#### Written Report (15 points)

To receive all points, the written report presents a cohesive written analysis that:

* Summarises the analysis (5 points)
* Draws two correct conclusions or comparisons from the calculations (10 points)

**What should a data-analysis write-up look like?**

Writing up the results of a data analysis is not a skill that anyone is born with. It requires practice and, at least in the beginning, a bit of guidance.

**Organization**

When writing your report, organization will set you free. A good outline is: 1) overview of the problem, 2) your data and modeling approach, 3) the results of your data analysis (plots, numbers, etc), and 4) your substantive conclusions.

1. **Overview**  
   Describe the problem. What substantive question are you trying to address? This needn’t be long, but it should be clear.
2. **Data and model**  
   What data did you use to address the question, and how did you do it? When describing your approach, be specific. For example:

* Don’t say, “I ran a regression” when you instead can say, “I fit a linear regression model to predict price that included a house’s size and neighborhood as predictors.”
* Justify important features of your modeling approach. For example: “Neighborhood was included as a categorical predictor in the model because Figure 2 indicated clear differences in price across the neighborhoods.”

Sometimes your Data and Model section will contain plots or tables, and sometimes it won’t. If you feel that a plot helps the reader understand the problem or data set itself—as opposed to your results—then go ahead and include it. A great example here is Tables 1 and 2 in the [main paper on the PREDIMED study](http://www.nejm.org/doi/pdf/10.1056/NEJMoa1200303). These tables help the reader understand some important properties of the data and approach, but not the results of the study itself.

1. **Results**  
   In your results section, include any figures and tables necessary to make your case. Label them (Figure 1, 2, etc), give them informative captions, and refer to them in the text by their numbered labels where you discuss them. Typical things to include here may include: pictures of the data; pictures and tables that show the fitted model; tables of model coefficients and summaries.
2. **Conclusion**  
   What did you learn from the analysis? What is the answer, if any, to the question you set out to address?
3. **Clearly Define Your Objective:**

Start by outlining the purpose of your analysis. Define the questions you're trying to answer, the hypotheses you're testing, or the comparisons you want to make. This will guide your analysis and keep your conclusions focused.

1. **Gather and Prepare Data:**

Collect relevant data for your analysis. Ensure the data is clean, accurate, and appropriately formatted. If necessary, perform data preprocessing, cleaning, and transformation to make it ready for analysis.

1. **Perform Calculations:**

Conduct the necessary calculations based on your objectives. This could involve statistical analyses, mathematical computations, aggregations, or other relevant operations.

1. **Visualize Data:**

Create visualizations such as charts, graphs, histograms, or scatter plots to represent your calculations. Visualizations make it easier for the audience to understand the data and your conclusions.

1. **Explain Methodology:**

In your analysis, describe the methods and techniques you used for calculations. Explain any assumptions you made and any data transformations performed. This transparency helps readers understand the process behind your conclusions.

1. **Present Findings:**

For each conclusion or comparison you want to draw, follow these steps:

* State the Conclusion: Clearly state the conclusion you've drawn from your calculations. Be concise and specific.
* Support with Evidence: Provide evidence from your calculations to support your conclusion. This could include statistical values, trends shown in graphs, or any other relevant information.
* Interpret Results: Explain what the evidence means in the context of your analysis. Interpret the numbers and trends in a way that your audience can understand their significance.

1. **Address Limitations:**

Acknowledge any limitations in your analysis. This could include limitations in the data quality, sample size, methodology, or external factors that might affect your conclusions.

1. **Cross-Check and Verify:**

Ensure that your calculations are accurate and your conclusions make sense in the context of the data. Double-check your work to avoid errors.

1. **Compare and Contrast:**

If you're drawing comparisons, clearly outline the variables you're comparing and why they're relevant. Highlight the similarities and differences between the compared elements based on your calculations.

1. **Provide Context:**

Place your conclusions in a broader context. Explain how your findings contribute to the larger picture or address the initial objective.

1. **Use Clear Language:**

Write in a clear and concise manner, avoiding jargon or overly technical terms unless your audience is well-versed in the subject matter.

1. **Review and Revise:**

Proofread your analysis to eliminate grammatical errors and ensure coherence. Review your analysis as a whole to ensure a logical flow from one point to the next.

Remember, a cohesive analysis not only involves accurate calculations but also effective communication of your findings. By following these steps, you can draw correct conclusions or comparisons from your data analytics calculations and present them in a well-organized and coherent manner.