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GIS – Final Paper

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## A Comparative Profile of Education in Grays Harbor County

### **Decision making**

'You can do this project on anything that has a spatial component to it.' This is not as easy as one might think. I began to think about the things I really like and came up with music. After some deliberation I decided that another exercise in how to run an address locator was not enough for me this time.

From there I narrowed things down to a scale that is the county where I live, Grays Harbor County. I had the general idea of doing a 'profile' of the East County. This soon went by the wayside because 'profile' was far too broad an idea to be a cohesive project. Then I struck upon the idea of incorporating education in to the project an increasing my scale to the whole county instead of just the most eastern portion of it. From that point I decided to take the only measure of students learning, in Washington, the WASL and compare the scores to different demographics.

I set out to compare county WASL scores to the taxes paid to school district. My idea was to see if there was any correlation between the taxes and the scores. Did richer school districts have better scores than the poorer ones? I added a few

additional variables; library circulation, population that didn't graduate high school and those that got Bachelor's degrees and compared these to WASL scores as well.

It is important to understand that correlation is not causation. In addition there are many problems with standardized testing, but in Washington we have no other measure at this time.

### **Collecting Data**

I would say that the bulk of my data came from the Grays Harbor County GIS Department. Wade Reuther is the Analyst there and was incredibly helpful. I got all my basic shape files from the site. Many GIS files were available to the public; land parcels, public land survey, hydrology, roads, city limits, and jurisdiction information. On more than one occasion Mr. Reuther sent me files that I wasn't able to find elsewhere. The GHC (Grays Harbor County) website was an integral source not only for GIS but for tax records (the Assessor's Office) and voting records (County Auditor).

The Timberland Regional Library was very helpful as well. They were able to send me exactly what I requested; how many card holder were there for each branch. They also included circulation, computer use, and increases or decreases from the previous year.

Another important source of information was the Office of the Superintendent of Public Instruction (OSPI). This site lists a 'report card' for the entire state. The report

includes WASL scores and demographics for each school district. It is a wealth of information on how the testing is done and who is tested and what they are tested on.

From the Census I used TIGER files and American Fact Finder for demographics. All of this information had to be converted to the projection I was using. The data from the County was projected in NAD 1927 WA State Plane South so I adopted it for the geo-database and dataset. I selected the part of the census that had basic educational data.

Half way through the project, I had so much data that I had to take inventory to decide what I needed. Several different times during the evolution process, I would do an inventory of all the things I had collected, and from that the next step became clear.

### **Transforming Data**

I ended up with several data tables from various sources. These all had to be converted to Excel files to be able to import them to Arc. I ran into stumbling blocks at every turn initially. I couldn't remember how to open excel files in Arc. I couldn't remember how to add data to a new field. Thank goodness my learning curve was not as long and arduous as it was in the beginning of the year. When I figured things out this time they stuck.

I had no trouble creating the geo-database the second time. I hadn't set the projection correctly to begin with and so I just created a second file that was right. This year I have learned that one of the most important aspects of GIS is the initial set

up of the project. If things are not done correctly to begin with often it is easier to simply start over, rather than try to fix something.

## **Processes**

I built a number of data sets in Excel; WASL scores per district, library data, and a address locator for all the school locations. Some things worked better than others. I found that the road layer that I had was not sufficient to use when trying to locate addresses and I had to get another one. It's hard to tie a location to a road if the road isn't there to begin with. I made a school address layer to attach individual WASL scores to each school. I decided that comparing WASL scores by school district was the right scale for this project and didn't use the layer after all the trouble I had making it.

I also added a town layer to a map to indicate where all the tiny towns are. I did this by using the editing tools to create a new point layer. This did not prove useful either. There are a lot of thing like this when one is 'playing with GIS.'

I wanted to clip the Census block groups to the school district boundaries so that I would be able to start compiling my results by district. There are 15 school districts in Grays Harbor County. It was at this point that I missed a crucial step that would have saved me days later on. I didn't adjust the population for each school district. Furthermore, I went about the correction of this error incorrectly. What should have been a matter of adding a field and using the field calculator to populate the new field

was days of incorrect Excel tables and utter mess. I am sure that I will always remember the correct way to do this from now on.

I took my Census data regarding level of education attained by the residents of the County and converted the block group level data into centroids and then performed an IDW interpolation to get a continuous surface of the information. This illustrates the areas where certain characteristics are most prominent. I chose to use the data on 'no high school degree' and 'received Bachelor's degree.' I could have used any or all of the data I collected but, decided that less was more in this situation.

### **Initial Results**

I found that without the population of each school district my data was not able to show a fair representation of the data. I eventually was able to dissect the block groups and provide accurate populations for each school district.

There were unavoidable holes in my data. One of the school districts, North River, has no WASL scores. I found no explanation as to the reason for this, could be a new school district or maybe they just decided not to test. There was also a problem with the library data. Several of the school districts have no library in them. This may have been a flaw in my hypothesis or perhaps I could have spent more time devising a way around the holes.

## Reprocessing

Once the population was sorted out I was able to use it to normalize the tax layer to show a per capita tax contribution. This showed that correlation between WASL scores and high taxes was negligible at best. North Beach school district has the highest per capita tax but one of the lowest WASL average. Other anomalies showed high dropout rates and better college attendance in the same area.

I have disproved my hypothesis. According to my calculations there is not a correlation between the wealthier communities and a better education.

The statewide average science score is 42%, everything I saw for Grays Harbor County was much lower, except for McCleary where the science score is 52%. I asked a friend that has sons in the McCleary School about the science program there, and she attributed the success to be due to a great teacher. It is not the amount of money a school has but the quality of its teachers. If we pay our teachers more maybe we would have better teachers.

## **Sources**

Grays Harbor County

**Wade A. Reuther**

GIS Coordinator

310 W. Spruce St.

Montesano, WA 98563

<http://www.ghc-gis.org/info/GIS/index.html>

Grays Harbor County Tax Assessors Office

<http://www.co.grays-harbor.wa.us/info/assessor/Docs/LevyPacket2007For2008Tax.pdf>

(2007 Budget outlining what was paid to each SD: pg 5)

Grays Harbor County Auditor

100 W Broadway, Suite 2

Montesano, WA 98563

<http://wei.secstate.wa.gov/graysharbor/Pages/AuditorHome.aspx>

Timberland Regional Library

<http://www.trlib.org/>



<http://reportcard.ospi.k12.wa.us/summary.aspx?year=2007-08>

US Census

TIGER: <http://www.census.gov/geo/www/tiger/index.html>

American Factfinder: [http://factfinder.census.gov/servlet/DownloadDatasetServlet?\\_lang=en](http://factfinder.census.gov/servlet/DownloadDatasetServlet?_lang=en)

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Source: Census 2000 Summary File 3/prepared by the U.S.Census Bureau, 2002 (Sept. 17, 2002)