

MTFC Project Proposal 2024-25

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MTFC Project Proposal Template Use Notes:

- Refer to the official MTFC Project Proposal Prompts 2024-25 for the 15 prompts and scoring instructions.
- The use of this template is OPTIONAL.
 - It is provided as an optional resource for teams to keep their Project Proposal response organized. Teams who wish to use this template should make a copy in order to edit.
- The final version of the team's MTFC Project Proposal should be downloaded as a PDF or Word document to submit on the ICS Dashboard. A single file will be submitted.
- Additional resources (including the Actuarial Process Guide) can be found on the Modeling the Future Challenge website: <https://www.mtfchallenge.org/resources/>
- Please direct any questions to challenge@mtfchallenge.org.

Part 1: Project Definition (*Team's Topic*)

These prompts can be found on page 3 of the MTFC Project Proposal Prompts 2024-25. Additional information on Project Definition can be found in **Step 1: Project Definition** in the Actuarial Process Guide.

Team Responses:

#1: Identify the topic

- Response: Our topic is about wrongful convictions in the justice system. This topic is important because it has the potential to have a significant impact on the lives of many people. It is a pervasive problem that needs to change and a part of a much larger social justice issue in society.

#2: Identify potential risks

- Response: One risk of wrongful convictions is spending time in jail and being away from one's family without needing to. The worst-case scenario for this risk is that a victim of wrongful convictions will go to jail for the remainder of their life, and the best-case scenario is that they aren't wrongfully convicted in the first place. Another risk of wrongful convictions is overcrowding in jails, which is already an issue. The worst-case scenario for this risk is that there will be too many people in jail and the conditions will be extremely poor, and the best-case scenario is that eradicating wrongful convictions allows for proper allocation of prison resources. A further risk of wrongful convictions is that people will lose trust in the justice system, leading to it being ineffective. The worst-case scenario for this risk is that people will riot and not follow the orders of the justice system, and the best-case scenario is that eliminating wrongful convictions will allow people to trust the justice system and justice to be served.

#3: Identify a behavior change risk mitigation strategy

- Response: A behavior change risk mitigation strategy for wrongful convictions could be collecting better evidence by increasing transparency in law enforcement and ensuring validity. The convicted individual, their family, and the government would xbe positively impacted as the individual would not be incarcerated, use government resources, or be absent from their family.

#4: Identify a modifying outcomes risk mitigation strategy

- Response: A modifying outcomes risk mitigation strategy for wrongful convictions could be providing better compensation for those who have already been wrongfully convicted. This strategy would directly affect the wrongfully convicted individuals and their families to make up for the time and resources lost due to the wrongful conviction, although there is no price that can be placed on a human life.

#5: Identify an insurance risk mitigation strategy

- Response: An insurance risk mitigation strategy could be employing insurance that will makes sure the wrongfully convicted are fully compensated, with the potential of life insurance in case of death in jail. Individuals who were wrongfully convicted, and potentially their families, would be impacted by such insurance.

#6: Identify driving research questions for your topic

- Response:

- How can the risks of wrongful convictions be mitigated using risk mitigation strategies?
- How do wrongful convictions impact different groups of people?
- What kind of financial loss do wrongful convictions cause for prisons?

Part 2: Data Identification & Assessment (*Team's Topic*)

These prompts can be found on page 4 of the MTFC Project Proposal Prompts 2024-25. Additional information on Data Identification and Assessment can be found in **Step 2: Data Identification & Assessment** in the Actuarial Process Guide.

Team Responses:

#7: Identifying the type of data you hope to find

- Response: We hope to find the number of people who were wrongly convicted and information regarding their profile such as their race, gender, age, area where the individual was convicted, and occupation. Additionally, data regarding what type of evidence (DNA, testimony, etc) was used to incriminate or exonerate everyone could be helpful, as well as information about any time spent in prison for wrongfully convicted individuals.

#8: Identify potential data sources for your topic

- Response: Potential data sources include the exoneration data set from the National Registry of Exonerations or other statistics from organizations relating to wrongful convictions such as the Innocence Project.

Part 3: Mathematical Modeling (Team's Topic)

These prompts can be found on page 5 of the MTFC Project Proposal Prompts 2024-25. Additional information on Mathematical Modeling can be found in **Step 3: Mathematical Modeling** in the Actuarial Process Guide.

