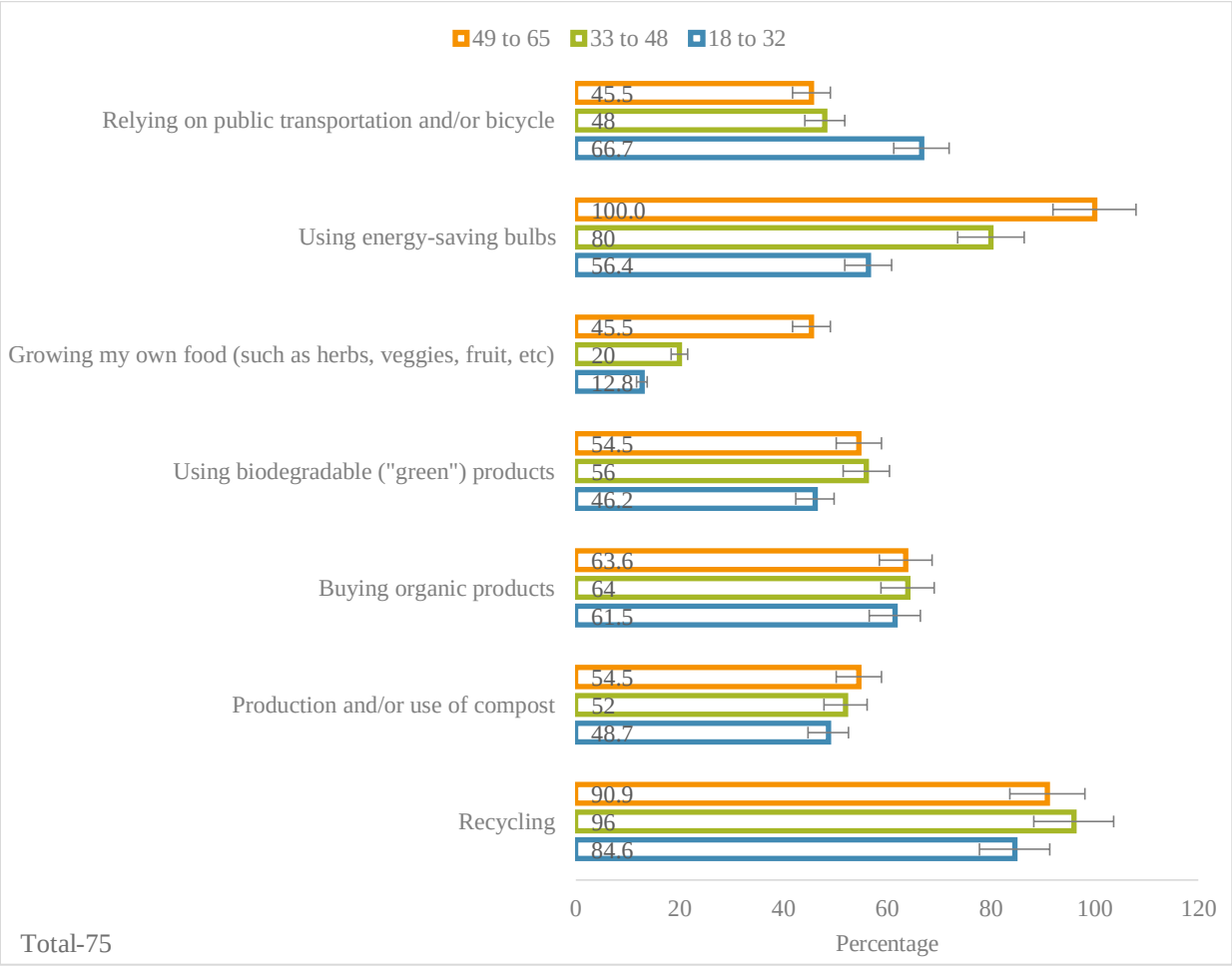


Figure E39- Data distribution among survey answers by age

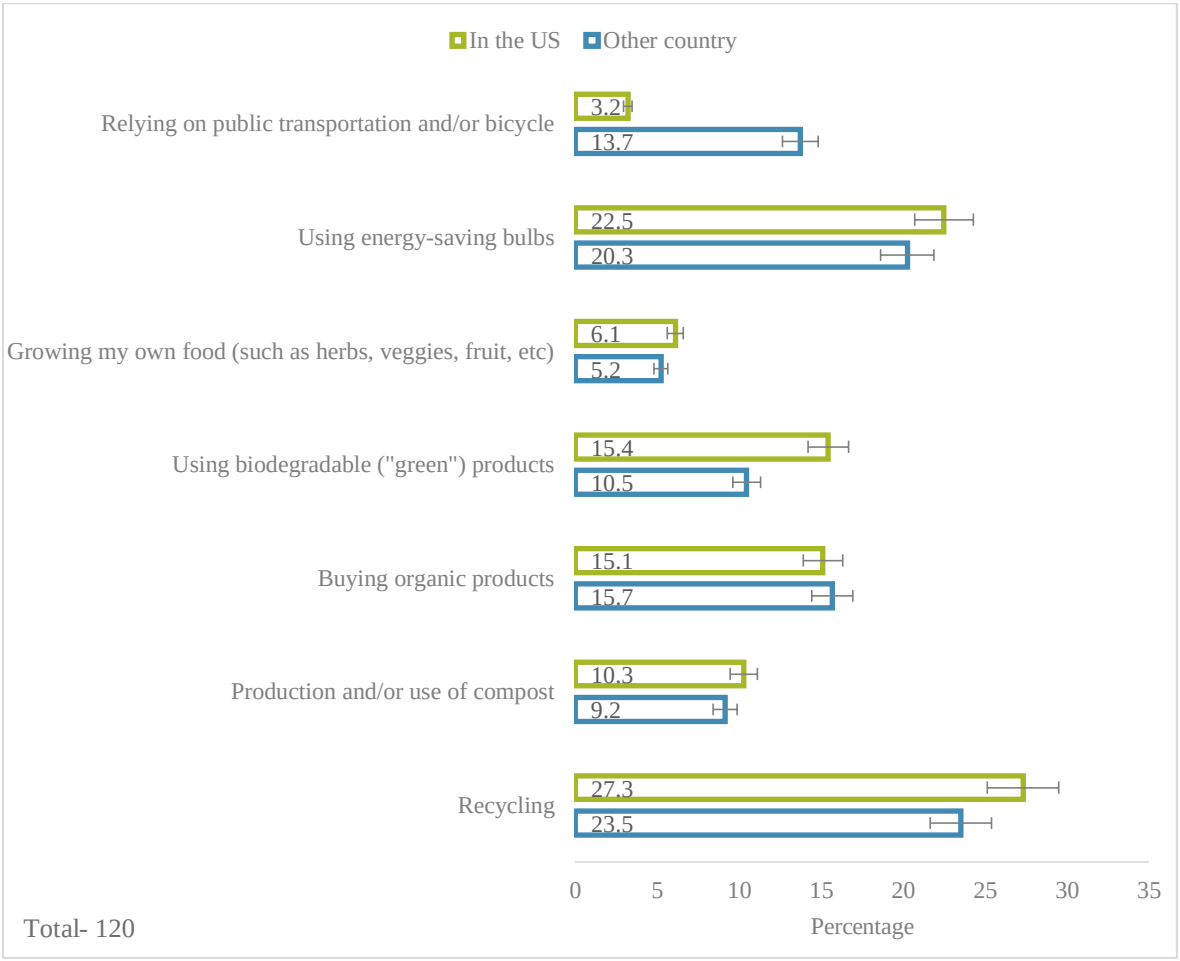


Figure E40- Data distribution among survey answers by country of origin. Other country refers to any country in Latin American and the Caribbean

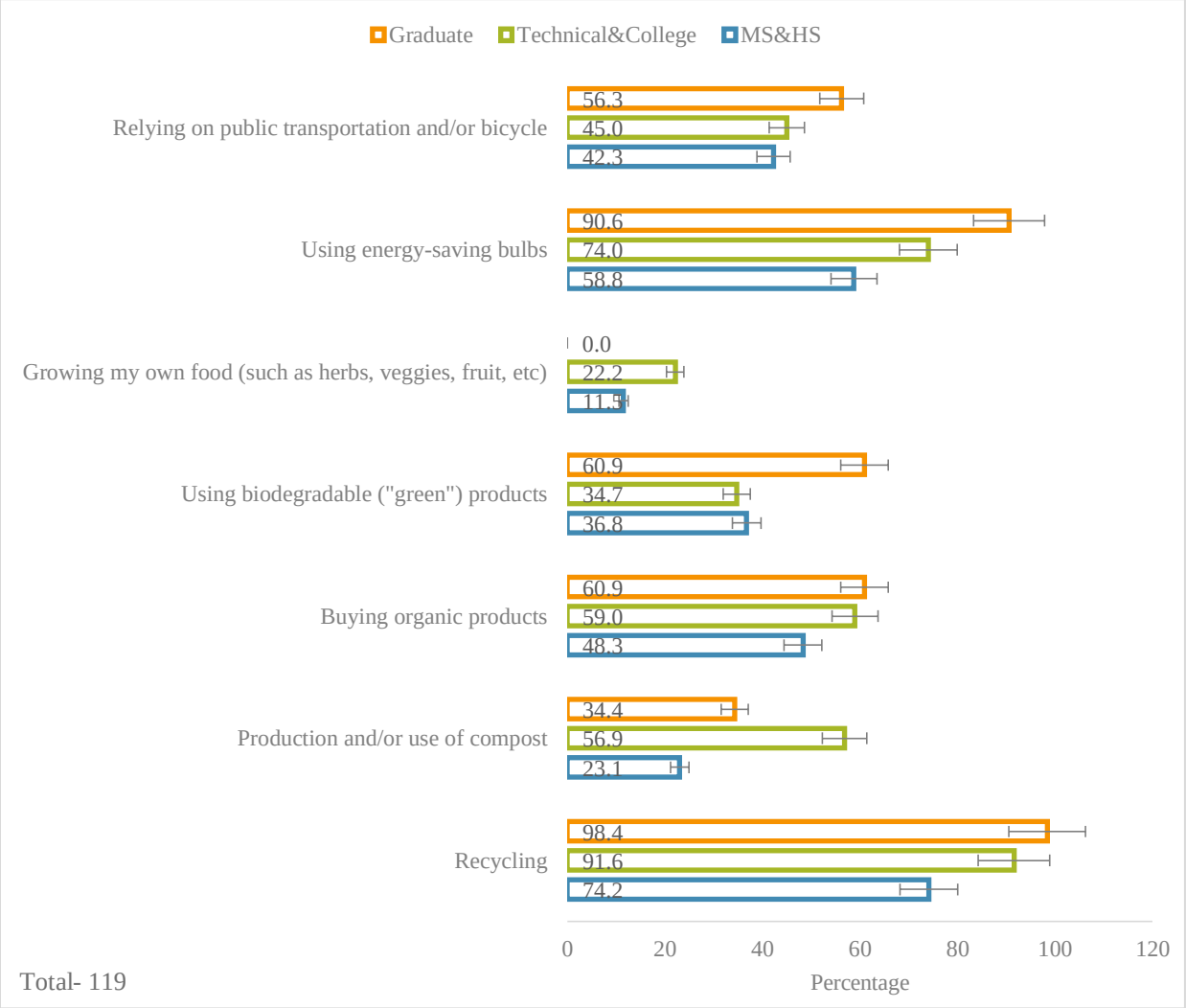


Figure E41- Data distribution among survey answers by level of education: Middle School and High School, Technical education and Bachelor's Degree, Graduate Degree

