MTFC Project Proposal 2025-26

Team Name	Myriad of Magnanimous Moderators
Team ID #	23919
Short Title for Proposal	Effects of Online Gaming on Mental Health
Topic Category	Drugs/Addictions/Mental Health

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

These prompts can be found on page 3 of the MTFC Project Proposal Prompts 2025-26. 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:

- Online gaming is an incredibly widespread activity, practiced by a huge range of ages and populations, especially by young children. It has been observed that gaming can greatly impact the mental health of those who engage in these activities. With their developing minds, children are most susceptible to online hate, which can lead to depression, anxiety, and even suicide. To protect this group who is in the way of potential harm, this project aims to study how online gaming can affect the mental health of minors.

#2: Identify potential risks

Response:

- For individuals, potential risks can include effects on the individual's mental health, as well as physical wellbeing due to this mental health. The worst possible outcome of these risks are that the individual will become severely negatively affected, possibly leading to suicide, while the best possible outcome is that the player's mental health is improved by participating in the game. For the gaming industry, potential risks can include the loss of players and legal trouble due to player injury. At its worst, these can result in the death of the online gaming industry due to a lack of a fanbase and legal persecution, while the best outcome is for the player population to be unchanged or increased with no grounds for legal persecution.

#3: Identify a behavior change risk mitigation strategy

- Response:
- One behavior change risk mitigation strategy that can be implemented is limiting the amount of time that minors are allowed to engage in online gaming. Due to online gaming having potential negative impacts on the young, a simple and easy solution to fixing the problem is by preventing minors from engaging in such activities in the first place. Limiting screen time or banning online gaming to this group altogether will remove all risks posed by it, however this likely will result in being a negative detriment to this same group. In the early stages of one's life, having fun and being allowed to socialize is important, and gaming can help be an outlet for adolescents. Stripping them of this right may prove to be an extreme method that may do as much harm as good. It will also be a huge detriment to large gaming companies, completely ruining the whole gaming industry.
- Another behavior risk mitigation strategy is incorporating a positive reinforcement system that ensures positive player feedback. In gaming, one common place of risk for minors is in chatting and gameplay. In these places, competition and toxicity can quickly arise, which is often a place of significant distress for this group. To prevent these risks, a system can be implemented that provides a user positive feedback when toxic events emerge, counteracting all negativity and preventing the user from developing negative impressions of themself or others.

#4: Identify a modifying outcomes risk mitigation strategy

Response:

- One modifying outcomes risk mitigation strategy is establishing an active mental health response system integrated into the platform to provide immediate access to crisis hotlines. In other words, those who have been victim to cyberbullying or are susceptible to various mental conditions can be given access to a mental health helpline through the game itself, which can modify the risk of suicide becoming an outcome.

#5: Identify an insurance risk mitigation strategy

Response:

- Therapy sessions themselves can be quite expensive. The risk of not having enough funds can be mitigated by the insurance company efficiently setting aside an adequate amount of money in reserves from their customer/patient. The insurer can ensure that the customer can pay high sums of money, even in times of economic instability. Insurance reserves are composed of multiple components, including paid claims, case reserves, claims that have occurred, and claims that have not occurred. This strategy allows for prediction of claims, with the reserves serving as a buffer.

#6: Identify driving research questions for your topic

Response:

- Some of the driving research questions for our topic include: how can we help prevent youth from being harmed mentally online? How can we make changes to the approach games take for this purpose? How can youth and their guardians change their methods to help them? How can we help the young that have been affected rebound? What are the most significant specific causes that lead to deteriorated mental health? Chatting, skill, other?

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

These prompts can be found on page 4 of the MTFC Project Proposal Prompts 2025-26. 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:

- The idea that we hope to find should provide sufficient information to observe rates/patterns of poor mental health in gamers, categorised by gaming platform. From there, we can go on to find data about each platform, such as the genre, average age of players, what kind of behavior is usually indulged in (if provided), and more. Using this information, we can then find out what groups of people, mainly minors, are most impacted mentally by gaming and deploy a system to prevent their mental deterioration. In other words, we are primarily trying to find data that can characterize/refine categories of potential outcomes. Data that defines frequency or likelihood of potential outcomes may also be considered to understand how gaming platforms have changed over time and how certain changes affect mental health in a user base.

