

## **Data Collection, Mapping, and Population Pyramids in a Cemetery**

### **Overview:**

This lesson is not specific to an Outdoor School but can be conducted outdoors in an urban or rural setting. Students will collect data from the headstones of a local cemetery and then create a grid map of the placement of the burial places for possible use by visitors to the cemetery. Students will also create two population pyramids; one from data collected at the cemetery and another one from data provided by the teacher. Analysis of the pyramids will take place with rubric scoring for both creation and analysis.

### **National Geography Standards:**

1.2 The acquisition and organization of geospatial data to construct geographic representations.

15.1 The characteristics of a physical environment provide opportunities for and impose constraints on human activities.

### **Oregon Geography Content Standards:**

6.15. Explain how people have adapted to or changed the physical environment in the Western Hemisphere.

### **Connections to Common Core: Math**

7.SP.2 Use random sampling to draw inferences about a population. Use data from a random sample to draw inferences about a population with an unknown characteristic of interest.

### **Objectives:**

In completing this activity, students should be able to accurately collect data to plot on a grid map, and create and analyze population pyramids.

**Grade Levels:** 6-8 (with extension to higher grades or Talented and Gifted Programs)

**Time:** Outdoor in cemetery: approx. 1 hour (would vary with the size of the cemetery).

In the classroom: 1-2 periods

**Materials:**

Cemetery Data collection chart (Appendix 1)

Clipboards with pencils

Large floor paper (rolled paper) for mapping grid

Markers for floor map

Data from Unknown Source form (App. 2)

Population Pyramid template (App. 3) -2 per group

Population Pyramid Assignment & Rubric (App. 4)

**Optional Materials:**

Sample Population Pyramid with definition (App. 5)

**Background:** Students need to be proficient with cardinal directions before visiting the cemetery in order to correctly plot the headstone information on the grid map.

Before entering a cemetery, students must be taught proper cemetery etiquette. See the following website for suggested etiquette guidelines.

<http://iacpinc-org.dbprginc.org/cemeteryetiquette.htm>

Note to teachers: The Unknown Source data is a list of the 9/11 victims on Flight 77 that crashed into the Pentagon. Students will most likely want to know this information at the end of their pyramid analysis. Be prepared to answer multiple questions on this subject.

Teachers may also consider enlarging the Cemetery Data Collection form to whatever size your school copier could accommodate, providing more space for students to write.

## **Procedures:**

- Divide students into groups of 2-4 (varies on the size of the cemetery).
- Walk or ride a bus to a nearby cemetery.
- Determine the cardinal directions of your cemetery for data collection purposes.
- Determine which row each group will start on.
- Have students start on the west side and work east across the row.
- Collect data on the Cemetery Data Collection form (more than one per group may be needed).
- Be sure to collect data from all the headstones. Don't forget someone.
- Upon returning to the classroom, each group will take turns putting the names of the deceased in the proper location on the large paper grid on the floor.
- When not writing on the grid, students will use their data and the additional data supplied to create two population pyramids; one of the cemetery and one from the unknown source supplied data.
- Students will construct a population pyramid on the provided template using the data collected from your cemetery headstones. Use two different colors for the genders. Use data from other groups to have at least 30-40 people from the cemetery to graph on your pyramid.
- Students will construct a second population pyramid from the table of unknown source information provided by your teacher.
- Once the pyramids are complete, students will work in their groups to compare, analyze and make inferences from the two pyramids by answering a set of provided questions.

**Assessment:** The population pyramids will be assessed on a rubric addressing the communication of the information (neatness of the pyramids and conventions of writing) and the application of the information (reflection of correct data values and completeness of written responses).

**Extensions and/or Adaptations:**

- This lesson could be extended by having students collect age data from their immediate and extended family living in the area and then create a classroom population pyramid from the data.
- For Special Education and English Language Learners: Students can be grouped with more capable students to overcome reading and writing difficulties.
- For Talented and Gifted or higher grades: Students could research burial practices of Native Americans or other locations around the US and the world. This ties in with the standard of adapting to the physical environment. An informational comparison would be used to demonstrate the research done and scored on a writing rubric. Students could also create an original population pyramid (without a template) which would require them to research their own list of data and to determine appropriate scale.
- For Younger grades: Modify the amount of data collected and then have students create a bar graph of age at death, comparison of genders, or other data collected.

**Sources:**

International Association of Cemetery Preservationists. "Cemetery Etiquette."

<http://iacpinc-org.dbprginc.org/cemeteryetiquette.htm>. Accessed 10 August 2016.

Slide Serve. "Population Pyramid."

<http://www.slideserve.com/deo/blank-population-pyramid>.

Accessed 11 August 2016.

USA Today. "American Flight 77 Victims at a Glance."

<http://usatoday30.usatoday.com/news/nation/2001/09/12/victim-capsule-flight77.htm>. Accessed 11 August 2016.