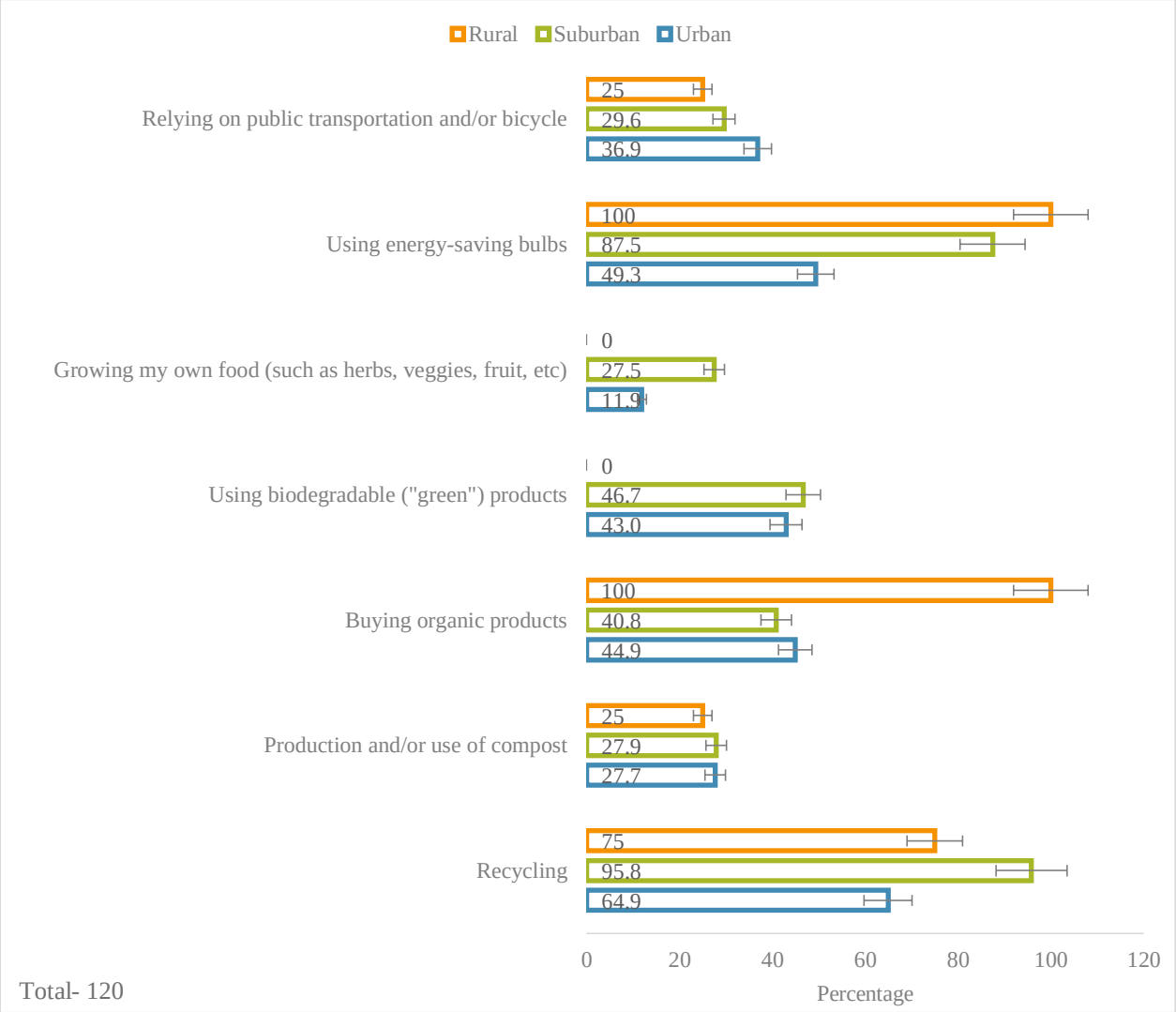


Figure E42- Data distribution among survey answers by current living area inside the Seattle metropolitan area

Question: In what areas do you think that climate change has an impact?