#8: Identify potential data sources for your topic

Response:

Some potential data sources regarding our topic are:

- Problem gaming and suicidality: A systematic literature review - PMC
    - This source is credible as it was published by the NIH, an official U.S. government website and talks about how gaming can relate to suicide, one aspect that can prove significant in our project. Because the article summarizes the data and outcomes from many relevant studies, this article helps to define the categories and severity of risks. This data can be used to find the average age range, scenario, and severity analyzed by studies, helping to guide later research.
- Does Video Game Play Elevate Suicide Risk? A Cross-sectional Study of Japanese Young Adults1,2
    - This source is credible as it is a published source in the Wiley Online Library that received a research fund from a Japanese university, Chukyo University, along with a Grant-in-Aid from the Japan Society for the Promotion of Science. A subset of the findings were later presented at the 21st International Conference on Human–Computer Interaction in Florida from July 26 to 31, 2019. It talks about how online gaming can elevate suicide risks, one area that our project regards. This data provides correlationary information about different factors in suicide such as gaming addiction, suicidal ideation, suicide attempts, etc. This can be useful in categorizing risks and potential outcomes, as it helps us understand how much a factor can impact suicide attempts. Therefore, we can assign varying levels of importance to each factor through weighting as well as lead us to other sources of data we can use to evaluate suicide risk.
- Exploring Suicide and Violent Videogames - Society for the Advancement of Psychotherapy
    - This source is credible as it is a published source in ScienceDirect and was written by researchers from the All India Institute of Medical Sciences. It explores how violent video games can have an influence on mental health, a pretty large focus of our project. This article can be used for categorize risks and potential outcomes and can help us categorize potential risks from how gaming features can increase the risk of suicide.

- Media reporting on deaths due to suicide attributed to gaming in digital news: A case of misrepresentation and missed opportunities - ScienceDirect
    - This source is credible as it is a published source in ScienceDirect and was written by researchers from the All India Institute of Medical Sciences. It talks about how media reported suicides due to gaming may not be fully accurate, which may affect our data. There may be a risk of an over exaggeration of how many suicides are truly due to gaming. This dataset would categorize the risks and potential outcomes, as the main purpose of this study was to find why gaming-related suicides occured. This data has potential to aid us in deciding which factors to examine in our analysis, ensuring that our model is effective.
- Video Game Sales Exploratory Data Analysis | Kaggle
    - This source seems to be credible as it is a large study that is widely viewed and well received. It explores how video game sales have changed over time. This can help us understand how video game genres trend over time, such as whether there is a rise in more violent video games. This data would be classified as historical frequency, and can be useful for comparison with the Fatal Injury Trend dataset.
- Fatal Injury Trends
    - This source is credible as it was published by the CDC, an official U.S. government website and gives data of how many suicides have occured in the U.S. per year. This is significant as it gives us data that we can use to understand how suicide trends have changed with gaming trends, a part our project intends to research. This source gives us significant data to define frequency or likelihood of potential outcomes, as it provides the total number of suicides in the United States on a given year. Therefore, this data helps define historical frequencies. It gives us plenty of charts and tables that we can use, and we can create various figures over time or figures dictating relationships between factors.

