




Introduction to Data Visualization

Workshop 2





The **Data Skills Census Workshops** were organized and designed by the Washington Technology Industry Association (WTIA) to support Census 2020 outreach efforts. We are a trade association that combines the power of member companies to solve problems they cannot easily solve alone.

Our mission is to build a strong technology sector in a thriving community.

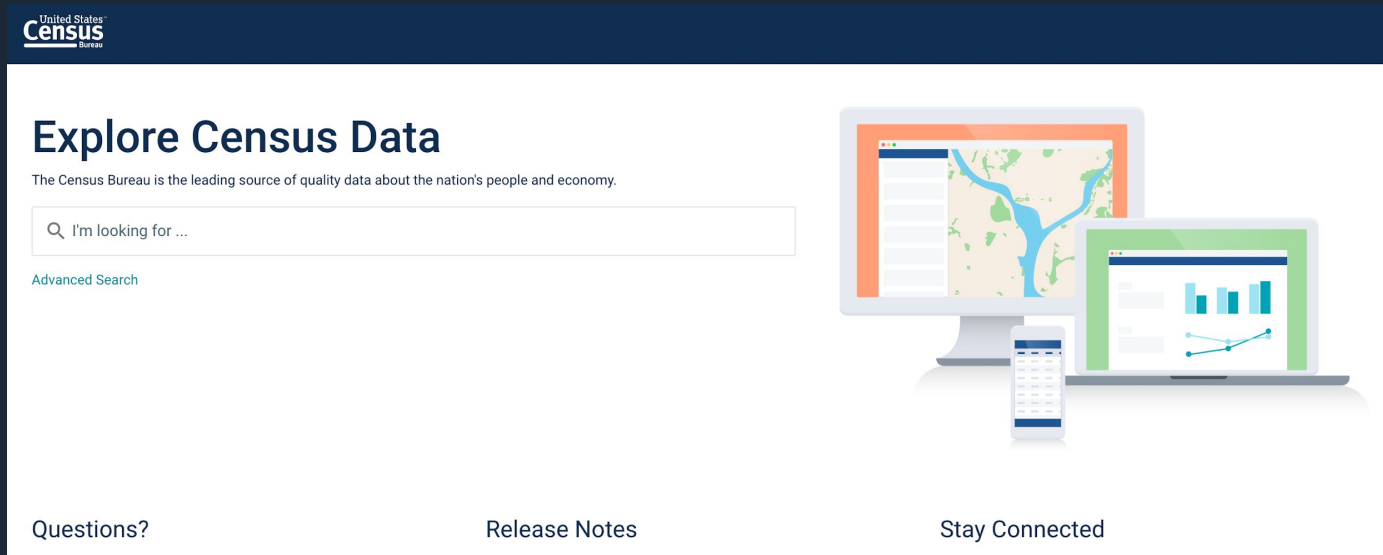


Agenda

- >> Participant Introductions
- >> Overview of Census surveys, data sets, and data tools
- >> Excel Overview
- >> Introduction to Data Visualization
- >> Classwork/Practice
- >> Questions?

Bureau Census Survey Data

- >> <https://data.census.gov/cedsci/>
- >> Most data are collected through American Community Survey (ACS)



