

Undergraduate Thesis Prospectus

Improving wellness and productivity of corporate employees

(technical research project in Computer Science)

The Response to Mental Healthcare Demand in American Education

(STS research project)

by

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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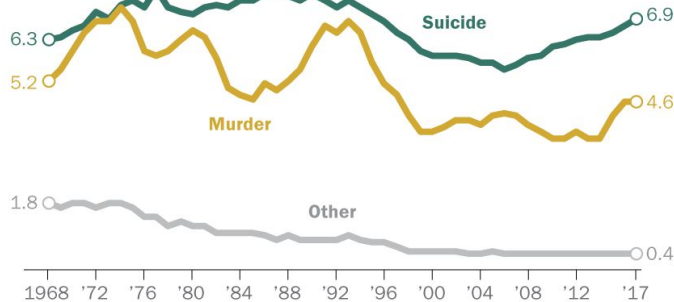
General Research Problem

How can mental health and wellness be improved in America?

Over the last decade diagnosed symptoms of mental health disorders have increased dramatically in youth and young adults. “Rates of major depressive episodes in the last year increased 52% 2005–2017 (from 8.7% to 13.2%) among adolescents aged 12 to 17 and 63% 2009–2017 (from 8.1% to 13.2%) among young adults 18–25”(APA, 2019). Incidence of increased mental illness correlates with higher suicide and gun violence rates. There were 7 reported active shooter incidents in 2000. In 2013 there were 208 (FBI, 2016). The relationship between mental illness and violence is debated. “Only 3%–5% of violent acts can be attributed to individuals living with a serious mental illness. In fact, people with severe mental illnesses are over 10 times more likely to be victims of violent crime than the general population” (MHS, 2017).

After declining in late 1990s, U.S. gun suicide and gun murder rates have edged higher in recent years

Gun death rate per 100,000 U.S. residents, by type



Note: "Other" includes gun deaths that were unintentional, involved law enforcement or had undetermined circumstances.

Source: Centers for Disease Control and Prevention.

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Figure 1. U.S. gun death rates, 1968-2017 (Gramlich; data from CDC, 2017).

Why did suicide and murder rates (by gun) peak in the 1990's (fig. 1), and why are they increasing again? Many attribute these rates to the information age. Social media and 24-hour news are sources of stress.

Improving wellness and productivity of corporate employees

We are helping Medella design a corporate wellness platform to help improve companies' employees' health. The goal is to provide educational content to employees and statistics to employers to indicate overall health in the company. A successful product will help employees control their health while giving businesses feedback on their overall health.

One existing workplace health product is a mobile-first platform called Limeade ONE. Limeade uses a gamified approach involving assessments and rewards (*Limeade*). While Limeade provides many services, these are complicated and result in a steep learning curve. It can take time to learn to navigate the various features (Desai & S, 2019). Furthermore, using Limeade requires knowledge of its file-sharing system, Sharepoint, which adds more complexity (Desai & S, 2019).

Our product will serve as a platform that employees, employers, and the Medella team interact with. Employee health will be tracked to provide personalized resources. The platform will include quizzes with questions like: “How many cups of water should you drink in a day?” Employers will see aggregated employee data to learn how Medella has impacted the company’s overall healthcare costs. Medella employees will be able to use the application to create content. There will be forms within the application to create quizzes, upload videos and write newsletters.

Gathering system requirements is vital to the development process because it ensures the client and developers have the same expectations for the finished product. Below is a list of our system requirements.

Minimum Requirements

- Businesses, employees, and the Medella team should be able to securely login.
- Businesses should be able to view aggregate health data points of company employees.
- The Medella team should be able to create quizzes and blog posts.

- Employees should be able to click on quiz links, view questions, submit answers, and receive a score after submission.
- The Medella team should be able to view aggregate and individual results for each quiz
- Businesses should be able to view aggregated results for each quiz.
- The Medella team should be able to input YouTube links into a form to display them in users' content feeds.
- Employees should be able to watch videos through the platform.
- The Medella team should be able to send emails to employees to inform them of relevant content.
- Employees should be able to opt out of receiving all information from Medella.
- Users should be able to view a page with a mission statement and contact information when going to the webpage without a log-in.