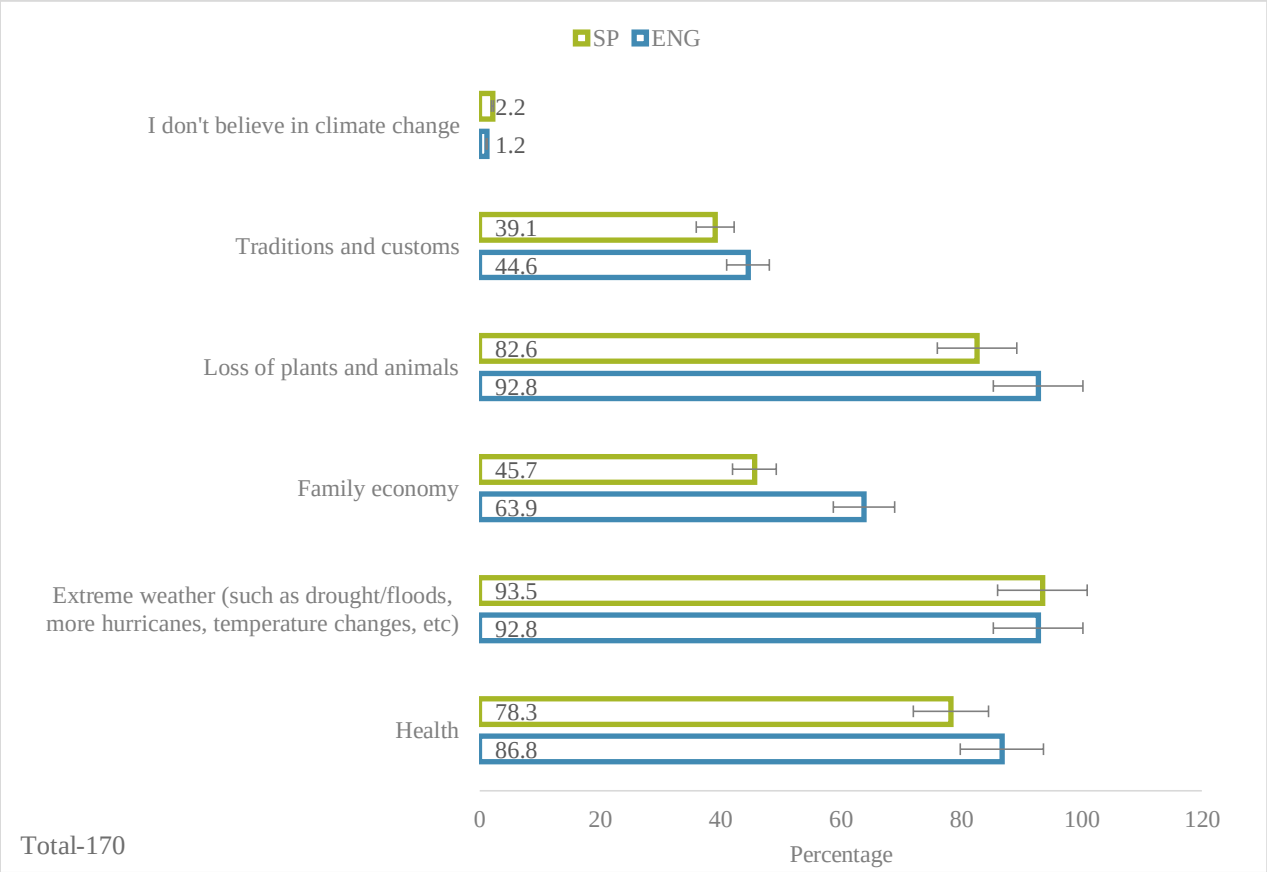


Figure E43- Data distribution among survey answers in Spanish and English

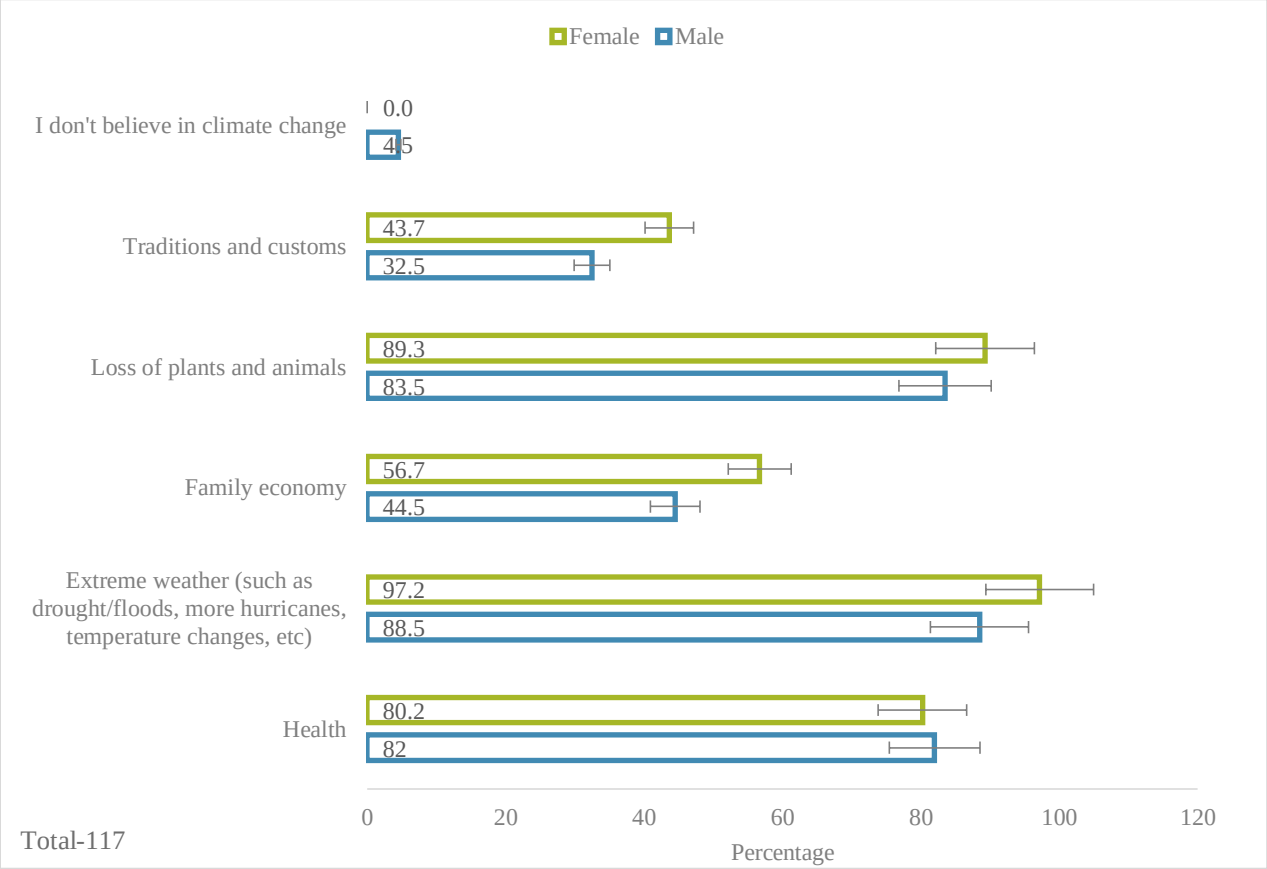


Figure E44- Data distribution among survey answers by gender

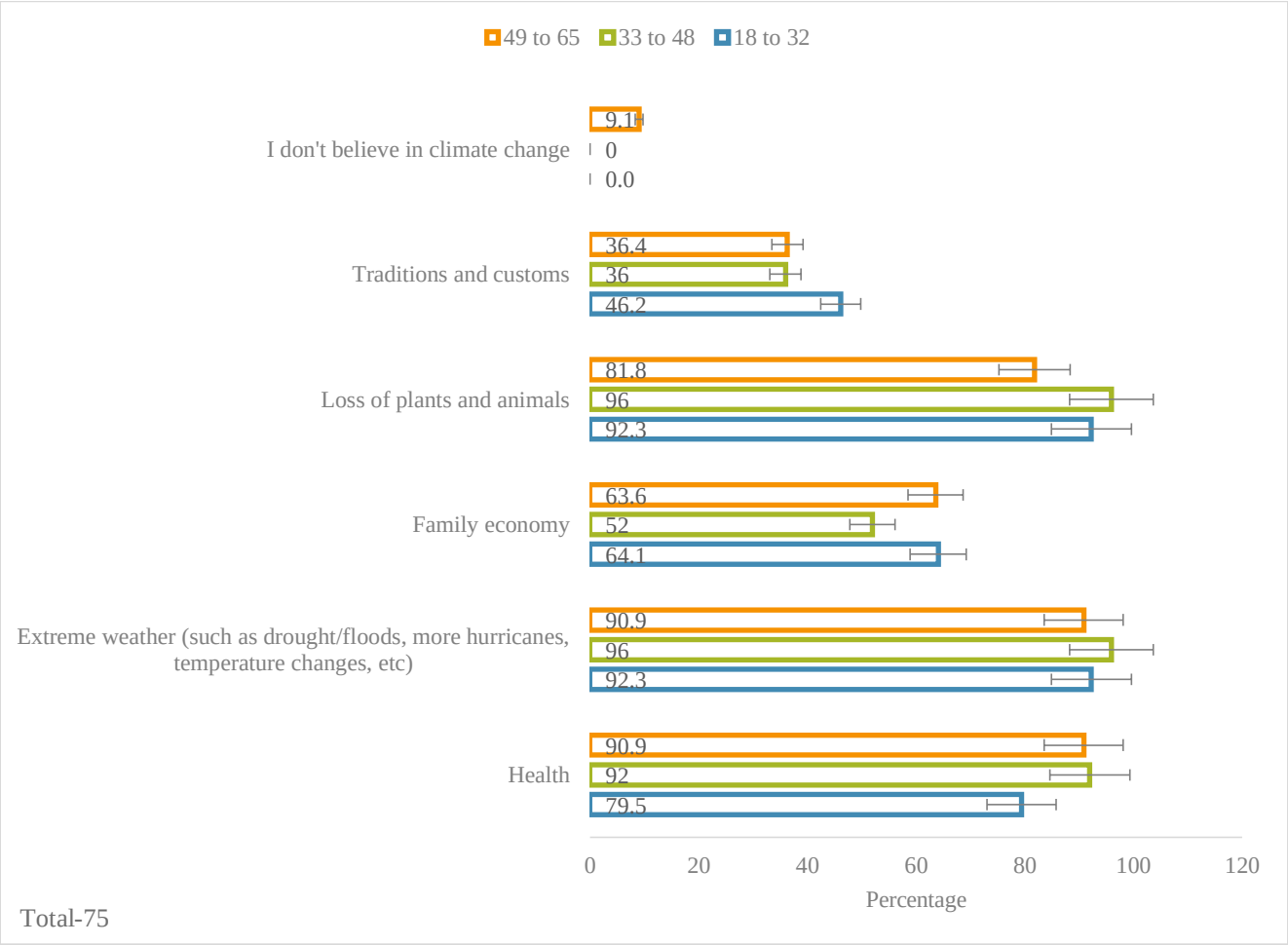


Figure E45- Data distribution among survey answers by age

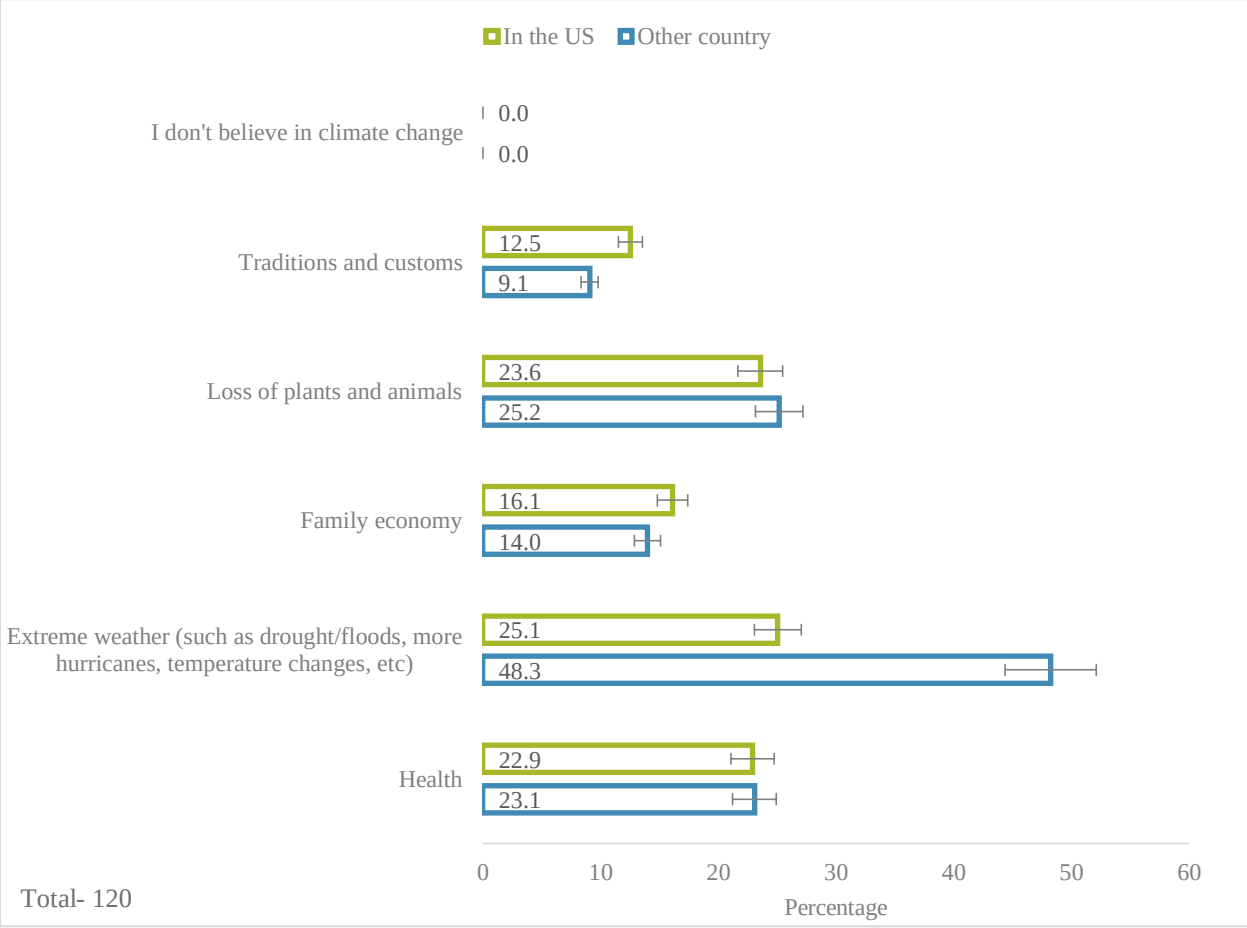


Figure E46- Data distribution among survey answers by country of origin. Other country refers to any country in Latin American and the Caribbean

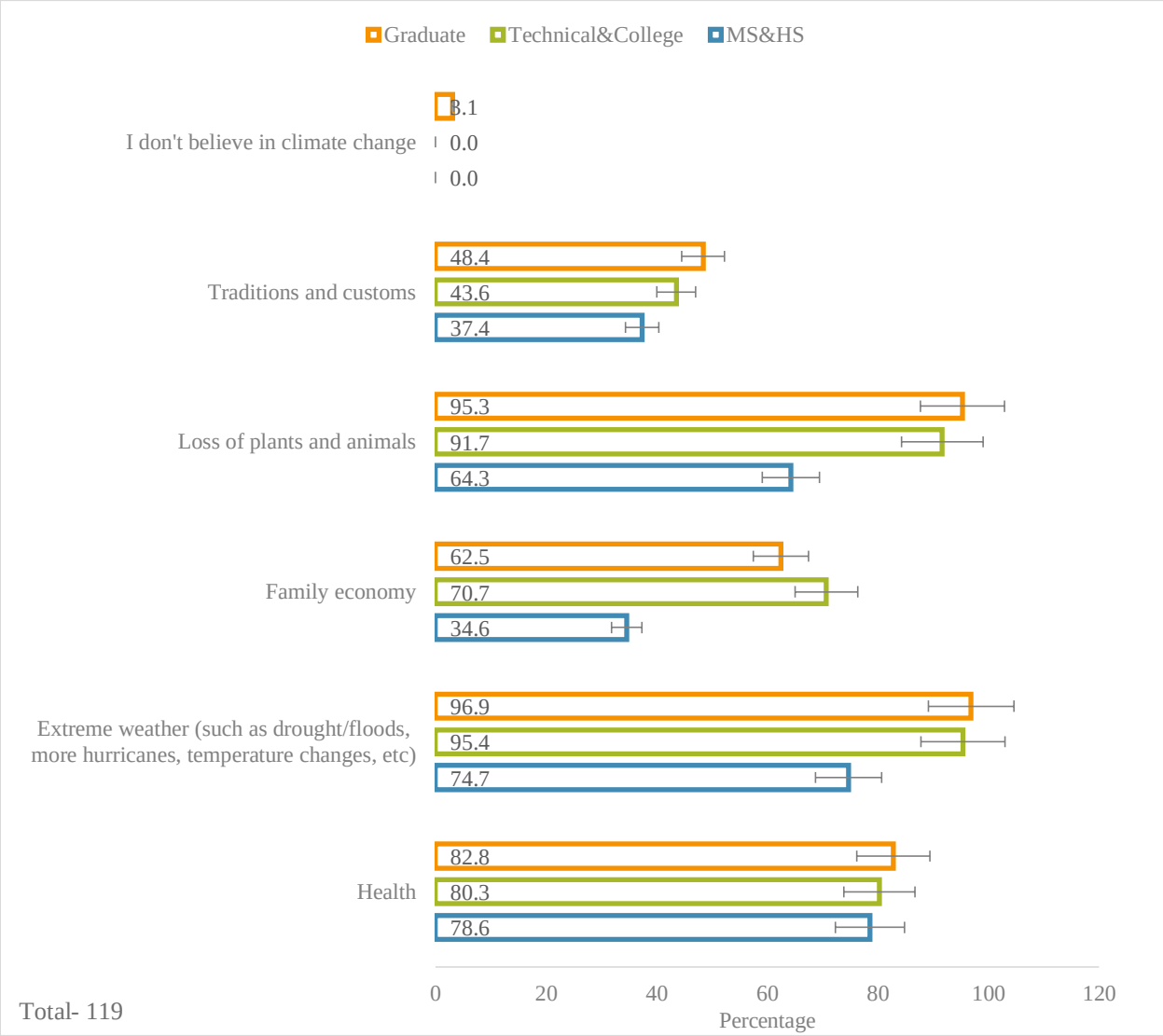


Figure E47- Data distribution among survey answers by level of education: Middle School and High School, Technical education and Bachelor's Degree, Graduate Degree