Appendix 2

**Data from Unknown Source for Second Population Pyramid**

<u>Name</u>	<u>Gender</u>	<u>Age at Death</u>	<u>Name</u>	<u>Gender</u>	<u>Age at Death</u>
Paul A.	M	32	Dora M.	F	45
Bernard B.	M	11	Chris N.	M	38
Charles B.	M	51	Barbara O.	F	45
Suzanne C.	F	42	Ruben O.	M	39
Sarah C.	F	65	Robert P.	M	63
Asia C.	F	11	Lisa R.	F	42
James D.	M	58	Mari S.	F	35
Rodney D.	M	11	Hilda T.	F	62
Barbara E.	F	58	Sandra T.	F	31
Joe F.	M	39	Leslie W.	F	45
Bud F.	M	62	Vicki Y.	F	43
Darlene F.	F	63	John Y.	M	71
Charles F.	M	45			
Zoe F.	F	8			
Dana F.	F	3			
Stanley H.	M	68			
Michelle H.	F	57			
Bryan J.	M	48			
Jake J.	M	43			
Ann J.	F	49			
Karen K.	F	40			
Chandler K.	M	29			
Jennifer L.	F	38			
Ken L.	M	49			

# Population Pyramid

Male		Female
	95+	
	90-94	
	85-89	
	80-84	
	75-79	
	70-74	
	65-69	
	60-64	
	55-59	
	50-54	
	45-49	
	40-44	
	35-39	
	30-34	
	25-29	
	20-24	
	15-19	
	10-14	
	5-9	
	0-4	





Group Names: \_\_\_\_\_ Period: \_\_\_\_\_

### Population Pyramid Assignment

- **Construct a population pyramid on the provided template using the data collected from your cemetery headstones. Use two different colors for the genders. Use data from other groups to have at least 30-40 people from the cemetery to graph on your pyramid.**
- **Construct a second population pyramid from the table of information provided by your teacher.**
- **Compare and contrast the two pyramids by answering the following questions.**

1. Describe the shape of your cemetery pyramid.

---

---

---

---

---

2. Describe the shape of your unknown pyramid.

---

---

---

---

---

3. What are some similarities between your two pyramids?

---

---

---

---

---

4. How are the pyramids different?

---

---

---

---

---

5. What conclusions could you draw about the causes of death for your cemetery pyramid?

---

---

---

---

---

6. What conclusions could you draw about the causes of death for your unknown pyramid?

---

---

---

---

---

7. Would your conclusion change if you knew that all of your unknown subjects died on the same day? How would you possibly explain that?

---

---

---

---

---

---

## Rubric: Population Pyramid Assignment

Criteria	1-      1      1+	2-      2      2+	3-      3      3+	4-      4      4+
<p><b>Communication</b></p> <p>- Construction of Population Pyramid</p> <p>- Spelling, sentence structure, mechanics of answers are correct and effective</p>	<p>Pyramid is very messy and difficult to read, or largely incomplete</p> <p>Responses have several errors in terms of structure and mechanics or are incomplete sentences</p>	<p>Pyramid is not very neat and somewhat difficult to read</p> <p>Responses have some errors that prevent them from being fully effective</p>	<p>Pyramid is constructed neatly and is easy to read</p> <p>Responses have few mechanical or sentence structure errors and are effective</p>	<p>Pyramid is constructed very neatly, and is very easy to read, looks professional</p> <p>Responses have no mechanical or sentence structure errors and are very effective</p>
<p><b>Application</b></p> <p>- The population pyramid bar graphs reflect correct values</p> <p>- The responses to the questions are correct and are supported with effective explanations</p>	<p>The pyramid is mostly incomplete and many values are incorrectly plotted; data collection may or may not be attached</p> <p>Many responses are incorrect and not explained with correct inferences of graphed results</p>	<p>The pyramid is complete but some values are incorrectly plotted and data collection is attached</p> <p>Some responses are incorrect and/or some explanations do not reflect correct interpretations of the graphed results</p>	<p>The pyramid is complete with only 1 or 2 values that are not precisely plotted and data collection is attached</p> <p>Most responses are correct and reflect correct interpretation of the graphed results</p>	<p>The pyramid is complete with all values plotted very precisely and data collection is attached</p> <p>All responses are correct and fully supported with explanations that reflect correct interpretation of the graphed results with insight</p>

**Communication:** \_\_\_\_\_

**Application:** \_\_\_\_\_

## Population Pyramids

A **population pyramid**, also called an age pyramid, is a graphical illustration that shows the distribution of various age groups in a population which forms the shape of a pyramid when the population is growing. Information is most often divided by gender. The age range can be found on the sides (y axis) or up the center of the diagram. The number range is found at the bottom of the diagram (x axis) and varies depending on the size of your population sample.

Example:

