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Census 2020: The effect of a census undercount in Pierce County

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26 August, 2019

Census 2020
**The Effects of a Census
Undercount in Pierce County**



Introduction

CAUR is partnering with GTCF to provide data for a Census 2020 campaign in Pierce County. The purpose of this campaign is to provide materials and information about the importance of a complete and accurate census count. The research materials provided by CAUR will be used to provide information for a public education video and materials to be distributed to community leaders as they encourage constituents to actively participate in the upcoming 2020 Census.

Census data has a wide variety of applications, both public/government and in private industry. CAUR worked closely with GTCF to identify four different use cases for census data that help convey the importance of having a complete and accurate count. These use cases represent aspects of day-to-day life for Pierce County residents that might be changed if the census count is inaccurate. For example, we present details on how bus routes might be altered if are using inaccurate census data, due to significant undercounts, potentially missing entire neighborhoods where bus service would be needed. We also evaluate the difference in federal funding to Pierce County if 10% of residents do not complete their census forms.

The examples we use here provide insight into the issues that arise from both inaccurate and incomplete census data. In some of our use cases, we simulate an inaccurate census count in key areas. For example, we simulate the differences of siting a new health clinic if some houses incorrectly report the number of children in their homes. In other cases we examine the repercussions of failing to complete the census entirely. Federal grants are sometimes based on the number of residents in an area, and if the census count does not include all residents, then there is a proportional drop in grant funding. It is important to relay the message that the census is important, and that it should be completed honestly and accurately.



The use cases presented here are hypothetical repercussions of a census undercount, and are to be used solely for informing the public on the importance of the census. In actuality, each of the decisions presented here are complex and in some cases combine census data with other datasets. The details provided here are an overview of census use for educational purposes only.

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Research Methods

To convey the potential repercussions of an incomplete or undercounted census, we identified four use cases of census data: planning bus/transit service, locating new or expanding businesses, applying for federal community funds and tax credits, and government congressional redistricting. Each of these play an important part in the lives of all Pierce County residents. Where applicable, we apply ‘what-if’ scenarios that assume a 10% undercount in a key location or census topic. The use cases are re-processed to present an alternative scenario where the undercount dramatically affects the results. *It is our intention to convince readers that the census is more than a count of the population, but that it has tangible effects on day-to-day life for all US Residents.* We use Pierce County specific examples to make the content relatable to our local audience.

Wherever possible, CAUR researchers worked with Pierce County businesses and residents, or government agencies with direct knowledge of how decisions are made or how funds are distributed.

Use Cases

Bus Stop Locations

Why it's relatable for Pierce County residents

Reliable access to public transit is an important aspect of urban living for many Pierce County residents. In 2017, nearly 18,000 Pierce County homes had no access to a vehicle¹ and potentially turned to public transit as their primary means of transportation. A significant portion of Pierce County residents commute alone by car (306,471),² and Puget Sound traffic continues to be among the worst in the nation.³ Public transit can serve different purposes; first it can provide transportation for local residents to-and-from work; second, it serves to remove single-occupancy vehicles from the road. If enough single-occupant vehicles are removed from the road then it may have a positive side-effect of alleviating traffic congestion. We can entice Pierce County residents to complete the census by demonstrating how that data might be used to inform traffic decisions. It is safe to assume that virtually all residents would like to see a reduction in traffic congestion.

How decisions are made

To identify the uses of Census data in determining potential transit service areas, we reached out to both *Pierce Transit* and *King County Metro*. Their responses were similar and provide reassurance that the following census tables are conventional for transit decision-making.

Along with other in-house datasets such as ridership data, each transit provider stated that they use the following census/ACS tables as inputs for their decisions:

- Areas with high senior population
- Areas with high youth population
- Areas with high disabled population
- Areas with low household vehicle access
- Areas with high/low transit usage

For educational purposes, CAUR assigned threshold values for each of these categories and performed GIS analysis to identify areas where all census criteria were met. Note that threshold values are for demonstration purposes and do not necessarily reflect the values that *Pierce Transit* or *King County Metro* use to identify