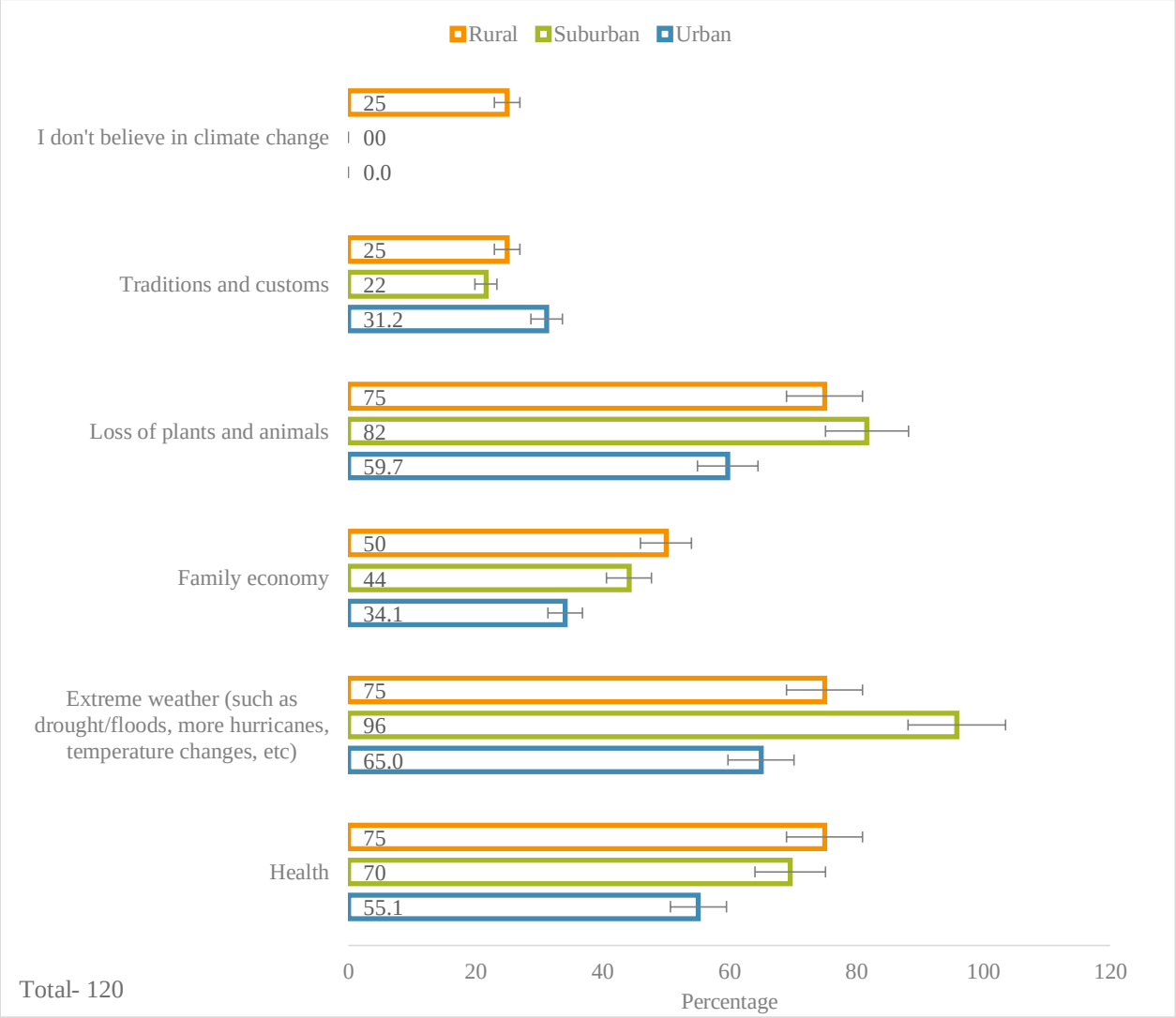


Figure E48- Data distribution among survey answers by current living area inside the Seattle metropolitan area