Team Responses:

#9: Modeling research on your topic

- Response: After looking at online sources that consist of using mathematical models for wrongful convictions, most of them talked about using math in evidence collection. Additionally, these sources explained the many uses of math in different parts of the justice system. Mathematical models can be used for the jurors to see how they may weigh different pieces of evidence and arrive at a verdict or can be used to assess the likelihood of a piece of forensic evidence belonging to a certain individual.
- Links:
 - <https://scholarworks.umt.edu/cgi/viewcontent.cgi?article=1330&context=tme>
 - This document explains how probability is used in court cases but then presents several cases in which probability is misused or wrongly interpreted, leading to wrongful convictions.
 - <https://stacks.stanford.edu/file/druid:zr441rf1437/DiBello-dissertation-augmented.pdf>
 - <https://docs.iza.org/dp11837.pdf>
 - <https://nij.ojp.gov/topics/articles/impact-false-or-misleading-forensic-evidence-wrongful-convictions>

#10: Goals of a mathematical model in the project phase

- Response: Ideally for our project, creating a mathematical model should help us determine the distribution of the most common or least common causes for being wrongfully convicted. Specifically, a regression model can help understand the correlation between different factors (such as the misplacement of evidence or race) and wrongful convictions.

#11: Assumption development

- Response:
 - A future time period for our model is approximately 10 years. Implementing risk mitigation strategies in the justice system, a system that has been established and doing things the same way for a long time, will take time. 10 years is not too far in the future because we want to make a change to a pressing issue today, and we also have to consider the limitations of the data available. We have exoneration data for 10-15 years in the past to help us project to the future.
 - Without any changes to the behaviors or implementing strategies to prevent wrongful convictions, we don't expect significant changes. However, there are multiple organizations for activism surrounding wrongful convictions, such as the Innocence Project, which may cause the number of wrongful convictions to decrease.

Part 4: Risk Analysis (*Team's Topic*)

These prompts can be found on page 6 of the MTFC Project Proposal Prompts 2024-25. Additional information on conducting a Risk Analysis can be found in **Step 4: Risk Analysis** in the Actuarial Process Guide.

Team Responses:

#12: Goals for mitigation strategy

- Response: One risk is spending time in prison away from family, which can weaken relationships and impact a house's income; for example, if the convicted individual was the sole provider for the family, then the rest of the family will have trouble supporting themselves. Another risk is overcrowding, which could result in unsanitary conditions that could result in the deaths of prisoners, and it can also lead to many fights or violence between the inmates. A third risk of wrongful conviction is that people can lose trust in the justice system, resulting in more opposition to the justice system, such as an increase in violent protests and resistance to the system. Our research shows that there has been a rise in the number of exonerations of the wrongfully convicted; however, articles have described an increase in wrongful convictions as well, over the past few years. Therefore, the trajectory shows that there will be an increase in wrongful convictions, which will lead to an increase in the risks described above. We hope the risk mitigation strategies can increase the number of exonerations but decrease the number of wrongful convictions in general. Additionally, we hope to improve the conditions in jail overall, so the wrongly convicted will not be harmed in jail.

Part 5: Recommendations (*Team's Topic*)

These prompts can be found on page 7 of the MTFC Project Proposal Prompts 2024-25. Additional information on making Recommendations can be found in **Step 5: Recommendations** in the Actuarial Process Guide.

Team Responses:

#13: Recommendation differences between mitigation strategies

- Response: Two important metrics that are likely to be helpful to ultimately determine which of the three risk mitigation strategies to pursue should be effectiveness and complexity. Effectiveness is a very important metric because it will determine whether the strategy helped reduce the number of wrongful convictions and it is easy to quantify. Additionally, complexity is another important metric to use because it quantifies the feasibility of the strategy and determine if the strategy is achievable.

#14: Audience for recommendations

- Response: One group that has the authority to bring changes based on our recommendations is the Federal Bureau of Investigation. This group handles investigations by gathering facts and evidence. One of our strategies is to improve the quality of the evidence collected and this strategy can be implemented by the FBI.

#15: Goals for situation improvement

- Response: By implementing our recommendations, we hope that the Federal Bureau of Investigation will improve the quality of their investigations, and their evidence collected. We hope that as a result, there will be fewer wrongful convictions and the wrongfully convicted can be compensated and supported. Moreover, with our risk mitigation strategies, we aim to increase the number of exonerations while also improving the conditions in jail overall.