

Recommendations



A Program of The Actuarial Foundation

Modeling the Future Challenge

The Modeling The Future Challenge

As part of the Scenario Phase of the MTFC, teams will be demonstrating and applying their mathematical analysis skills to a scenario response paper as well as identifying a potential project and writing a proposal. The Actuarial Process Guide to be an invaluable resource.

- [The Actuarial Process Guide](#)

How to Use this MTFC Recommendations Scaffolding Guide

When all of the potential topics in the world are at your fingertips, identifying a topic, identifying possible risks, finding sources, mathematically modeling, and studying risks can seem overwhelming to begin. This guide will help scaffold the process and guide participants through the process of risk analysis in the MTFC Project Proposal. Each task refers to a specific section of The Actuarial Process Guide for more in-depth information.

Content: The process is scaffolded into 4 total tasks.

Suggested pacing: 1 task per week for 4 weeks. Completing the *Basic Training 4. Risk Analysis* resource first will provide context to the scenario and scaffolding procedure.

Common Core Standards for Mathematical Practice

The [Common Core Standards for Mathematical Practice](#). The MTFC Project Proposal specifically addresses the following standards:

- ❑ CCSS.MATH.PRACTICE.MP1 **Make sense of problems and persevere in solving them.**
- ❑ CCSS.MATH.PRACTICE.MP2 **Reason abstractly and quantitatively.**
- ❑ CCSS.MATH.PRACTICE.MP3 **Construct viable arguments and critique the reasoning of others.**
- ❑ CCSS.MATH.PRACTICE.MP4 **Model with mathematics.**



What Kinds of Recommendations Do Actuaries Make?

The modeling and analysis of data that actuaries do can be interesting, fascinating, elegant, sophisticated, insightful (any number of fancy words). However, without using those insights to make recommendations based on those findings to critical stakeholders, the analysis, models, and findings are worthless and can be seen as an exercise in academic futility. The recommendations are “the whole point” of the project. The answer to the “where are we ever going to use this?” question posed by nearly every student at some point in their academic careers. The recommendations section of your project and proposal should be given significant weight, focus, and solid work. What kind of recommendations do actuaries make? Recommendations that inform the following types of decisions:

- Business decisions
- Financial decisions
- Government policies (policies or incentives)
- Mitigating risks with insurance

After risks are identified, strategies that take action to reduce an organization's exposure to potential risks and reduce the likelihood that those risks will happen need to be identified and addressed. As outlined in The Actuarial Process Guide, there are three categories of risk mitigation strategies:

- insurance
- behavior changes
- modifying outcomes

Insider Tip! The MTFC judges are looking for evidence and a discussion that you have considered all three categories of risk mitigation strategies (insurance, behavior changes, modifying outcomes) for your project but only one robust and complete recommendation is expected in your final project report.



Task 5.1 Risk Mitigation Strategies and Recommendations

For this task, recall the broad topic of water quality in the USA topic from Task 4.1. With each risk that was identified and its quantification, identify a possible risk mitigation strategy to address the risk (insurance, behavior changes, modifying outcomes).

Identify multiple recommendations for each risk: the best way to start is to review the risks you have identified in the previous section of your project (make sure your risks are quantified or it will be hard to quantify your recommendations). Try to come up with many different ways that the government, insurance company, public, consumers, etc. could respond to each risk.

Risk and Quantification of the Risk	Risk Mitigation Strategy	Recommendation



Task 5.2 Assumptions about the Recommendations

Make Assumptions about the recommendations: for each recommendation you identified, write down a list of assumptions that you are making, or things that you need to verify. For example, if there is a recommendation about using insurance to mitigate future risks, you should have some background information on how farm insurance currently works. What changes would be needed? For public policies, are you assuming certain values of how much water different crops use? What else? Make sure your team understands the assumptions and the background numbers before you analyze your recommendations.

Recommendation	Assumptions about Recommendations/Items needing Verification



Task 5.3 Assumptions about the Recommendations

Analyze the recommendations: for each of your recommendations, do some mathematical analysis to understand the degree to which your recommendations will mitigate the risks.

Recommendation	Analysis on how the Recommendation Mitigates Risk



Task 5.4 Written Recommendations

Finalize your recommendations: After you've analyzed all of the recommendations you identified, select the best ones that you would present to the government. Identify why you think they are the best – use your assumptions and analysis to quantify why you think they are the best.

The best recommendations are

- data-driven.
- quantified.
- respond to the problem.
- clear and concise.

Recommendation	Rationale and Quantified Justification for the Recommendation