poverty



Search

POVERTY STATUS IN THE PAST 12 MONTHS

Survey/Program: American Community Survey

TableID: S1701

Product: 2018: ACS 1-Year Estimates Subject Tables



CUSTOMIZE TABLE

	United States					
	Total		Below poverty level		Percent below poverty level	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Population for whom po...	319,184,033	+/-23,581	41,852,315	+/-232,949	13.1%	
AGE						
Under 18 years	72,163,269	+/-42,821	12,997,532	+/-124,405	18.0%	
Under 5 years	19,301,529	+/-24,899	3,758,704	+/-43,842	19.5%	
5 to 17 years	52,861,740	+/-34,904	9,238,828	+/-95,682	17.5%	
Related children o...	71,831,448	+/-45,438	12,688,856	+/-124,482	17.7%	
18 to 64 years	195,883,446	+/-26,712	24,030,690	+/-118,633	12.3%	
18 to 34 years	71,927,050	+/-39,774	11,172,384	+/-76,264	15.5%	
35 to 64 years	123,956,396	+/-52,279	12,858,306	+/-67,645	10.4%	
60 years and over	71,621,407	+/-66,123	7,054,887	+/-43,964	9.9%	
65 years and over	51,137,318	+/-22,004	4,824,093	+/-35,462	9.4%	

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POVERTY STATUS IN THE PAST 12 MONTHS

Survey/Program: American Community Survey TableID: S1701 Product: 2018: ACS 1-Year Estimates Subject Tables

Data Notes Selections 1 Geography Years 1 Topic Survey Code 123 Hide Filter Sort Transpose Table Margin of Error

Nation

Region

Division

State

County

Tract

Block Group

Block

Zip Code Tabulation Area (Five-Digit)

Elementary School District

Secondary School District

Unified School District

Congressional District

Puerto Rico

Rhode Island

South Carolina

South Dakota

Tennessee

Texas

Utah

Vermont

Virginia

Washington

West Virginia

Wisconsin

Wyoming

☐ All counties in Washington

☐ Benton County, Washington

☐ Chelan County, Washington

☐ Clallam County, Washington

☐ Clark County, Washington

☐ Cowlitz County, Washington

☐ Franklin County, Washington

☐ Grant County, Washington

☐ Grays Harbor County, Washington

☐ Island County, Washington

☒ King County, Washington

☐ Kitsap County, Washington

POVERTY STATUS IN THE PAST 12 MONTHS

Survey/Program: American Community Survey

TableID: S1701

Product: 2018: ACS 1-Year Estimates Subject Tables

	King County, Washington					
	Total		Below poverty level		Percent below poverty level	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	
Population for whom poverty status was determined	2,201,821	+/-2,969	204,028	+/-13,130	9.3%	
AGE						
Under 18 years	447,444	+/-1,396	50,910	+/-6,656	11.4%	
Under 5 years	127,695	+/-765	16,349	+/-2,819	12.8%	
5 to 17 years	319,749	+/-1,210	34,561	+/-5,109	10.8%	
Related children 18 to 17 years	445,979	+/-1,531	49,537	+/-6,687	11.1%	
18 to 64 years	1,465,501	+/-2,551	130,842	+/-8,124	8.9%	
18 to 34 years	574,190	+/-2,156	71,617	+/-5,866	12.5%	
35 to 64 years	891,311	+/-1,635	59,225	+/-4,705	6.6%	
60 years and over	414,323	+/-4,460	31,346	+/-3,096	7.6%	
65 years and over	288,876	+/-876	22,276	+/-2,752	7.7%	
SEX						
Male	1,104,705	+/-2,303	93,264	+/-6,235	8.4%	
Female	1,097,116	+/-1,730	110,764	+/-8,661	10.1%	
RACE AND HISPANIC OR LATINO						
White alone	1,390,116	+/-9,464	95,125	+/-7,199	6.8%	
Black or African American alone	147,639	+/-5,023	35,346	+/-7,236	23.9%	
Hispanic or Latino	13,611	+/-1,937	1,654	+/-736	12.2%	

POVERTY STATUS IN THE PAST 12 MONTHS

Survey/Program: American Community Survey TableID: S1701 Product: 2018: ACS 1-Year Estimates Subject Tables

Data Notes
 Selections
 1 Geography
 Years
 1 Topic
 Survey
 Code
 123
 Hide
 Filter
 Sort
 Transpose Table
 Margin of Error
 Restore Layout
 Download
 Print
 Share
 More Data
 Map