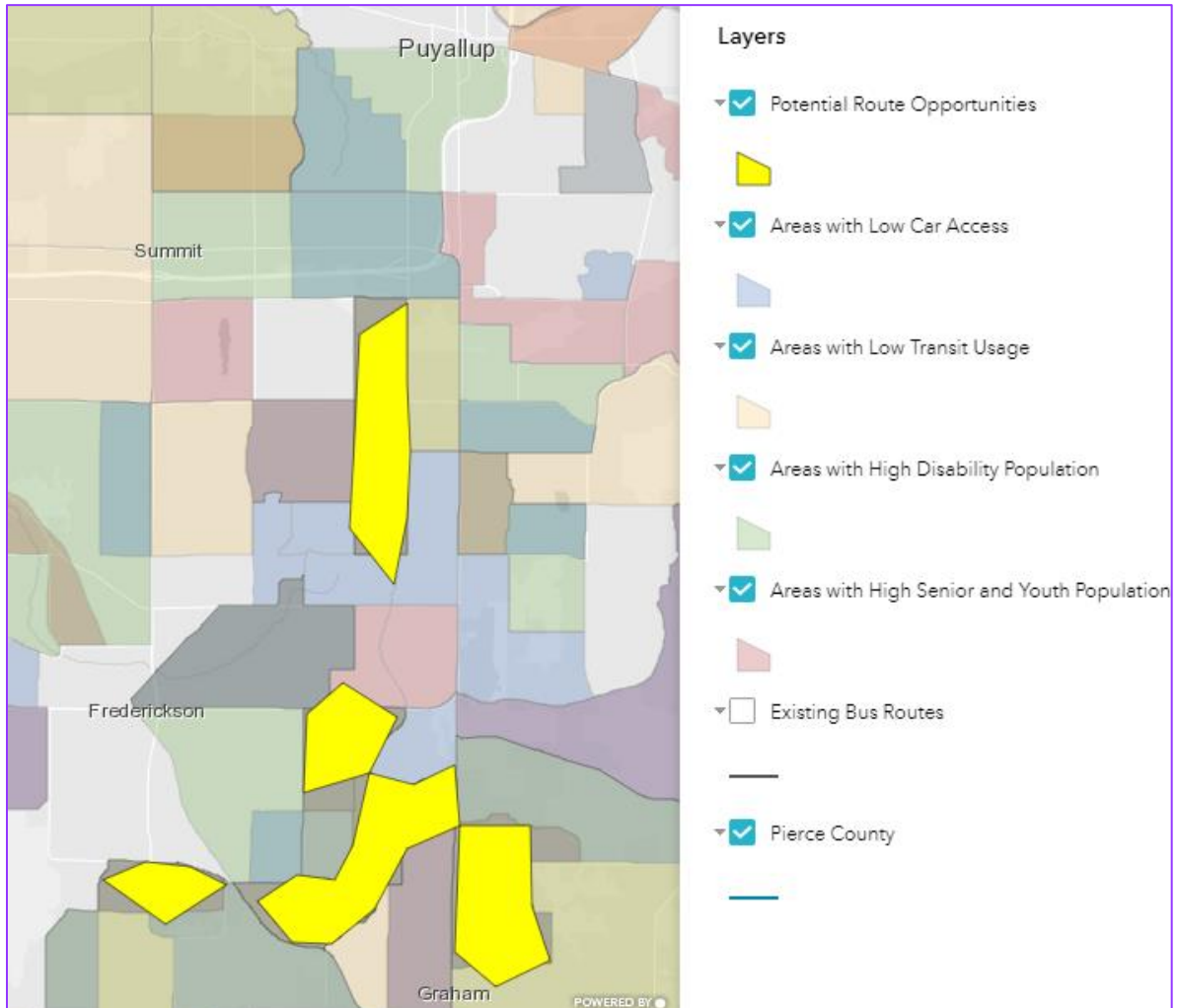
¹ American Community Survey, 2017 5-yr estimates. Table B25044

² American Community Survey, 2017 5-yr estimates. Table B08141

³ <https://mynorthwest.com/1406756/seattle-fifth-worst-traffic-united-states/>

potential service areas. The threshold values used for our model were selected as they present a digestible story for most viewers.

Using GIS tools, we can overlay each input on a map and then identify any places where all criteria intersect. The result is a place where all of the census conditions are satisfied for considering service expansion. In our example we identified a series of census tracts, mostly in the South Hill/Graham area, where all of the conditions listed above are met. A transit provider might use this as justification for exploring the potential of expanding transit service to those areas.

