



A Program of The Actuarial Foundation

## **Modeling the Future Challenge**

### **Template Submission Report**

Your team's submission should be a written report describing their mathematical model of the future of self-driving vehicles. The report should be written in no less than 10pt font, single spaced pages, submitted in PDF or MS Word format and should be no more than 30 pages long, including figures. It can be shorter than this, so long as you are clear and concise on the mathematical analysis and description of the expected changes in each section of your report.

You or your team do not have to follow this format for your report exactly; however, you must include the following sections to move passed the initial review process.

- Executive Summary
- Transportation Analysis
- Insurance Analysis
- Society-At-Large Analysis
- Conclusions and Recommendations
- Works Cited or Resources

We also recommend including a cover page that has this identifying information:

- Report Title
- Team Name
- Team Members
- Team Sponsor/Mentors
- School Name/ Date / City State

Finally, include page numbers on your pages, but you do not need to count your title page or table of contents in the numbers. Also, create a Table of Contents to help reviewers jump to different sections of your report would be valuable!

# Autonomous Vehicles: THE FUTURE IS NOW!

November 25, 2017

Sample High School  
Sample, Wyoming

**Submitted by:**

**The Mathletes**

Taylor Gomez  
Harry Granger  
Selena Swift

**Team Sponsor**

Ms. Jennifer Cooper  
Math Team Advisor  
Statistics Teacher

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## ***Executive Summary Sample Outline & Tips***

*5 points available*

How well does the submission summarize the important information in the report? Is it concise but clear? Does it provide key points on each of the three content sections, and include information about the mathematical models and conclusions/recommendations?

The Executive Summary should tell the “story” of your entire report. It needs to provide an easy to read overview of your expected changes in three areas (transportation, insurance, and society at large) and how you came to those determinations.

### **TIPS:**

1. Write your Executive Summary LAST! It will come best by taking highlights from your other sections and condensing them into a strong, cohesive story of how you came to those conclusions.
2. Do not just copy and paste information from your other sections to create an Executive Summary. Make sure it is all connected and reads well when you talk about the points in your different sections.

## ***Transportation Analysis***

*5 points available*

### **Scoring:**

How well developed and thought-out is the model of change for the transportation industry?

To receive full points, the submission must identify and characterize one or more specific changes in the transportation industry that are based upon direct inferences from the mathematical models. The submission should state how the expected industry statistics were calculated, both with and without adoption of autonomous vehicles.

### **Tips:**

1. Make sure to compare and contrast what you project the industry (or sub-sector you are analyzing) to be like 10+ years in the future both with and without adoption of autonomous vehicles. Judges want to see how you project the industry based on existing trends in the data you can see, and then how you think autonomous vehicles will change those projections.
2. Focus on one part of the industry, depth is better than breadth in this analysis!
3. Make sure you read the challenge statement and answer all the questions.
4. Include your math!
5. Include figures to describe important projections. Show the changes you expect going forward.
6. You do not need to fill up space with extra writing to meet a page count. Being concise and clear is better than just adding a lot of words. The page count is a **maximum**, don't feel like you have to meet that, and don't let the overall maximum length of the report scare you – shorter reports can be scored well if they are concise and clear in their methodologies.

## ***Insurance Analysis***

*5 points available*

### **Scoring:**

How well are existing auto-insurance policies understood and how well does the submission model the changes that may be required to those policies with the expected adoption of autonomous vehicles over the next 10 years?

To receive full points, the submission should identify and characterize specific changes to insurance policies based on direct inference from their mathematical models. The submission should also demonstrate a strong understanding of the economics of automobile insurance and demonstrate how the use of autonomous vehicles will impact the financials of these policies.

### **Tips:**

1. Make sure you use existing data to project what the insurance claims and industry data will look like 10+ years into the future. Pay particular attention to using the ISO data provided, and combine that with changes in the transportation industry that you expect from autonomous vehicles, to make projections on how the insurance industry claims will change.
2. Focus on 1 part of the industry and get deep into that information! Depth is better than breadth in this analysis.
3. Include your math!
4. Include figures to show the changes you expect.
5. You do not need to fill up with extra writing to meet a page count. Being concise and clear is better than just adding a lot of words.

## ***Society at Large Analysis***

*5 points available*

### **Scoring:**

How well does the submission identify and characterize another sector of society that will be impacted by the adoption of autonomous vehicles over the next 5 to 20 years?

To receive full points, the submission should identify one or more sectors of society that will be affected by autonomous vehicles. The submission must accurately characterize effects based on mathematical analysis. The submission should demonstrate how that change is expected to propagate over 10+ years.

### **Tips:**

1. Select one specific sector of society that you expect will be affected by the adoption of autonomous vehicles. Remember, depth is better than breadth.
2. Connect it to data from your other sections of the report. Make sure you connect this change to the same numbers and data used to project changes in the other industries. It should all tell different pieces of the same cohesive story.
3. Show your math.
4. Use figures to demonstrate the change.
5. You do not need to fill up with extra writing to meet a page count. Being concise and clear is better than just adding a lot of words.

## **Conclusions**

*10 points available*

### **Scoring:**

How well does the submission identify recommendations in each of the three sectors (Transportation, Insurance, and Society at Large) to mitigate some of the potential negative impacts or risk factors associated with the adoption of autonomous vehicles over the next 10+ years?

To receive full points, the submission should identify recommendations in each of the three sectors that are based on sound mathematical findings. The recommendations should be characterized and quantified, and should demonstrate how the expected adoption of autonomous vehicles will improve each sector.

### **Tips:**

1. Identify at least one impact from the adoption of autonomous vehicles from each section of your report (Transportation, insurance, and society-at-large). The impact can be either positive or negative.
2. The conclusions section is not just a re-hashing of your earlier sections. It should go slightly further and make recommendations for how the industry, society, or government group related to the impact you have identified, should adapt to that expected change to either minimize negative outcomes, or maximize the positive outcomes.
3. Make sure the conclusions connect to your earlier sections and are backed up by your data and mathematical analysis.
4. When writing your conclusions ask yourselves these questions:
  - a. Can a government body do something to change the expected impact from autonomous vehicles? Should it?
  - b. If there is a projected negative outcome (such as an increase in traffic fatalities), can something be recommended to lessen that projected impact? Or to improve the insurance industry ability to handle those changes?
5. Think of your conclusions as a way to wrap up the entire report and make a clear recommendation on how to maximize positive outcomes, and minimize negative ones from each of your three sections of the report.



### **“Works Cited” or “Resources”**

Remember to cite all the data sources, articles, or other papers that you may have used in your analysis. Any citation method is fine to use in this report, we do not require a particular method, just be consistent with what you use.