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SEX						

Spreadsheet

- >> A file or “workbook” may contain one or multiple spreadsheet(s)
- >> Spreadsheets are made of cells arranged in Rows (horizontal, numbered) and Columns (vertical, lettered)
- >> Can capture any information, but most of the times is used to capture numbers.
- >> Cells can be formatted to represent a variety of numerical values
- >> Can compute mathematical functions

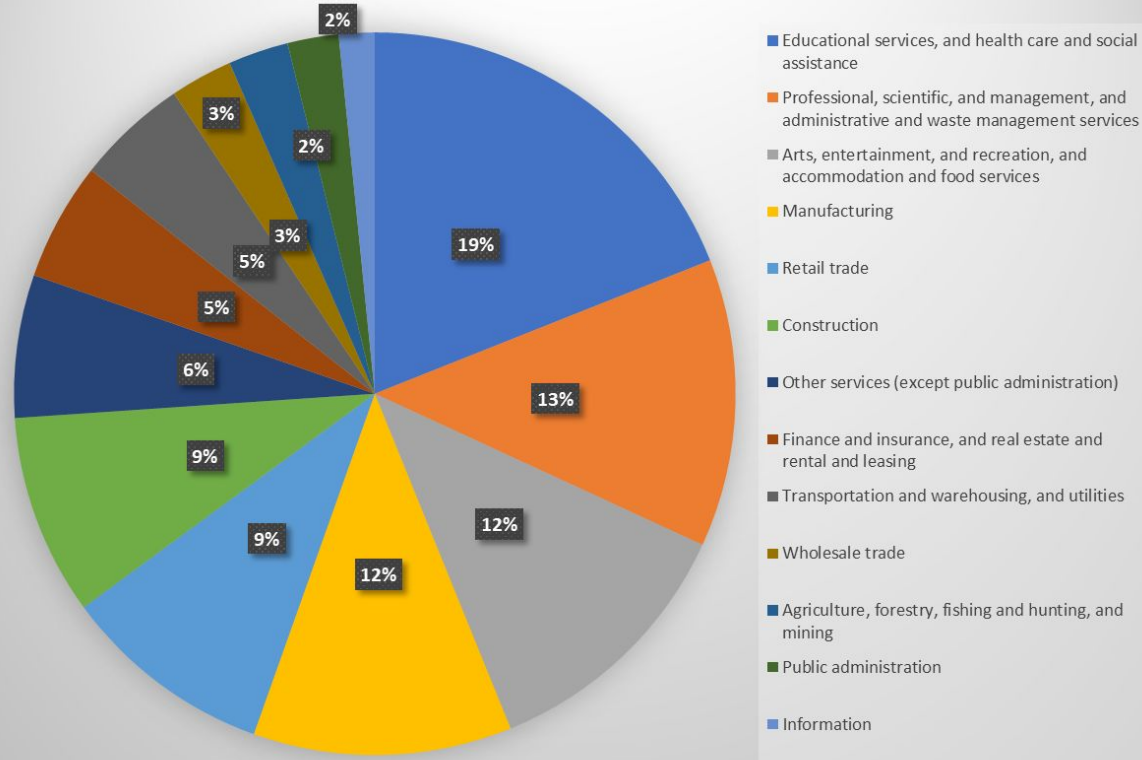
Spreadsheet Apps



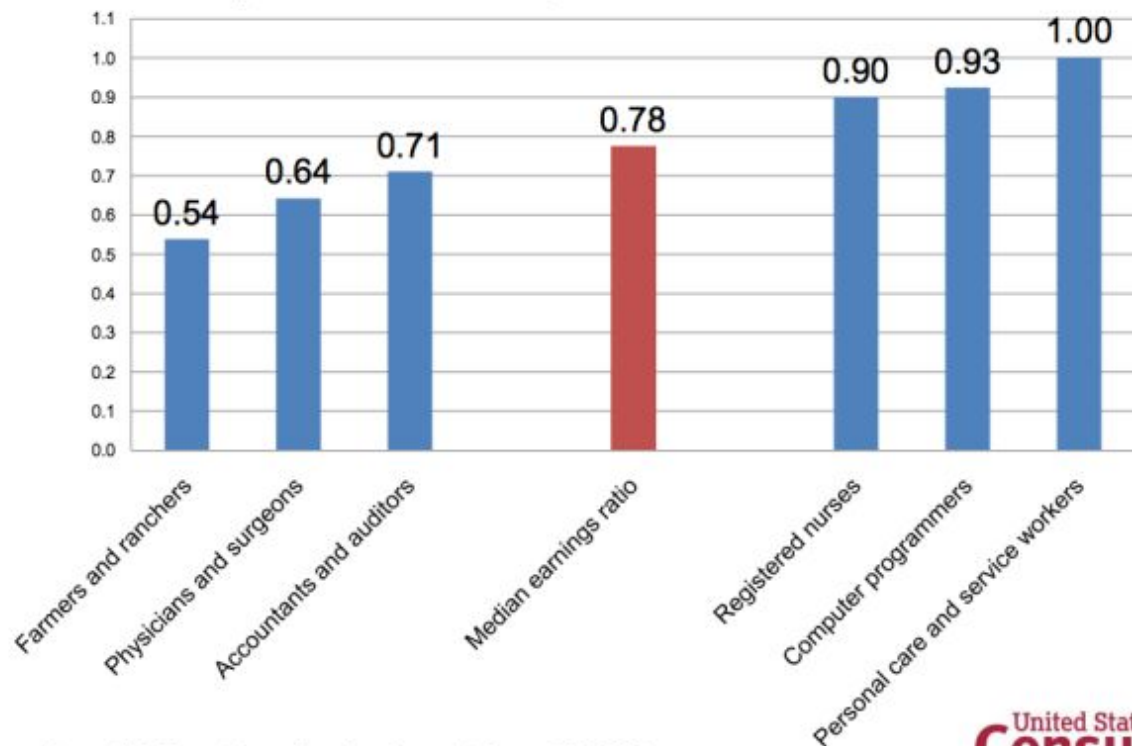
Data Visualization

- >> A translation of a set of data into charts and graphs, reflecting the information in easier-to-comprehend visuals.
- >> Must have at least 2 sets of information representing the row(s) and column(s)
- >> Most common and basic types of visualization
 - Pie chart
 - Bar chart
 - Line chart

In Which Occupations Do Immigrants Work?