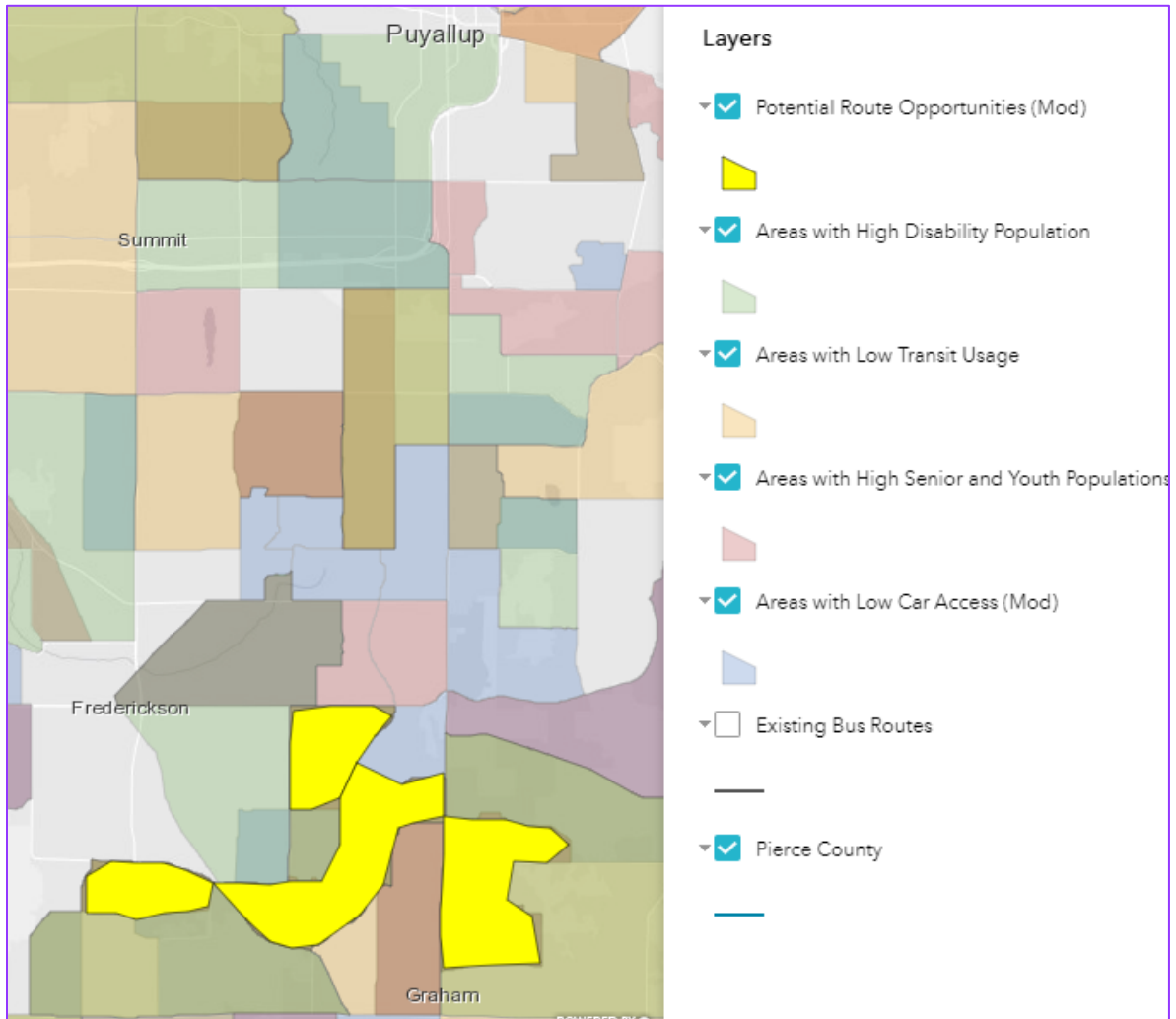


1 - Using a GIS, we overlay areas and find where all conditions are satisfied. Here we can see a group of areas in the South Hill/Graham area might be suitable for transit expansion.

Note that Transit providers also have access to internal datasets such as ridership, commute times, individual rider on/off times, and more; which are also used as inputs to aid in decision-making like this. That data helps to further refine the results.

Effects of an undercount

To demonstrate the effects of an undercount on transit service areas, we simulated an undercount in one of the census topics that are used to inform those decisions. In the previous step we identified a census tract where all layers intersected and produced a potential service area. We then reduced the count of homes with vehicle access by 8% for that tract and re-ran the data model. The tract no-longer satisfies all of the requirements listed above and the tract is removed from the potential service area expansion.



2 - After simulating an 8% undercount in only one category, there is an obvious change in potential expansion areas.

In this hypothetical example, we reduced the count of homes with vehicle access by only 88 (roughly 8% of the census population). It is important to note that the 8% error can be introduced in different ways. A straight undercount where 88 homes in this area did not complete the census, or 88 homes where the census was incorrectly filled-out. The different ways in which errors can be introduced should be taken into account when encouraging participation in the census, not only do we want to increase participation, we also want to ensure that residents are honest and accurate with their census details.

Pierce County Fast-Facts		
Total Occupied Housing Units in Pierce County	312,839	ACS17 5-yr B25003
Homes with no vehicle available	17,975	ACS17 5-yr B25044
Residents using transit to get to work	13,595	ACS17 5-yr B08141
Avg (mean) Commute Time to work (for residents driving a vehicle)	31.2 minutes	ACS17 5-yr S0801
Avg (mean) Commute Time to work (for residents using public transit)	53.9 minutes	ACS17 5-yr S0804

Small/Medium Sized Businesses – Health Clinics

Why it’s relatable for Pierce County residents

These businesses represent a number of different aspects of Pierce County life. From a local resident’s perspective, these businesses might represent job opportunities for professional or skilled laborers. Depending on the business, they might also represent retail, service, or healthcare options in the local area. From a business perspective, these companies are economic drivers for the region, providing relatively high salaries to skilled labor in the region and encouraging a snowball growth effect for other businesses in the area. Along with higher-waged jobs come higher end restaurants, boutiques, service providers, and more.

Over the course of our research, the CAUR team reached out to numerous businesses in the Tacoma area to determine how they use Census data to make business decisions. We managed to connect on only a few occasions. One case was with a healthcare provider with locations scattered throughout the Puget Sound region. Healthcare resources are important for all residents, making it a relatable topic of discussion. Whether it be emergency services for traumatic accidents, or medical clinics and medical services for illness management, virtually all residents will require medical services to be near to where they live.

