Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): What will students learn?

Unit 1 introduces students to data and the vocabulary of statistics. Students will also learn to talk about data in real-world contexts. Variability in data may seem to suggest certain conclusions about the data distribution, but not all variation is meaningful. Statistics allows us to develop shared understandings of uncertainty and variations. In this unit, students will define and represent categorical and quantitative variables, describe and compare distributions of one-variable data, and interpret statistics calculations to assess claims about individual data points or samples. Students will also begin to apply the normal distribution model as an introduction to how theoretical models for populations can be used to describe some distributions of sample data. Later units will more fully develop probabilistic modeling and inference.

GA DoE Standards

| College Board Standards: |  |
|--------------------------|--|  |  |  |  |  |
| 1.1 Introducing Statistics: What Can We Learn from Data? | 1.2 The Language of Variation: Variables |
| 1.3 Representing a Categorical Variable and Tables | 1.4 Representing a Categorical Variable with Graphs |
| 1.5 Representing a Quantitative Variable with Graphs | 1.6 Describing the Distribution of Summary Statistics |
| 1.7 Summary Statistics for a Quantitative Variable | 1.8 Graphical Representations of Summary Statistics |
| 1.9 Comparing Distributions of a Quantitative Variable | 1.10 The Normal Distribution |

Concepts/Skills to support mastery of standards

- Describe data presented numerically or graphically.
- Construct numerical or graphical representations of distributions.
- Compare distributions or relative positions of points within a distribution.
- Calculate summary statistics, relative positions of points within a distribution, correlation, and predicted response.
Vocabulary

Bar Graph       Pie Chart       Segmented Bar Graph       Relative Frequency       Categorical Variable
Quantitative Variable       Two Way Table       Mosaic Plot       Shape       Outliers
Center       Variability       Dot Plot       Histogram       Stemplot
Box Plot       Mean       Median       Range       Standard Deviation
Interquartile Range       Skewed       Bimodal       Symmetric       Percentile
Cumulative Relative Frequency Graph       Empirical Rule       Z Score

Notation

\[ \bar{x} = \frac{\sum x_i}{n} \]
\[ \text{Standard Deviation} = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}} \]
IQR = Q_3 - Q_1
Low Outlier < Q_1 - 1.5(IQR)
High Outlier > Q_3 + 1.5(IQR)
\[ z \text{ score} = \frac{x - M}{\sigma} \]

Essential Questions

How do we determine if our results are significant or can happen by chance alone?
How can we display and describe categorical data?
How can we display and describe quantitative data?
How do I discuss and compare 1-variable data?
How do I determine what statistic is best to describe a certain data set?
How can I describe a location in a distribution?
How can determine if a distribution of data is approximately normal?

Assessment Tasks

List of common formative and summative assessments.

Formative Assessment(s):
Common Formative Assessment – Quiz

Summative Assessment(s):

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Resources, materials, assessments not linked to SGO or unit planner will be reviewed at the local school level.
<table>
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<th>Objective or Content</th>
<th>Learning Experiences</th>
<th>Personalized Learning and Differentiation</th>
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<tr>
<td>Stats Medic Task: “How are your favorite classes related?”</td>
<td>Become familiar with vocabulary used to describe data. Make and interpret graphs for categorical data. Identify what makes some graphs of categorical data misleading. Calculate marginal, join and conditional relative frequencies from a 2 way table.</td>
<td>Students will work at their own pace, vocabulary and technology support provided. Students will learn how to display data using stapplet.</td>
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<tr>
<td>Stats Medic Task: “How many pairs of shoes do you own?”</td>
<td>Make and interpret dotplots, stemplots, and histograms of quantitative data. Identify the shape of a distribution from a graph. Describe the overall pattern, shape, center and variability of a distribution and identify major pattern(outliers)</td>
<td>Students will work at their own pace, vocabulary and technology support provided. Students will learn how to display data using stapplet.</td>
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<td>Stats Medic Task: “Will Marty Make it Back to the Future?”</td>
<td>Find the proportion of values in a specified interval in a Normal Distribution using Table A or Technology. Find the value that corresponds to a given percentile in a Normal distribution using Table A or Technology</td>
<td>Students will work at their own pace, vocabulary and technology support provided. Students will learn how to find probability using Table A and the Ti84.</td>
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**Content Resources**

All notes are provided on schoology.
The Practice of Statistics 5th edition
AP College Board
StatsMedic   Stapplet

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