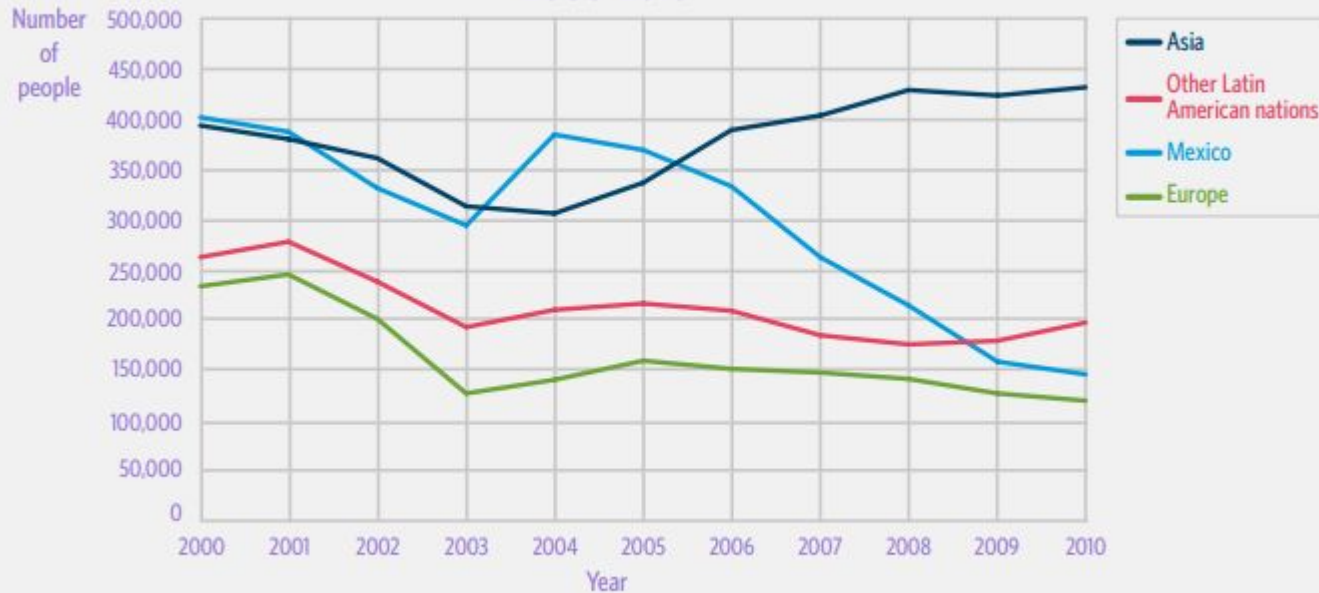
Ratio of Women's to Men's Median Earnings in Selected Occupations for Full-Time, Year-Round Workers: 2007-2009



Source: U.S. Census Bureau, American Community Survey, 2007-2009

United States[™]
Census
Bureau

Immigration Into the United States: 2000-2010



Data source: U.S. Census Bureau, American Community Survey, 2000-2010.

From data to charts

- » Data can be manually typed in, copied and pasted from a separate source, and downloaded through a csv file.
- » A group of information that falls within the same row or column is also called a series
- » Once data are ready to be visualized, highlight the series and select the appropriate type of chart and style
- » Customize as desired