Connectedness to nature

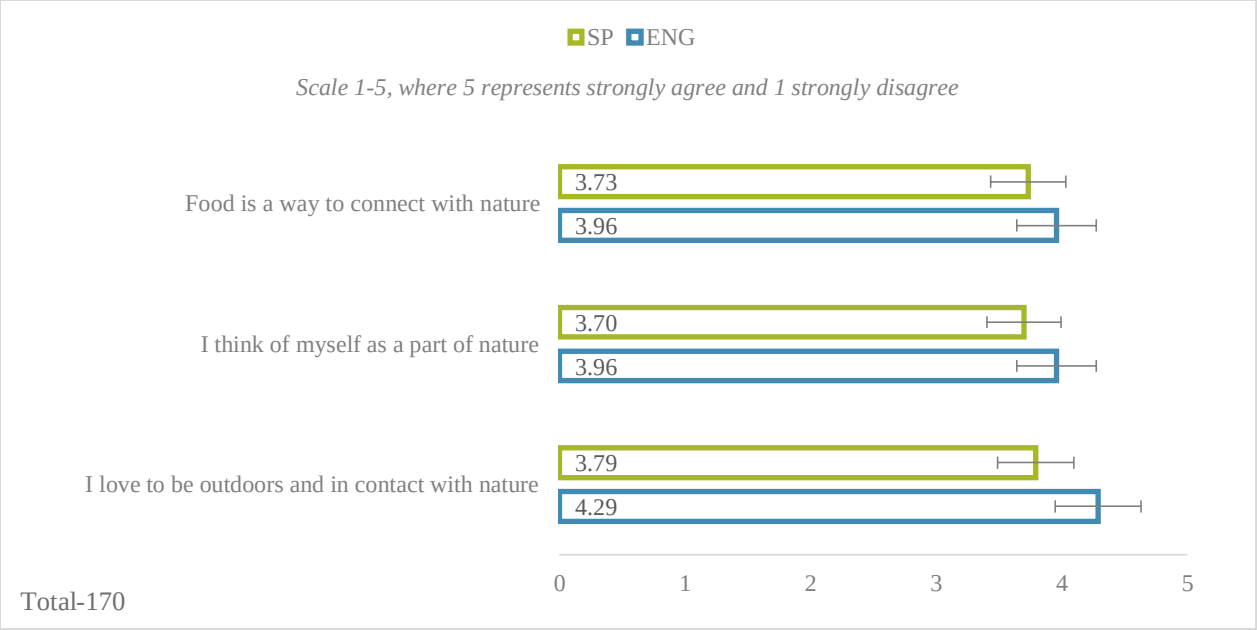


Figure E49- Data distribution among survey answers in Spanish and English

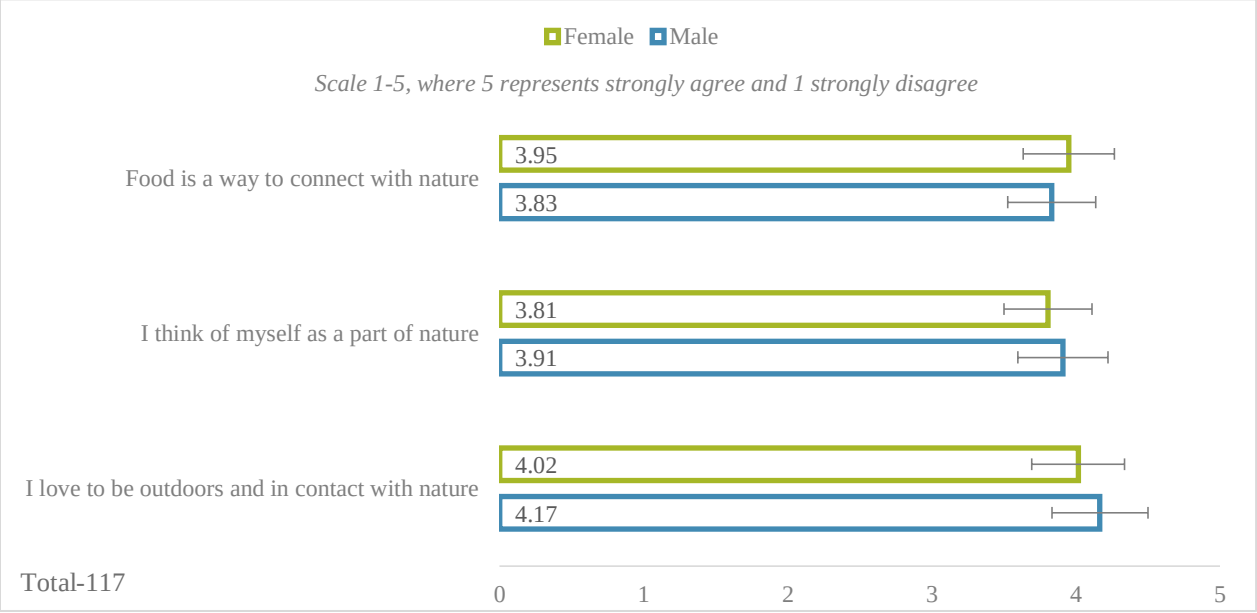


Figure E50- Data distribution among survey answers by gender

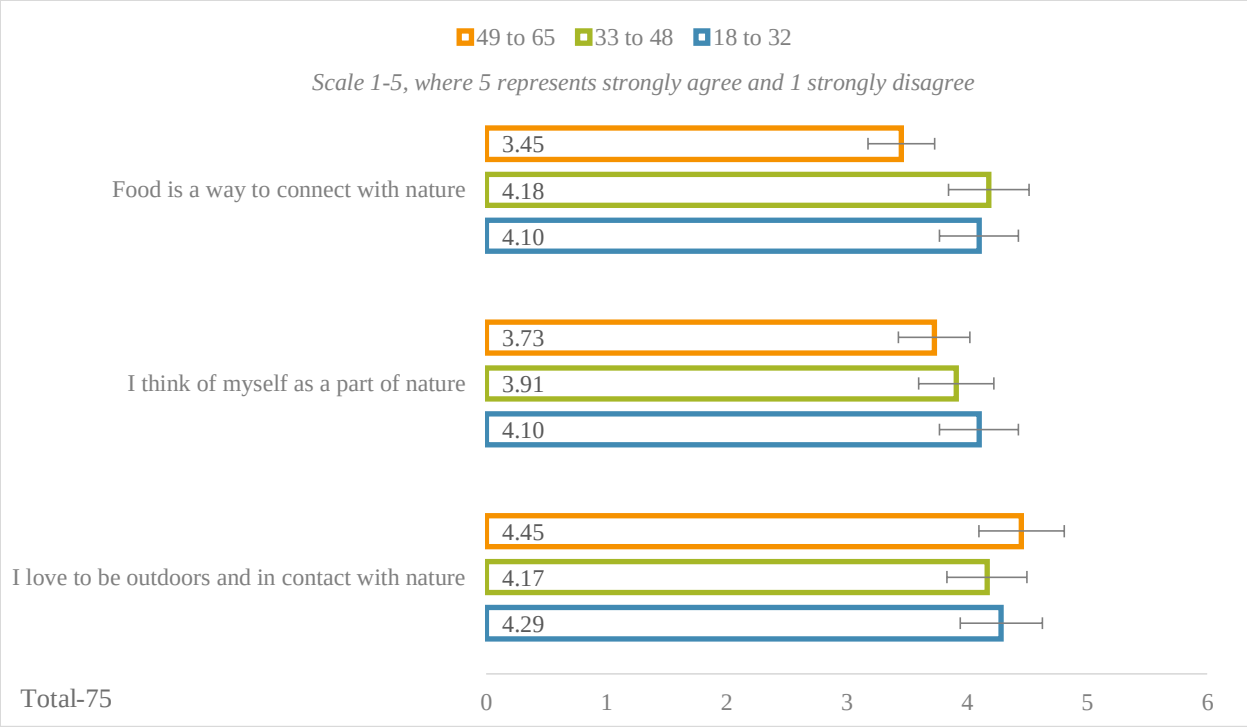


Figure E51- Data distribution among survey answers by age

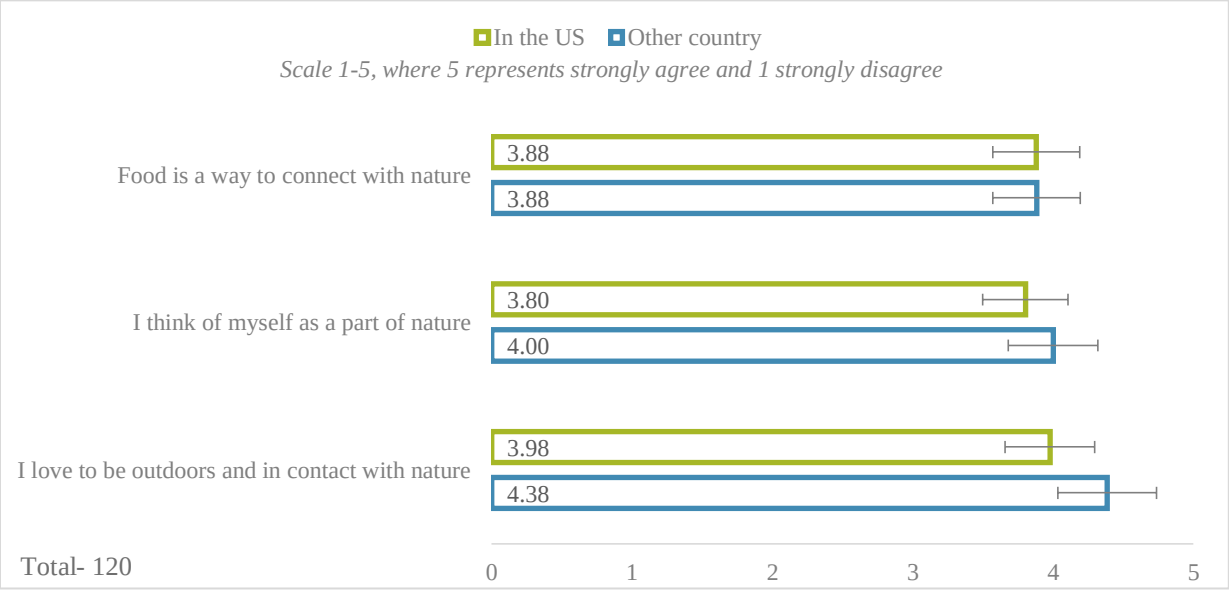


Figure E52- Data distribution among survey answers by country of origin. Other country refers to any country in Latin American and the Caribbean

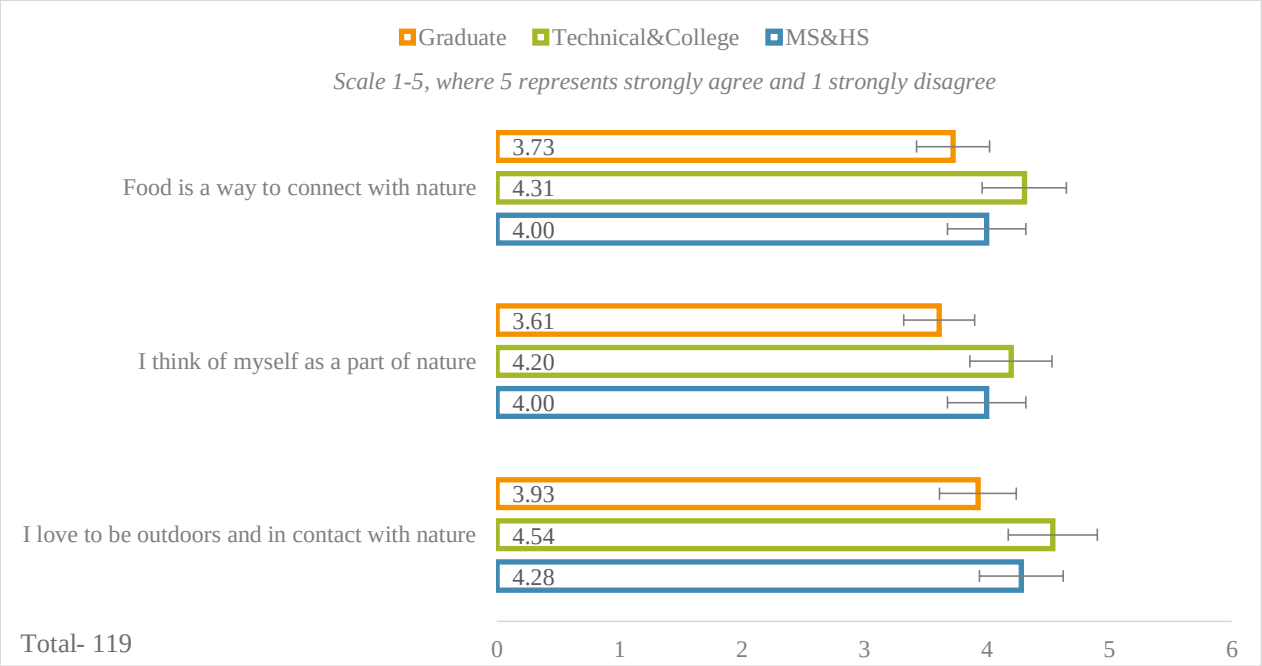


Figure E53- Data distribution among survey answers by level of education: Middle School and High School, Technical education and Bachelor's Degree, Graduate Degree

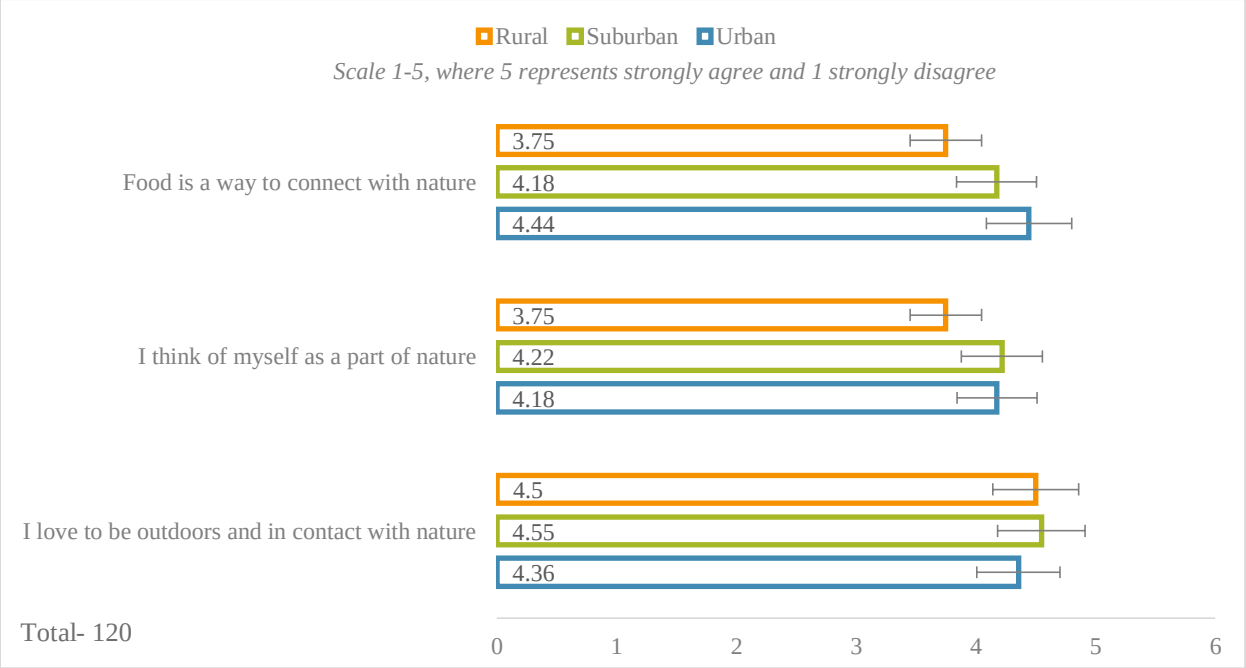


Figure E54- Data distribution among survey answers by current living area inside the Seattle metropolitan area

Question: Do you feel that your sense of connection to nature has changed since living in the Seattle Metropolitan Area?

