

MTFC Project Proposal 2024-25

Team Name	What the function
Team ID #	19715

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: Effects of social media on Behavior and Attention Span

#2: Identify potential risks

- Response: Some potential risks include the loss of mental stamina, brain development being slowed down or hindered, as well as perception of the world being altered, or grasp of reality being different. Furthermore, a large risk is of lowered or shortened attention span, as many times the constant stimulation from social media can make it hard to retain the same amount of focus and concentration. These risks could lead to long-term cognitive and behavioral changes that affect academic performance, workplace efficiency, and interpersonal relationships.

#3: Identify a behavior change risk mitigation strategy

- Response: Some behavior change risk mitigation strategies include limiting screen time, finding alternate entertainment platforms, particularly ones that host long form content, and getting rid of toxic social media accounts or apps. Blocking/unfollowing media that encourages altered perception (ex: propaganda, body dysmorphia, etc.) can aid in improving your perception of the world because you are getting rid of content that will encourage negativity. Reducing screen time can also help because you spend less time being influenced by the hidden messages on your phone and more time having real life experiences. Not using social media as much will improve one's ability to form ideas for oneself, as one does not need to follow a popular opinion or trend. Reducing screen time improves mental stamina by decreasing the frequency of watching short videos that can shorten your attention span. Watching long form content can also aid in increasing attention span because you are conditioning yourself to pay attention to longer forms of content while still being entertained.

#4: Identify a modifying outcomes risk mitigation strategy

- Response: Some risk mitigation strategies that serve to modify outcomes are seeking therapy and support from your friends and family. The purpose of these strategies is to cope or work through your altered perception of life. Talking about your feelings or the perspective you gain from being on social media can help you decide what your true opinions are, and what opinions you were influenced by because of social

media. This also ties back to real life memories that help you see life as it truly is. These strategies also help to fix a short attention span as interactions with friends, family, or a counselor are likely to be longer conversations. Furthermore, these interactions will facilitate the person to be exposed to an environment that affects them in reality. This is because oftentimes, social media represents a situation that will have no effect on one's life whatsoever, but the posts use provocative language to garner attention. Hence, the person would not be influenced by outrageous comments on social media due to them spending more time with the real world.

#5: Identify an insurance risk mitigation strategy

- Response: All risks are addressed with this strategy as in the advent of loss of property due drastic action taken by individuals affected by the copious amount of misinformation present in social media. These individuals most likely have a short attention span since they do not verify the information presented to them, and their brain developed abnormally due to overexposure to technology. Hence, receiving a formal education will improve their attention span, provide them with good knowledge, and help with brain development.

#6: Identify driving research questions for your topic

- Response: The questions driving the research are:
- How does extended exposure to social media and digital entertainment affect a person?
- How does a person's age affect their behavior towards the entertainment found on the internet?
- How do neural pathways change with increased exposure to social media?
- How might attention span be fundamentally changed when there is lots of exposure to social media?

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

Describe in 2-3 sentences what the “perfect” or “ideal” data/dataset(s) would be that would enable you to answer and explore the questions you posed. Think about what the data would include – frequency of past events? geographic locations? dates? charts? costs of repairs? financial claims values

- Response: We hope to find data, likely in a spreadsheet or some other large database, that has numerical values for attention span, how much time people spend on social media, and possibly even the amounts of hormones such as dopamine or oxytocin being released. Furthermore, data on the age of the person who starts to spend time on the internet of a population would also be useful to identify the trend of entertainment exposure among young people and adults. Ideally, the dataset would also include demographic information, such as geographic location and socioeconomic status, to analyze how these factors influence the impact of social media exposure.

#8: Identify potential data sources for your topic

- Response: Potential data sources for our topic include the US government’s data on people and behavior. This data source will likely have censuses to provide information of the US’ population behavior using their digital resources.
- Other social media platforms will have data on their users to gauge the average time spent on social media for different age groups. This data is important to see how different amount of social media usage affects different groups of people.
- APA PsycInfo, which is a site containing psychological and behavioral data, The data
- CDC.gov has data from [surveys about adolescent behaviors and experiences](#), and [journal articles about the effects of social media on youth](#).