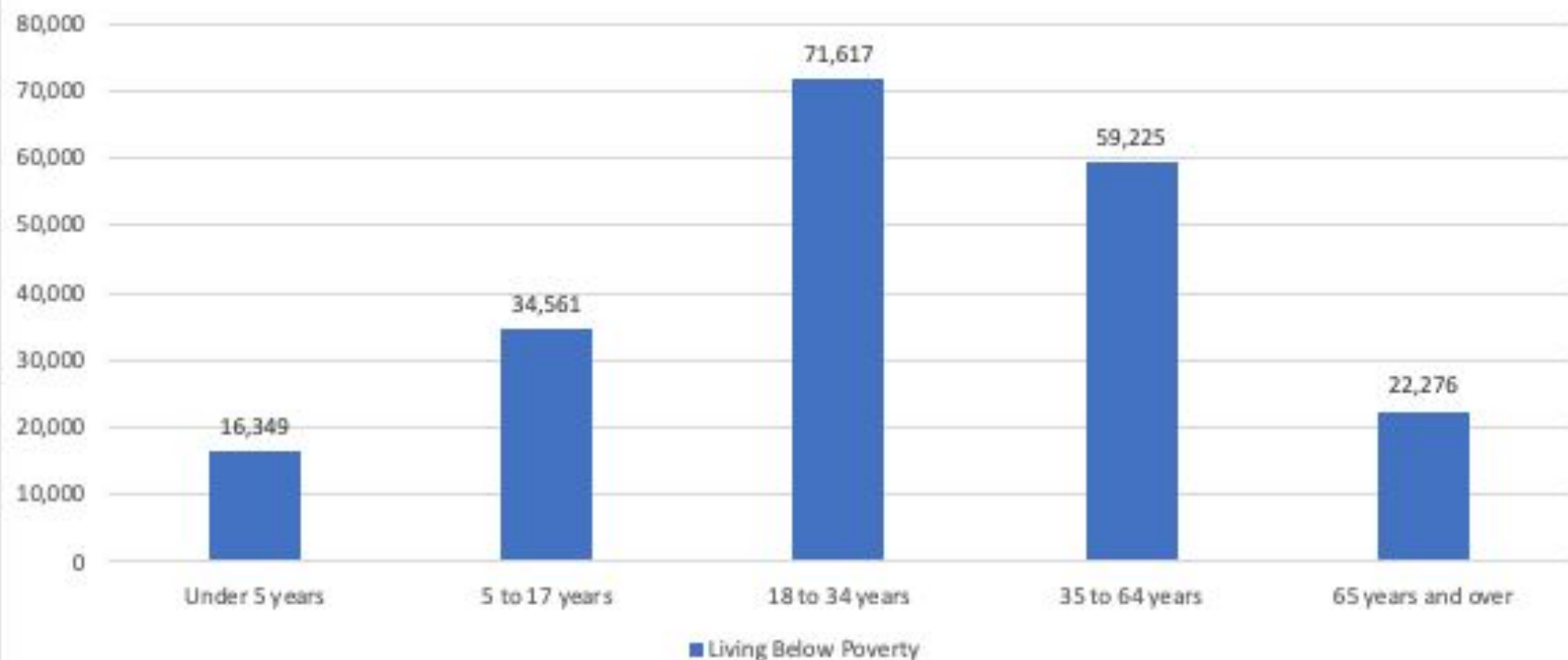
Common tools and functions

- » =SUM, aggregates the series
- » =AVERAGE, averages the series
- » -, +, /, * = subtract, add, divide, multiply
- » Select Data
- » Format Cells
- » Format Data Label
- » Format "Chart"