In addition to determining areas for new health clinics, healthcare providers use census data to comply with Medicaid, Medicare and the Affordable Care Act. Through Census data, providers can ensure that they are properly reimbursed by the federal government by applying for Medicaid/Medicare grants to serve their local communities. The Affordable Care Act dictates that annual community health needs assessments are completed and census data is used to develop implementation strategies and to identify gaps in coverage.

Finally, healthcare providers with multiple locations employ thousands of people throughout the region. Census data is used to ensure that the local population has enough skilled labor to fill all positions for medical clinics. Census data goes to inform wages and cost of operation for clinic locations.

How decisions are made

In conversations with a healthcare provider, there were few details provided about the specific models or algorithms used to make business recommendations. It should also be noted that, as with bus route decisions, other datasets beyond just census data are used to influence business decision-making. Demonstration modelling for this use-case is difficult, as it is overly speculative to make assumptions for Pierce County based solely on our conversations with that healthcare entity.

Instead, to effectively convey the use of Census Data in health provider decision-making, we turn to literature provided by the *Urgent Care Association of America*, (UCAA).⁴ As with the previous example of bus service expansion, there are numerous datasets that are processed through a GIS algorithm to identify potential expansion areas. Some of these datasets are sourced from the US Census, primarily to identify the demographic makeup of a community. UCAA has provided a framework of data points that should be taken into consideration when considering expansion of an urgent care clinic. They suggest identifying communities with: a minimum of 40,000 people within a 'short' trip to the clinic, a lack of competing urgent care clinics in the area, large concentrations of residents insured through employer health benefits, and the ability of the local population to pay and support a new clinic.⁵ In some ways, the decision to open a new urgent care clinic mimics the decision process of opening a new retail outlet.⁶

UCAA has identified a series of census tables that are useful in helping categorize an area. For the purposes of this example, we have distilled those down to identify a general demographic profile that might cause an urgent care provider to consider a neighborhood. In our data model, we used the following data inputs:

- Areas with high population aged 21-49 (prime working years)
- Areas with high percentage of families with children
- Areas with high percentage of working residents (therefore assumed to have healthcare benefits)
- Areas with high percentage of home ownership
- Areas with greater than average median income

These datasets act as a way to identify areas with a robust enough population to utilize an urgent care clinic, but also with the stability needed to financially support a clinic for the long term. Areas with high worker populations is used as a proxy to identify areas with high numbers of health-insured individuals.⁷

As with bus service routes, each of these datasets were added to a GIS and overlaid to identify areas where all of the desired criteria intersect. In our example, we identified a location near Bonney Lake that satisfies all of these criteria and might be a consideration for a health care provider to open an urgent care clinic.

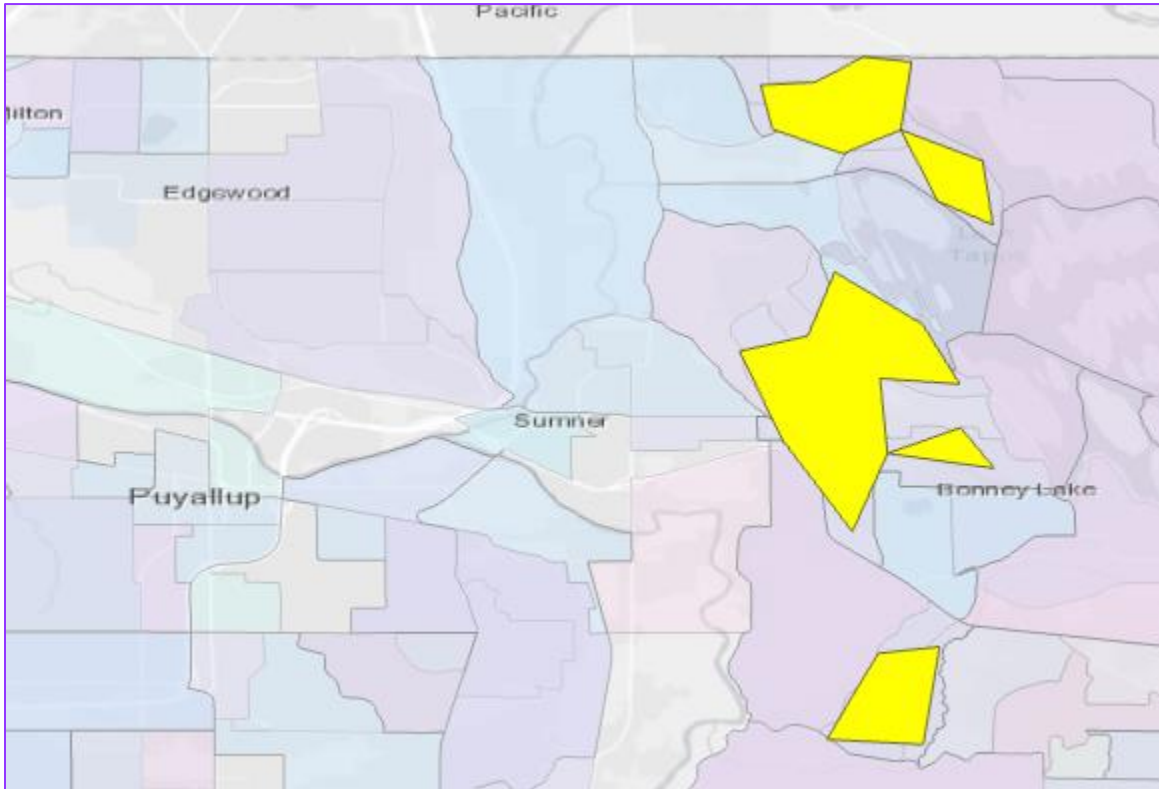
Note that health care providers have access to other datasets, including private internal datasets which influence their decisions. That data helps to further refine the results.

