STAT 212 Project

General Information:

You and two group mates are tasked with determining how a school is doing compared to statewide numbers on the math SOL tests (Virginia Standards of Learning.) ***Each member of the group is required to do two tests,*** and those six findings are to be shared in one, cohesive Power Point presentation. Someone looking at the presentation should not be able to tell that it was created by three separate individuals, so be sure to use consistent formatting and wording throughout.

If your group only has two members, you will do four analyses (two per student.)

Tips for creating a good Power Point presentation can be found here:

https://www.ncsl.org/legislators-staff/legislative-staff/legislative-staff-coordinating-committee/tips-for-making-effective-powerpoint-presentations.aspx

and here:

https://www.youtube.com/watch?v=grJ0FbpfvOw

Please ensure each test has an executive summary slide that has the following components (use the rubric as a guide):

- Situation/problem that you are trying to solve
- Complications (if any)
- Hypothesis and assumptions
- The raw data values that you used in your analyses
- Procedure/resolution/results (please include any outputs from any statistical tests/methods that you run)

Your presentation should end with a concluding slide, summarizing results and making recommendations on areas where the school can improve.

With each test, please provide the data values you used in your analyses. We can't check your math unless we see which values you selected.

Please keep in mind that these slides should be written in a manner that is simple enough that a layman without the knowledge of detailed statistics can understand: What was the key question you were trying to solve, how did you solve it, and what was the result?

Due dates and submission guidelines:

On or before June 16, you will be randomly assigned to a group of two or three people. To find your group mates, you will go into Canvas and click on the "Groups" icon in the side bar. That should lead you to a page that states which group you are in. Follow that link and click the "people" subcategory to see who is in your group.

You are required to contact your group mates by June 18th and decide who is doing which analyses. (Remember, each of you have to conduct two analyses.) Then, EVERY MEMBER OF THE GROUP must go into the project module in their Canvas page and type that information into the "Project Roles" quiz. If a group mate doesn't respond to your attempts to contact them, that person will get a zero on the quiz. If you don't take the quiz, you will also get a zero, so be sure to complete the quiz.

If you have any questions along the way about your project, please attend Ms. Basu's or Ms. Durfee's office hours. You only get one submission per group, so please address any concerns BEFORE you submit. You may not fix mistakes after the project has been graded. The grade you get on the project is a group grade, no matter who made the errors. Therefore, you should check each other's work before submitting.

The project is due June 24th. However, the optional final is the same day. If you wish to know your project grade before the optional final, you can have the project submitted by June 22nd. Any projects submitted before that date will be graded before the date of the optional final. However, early submission does not mean you are able to fix errors in the project after it is graded. All submissions are final.

When submitting the presentation, you must include a brief explanation of which group member did which tests. If one group member does not participate, your presentation will only have four tests and the person who did not contribute will get a zero.

To submit, you will upload a power point presentation into Canvas under the Project module. Only one group member needs to submit the project; it will automatically populate into the grades for the other group members.

Grading Criteria:

Each test will be graded based on the following rubric, which can be found in the Project folder. Your presentation must show all six components of each test for full credit.

Competency	3 pts	2pts	1 pt	0 pts	Earned
Data Collection/ Identification	The sample collection method was appropriate, correctly named, and executed correctly	The sample collection method was appropriate but contained minor errors or was incorrectly named	The sample collection method was appropriate but a major mistake was made in the execution	An inappropriate sample collection method was used	
Representation	An appropriate formula was correctly used and justified	An appropriate formula was used but minor mistakes were made during conversion or the justification was only partially correct	An appropriate formula was used but values were impropery substituted or the justification was incorrect or missing	An inappropriate formula was used	
Calculation	Calculations were correct and complete	Minor errors exist in calculation	Major errors exist in calculation	Calculation was not attempted	
Analysis	Correct and complete analysis was used to make appropriate conclusion	A logical conclusion is drawn but is partially incorrect	An incorrect conclusion was drawn	No attempt was made at drawing a conclusion	
Assumptions	All necessary assumptions are stated and correctly evaluated	Some assumptions are identified and correctly evaluated, but not all	Assumptions are mentioned but incorrectly identified	No mention of assumptions was made	
Communication	A correct and complete explanation is clearly presented	A partially correct relevant explanation is present but is incomplete or poorly presented	A relevant explanation is present but is not clear	No relevant explanation is provided	

Each test is worth 18 points, for a total of 108 points for a group of three people (six tests) and 72 points for a group of two people (four tests). In addition, the following grading scheme will be applied to the overall Power Point presentation, for a total of 114 or 78 possible points.

6 points	4 points	2 points	0 points	Score
The presentation is professional, organized and cohesive with slides that are easy to follow	The presentation is professional but disjointed; some slides have too many words/graphics	The presentation is disorganized/ disorganized/ unprofessional; many slides contain too many words/graphics	The presentation was not done	

Final thoughts and getting started:

Your instructions for this project are deliberately vague. People in industry have asked us to create projects where students are given minimal instruction (for instance, simply being told, "Analyze this data,") because that may be how you are tasked with projects on the job. Industry wants to see graduates who can examine a situation, formulate their own questions, execute the appropriate analyses and effectively communicate the results.

In addition, people in industry want employees who investigate a situation from multiple angles, which is why we are requiring six tests. If you are asked to analyze a data set, it is not enough to simply run one test and call yourself done. By investigating further, you may be able to see findings that you would miss in a single, global analysis.

You are provided with two PDF documents in the project module: one has the students broken down by sex, and the other has the students broken down by whether they are traditional, gifted, remedial, or ESL (English as a second language.) You may assume the math SOL scores for each subset of the population are normally distributed.

Each student has been given a code number. You can use those code numbers for sample selection, either with a random number table or random number generator. An example of a random number generator can be found here:

https://stattrek.com/statistics/random-number-generator.aspx

A random number table can be found here:

http://teorica.fis.ucm.es/ft8/tablern2.pdf

We deliberately gave you PDFs of the data instead of a spreadsheet so you can practice gathering a sample.

Professional skills developed:

1. With minimal guidance, the student will formulate and test hypotheses
2. The student will effectively communicate findings in a Power Point presentation
3. The student will work cooperatively with group mates, doing their share without dominating

Background of the case:

The Virginia Standards of Learning (SOLs) are comprehensive tests to evaluate the performance of students in all core subject areas. The scores are out of 600 total points. Anyone scoring a 400 or above passes the SOL. Anyone scoring a 500 or above scores at a “passed advanced” level. Students who score 399 or below need to receive remediation and take the test again.

A principal has hired you to see how their school compares to the state average with the math SOLs. There are 997 students in the school in total.

Statewide numbers:

The overall state average math SOL score is 467.78.

The state average for ESL students is 404.56

The state average for remedial students is 419.31.

The state average for gifted students is 562.39

The proportion of all students statewide who score 399 or below is 8.47%

The proportion of all students statewide who score between 400 - 499 is 61.05%

The proportion of all students statewide who score between 500 - 600 is 30.48%

The state average score for males is 470.56.

The state average score for females is 465.22.