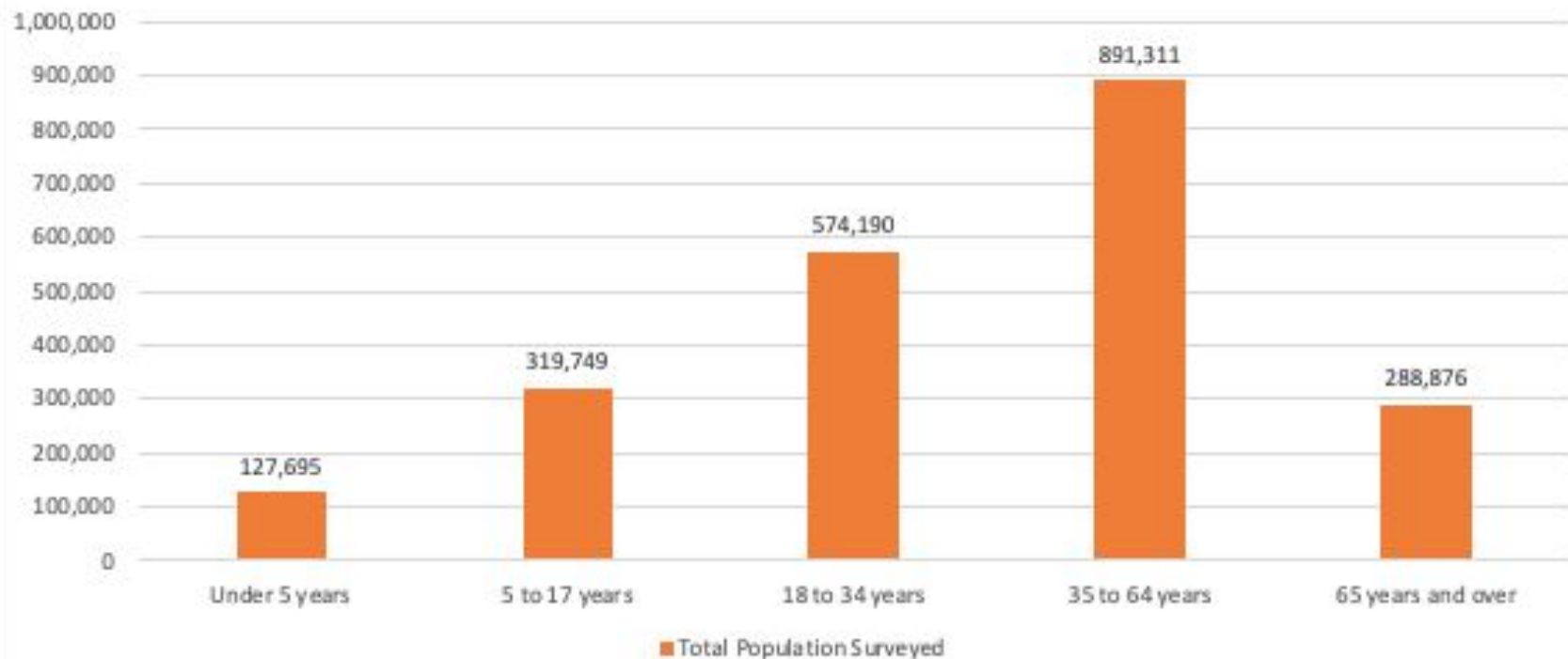
Practice Time

- » Using data from <http://bit.ly/2Rh2kEF>, create a bar chart for “Poverty by age group less than 5 years to over 65 years for King County, WA.”
- » Visualize the data for “below poverty level”