Part 3: Mathematical Modeling *(Team's Topic)*

These prompts can be found on page 5 of the MTFC Project Proposal Prompts 2025-26. 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 searching for specific factors in gaming that may influence mental health (such as poor moderation of bad characters, gaming time, violence, etc.), it is apparent that certain factors such as gaming time and violence are more studied than social responsibility or moderation in gaming. Additionally, many articles exploring this topic involve surveys or behavioral analyses. Interesting mathematical topics in the mathematical models such as the positive equilibrium state, a concept that refers to a stable, non-zero distribution.
- Search Query: "Poor moderation in video games math model"
    - https://www.redalyc.org/journal/6941/694173115006/694173115006.pdf
    - https://www.frontiersin.org/journals/computer-science/articles/10.3389/fcomp.2024.1283735/full
    - https://pmc.ncbi.nlm.nih.gov/articles/PMC8277305/ (Differing Opinions)
- Search Query: "mental health and poor moderation in video games math model"
    - https://www.researchgate.net/publication/353403062_Video_Gaming_And_Its_Association_With_Depression_Anxiety_And_Stress (Agreeing Opinions)
    - https://tmb.apaopen.org/pub/hr9fbho7/release/2
    - https://dr.lib.iastate.edu/server/api/core/bitstreams/53682ca6-c1db-4eb8-ab20-82fd51d91d37/content (Says that poor mental health can cause problematic gaming and vice versa. Is there a correlation? Looks like it's talking about video game addiction)
- Search Query: "negative effects of video games on mental health"
    - https://pmc.ncbi.nlm.nih.gov/articles/PMC9691221/
    - https://www.nature.com/articles/s41562-024-01948-y
- Search Query: "negative effects of multiplayer video games on mental health"
    - https://www.southwesthealth.org/the-effects-of-video-games-on-children/
- Search Query: "negative effects of multiplayer video games on mental health" Gordon Library Search Query: "Social Responsibility in video games"
    - https://www.gamedeveloper.com/business/call-of-duty-of-care-social-responsibility-and-the-videogame-industry
    - https://www.mdpi.com/2414-4088/2/2/19 //Who is at risk for problematic gaming?

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

Response:

- Ideally, the mathematical model should be able to characterize how different aspects of gaming can affect the mental health of minors. It should be able to identify different risks of gaming, as well as how they affect the mental health of minors, specifically looking at suicide rates. The model will hopefully identify the likelihood and severity of suicide rates depending on different factors of gaming such as length, genre of game, poor moderation, etc. The analysis of different factors of gaming will also be able to characterize how problematic issues in the gaming industry are to suicide rates of minors, adding urgency to solutions to fix those issues. Given the ideal datasets, it would be fruitful to use statistical analysis to compare the mental health of people playing games with varying moderation strategies to a control group of the

average population, using data such as suicide rates to represent mental health severity. Tests to use for this could be z or t-tests to evaluate the likelihood of the different games' mental healths to be significantly different from normal.

#11: Assumption development

Response:

- For the mitigation strategy to take effect, it could take from one week up to half of a few months. Users will need to become acquainted with this feature in a game, which will take a considerable amount of time to actually implement. Moreover, this time depends on the frequency of people experiencing negative mental health and also the duration of their gaming sessions. We believe that over time, the rates of self-harm and negative thoughts may go down, contrasting with the historical trends. This will be due to increased engagement with the game's crisis helpline, as users find the function of the feature time.

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

These prompts can be found on page 6 of the MTFC Project Proposal Prompts 2025-26. 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:

- Currently, if no serious interventions are made, many more gamers and others online will end falling into cycles of depression and anxiety from these activities they engage in. A goal for our mitigation strategies are to assist people online so that their mental health does not deteriorate significantly. Our hope is that by implementing some mitigation strategies, those negatively affected by online communication will no longer be exposed to such harmful causes.

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

These prompts can be found on page 7 of the MTFC Project Proposal Prompts 2025-26. 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:

- There are two very important metrics that we really need to prioritize when choosing a risk mitigation strategy: feasibility and effectiveness. Feasibility is the most important thing to prioritize as some mitigation strategies may be way out of our scope, so even if they work well, that won't matter if we can't actually help people with it. Along with this, we need to prioritize effectiveness as if the strategy doesn't work well, what's on the line is human mental health and possibly lives. We want to do everything in our power to help everybody that we can, and so we must prioritize these two metrics.

#14: Audience for recommendations

Response:

- There are a few different audiences we can target, two of which being: gamers themselves and gaming companies. Some of our mitigation strategies require encouraging gamers to seek out help for themselves, and if they do, help will be provided. These strategies require the people we're hoping to help with the technique to be our target audience and seek to do something themselves. On the contrary, some of our strategies demand a change in the system itself, which in most cases is something that may only be able to be implemented with the help of gaming companies. For feasibility's sake, we will likely end up going for a mitigation strategy that asks the individual to seek help themself, or appeal to a figure who has a significant role in their life.

#15: Goals for situation improvement

Response:

- We hope that through our recommendations, plenty of gamers are able to find the help they need, or we are able to prevent them from ever being in a situation in which they need help. Ideally, we can build a system in which gamers no longer suffer and will not end up falling into emotional distress or developing poor habits. In the case they do develop negative mental conditions, we will aim to aid them through the difficult times and rehabilitate them to a positive state of mind.