⁴ Urgent Care Association of America. <https://www.ucaoa.org/>

⁵ Urgent Care Association of America. Site Selection Overview and General Guidelines. https://c.ymcdn.com/sites/ucaoa.site-ym.com/resource/resmgr/faq/ucaoa_faq_site_selection.pdf

⁶ Ibid.

⁷ Ibid.



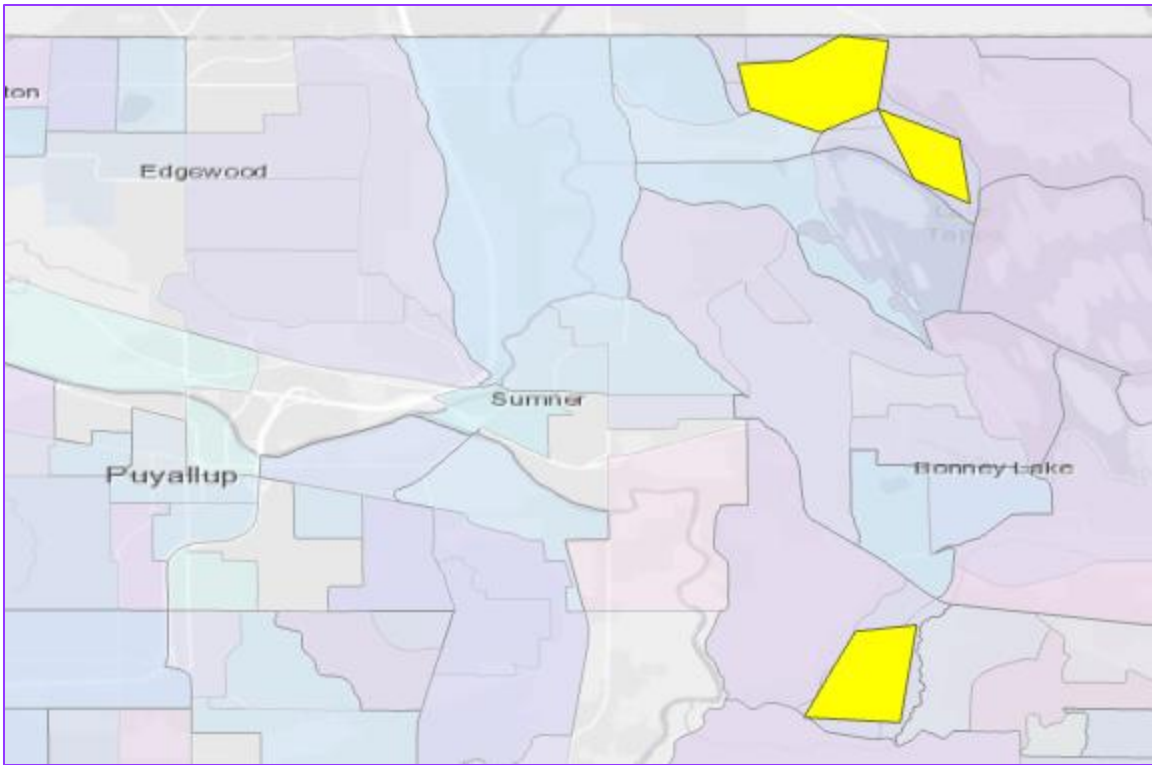
3- Using simplified criteria from UCAA, we identified potential clinic expansion near Bonney Lake. An Urgent care facility should consider being nearby to these areas.

Effects of an undercount

To simulate an undercount error and how it affects the model, we eliminated a key block group from contention in the Bonney Lake area. In our model we identified areas with a high number of families with children. We simulated a 6.6% decrease in number of children in a given reported in a census tract. This minute drop in numbers removed the area from the threshold and Bonney Lake was no longer identified as a potential expansion location.

As with bus service, a very small change in a single dataset has a large impact on how GIS modeling identifies expansion areas. In this case, a reduction of only 54 children from a census tract of over 2150 households.⁸ Such a small reduction in just a single dataset helps to relay the concept that an accurate and complete census is the key to informed decision-making for more than just government agencies, but also for private industry as well.