- » Pay attention to the breakdown of the age group
- » Added Challenge - Make a “second chart for total population”. One step further, a chart that has both (bar chart where the two overlaps)

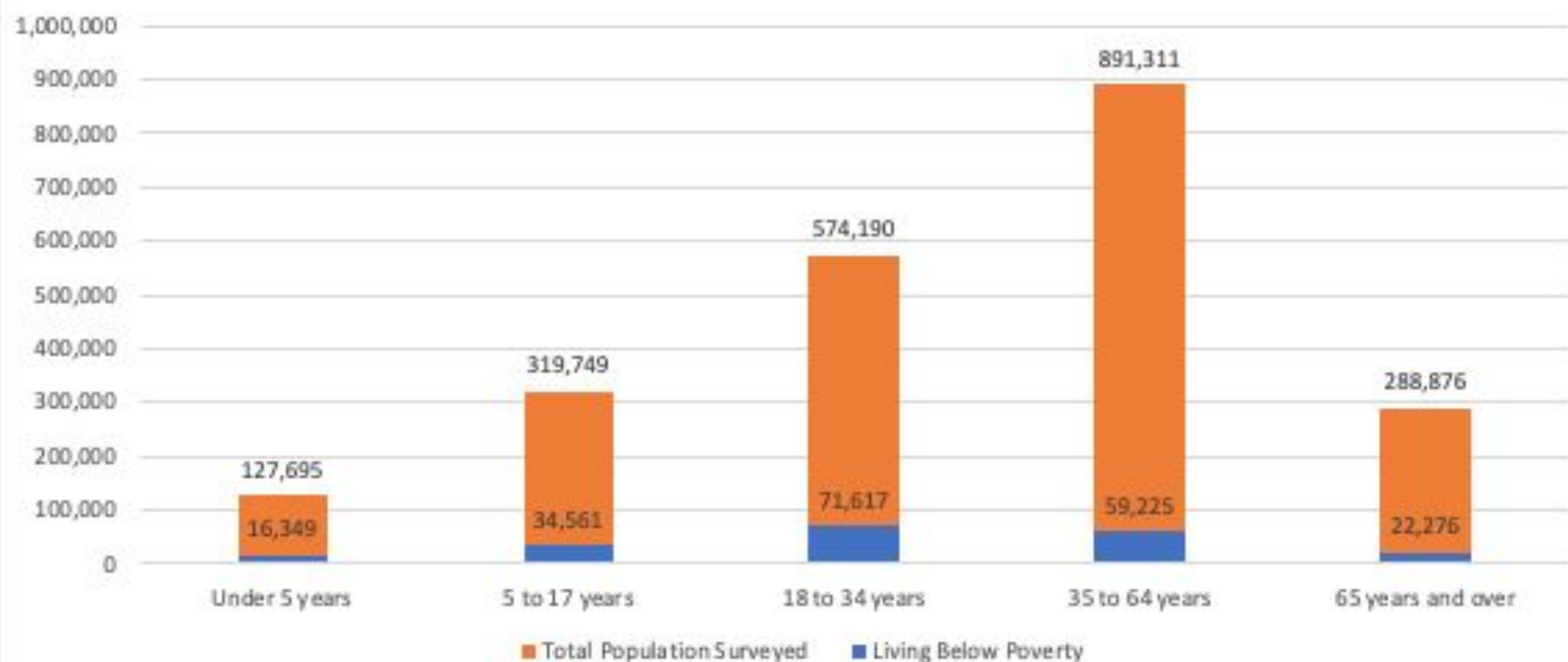
Population Living Below Poverty in King County, WA