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:

The research identified studies and datasets exploring the effects of social media on neural pathways, dopamine regulation, and attention spans. Notable sources include:

- The Natural Library of Medicine publishes studies on brain plasticity, including articles like “What the brain ‘Likes’: neural correlates of providing feedback on social media” (<https://pmc.ncbi.nlm.nih.gov/articles/PMC6121147/>)
- Journal of Social Media Studies contains research focusing on the behavioral effects of extended screen time and altered attention spans.
- CDC Behavioral Risk Factor Surveillance System provides survey data on adolescent and adult behaviors, which can correlate screen time with mental health indicators.
- APA PsycInfo Database includes psychological studies like “Attention Span Trends in a Digital Age.”

These sources offer critical insights into trends and quantifiable relationships. Some statistical methods found in the research, such as advanced regression modeling and neural network approaches, require further exploration for practical application.

The research found studies highlighting the effects of prolonged social media use on neural pathways, dopamine regulation, and attention spans. For example, excessive screen time is linked to reduced cognitive resilience and alterations in the reward system. The CDC provides survey data on adolescent behaviors, while APA PsycInfo includes metrics on attention spans and behavioral changes related to social media exposure. These sources provide insights into trends and relationships.

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

- Response:

A mathematical model should quantify the relationship between social media exposure and measurable outcomes such as attention spans, dopamine levels, and neural pathway changes. The model can predict long-term effects across age groups, incorporating factors like usage duration and starting age. This analysis will help assess risk likelihood and severity, providing insights into trends over time. Regression analysis, time-series models, or neural network frameworks may be effective approaches.

#11: Assumption development

- Response:

1. Future time period for analysis:

A 10–15-year period is suitable for observing generational behavioral shifts and the effects of evolving digital engagement.

2. Expected changes in data over time:

Social media usage will likely increase, particularly among younger demographics, driven by greater accessibility and technological advancements. The growth rate may accelerate rather than follow a linear progression.

3. Rationality of assumptions:

These assumptions align with historical data trends and research showing the increasing integration of digital technologies into daily life and their expanding influence on behavior.

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: If no interventions are made, the current trajectory suggests a worsening of risks such as diminished attention spans, impaired brain development, and an increasing prevalence of mental health issues tied to excessive social media use. Over time, societal reliance on short-term digital gratification could reduce cognitive resilience, poorer decision-making skills, and a heightened susceptibility to misinformation. These outcomes would likely compound across generations, significantly impacting productivity and social interactions. The goal of the risk mitigation strategy is to counter these trends by fostering healthier digital habits and enhancing individuals' ability to engage with social media critically. The hope is to improve attention spans, support normal brain development, and build resilience against negative cognitive and emotional effects. Ultimately, these efforts aim to create a more mindful and informed society that can harness the benefits of technology without succumbing to its risks.

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: Some behavior change risk mitigation strategies include limiting screen time, finding alternate entertainment platforms, particularly ones that host long-form content, and getting rid of toxic social media accounts or apps. It is helpful to prioritize metrics such as time spent on screens, amounts of alternate entertainment platforms, and access to toxic social media accounts or apps. We think that limiting screen time is the mitigation strategy that we will pursue when fully modeling our project. Since the effects of social media are directly caused by time spent on screens, it is logical that by limiting screen time, the detrimental effects will greatly decrease.

#14: Audience for recommendations

- Response: One potential target audience for our recommendation is parents, teachers, educators, or other adults who distribute and regulate social media and screen time in kids. Kids themselves enjoy spending time on social media, so they will want to continue spending time on it due to the entertainment it provides. Parents and teachers, on the other hand, understand the risks and have the authority to regulate social media usage. Since these adults are in charge of the kids, we will target our recommendation towards them to ensure that the effects of social media are understood and prevented.

#15: Goals for situation improvement

- Response: We hope that our recommendations regarding the effects of social media will cause change in society. Firstly, all kids and people exposed to social media will be able to have sufficient attention spans to function in society, either by preventing or fixing already degraded attention spans. Along with this, our goal is to improve mental stamina, which will allow kids to focus on important tasks such as school work for extended periods of time. The development of cognitive functions and overall brain development will also assist in improving the overall mentality of kids. This will result in a higher level of education in society, which benefits the overall well-being of the population. With limited amounts of social media, relationships with technology will improve as well.