# Mining Ore Not? City Population Density as a Result of the Mining Industry

Students learn how the decline of mining opportunities in rural areas contributed to the increased population of the major cities in Arizona.

<table>
<thead>
<tr>
<th>National Geography Standards</th>
<th>Arizona Geography Strand 4</th>
<th>Arizona Math Standard</th>
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</thead>
<tbody>
<tr>
<td><strong>ELEMENT FOUR: Human Systems</strong></td>
<td><strong>Concept 4: Human Systems</strong></td>
<td><strong>Strand 2: Data Analysis, Probability, and Discrete Mathematics.</strong></td>
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<td>9. The characteristics, distribution, and migration of human populations on Earth’s surface.</td>
<td><strong>Grade 4</strong></td>
<td><strong>Concept 1: Data Analysis</strong></td>
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<td></td>
<td>PO 1 Describe the factors (push and pull) that have contributed to the settlement, economic development (e.g., mining, ranching, agriculture, and tourism), and growth of major Arizona cities.</td>
<td><strong>Grade 4</strong></td>
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<td>PO 5 Describe the major economic activities and land use patterns (e.g., agricultural, industrial, residential, commercial, recreational, harvesting of natural resources) of regions studied.</td>
<td><strong>PO 6 Formulate predictions from a given set of data.</strong></td>
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<td><strong>Grade 5</strong></td>
<td><strong>PO 7 Solve contextual problems using graphs, charts, and tables.</strong></td>
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<td>PO 2 Explain the effects (e.g., economic, cultural, environmental, political) of human migration on places.</td>
<td><strong>Grade 5</strong></td>
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<tr>
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<td><strong>PO 5</strong></td>
<td><strong>PO 6 Formulate the reasonable predictions from a given set of data.</strong></td>
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<td><strong>PO 8</strong></td>
<td><strong>PO 7 Solve contextual problems using graphs, charts, and tables.</strong></td>
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## Overview

This lesson examines how the rise and fall of mining communities impacted Arizona populations.

## Purpose

In this lesson students will gain a better understanding of how migration patterns of displaced miners bankrupted some towns while...
other cities prospered and grew from the same populations.

**Materials**
- *Mining Ore Not* article
- Arizona distance chart (overhead of distance chart is helpful yet optional.)
- Mining Ore Not: Arizona Mining Towns map
- Paper, pencil, colored pencils, markers, crayons, rulers
- *What’s at the end of the Road?* worksheet
- *What’s at the end of the road?* answer key
- PowerPoint on Arizona Mining: Pictures from the Past

**Objectives**
The student will be able to:

1. Measure the distance from one town to another town using a map scale as a conversion tool.

2. Read a chart and complete a chart.

3. Speculate as to which major Arizona cities were reasonably close for miners to migrate after they were displaced due to mine closures.

4. Create general migration “zones” on a map of Arizona

**Procedures**

**SESSION ONE:**
1. Have the students read the provided historical background. If possible, show the PowerPoint on Arizona Mining: Pictures from the Past.

2. Distribute Mining Ore Not: Arizona Mining Towns map. Discuss the cities that are mining towns and those that are not.

3. Pass out *What’s at the end of the Road?* worksheet and the Arizona Distance Chart.

Then have students work in groups to measure distances between towns and major cities in Arizona that were not filled in on the worksheet. Complete the first one with students.

**SESSION TWO:***
1. When the students have completed part one of *What’s at the end of the Road?* worksheet, have them organize the data for their zone maps by using the “Closest City” column (for instance, all Phoenix cities or all Tucson cities).

2. Have students mark the migration group cities (the organized data) on the map color coded by city. For example, all of the cities that are demographically closest to Phoenix might be circled, marked with an “X,” or highlighted in blue. Then the students will create “zones” of possible migration by encompassing all the cities of the same color into a “zone.”

3. Have the students complete Part Two of the *What’s at the end of the Road?* worksheet.

**Assessment**

**Math Assessment:** Assess the students’ “zone” maps for clarity and reasonableness. (Remember, the students’ zone will not be exactly the same, reasonableness is key.) Check that the data is organized logically (3 pts.) and color coded properly (1pt.). Did the students measure correctly (2pts.) and record correct answers on the chart (1pt.)? Did the students select a city based on distance to the other city (3 pts.)? There is a total of 10 points with 8 points considered mastery.

**Geography Assessment:** Part Two of the student worksheet can be graded. Allow 4 pts. for questions #1, 2 pts. for question #2, and 4 pts. for question #3. There is a total of 10 points with 8 points considered mastery.
Extensions
Students can use the metric key to measure distance and begin to describe the relationship between metric and standard measurements.

Have students create a rule or formula that would allow them to convert any inch or centimeter measurement to a mile or kilometer distance.

Have students research what industries in Arizona flourished due to an influx of displaced mine workers.

Sources
A special thanks to Kay McClain, Vanderbilt University

Data and history sources:
http://www.azgs.state.az.us
http://www.indo.com/distance/

Photos:
Western History/Genealogy Department, Denver Public Library
http://memory.loc.gov/ammem/award97/codhtm I/copyres.html

Center of the American West
http://www.centerwest.org/futures/development /development_az.html