Marietta City Schools

2024–2025 District Unit Planner

Statistical Reasoning

Unit title	Unit 4: Analyzing Data and the Role of Distributions	**Unit duration (hours)**	*27 - 30 hours*

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

GA DoE Standards

Standards

SR.DSR.4.1 Summarize quantitative or categorical data using tables, graphical displays, and numerical summary statistics.
SR.DSR.4.2 Summarize and describe relationships among multiple variables.
SR.DSR.4.3 Use sampling distributions developed through simulation to describe the sample-to-sample variability of sample statistics.
SR.DSR.4.4 Use sampling distributions to compute simulated p-values.
SR.DSR.4.5 Describe the relationship between two quantitative variables by interpreting correlation (r) and a least-square regression line (using technology).
SR.DSR.4.6 Use simulations to investigate associations between two categorical variables and to compare groups.

Concepts/Skills to support mastery of standards

- Students should identify types of displays that are appropriate for categorical data versus quantitative (numerical) data.
- Students should be able to identify situations where a change in one attribute may be related to a change in another attribute.
- Students should be able to construct scatterplots, and describe positive, negative or no relationship.
- Students should be able to recognize that sample statistics vary with repeated sampling.
- Students should be able to interpret the sampling variability in a summary statistic.
- Students should be able to interpret the sampling variability from simulation studies of statistics.
- Students should be able to recognize how sampling variability is influenced by sample size.

• Students should be able to provide a reasonable estimate of the Pearson's correlation coefficient (r) for a scatterplot; identify linear and non-linear relationships in scatterplots; correctly interpret the strength of a linear relationship based on r.

• Students should be able to understand the magnitude of a correlation coefficient represents the strength of association; understand and able to calculate a residual; understand that any straight line other than the best fit line (by least squares) will have a larger sum of squared residuals than the best fit line. Students should be able to approximate p--values using simulation or simulation results, especially for the difference in two means or two proportions.

• Students should be able to convert a p-value into a statement about their confidence that the observed data was produced by the treatment rather than by random chance.

• Students should be able to interpret measures of association to determine if there is a relationship between variables.

• should be able to recognize that “association” does not imply “cause and effect.”

Vocabulary

Terms/Symbols: population distribution, sample data distribution, sampling distribution, sampling proportion, sample statistic, population parameter, randomness, simple random sample, treatments, sample survey, experiment, observational study, inference, bias, modal category, bivariate data, significant differences, margin of error, p-value.

Notation

Essential Questions

How can I represent relationships between two variables? How can I interpret the variables in the context of the problem?

Assessment Tasks

List of common formative and summative assessments.

Formative Assessment(s):

Classwork

Quiz

Tickets out the door, skills checks

Summative Assessment(s): Unit 4 Test

Learning Experiences Add additional rows below as needed.		
Objective or Content	**Learning Experiences**	**Personalized Learning and Differentiation**
SR.MM.1.1 • SR.MM.1.2 • SR.MM.1.3 • SR.MM.1.4	Yawning Task - https://lor2.gadoe.org/gadoe/file/c42b3e60-25f1-4c36-91b0-b5841c0c187f/1/SR-U4-Yawning-Learning-Plan.pdf	Collaborative group work or individual, scaffolded by teacher
Content Resources		
chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://lor2.gadoe.org/gadoe/file/29183861-9324-4cc2-8315-08a79985be06/1/Statistical-Reasoning-Unit-4-Framework-Analyzing-Data-and-the-Rule-of-Distributions.pdf **GA DOE** **Stats medic**		