Population Living Below Poverty in King County, WA



Population Living Below Poverty in King County, WA



Census Database quiz time!

Try finding this data in the Census Database

1. Find the number of Asian population in King County, WA in 2011 compared to 2018
2. What is the percentage of the Asian population to the entire King County's population in 2011 compared to 2018?
3. What is the male-female breakdown in percentage of the US population between the age of 18 to 24 years who enrolled in public colleges/graduate schools in 2018?
4. What is the estimate for the number of families in the state of Washington that make over \$200,000 or more in 2016?
5. What is the percentage of people in King County who commute to work via "drove alone", "bicycle", and "public transportation" in 2018?
6. What is the percentage of people with private employer-based health insurance in Seattle city in 2015?
7. What is the employment rate for ages 16-19, in the Seattle School District in 2010 compared to 2018?
8. What is the percentage of White alone, Black/African American alone, and Asian alone with a disability in Kent city in 2018?

Quiz answers

1. Find the number of Asian population in King County, WA in 2011 compared to 2018 [**399,090 in 2018 and 289,879 in 2011**] (**ACS Demographic and Housing Estimates**)
2. What is the percentage of the Asian population to the entire King County's population in 2011 compared to 2018? [**17.87% in 2018 and 14.72% in 2011. 3.15% difference**] (**ACS Demographic and Housing Estimates**)
3. What is the male-female breakdown in percentage of the US population between the age of 18 to 24 years who enrolled in public colleges/graduate schools in 2018? [**46.95% male - 53.05% female**] (**School Enrollment**)
4. What is the estimate for the number of families in the state of Washington that make over \$200,000 or more in 2016? [**178,404 families**] (**Income in The Past 12 Months in 2018 - Inflation Adjusted Dollars**)

Quiz answers

5. What is the percentage of people in King County who commute to work via “drove alone”, “bicycle”, and “public transportation” in 2018? [**60%, 1.7% and 14.6% respectively**] (**Commuting Characteristics by Sex**)
6. What is the percentage of people with private employer-based health insurance in Seattle city in 2015? [**64.41%**] (**Type of Health Insurance Coverage by Age**)
7. What is the employment rate for age 16-19, in the Seattle School District in 2010 compared to 2018? [**30.10% in 2010 and 32.00% in 2018, 1.90% difference**] (**Employment Status**)
8. What is the percentage of White alone, Black/African American alone, and Asian alone with a disability in Kent city in 2018? [**13.6%, 11.8% and 9.0% respectively**] (**Disability Characteristics**)

Review

- » Data must have at least 2 series to make sense
- » Select charts that reflect the information best
- » Utilize basic functions to convert data into the form that you need e.g. percentage to real value
- » Format cells to better reflect the information
- » Save your work intermittently

Questions?