⁸ US Census ACS 2017 5-yr estimates Table S1101



4 - After simulating a 54 child undercount, we can see that the Bonney Lake area is not as enticing to Urgent Care Expansion

Pierce County Fast-Facts		
Total Non-institutionalized Population	822,539	ACS17 5-yr S2701
Total with Health Insurance	755,573 (91.9%)	ACS17 5-yr S2701
Total Uninsured	66,966 (8.1%)	ACS17 5-yr S2701
Uninsured People With Jobs	36,259 (59.6% of the uninsured population has a job)	ACS17 5-yr S2702
<i>Selected Demographic Details</i>		
Male/Female Breakdown	49.7% Male/ 51.3% Female	ACS17 5-yr DP05
Median Age	36.0	ACS17 5-yr DP05
Median Income	\$63,881	ACS17 5-yr S1901

Tax Credits/Block Grants

Why it's relatable for Pierce County residents

For the purposes of this research, we evaluated two different types of federal grants. The *Community Development Block Grant* (CDBG) and the *Home Program* (HOME). Both are operated through the US Department of Housing and Urban Development (HUD). These programs provide funds to cities and jurisdictions to provide

a wide range of services for their communities including, but not limited to, providing housing opportunities for low-income residents and expanding economic opportunities for low-and moderate-income persons.⁹ The HOME program also aims to increase homeownership among low-and very-low-income Americans.¹⁰

These programs are important to Pierce County residents because they provide a means of increasing homeownership and rental options for those who might not have the means to do so. Additionally, they provide funding to help update and repair safety issues with homes or rental units where the homeowner might not have sufficient capital to invest in a property.

How decisions are made

Funding for these grants is determined through different formulae as defined by HUD using US Census/ACS data.

The CDBG formula is a two-part formula that identifies a region's need for urban updating funds. Each region's data is processed through the calculation to identify how urgently funding is needed. The formula is intended to stack-rank regions to identify how much of the whole CDBG budget they are entitled to receiving. Data used for the CDBG includes:

Formula A:

- Population of the area
- Number of people in poverty
- Overcrowding of housing units

Formula B:

- Growth Lag (the amount a region is lagging in population growth compared to all regions)
- Number of people in poverty
- Age of housing in the region

Each data point is weighed and multiplied by the total CDBG allocation to compute the allocation amount for a given region. The higher of Formula A and Formula B is used to disseminate funds.¹¹ Note that once all regions have received their allocation rate, they are assigned a proportional amount based on the actual CDBG budget assigned by Congress.

The CAUR team processed sample data through these formulae using 2010 SF-1 Census data and other details available from example calculations.¹² For demonstration purposes, we used the 2019 CDBG allocation.¹³

After processing these details, we identified a potential CDBG allocation for Pierce County of \$7,487,845.

Effects of an undercount

Since the CDBG allocation is determined from strictly census values, we simulated a 10% undercount across the board for all Pierce County residents. This differs from previous examples. Here we simulated 10% of the population not returning their census at all, removing them from population counts and removing their

⁹ Community Development Block Grant Program Website https://www.hud.gov/program_offices/comm_planning/communitydevelopment/programs

¹⁰ Home Program Website <https://www.hud.gov/hudprograms/home-program>

¹¹ Housing and Urban Development Website https://www.hud.gov/program_offices/comm_planning/communitydevelopment

¹² CDBG Formula Targeting to Community Development Need, 2005. <https://www.huduser.gov/portal/publications/cdbgassess.pdf>

¹³ CD Appropriations Budget. Housing and Urban Development Website. https://www.hud.gov/program_offices/comm_planning/about/budget

household details from the formulae. In previous examples, we simulated an undercount or erroneous count in a specific table.

We regenerated the census numbers as though there was a 10% undercount in all categories. Using these new values, Pierce County's new allocation number is \$6,740,537. A reduction of nearly \$750,000.

To convey the value of such a reduction in funding, we identified local projects that were receiving CDBG funding in 2019 to show tangible changes in the Pierce County community. Some examples of these include:

Arlington Youth Campus:

- Funding:
 - o \$1,466,350 Low-Income Housing Tax Credits¹⁴
 - o \$500,000 CDBG¹⁵
- Provide housing opportunities for homeless youth and young adults in Tacoma/Pierce County. Also provides a 12-bed crisis center for youth aged 12-17.

1800 Hillside Terrace:

- Funding:
 - o \$37,744 Low-Income Housing Tax Credits¹⁶
 - o \$227,006 CDBG¹⁷
- Provide affordable housing options in Tacoma/Pierce County. Providing apartment units for residents and families <60% annual median income for the area. Includes 20% of units held for persons with disabilities, and 20% of units held for persons experiencing homelessness.

Single Family Residence Rehabilitation Program

- Funding:
 - o \$448,000 CDBG¹⁸
- Provides interest free loans to residents making <80% annual median income for the area. Funds to be used to perform repair and rehabilitation to their homes.

Associated Ministries – Paint Tacoma/Pierce Beautiful

- Funding:
 - o \$75,000 CDBG¹⁹
- Provides home painting services from volunteers to individuals making <80% annual median income in the area to beautify and maintain places of residence.

Vadis

- Funding:
 - o \$20,000 CDBG²⁰
 - o \$265,000 HOME²¹

¹⁴ Washington State Housing Finance Commission. <http://www.wshfc.org/mhcf/9percent/2019AllocationList.pdf>

¹⁵ Tacoma Lakewood HOME Consortium. https://cms.cityoftacoma.org/cedd/housing/consolidated_plan/PY_2019_20_AAP_Draft.pdf

¹⁶ Washington State Housing Finance Commission. <http://www.wshfc.org/mhcf/9percent/2019AllocationList.pdf>

¹⁷ Tacoma Lakewood HOME Consortium. https://cms.cityoftacoma.org/cedd/housing/consolidated_plan/PY_2019_20_AAP_Draft.pdf

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Ibid.

