

OHIO CENSUS

Student/Class Goal
Students often have questions about their community. Looking at population trends over the past decade can help them understand their community and make predictions about the future.

Outcome *(lesson objective)*
Students will use Ohio census data to solve problems, make comparisons, draw conclusions, and support predictions related to Ohio's population.

Time Frame
90 minutes or two 45 minute classes
30 minutes optional follow up activity

Standard *Use Math to Solve Problems and Communicate*

NRS EFL 2-4

Number Sense	Benchmarks	Geometry & Measurement	Benchmarks	Processes	Benchmarks
Words to numbers connection		Geometric figures		Word problems	2.18, 3.21, 4.25
Calculation	2.2, 3.2, 4.2	Coordinate system		Problem solving strategies	
Order of operations		Perimeter/area/volume formulas		Solutions analysis	4.27
Compare/order numbers	2.3, 3.3, 4.4	Graphing two-dimensional figures		Calculator	2.19, 3.22, 4.28
Estimation	2.4, 3.4, 4.5	Measurement relationships		Mathematical terminology/symbols	2.20, 3.23, 4.29
Exponents/radical expressions		Pythagorean theorem		Logical progression	
Algebra & Patterns	Benchmarks	Measurement applications		Contextual situations	
Patterns/sequences		Measurement conversions		Mathematical material	
Equations/expressions		Rounding		Logical terms	
Linear/nonlinear representations		Data Analysis & Probability	Benchmarks	Accuracy/precision	3.26, 4.33
Graphing		Data interpretation	2.15, 3.16, 4.20	Real-life applications	2.22, 3.27, 4.34
Linear equations		Data displays construction	2.16, 3.17, 4.21	Independence/range/fluency	2.23, 3.28, 4.35
Quadratic equations		Central tendency			
		Probabilities			
		Contextual probability			

Materials

Ohio Facts Handout
Math Standard Overhead
Finding Ohio Facts Activity Sheet
Census Data Follow-up Activity
Casio fx-260 calculators

Learner Prior Knowledge

Students will need some understanding of the U.S. census. Students will need some prior knowledge with median and reading charts to obtain data to answer questions and make comparisons. They should have mastered subtraction, greater or less than, and be familiar with percentages. Vocabulary: urban, rural, households, educational enrollment, attainment, current census year and previous census year

Instructional Activities

Step 1 - Ask what the students know about the United States census. The U.S. Census Bureau provides the following background information: The United States Constitution requires a census every 10 years to determine how many seats each state will have in the U.S. House of Representatives. But community leaders use the census for everything from planning schools and building roads to providing recreational opportunities and managing health-care services. Students may remember the 2010 census. They may have filled out the short form answering seven questions: name, sex, age relationship, Hispanic origin, race, and housing tenure (whether the home is owned or rented). About 83 percent of households filled out the short form. The long form covers about 34 subjects including education, ancestry, employment, disability, and home heating fuel. Only 1 in 6 households received the long form. Census data is compiled for the country, for states, for counties, and for cities. For this activity we will use Ohio census data.

Pass out the *Ohio Facts* Handout.

READING STANDARD EXTENSION Students might want to explore issues about population change, race, age, family structure, housing, etc. These kinds of articles can be found at [American Fact-Finder](#) or the [Fannie Mae Foundation](#). To find relevant information in these articles, reading strategies on main idea and details can be used.

Step 2 - Explain that to use census data students will need to use both reading and math. Review strategies for reading the 2000 and 2010 census table: What are the headings of the columns? (subject, previous census year, current census year). What bold type categories divide the rows into sections? (Total population, age, median age, urban and rural residence, households, language spoken at home, school enrollment, educational attainment, housing characteristics). Make sure students understand the meaning of the vocabulary used: median age, urban/rural/farm, enrollment/attainment, preprimary, elementary, graduate school, bachelor's degree or higher.

Step 3 – Show students how they need to use reading and math concepts to answer some general questions about the Ohio census. Begin with a knowledge question: What was the total population of Ohio in the past census year? To answer this question you need to use the heading of the column to obtain the necessary data. You would also need to use your knowledge of mathematical concepts, number symbols and place value, to read the number correctly.

Step 4 - Refer to the math standard. Ask students what data would you need to compare the total population in the past census year to the total population in the current census year. What mathematical concepts would you need to use? Match the information with an appropriate component of performance on the math standard overhead. Model how students would select the data and use subtraction to compare the total population of the past and current census year. Model how they could communicate results a variety of ways: a number, a greater than expression using a math symbol $>$, even a line graph. The goal is to become familiar with the format and data.