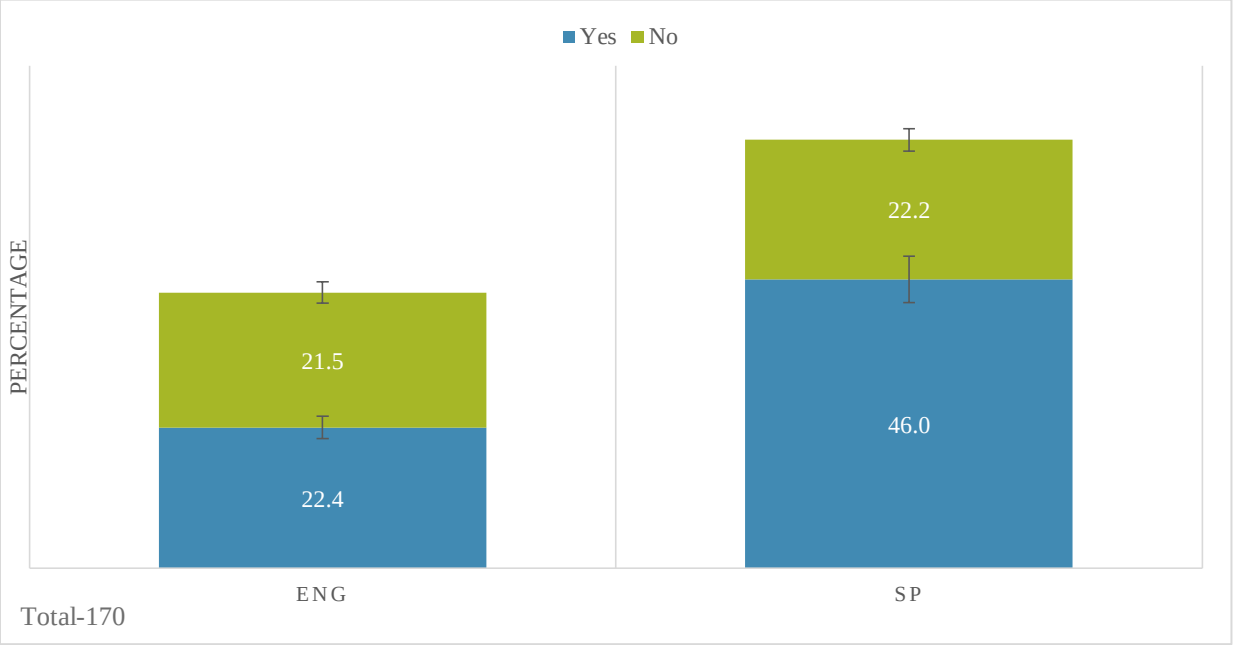


Figure E55- Data distribution among survey answers in Spanish and English

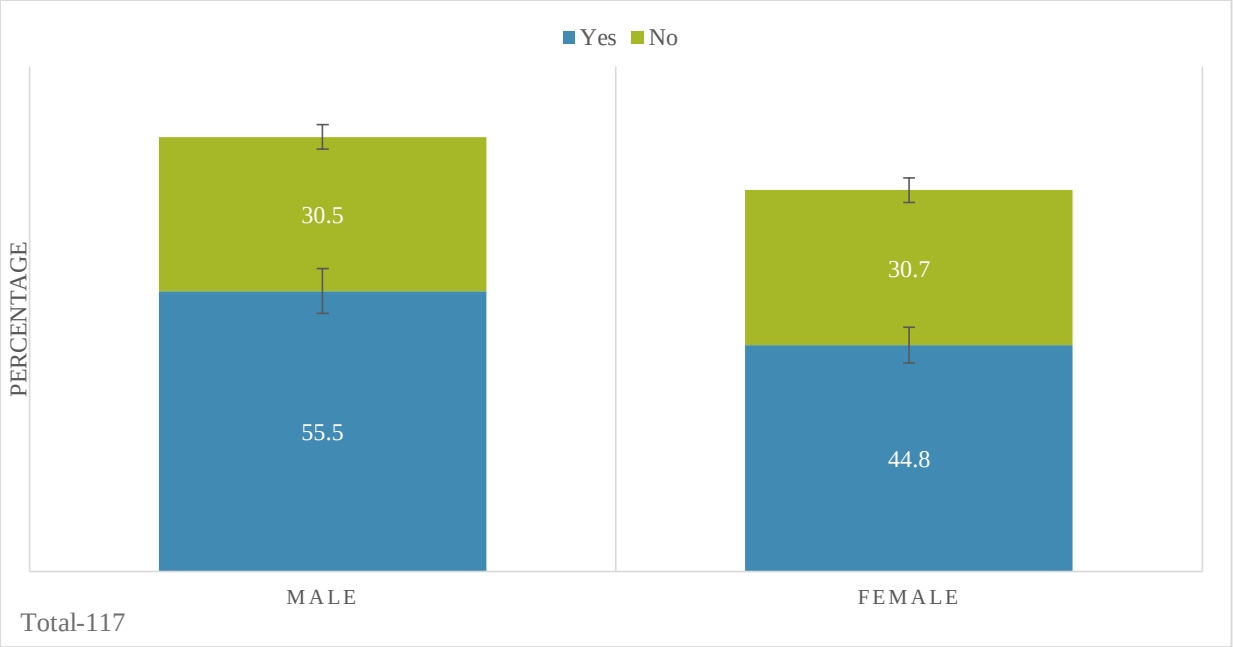


Figure E56- Data distribution among survey answers by gender

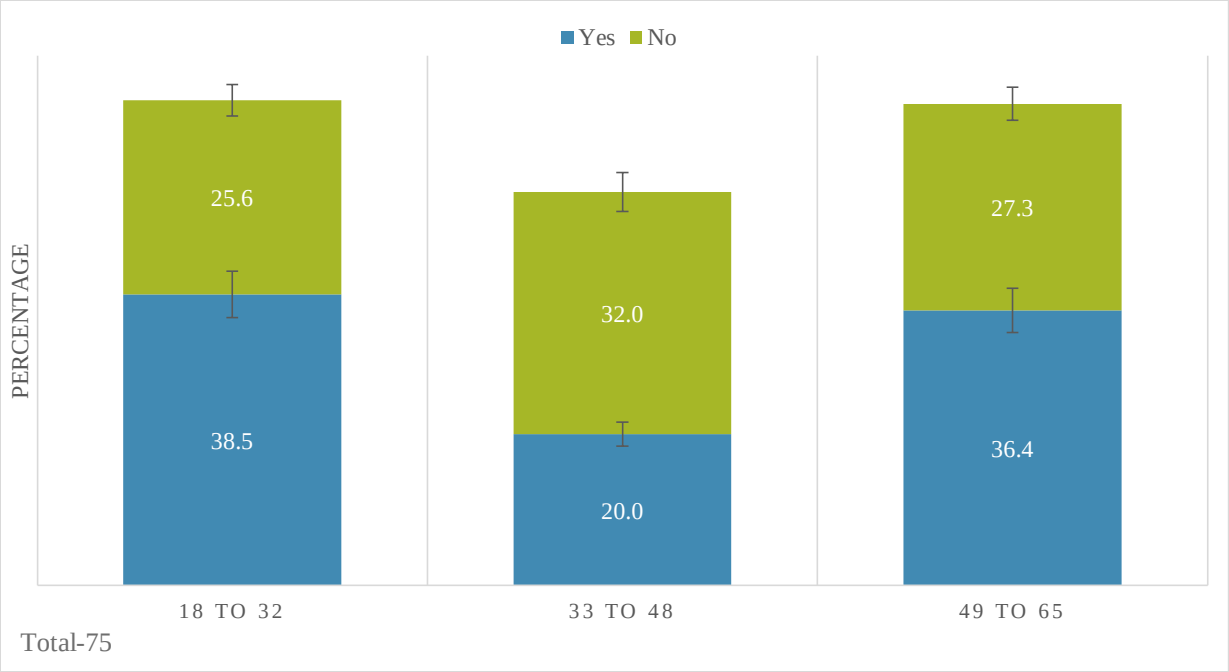


Figure E57- Data distribution among survey answers by age

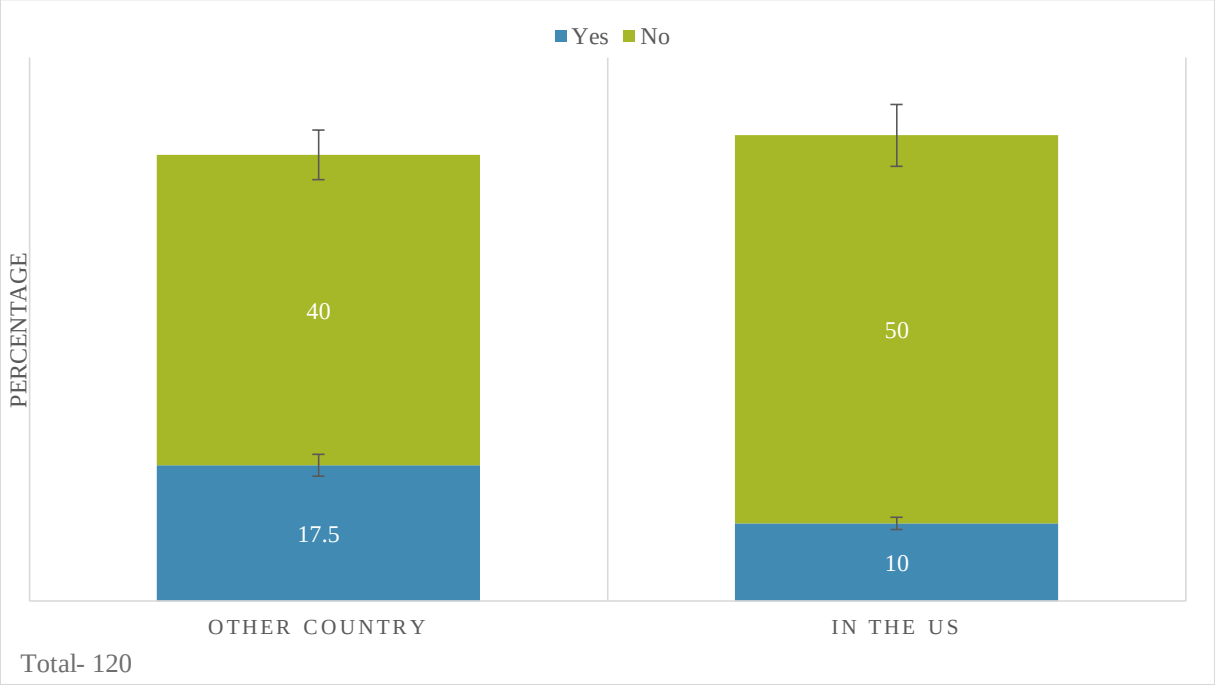


Figure E58- Data distribution among survey answers by country of origin. Other country refers to any country in Latin American and the Caribbean

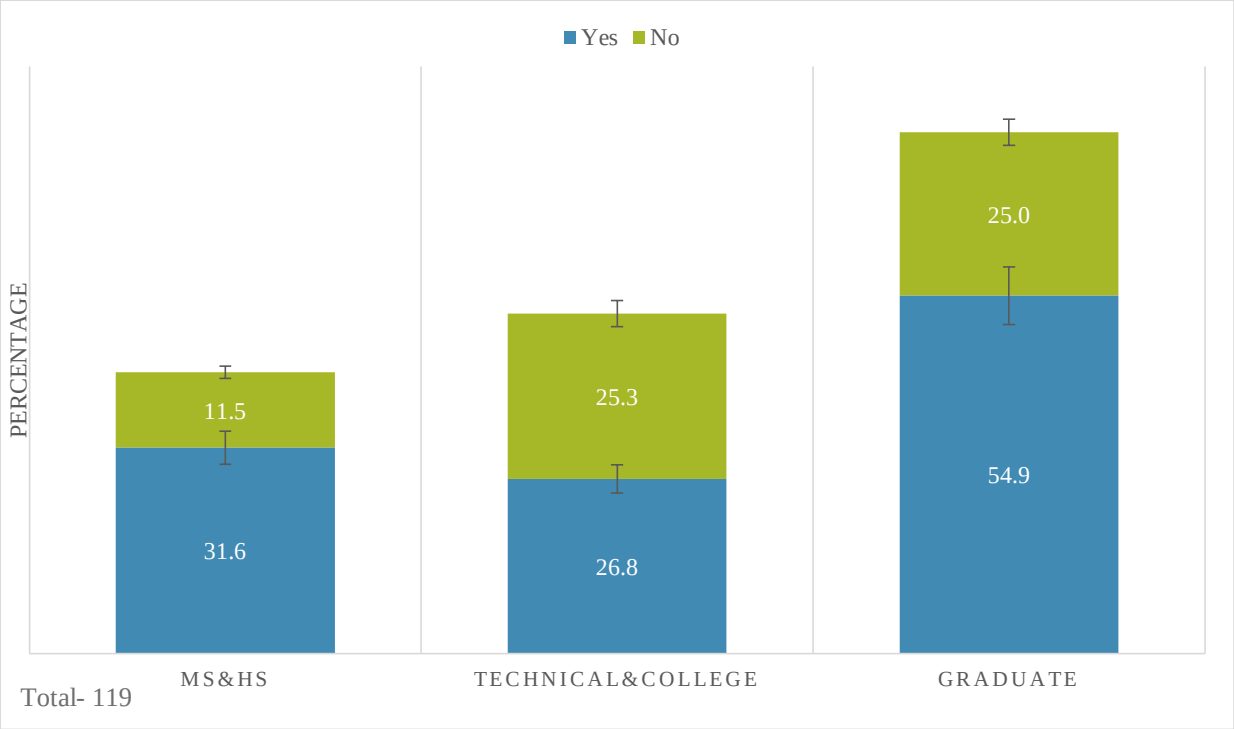


Figure E59- Data distribution among survey answers by level of education: Middle School and High School, Technical education and Bachelor's Degree, Graduate Degree