Sample of Desired and Stretch Requirements

- The Medella team should be able to use a newsletter builder form to add text, images, and links to health-related topics to newsletters, as well as publish the newsletters to employees.
- Employees should be able to view previous quiz submissions.
- The Medella team should be able to track clicks by users and businesses on the website in order to monitor user engagement.
- The Medella team and businesses should be able to see a graph depicting how Medella has impacted healthcare costs.

- Employees should be able to opt out of receiving only one type of content (quizzes, blogs, videos, etc.)a
- The Medella team should be able to limit content to specific users.
- Businesses should be able to view the dashboard data broken down by department.

The Response to Mental Healthcare Demand in American Education

How are U.S. universities responding to the rise of mental healthcare demands from students? Participants include university students with a mental illness, university employees, university administrators, healthcare workers, the US government, and politicians.

According to Lattie et al. (2019), “In a survey of college counseling center directors, more than 95% reported that the number of students with significant psychological problems is a growing concern on their campus. Across the country, more and more college students appear to be suffering.” From 2001 to 2017, suicide rates increased 31%. 10.5% of adults aged 18-25 had suicidal thoughts in 2017 (NIMH, 2019).

American suicide rates have been increasing since the 1990’s. Both racial and socioeconomic minority groups have higher rates of suicide. Student Alyshia Hull talks about her anxiety: “Imagine your greatest fear, that feeling of being so scared, but experiencing that every day” (cited in Lauriello, 2019). Treating mental illness means understanding its origins. Auerbach et al. report that “among college students, mental disorders have onsets occur prior to college entry, in the case of pre-matriculation disorders are associated with college attrition, and are typically untreated” (Auerbach et al., 2016). Mental disorders can persist for a long time

without attention, and may worsen without treatment. Dr Sherry Benton advises: “If the problem is more serious or has continued for several months, help from a therapist can be highly effective” (cited in Hess, 2018).

However, getting treatment isn’t always easy. One reporter found that “Constance Rodenbarger, a student at Indiana University, attempted suicide while waiting for an appointment at the campus counseling office” (Thielking, 2017). Wait times up to 3 weeks are not uncommon according to Thielking. Not much is known about the impact of wait times, but for every day of waiting, 1% of patients cancel their appointments (Dampier, 2018). Wait times can be attributed to volume of patients, number of care providers, and insurance plans. “If I’m an average patient with an insurance plan, I’m probably going to wait at least three weeks for an appointment,” says professor Christopher R. Larrison (cited in Dampier, 2018). The types of appointments matter as well. Initial intakes can have long wait times on top of the time taken to find an available provider.

Publicly funded universities apply some of their state support to their health services. After losing his son to suicide relating to mental illness, Virginia state senator Creigh Deeds said: “We cannot afford to wait for another crisis or tragedy. Too many lives have been lost, too many families changed forever” (cited in Szabo, 2019). The University of Virginia’s 2019-2019 budget lists “total direct expenses” at \$14,182,358 (University of Virginia, 2019), while the university’s endowment is \$9.5 billion (Smith, 2018).

Increasing spending for mental health services has shown promising results. The California Mental Health Services Authority allots public funding for California schools. It spends 8.7 million per year. 13% more students receiving treatment and more than 300 students

graduating from the previous year. (Lam, 2015) Colleges and universities are planning for the increase in mental healthcare needs. The University of Virginia is investing 100 million dollars to build a new student health center, so that it can be one of the leaders in student health and wellness research,” said Dr. Christopher Holstege (cited in Kelly, 2018) about UVA’s new health center. Holstege hopes future students can have “really healthy and well-rounded lives when they go and work and find occupations.” According to Chessman, “We know that poor mental health hinders student academic success.” Chessman adds “I think it’s important that mental health and well-being be a campuswide priority, and it is for a lot of college presidents”(as cited in Bauer-Wolf, 2019).

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