²¹ Pierce County Affordable Housing Funding Awards. <https://www.co.pierce.wa.us/DocumentCenter/View/73598/2018-Affordable-Housing-Awards>

- Provide employment services and life skills training in the Housing 4 Success partnership, focusing on eliminating barriers to employment and schooling, reducing homelessness and returns to homelessness for youth and young adults.²²

Redistricting

Why it's relatable for Pierce County residents

Effective governmental representation is a hallmark of democracy and allows for residents to have a point of access to government in decision-making at all levels. Small city government and large federal government representation is important for all residents as they get a say in how funds and services are allocated directly in their own neighborhoods. Often it is easy to focus only on federal government as the most-important, but there are multiple layers of government below federal that sometimes have a more dramatic impact on a resident's day-to-day life.

Redistricting is a complex process that varies from state-to-state. In Washington, redistricting is completed by an independent council that creates new congressional and legislative maps. The council follows a set of rules outlined in State law that dictates how districts are to be drawn, and census data plays an enormous part in defining districts. One important aspect of redistricting is ensuring that in drawing electoral districts, *to the extent possible, boundaries of...common interest are respected, and their division minimized.*²³ This means that the redistricting commission works to ensure that political, social, or other groups stay together in a voting district so as to avoid the potential of a vote being diluted in a district with few constituents of similar values.

How decisions are made

The Washington State Redistricting commission is entrusted to delineate maps for federal and state government elections. In doing so, they abide by the following criteria:²⁴
Districts must be drawn to:

- Encompass, as nearly as can be done (or is 'practicable') equal numbers of people.
- Comply with the Voting Rights Act to ensure that minorities have an equal opportunity to elect representatives of their choice.
- Make sure that parts of a district are not physically separated.
- Make sure that, to the extent possible, boundaries of cities, counties, neighborhoods and communities that have common interests are respected, and their division minimized.
- Make sure they do not favor or discriminate against any incumbent, candidate, or political party.

These rules dictate how districts are derived, and what the population make-up of a district must be.

The process of developing districts is complex in order to satisfy all of these rules, and will not be explained in depth here except for the requirement to make all districts of equal population. Impressively, congressional districts in Washington State were designed to be within +/-10 people per district, an incredibly accurate count of 0.0014% difference.²⁵ State legislative districts are designed with a difference of only 0.7%. The redistricting commission must identify Census blocks by population counts, and move them between districts such that they can satisfy the requirement of equal population.

²² Tacoma Lakewood HOME Consortium. https://cms.cityoftacoma.org/cedd/housing/consolidated_plan/PY_2019_20_AAP_Draft.pdf

²³ Washington State Redistricting Commission Website. <http://www.redistricting.wa.gov/faq.asp>

²⁴ Ibid.

²⁵ Washington State Redistricting Commission Website. http://www.redistricting.wa.gov/assets/Amended_Final_Plans_020112/Tables/CongDistrict.pdf

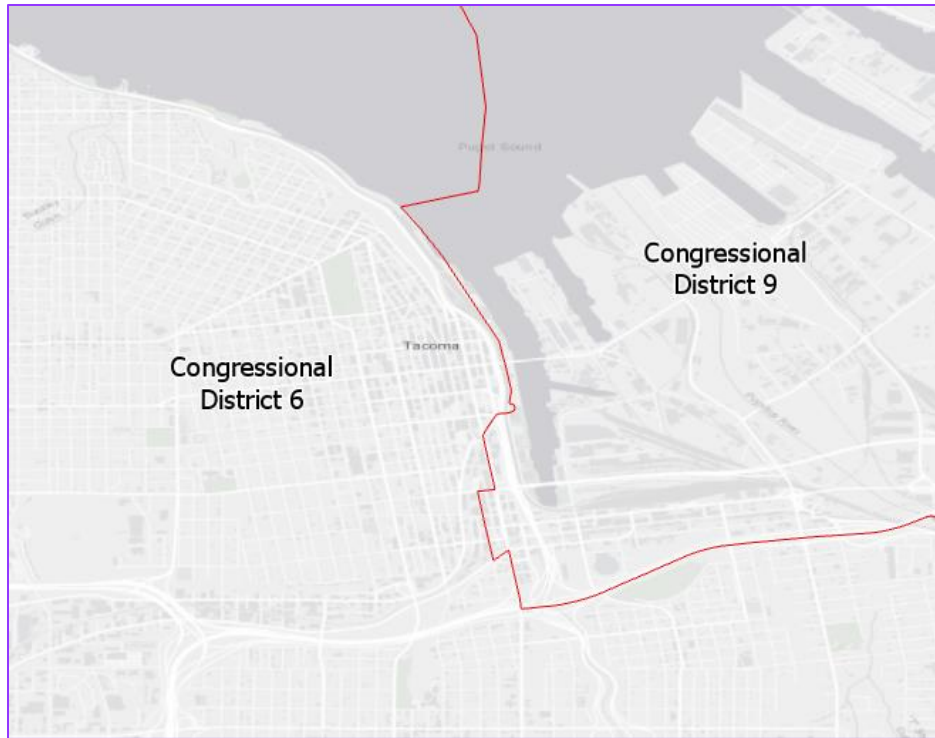
The Redistricting Commission will reconvene following the 2020 census to update and revise the congressional and legislative maps to reflect the new population data.