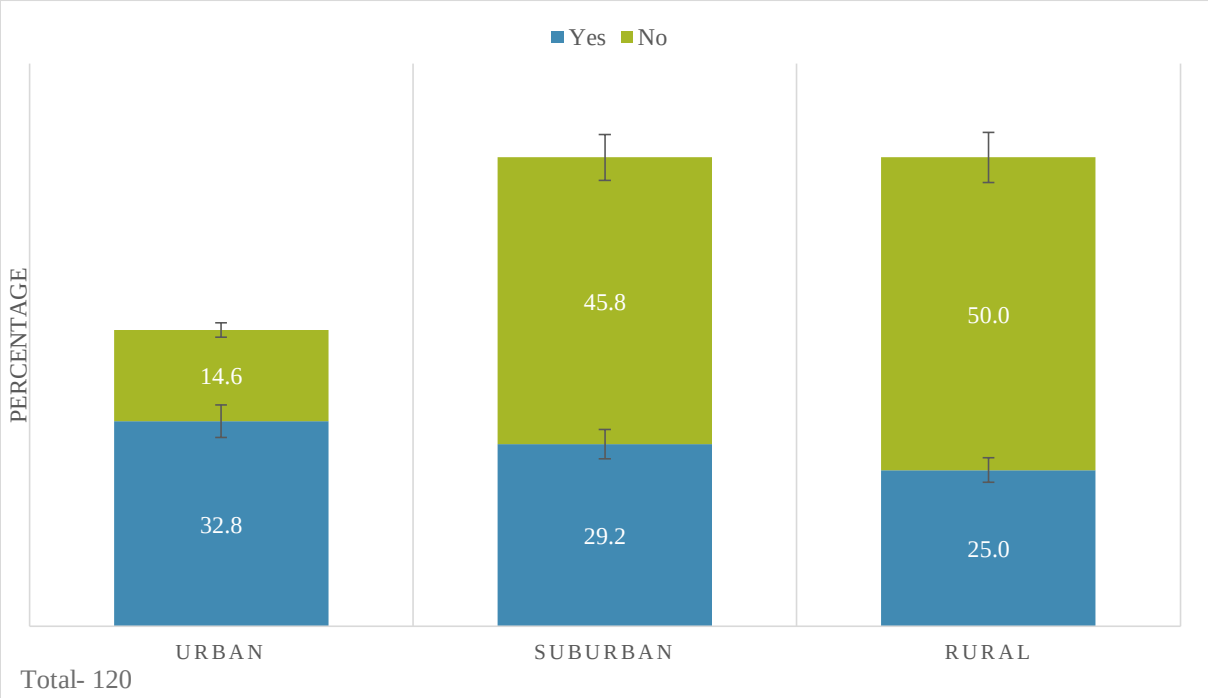


Figure E60- Data distribution among survey answers by current living area inside the Seattle metropolitan area

Question: Do you feel that your cultural traditions and habits connect you in some way to the natural environment?