Step 5 - Continue the discussion by asking students how community members might use Ohio census data? Some answers might include determining the need and location for schools, roads, hospitals, clinics, libraries, day-care and senior centers, playgrounds, job training programs. (Every year over \$100 billion in federal funding and even more in state funds are allocated to localities based on census records.) Have students determine the data that would be used to determine different needs. For example, what census data would you need to determine the need for senior centers in Ohio? Preprimary schools? What math skills would be used? How can community members determine what percentage of the population live in households with their own children less than 18 years of age? Model how to choose correct data and set up this problem. If time permits discuss how median age is determined and how average family size is determined “How can there be 4.2 family members?”

Step 6 - How can businesses use Ohio census data? Some answers might include determining the need and location for supermarkets and shopping centers, housing, factories and offices, movie theaters, and restaurants. Businesses may look at the available workforce in an area to match education and skills with jobs and then determine the training needs of potential workers. Explain how some questions can be answered only with an approximate number. Consider how a business could estimate how many adults might be in the workforce in Ohio after the current census year. Businesses might consider the total population in Ohio between the ages of 20-59, the increase/decrease in the population from the previous census, and the percent of the population not in the workforce, etc. Is all the needed data in this Ohio census table? Is it possible to determine an exact number? Relate this to the math standard and discuss the need to draw conclusions and make predictions using reasonable estimates.

TEACHER NOTE Depending on your group's familiarity with the Math Standard, this may be a lot of information for them to process. Use your professional wisdom to determine how much detail to present.

Step 7 - Students will complete a [Think-Pair-Share](#) as they work on the *Finding Ohio Facts* Activity Sheet. Explain that students will use Ohio census data to answer questions. Many questions will compare census data from the past and current census year. Discuss why it would be beneficial for community members and businesses to compare data from the most recent census to data from the last census.

Step 8 - The follow-up activity helps students recognize generalizations that cannot be supported by the census data. Have students complete the first questions of the *Census Data* Follow-up Activity. This can be done individually. Go over this question with the class. Have the students give examples of other generalizations that may or may not be true, but cannot be supported by the available data. Students work in groups or in pairs on question two. They exchange papers with another group to determine the statements that can be supported by the data and the statement that cannot be supported by the data. This activity provides students with additional practice using Ohio census data. They need to draw conclusions that are both true and false. They will gain

experience in determining the accuracy of statements made about census data.

Assessment/Evidence *(based on outcome)*

Teacher observation during class discussion.

Finding Ohio Facts Activity Sheet, *Census Data* Follow-Up Activity

Teacher Reflection/Lesson Evaluation

Not yet completed.

Next Steps

Students can determine the median age or the average family size of the members of their class. Students will use the math standard and census data from their city in classroom activities.

Technology Integration

Ohio Facts <http://factfinder.census.gov/home/en/kids/funfacts/ohio.html>

2010 Census <http://www.census.gov/>

American Fact-Finder <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>

Fannie Mae Foundation <http://www.fanniemaefoundation.com/>

Think-Pair-Share http://literacy.kent.edu/eureka/strategies/think_pair_share.pdf

Ohio Census Data 2010 <http://www.uscensus2010data.com/39-ohio-census-2010-data>

Purposeful/Transparent

Ohio census data is real data. Students can relate the data to what they know about their own community and what they know about Ohio from what they read/hear in the news.

Contextual

Students use a handout from the U.S. census to obtain information about Ohio. They can choose to use a calculator and a variety of problem solving strategies.

Building Expertise

Students may know how to solve the math problems. This activity helps them understand how they can use the math standard and real data to answer questions and solve problems. Other students may need more practice with calculating percentages.

Use Math to Solve Problems and Communicate

COPS

Understand, interpret, and work with pictures, numbers, and symbolic information.

Apply knowledge of mathematical concepts and procedures to figure out how to answer a question, solve a problem, make a prediction, or carry out a task that has a mathematical dimension.

Define and select data to be used in solving the problem.

Determine the degree of precision required by the situation.

Solve problem using appropriate quantitative procedures and verify that the results are reasonable.

Communicate results using a variety of mathematical representations, including graphs, chart, tables, and algebraic models.

Give examples of how you use each component of performance to answer the above questions about the Ohio census.

