WSMC High School Competition

Cities, Suburbs or the Brush: How Does Population Density Affect Quality of Life, or Does it?

2010 Team Project

SCORING GUIDE for the 2010 WSMC Team Project

Your investigation will result in three "products". The first will be a written report. The second will be a very brief presentation before an audience and a panel of judges. The third will be a display of some kind that you will use to summarize your findings for students, judges and others who will come to you and ask you questions about your work. In all three you will need to explain your findings and conclusions, give reasons for the factors you invented, for the ways in which you analyzed them and so forth. In the final evaluation, the report will account for 70% of the total points. The presentation will account for 15% and the display will account for the remaining 15%. Below you will find explanations of these three products and the ways in which they will be evaluated. The report, the presentation, and the display will be evaluated according to your performance on the criteria shown below. You will receive 0 - 4 points on each of these criteria. When you meet expectations for a criterion, you will be given 3 points for that criterion. Four points will be given to those who, in the judgment of the evaluators, exceed expectations. Zero points will be awarded if there is no effective response.

I. The Report (70%)*The entire report should have ten pages or fewer.* The pages should be numbered and have one inch margins all around. Please use a legible font and do not use a font smaller than 12 for the text of the report.

Addressing the problem 12 points

4 points	**Address the problem that was posed** The problem you address in your report is the one that was given. It has not been substantially modified.
4 points	**Restate the problem in your context** The problem is clearly and succinctly restated in the report's introduction so that the reader will know that you understood the problem.
4 points	**Communicate your plan for addressing the problem** A clear and succinct plan for addressing the problem is outlined following your restatement of the problem. The plan should follow a logical progression. For example, "In order to address the problem we needed to know *x*. Therefore we did *y*. " etc.

Data 12 points

4 points	**Data sources must be clearly identified and cited** You clearly identify the sources of data you used to address the problem. (Zip Skinny, etc.) Your citation should allow an informed and competent reader to find the same information.
4 points	**Data sources must be appropriate and reliable** The data sources you chose to use to characterize each of the five factors would be acceptable to an "expert"* in the field. Explain why you used the sources you selected for that factor.
4 points	**Data sources must be sufficient** You give evidence to show that you examined a sufficient amount of data in order to understand how the factors vary across the population density categories.

Mathematics 32 points

8 points	**The mathematics you use must be appropriate** You have selected mathematical tools (algorithms, techniques, procedures, models, etc.) that have the potential to address the problem effectively. A K-12 math "expert"* would probably make the same selection.
8 points	**The mathematics you use must be clearly justified** You have given a clear and succinct justification for substantial choices among mathematical tools (e.g., You <u>don't</u> need to explain why you chose addition when you need the sum of a set of numbers. You <u>should</u> explain why you used a linear vs a logarithmic trend line to analyze the association between two variables in a scatter plot.)

8 points	**The mathematics you use must be adequate / sufficient** The mathematical tools you selected enable you to address the problem effectively and efficiently. You've done enough.
8 points	**The mathematics you use must be correctly applied** You have used the mathematical tools (algorithms, techniques, procedures, models, etc.) successfully. There are no substantial mistakes in your mathematics.

Communicating the Results 20 points

4 points	**Your conclusions must be clearly and correctly tied to and supported by the mathematical analysis.** You are able to explain how you have used mathematics to make sense of and solve the problem. Your explanation follows a clear and logical sequence that makes sense to a k-12 math "expert"*.
4 points	**The figures and graphics must be necessary and sufficient.** You have used representations of mathematics (tables, graphs, charts, etc.) that assist the reader in understanding your work and your conclusions. Every representation has a clear and considered purpose.
4 points	**The figures and graphics must be clearly labeled.** The meaning of every figure or graphic is clear to a competent reader. You have a succinct and informative title for each figure or graphic. The axes or dimensions are labeled, etc.
4 points	**The figures and graphics must be tied to the text.** When a figure or graphic appears in the report it has a figure number in the lower left corner (i.e., figure 1, figure 2, etc.). Each figure is clearly connected to a point that you are making in the report. (e.g., "The data / results shown in figure 4 show that ….")
4 points	**Your grammar is correct.** You have very few (less than one per page?) grammatical errors**. You must have page numbers. You should use some acceptable style standard (e.g., Strunk and White, APA, etc.). While you do not have to be obsessive about this, deviations from a standard should not detract from the report's readability. Your source citations must also conform to some standard format.

/76	**Total for Report** **(/76)*70=**

II. The Display (15%)

On the day of the contest, you will set up and "staff" a display where you will talk with people about your investigation. You should have some sort of visual display that summarizes the highlights of your investigation. This, however, is only part of the process. More importantly, you should be prepared to summarize the results generally and to answer specific questions from judges and students about your work. These questions can cover any aspect of the work you have done, including details from the report and will allow the judges to continue their evaluation of the investigation. Your display will be set up in an area that is available to all of the participants in the contest and so you may also get questions from others who are interested in your work. At least one member of the team should be present at all times except during the presentation.

The Display 12 points. Your display and the people supporting it must:

4 points	**Explain your <u>interpretation</u> of the problem** Your display and your verbal explanation should allow a competent and interested reader or listener to understand the basis of the problem as you addressed it.
4 points	**Explain and justify the <u>approach</u> you took** Your display and your verbal explanation should allow a competent and interested reader or listener to understand why you selected and how you used major mathematical tool and techniques.
4 points	**Explain and justify your conclusions** Your display and your verbal explanation should allow a competent and interested reader or listener to understand your solution to the problem that was posed.

/12	**Total for Display** **(/12)*15=**

III. The Presentation (15%)
On the day of the contest, your team will give a very brief (approximately five minutes) presentation summarizing your investigation. The evaluation of the presentation will focus on your communication skills more than on the quality of the mathematics, which receives primary emphasis in the report and during the display.

The Presentation	**24 points.**	**Your presentation must:**
4 points	**Be informative.** Your presentation should include sufficient information so as to enable listeners to understand what is important about this problem and your conclusion or solution to the problem.	
4 points	**Be clear.** The style, structure, and sequence of your presentation should enable listeners to easily understand your work on the problem.	
4 points	**Be convincing.** The style, structure, and sequence of your presentation should convince listeners that you used mathematics effectively to understand and address the problem.	
4 points	**Be compelling.** The style, structure, and sequence of your presentation should keep listeners engaged, involved, and interested.	
4 points	**Be succinct.** Your presentation must be completed within the time allowed.	
4 points	**Be responsive to questions.** Be prepared to answer reasonable questions from the audience or judges.	

/24	**Total for Presentation (/24)*15=**

	Grand Total ____ + _____ + ____ = _____
Comments:	

* An "expert" is someone who is very familiar with the context of this question and who has a very competent and informed grasp of k-12 mathematics.

** You should have the report proof read by an expert. How about an English teacher?