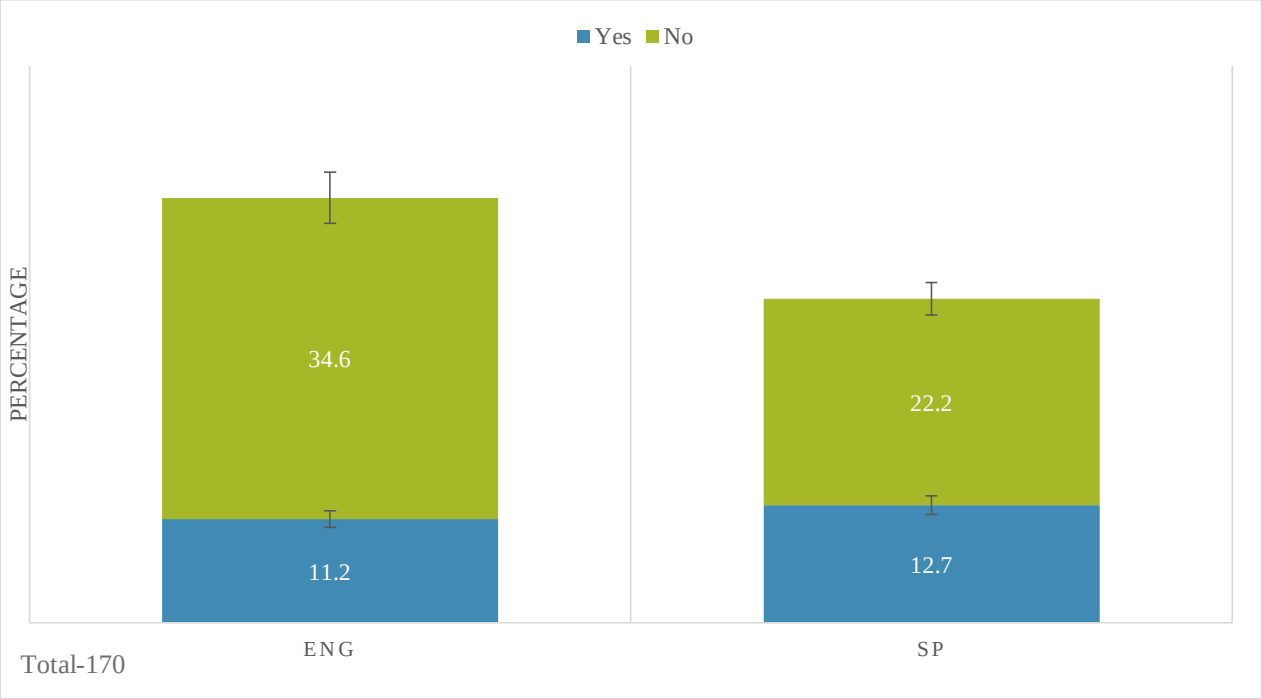


Figure E61- Data distribution among survey answers in Spanish and English

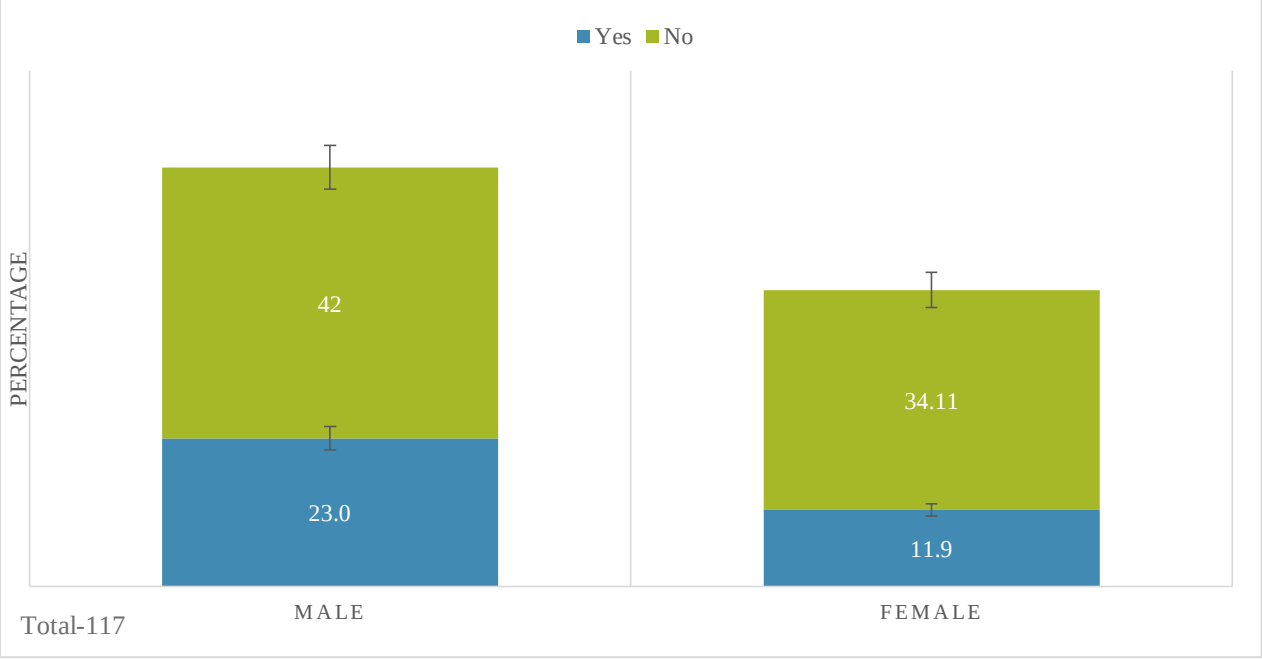


Figure E62- Data distribution among survey answers by gender

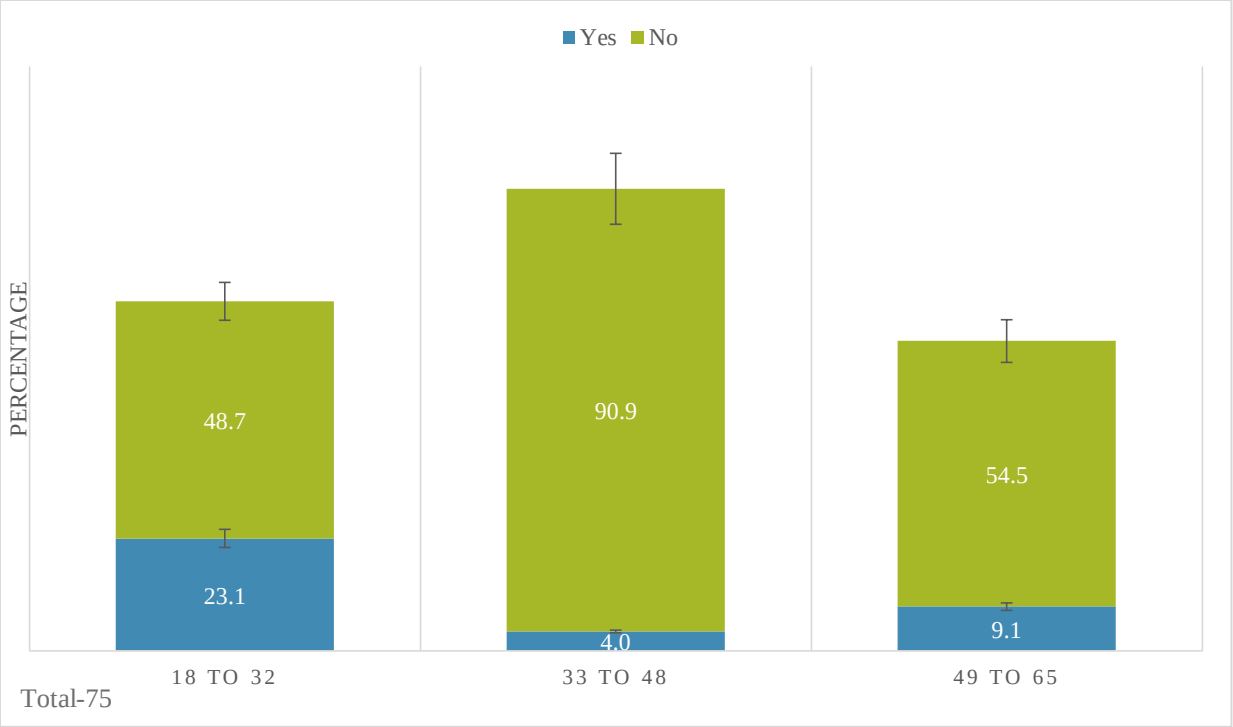


Figure E63- Data distribution among survey answers by age

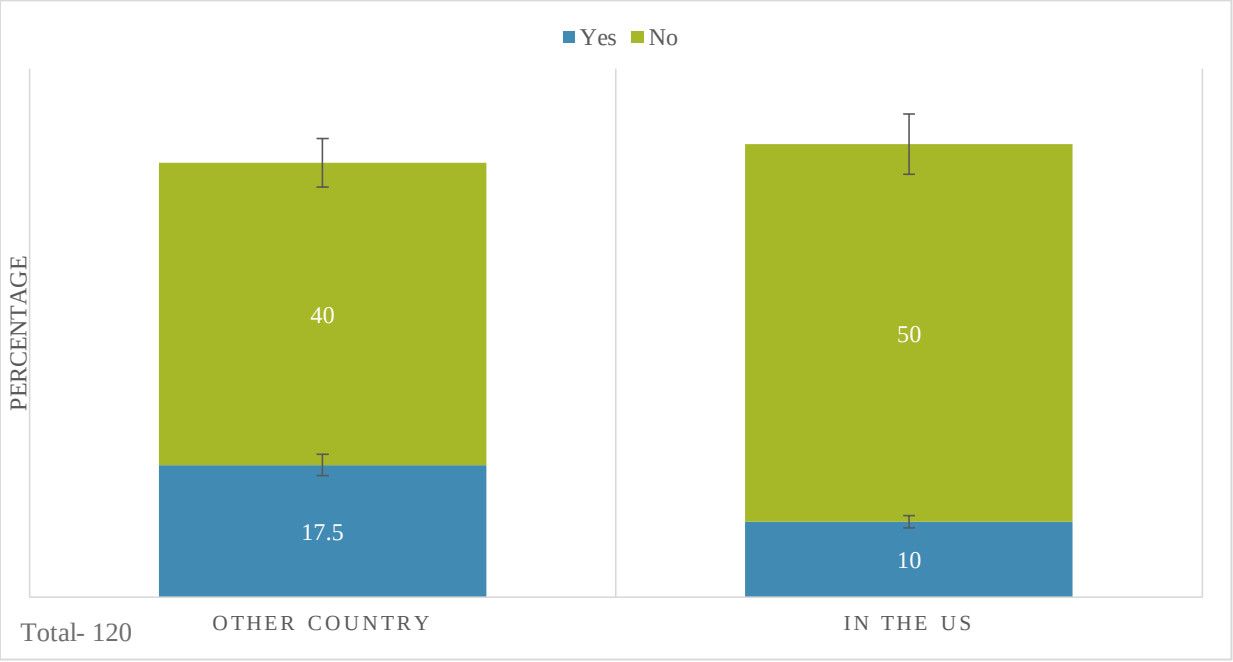


Figure E64- Data distribution among survey answers by country of origin. Other country refers to any country in Latin American and the Caribbean

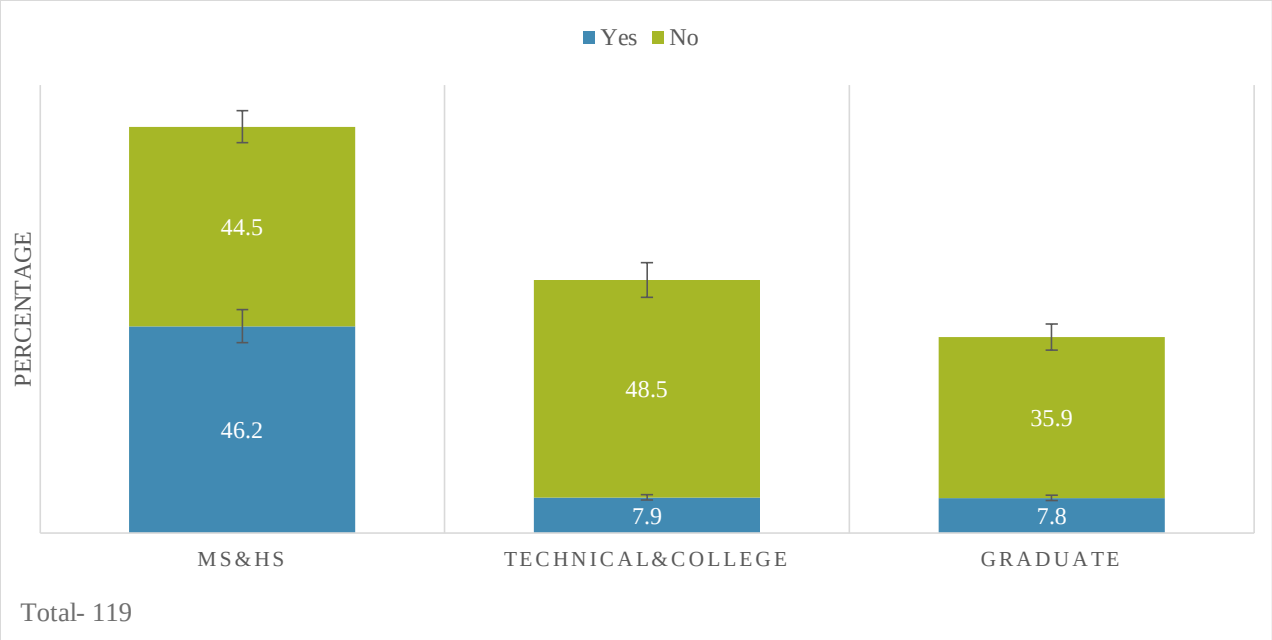


Figure E65- Data distribution among survey answers by level of education: Middle School and High School, Technical education and Bachelor's Degree, Graduate Degree

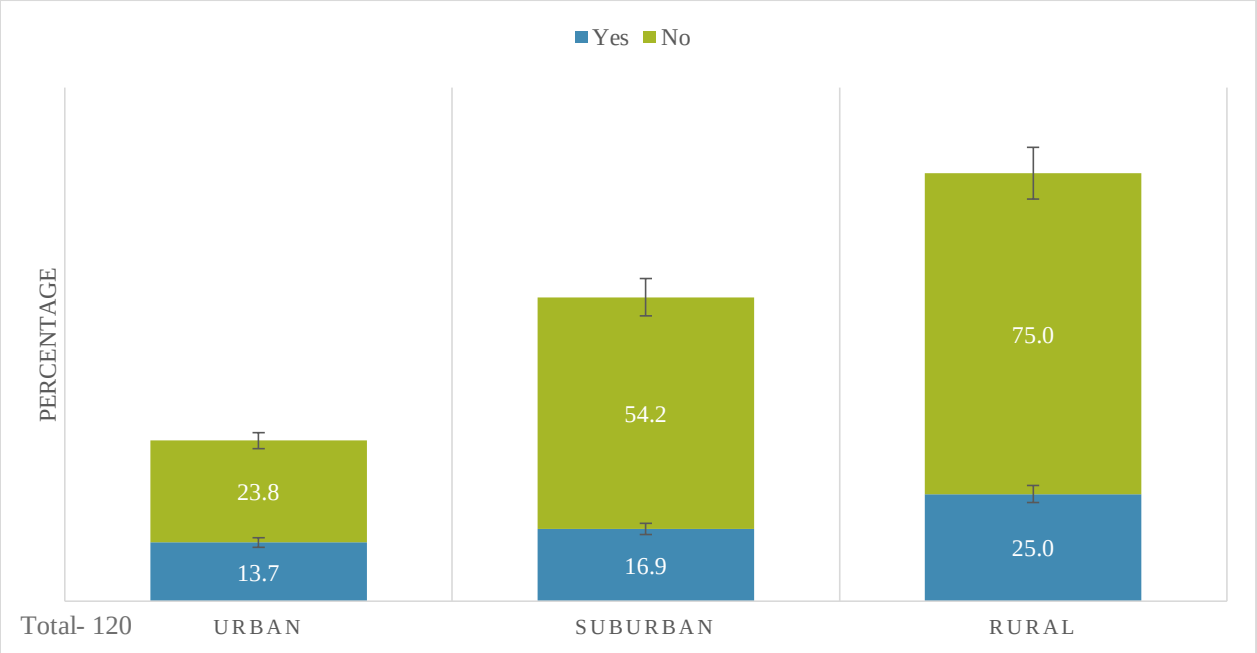


Figure E66- Data distribution among survey answers by current living area inside the Seattle metropolitan area

APPENDIX F- CODED PHOTOGRAPHS

Table F1- Presence of coded themes in *Fotohistorias* data per media

Photo	Commercial ingredient	Food security	Plant-Harvest	Prepared food	Traditional ingredient	Family	Interaction with Animals	People in nature	Pro-environmental behavior	Use of plants	Home	Nostalgia
1		1	1					1				
2		1				1				1		1
3		1								1	1	
4		1	1					1				
5		1	1							1		
6		1	1			1		1				1
7			1			1		1		1		
8		1		1						1	1	
9		1	1			1		1		1		
10		1	1			1		1		1		
11		1				1			1	1		
12		1	1							1		
13		1	1							1		
14		1	1			1		1		1		1
15		1	1							1		
16			1							1		
17						1		1	1	1		
18		1		1					1	1		
19		1								1	1	
20	1	1		1	1					1	1	1
21	1	1		1							1	
22	1	1		1							1	
23	1	1		1							1	
24	1	1									1	
25						1			1			
26							1					
27		1	1							1		1
28	1	1			1							
29	1	1		1		1				1		
30		1			1					1		
31		1								1		

Photo	Commercial ingredient	Food security	Plant-Harvest	Prepared food	Traditional ingredient	Family	Interaction with Animals	People in nature	Pro-environmental behavior	Use of plants	Home	Nostalgia
32		1	1		1					1	1	1
33			1			1				1	1	
34		1		1						1		1
35	1	1		1							1	1
36	1	1		1							1	1
37		1	1				1	1		1	1	
38		1	1							1		
Quotes	1	1	1	1	1	1		1	1	1	1	1
Total	**10**	**33**	**18**	**11**	**5**	**12**	**2**	**10**	**5**	**27**	**14**	**10**

Table F2- Frequencies of coded themes, groups by general theme, per participant

Food sovereignty

	Commercial ingredient	Food security	Plant-Harvest
Kid: G1		1	1
Kid: G2	5	8	
Kid: S1		11	11
Adult: Gloria	5	11	5
Adult: Susana			
Totals	**10**	**31**	**17**

Cultural identity-Traditional Food

	Prepared food	Traditional ingredient
Kid: G1	1	
Kid: G2	5	1
Kid: S1		
Adult: Gloria	4	3
Adult: Susana		
Totals	**10**	**4**

Family
1
7
2
1
11

Connectedness to nature

	Interaction with Animals	People in nature	Pro-environmental behavior	Use of plants
Kid: G1		1	2	3
Kid: G2				4
Kid: S1		7	1	10
Adult: Gloria	1	1		9
Adult: Susana	1		1	
Totals	**1**	**9**	**4**	**26**

Migration

	Home	Nostalgia
Kid: G1		
Kid: G2	8	1
Kid: S1		3
Adult: Gloria	5	5
Adult: Susana		
Totals	**13**	**9**

VITA

Isabel Carrera is a Mexican biologist, with a Master's degree in Systematics and Taxonomy, and a certificate in Science, Technology, and Society studies, completing a doctoral degree through this study in Environmental Studies at the School of Environmental and Forest Sciences at University of Washington. Isabel's academic interests revolve around the study of power dynamics and sociocultural factors around scientific practices, looking at science as a political actor in modern society. On the other hand, Isabel works in science outreach and education at formal and informal venues, expanding opportunities in science and technology, especially for underserved and underrepresented students, and promoting critical thinking skills as a way to empower communities.