Ohio Facts



Capital: **Columbus**
 Date of Statehood: **March 1, 1803**
 Flower: **Scarlet Carnation**
 Tree: **Buckeye**
 Bird: **Cardinal**

SUBJECT	1990	2000¹	2010²
Total Population	10,847,115	11,353,140	11,536,504
Male	5,226,340	5,512,262	5,632,221
Female	5,620,775	5,840,878	5,910,424
AGE			
Under 5 years	785,149	754,930	737,279
5 to 9 years	795,135	816,346	736,598
10 to 14 years	766,822	827,811	757,772
15 to 19 years	793,919	816,868	821,356
20 to 24 years	795,137	728,928	751,292
25 to 59 years	5,007,012	5,444,768	5,498,832
60 to 84 years	1,765,911	1,786,693	2,012,501
85 years and over	138,030	176,796	227,015
MEDIAN AGE	33.3	36.2	38.8
Under 18 years	2,799,744	2,888,339	2,734,151
Male	1,434,739	1,477,885	1,334,266
Female	1,365,005	1,410,454	1,399,885
URBAN AND RURAL RESIDENCE			
Total population	10,847,115	11,353,140	11,536,504
Urban population	8,039,037	8,780,237	9,299,425 ³
Rural population	2,808,078	2,572,903	2,237,079 ³
Farm population	198,914	150,871	75,700 ⁴

Ohio Facts

SUBJECT	1990	2000 ¹	2010 ²
HOUSEHOLDS			
Families (family households)	2,895,223	2,993,023	2,947,214
With own children under 18 years	1,383,269	1,409,912	1,306,350
Average family size	3.12	3.04	3.07
LANGUAGE SPOKEN AT HOME			
Persons 5 years and over	10,063,212	10,599,968	10,805,366
Speak a language other than English	546,148	648,493	10,124,018
SCHOOL ENROLLMENT			
Persons 3 years and older in school	2,798,226	3,014,460	3,010,651
Preprimary school	198,740	367,623	336,834
Elementary or high school	1,880,830	1,994,444	2,315,726
College or graduate school	718,656	652,393	823,568
EDUCATIONAL ATTAINMENT			
Percent high school graduate or higher	76	83	87
Percent Bachelor's degree or higher	17	21	24
HOUSING CHARACTERISTICS			
Total housing units	4,371,945	4,783,051	5,094,314
With no telephone service	191,994	97,717	130,524

¹All data is from US Census Bureau, Ohio Fun Facts. <http://factfinder.census.gov/home/en/kids/funfacts/ohio.html>

²All data is from Ohio Census Data 2010, Sex, Age & Race, and Household, Education & Immigration, Unless stated otherwise.

[Ohio Census 2010 Data](#)

[Ohio2010 Household, Education & Immigration Demographics](#)

³Data is from USDA Economic Research Service.

[Ohio Fact Sheet: OH agriculture income population food education employment unemployment federal funds farms top commodities exports counties financial indicators poverty food security farm income Rural Nonmetro Urban Metropolitan America USDA organic Census](#)

⁴Data is from Ohio Farm Bureau

[Frequently Asked Questions > Education & Reference > Ohio Farm Bureau Federation \(OFBF\)](#)

Finding Ohio Facts

Use the 2000 and 2010 Census data to answer the following questions.

1. In the current census year, were there more males or more females over the age of 18? How many more?
2. In the current census year, were there more men or women in the total population? How many more?
3. What could account for the difference in the over 18 population and the total population?
4. By how much did the average family size increase or decrease between the previous and current census year?
5. Which population groups decreased in numbers between the past and current census year? In your opinion why might this have occurred? Is there a relationship between the groups that decreased in population?
6. What percentage of Ohio's population lived on a farm in previous census year?

7. What data do you need to determine how many people in Ohio age 25 years and over were not high school graduates in the current census year?

8. What additional data would you need to best understand how many adults in Ohio do not have a high school diploma?

9. In the current census year, approximately what percent of the total population is over 60 years old?

10. Determine three job opportunities that might be available in Ohio because of the population trend between the previous and current census year. Explain what population data could determine each job opportunity.

11. What types of retail items or businesses might have had decreasing sales during the past census year. What retail items or business might have seen an increase in business during the past census year? What data could be used to support your conclusions?

Census Data Follow-up Activity

What data from the *2000 and 2010 Census* could be used to support the following statements? Which statement(s) could not supported by the *2000 and 2010-census* data?

Children are starting school earlier, but fewer people are attending college.

People are living longer.

People are smarter.

Pair/group activity: Using the *2000 and 2010 Census* data, write three statements. Write two statements that could be supported with the data and write one false statement that can not be supported with the data. You can write mathematical relationships, or you can draw conclusions from the data. Your group will exchange statements with another group. The other group will need to determine the data from the *2000 and 2010 Census* that could be used to support two of your statements and which statement may be true but can not be supported by the *2000 and 2010 Census* data.