Effects of an undercount

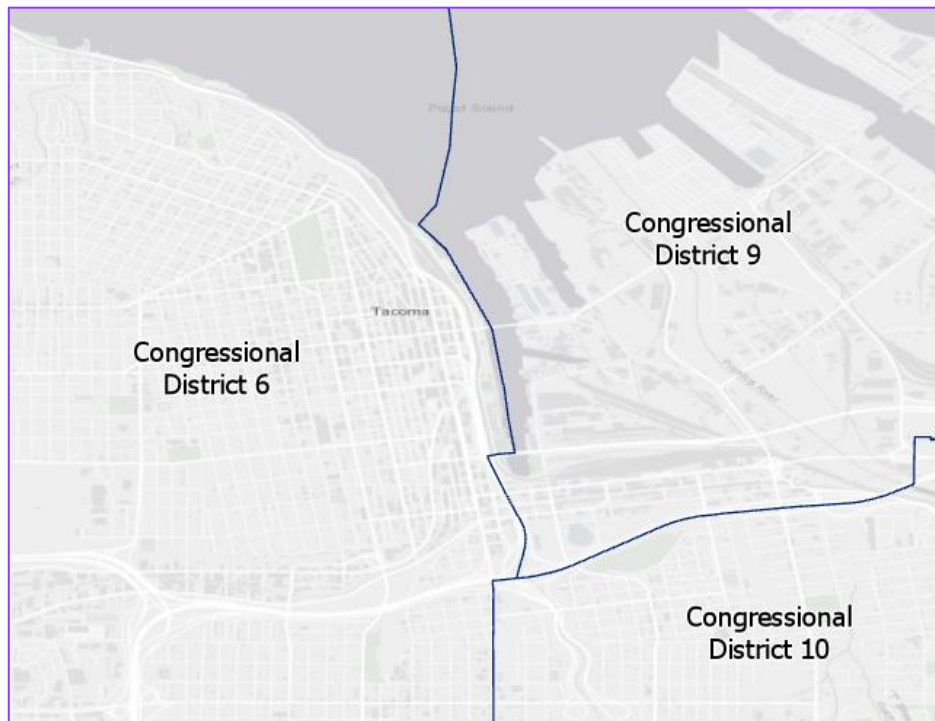
It is easiest to observe the effects of an undercount by evaluating the movement of district boundary lines over time. As we have seen, congressional districts are drawn with incredible population parity between districts, and census blocks (the smallest unit of area used by the US Census) are moved between districts as needed so that population counts can be equalized. An accurate census count is essential to satisfying that requirement. The redistricting commission must have the most accurate count of people per census block so that they can shuffle blocks in and out of districts to equalize populations.

A local example of this at work might be the Thea Foss Waterway. Following the 2000 Census, the area now known as the Thea Foss Waterway in Tacoma was included in a congressional district with Kent, Auburn, Federal Way, and Yelm. However, following the 2010 Census, and after some new apartment construction on the waterway, that area was shifted to a new district and is now included in a district with Tacoma, Ruston, and the Olympic Peninsula. While population is merely one component of the redistricting process, it is apparent that small changes in population might have drastic impact when it comes to redistricting.

Another way to consider the importance of Census participation and the effects of an undercount is to consider the impact that a 10% undercount might have on the government landscape. There are 10 congressional districts in Washington State, each with approximately the same number of constituents. A 10% undercount for the entire state would represent over 672,000 Washingtonians, and more importantly, might represent the loss of an entire congressional seat in the House of Representatives. This would weaken Washington's voice at the federal government level. At the State legislature level, Pierce County would lose a state house district with the equivalent of a 17% undercount.



5 - After the 2000 Census, the Thea Foss waterway was included in WA-9



6 - Following the 2010 Census, the Thea Foss Waterway was moved to WA-6

Tying it All Together

The decennial US Census is an incredibly important moment for all US residents. Census data is used to inform governmental fund allocation, congressional seat allocation and other administrative decisions, but Census data is also an important component of decision making process for private industries. The US Census provides the *only* count of population for the entire nation. The US Census data on income and demographics is incredibly valuable to public and private industry alike.

In reaching out to community partners, advocates should encourage both participation and accuracy in the 2020 Census. As we have shown here, inaccurate data is just as detrimental to decision-making as an incomplete census. Residents should be aware of the uses of census data and how the small amount of work required to fill it out can have implications beyond simply counting the population. Each census point is an important piece of information used in a variety of situations for a variety of beneficial reasons. The US Census lets you be counted and lets companies and government know where you are and what amenities you might need.

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