

TEACHING BURIED HISTORY

Statistics Lesson - H.S. Senior Level

GUIDING QUESTION:

How can we use data to learn about geographical spaces such as cemeteries in our community?

How can we analyze and infer from data to learn the story of our community?

OVERVIEW:

- ◆ Students will explore 2 local cemeteries and collect data from grave markers.
- ◆ Students will analyze and evaluate the data to make inferences.
- ◆ Students will analyze limitations of the data and the collected data set.

OBJECTIVES:

At the conclusion of this lesson students will be able to

- ◆ Gather, analyze and evaluate data.
- ◆ Present data and analysis to make informed inferences based on the data and sound mathematical reasoning.

AP STATISTICS (College Board Learning Objectives)

SKILLS

2.A

Describe data presented numerically or graphically

2.B

Construct numerical or graphical representations of distributions

4.A

Make an appropriate claim or draw an appropriate conclusion

INFERENCE

3.D

Construct a confidence interval, providing conditions for inference are met

4.D

Justify a claim based on a confidence interval.



MATERIALS:

For Students

- ◆ Why study a cemetery? What can we learn?
- ◆ Background materials on history of cemeteries
- ◆ Gravestone motif glossary
- ◆ Gravestone materials glossary
- ◆ How to draw conclusions

For Teachers

- ◆ Why study a cemetery? Annotated with illustrations
- ◆ Background materials on history of cemeteries: Annotated with illustrations
- ◆ Extra Resources and links
- ◆ Instructional video, materials, links on using GIS app and story maps

CLASS TIME/PERIODS REQUIRED:

One school day

ACTIVITIES/PRODUCTS:

- ◆ Students will effectively gather and record data.
- ◆ Students will create and present responses to short answer questions regarding the data collected.
- ◆ Students will compare and make inferences about the cemeteries based on collected data.

OPPORTUNITIES FOR EXTENSION:

- ◆ Research the history of visited cemeteries and compare the representation of the cemeteries history as given by data and by a written summative history.
- ◆ Research the history of an individual or family interred at one of the visited cemeteries.
- ◆ Students will participate in a follow up visit to cemeteries to gather and analyze further data.

LESSON EXTENSIONS AND ASSESSMENT ALTERNATIVES:

- Students will dig deeper into research and locate photos of the deceased person as well as people or events of their lives. Create a video memorial/slideshow.
- Students will write an obituary for their chosen subject.
- Create a timeline in your classroom of the chosen subjects and analyze and identify historical trends that impacted the local community.

LESSON OVERVIEW:

ONE

Teachers will assign partners and make sure students' have access to the technology.

TWO

Teachers will review the student material.

THREE

Students will travel to the first cemetery and disperse to collect and record data from grave markers.

FOUR

Students will travel to the second cemetery and disperse to collect and record data from grave markers.

FIVE

Students will convene and work in groups to view the data as a whole.

Students will work in groups to respond to the following prompts:

1. Construct parallel boxplots based on age of death for the 2 different types of stones. Comment on each distribution.
2. Do the ages of death follow a normal distribution?
3. Is there a strong correlation between year of birth and age at death? Perform the calculations and report your findings.
4. Does the material of the gravestone matter? Recalculate the correlation from #3 except separate your data into groups based on headstone first and recalculate.
5. If the data on age follows a normal distribution, what are the mean and standard deviation?
6. Derive the LSRL that would allow us to predict a person's age at death if we know the year they died. How comfortable do you feel with your projections using this LSRL. Refer to the correlation or the coefficient of determination.
7. Calculate the Coefficient of Determination for year of death and age at death.
8. What was the sampling method used? Could you have done an SRS? What are the benefits and weaknesses to your sampling method in this instance?

CLOSING QUESTIONS:

- ◆ What additional work would you need to do in order to accurately tell the story of these cemeteries?
- ◆ What do you think learning more about these sites could do to enhance your understanding of the history of our community?
- ◆ What additional data and information would you need to gather?
- ◆ Are you ready to do the work?



TEACHER NOTES: