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Emergency Preparedness and Perceptions of Resident University Students: Literature Review, Study Proposal & Impact of Pandemic Crisis on Research

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Abstract

Emergency preparedness is an essential step in mitigating negative impacts of disasters, especially in an area affected by wildfires, power shutoffs, earthquakes, and flooding. Dominican University of California resides within Marin County, and has experienced emergencies in the past. Students are expected to prepare themselves to survive independently for 3-5 days. As previous research has shown, college students often do not meet this expectation. This proposed study will assess the current preparedness levels of students living on Dominican's campus. It will also determine how perceptions of emergency readiness contribute to actual preparedness. Data collection was interrupted by the COVID-19 pandemic, threatening internal validity. A summary of previous studies interrupted by disaster has been included in place of data analysis, with parallels noted between preparation procedures for future natural disasters, local emergencies, and pandemics.

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Introduction

Emergency preparedness is an essential step in mitigating negative impacts of disasters, especially as the number of individuals effected by disasters in the United States is projected to increase (CDC, 2015). In Marin County, California, emergencies such as fire, power shutoffs, and earthquakes are the most likely to occur. According to risk assessments completed by County organizations, 82% of land in Marin is ranked as having moderate to very high fire hazard severity zone ratings, and there is a 52% chance of Marin being affected by a 6.7 or greater earthquake before 2036 (Marin Co Fire Dept, 2016; Marin County, 2018). Public Safety Power Shutoffs are done with increasing frequency by the local power company to decrease the risk of wildfire instigation during red flag weather conditions (PG&E, 2019). Located within the affected area is Dominican University of California, a private university hosting 1737 students (DUoC, 2019). The numerous potential threats to campus safety indicate the need for all students to be adequately prepared for an emergency, both in knowledge and supplies.

Studies have been previously done on efforts to increase awareness and action towards household preparedness prior to disasters in the United States (FEMA, 2014). Increasing rates of emergency preparedness can lead to less negative health outcomes after a disaster, which may range from physical injuries to disease outbreaks to psychological impacts (CDC, 2019). Resources like the federal government's Ready website and events are available to the public to encourage continued community efforts on the issue (Ready.gov, 2019).

Many resources and studies address vulnerable populations of disasters within risk-prone areas, recognizing the increased needs for preparation within these communities (Aldrich, 2008; Banks, 2016). College and university students have been understudied in comparison, despite their unique roles in the community. Students can be considered vulnerable in terms of disaster readiness due to a number of factors. They often live in rented short term housing, have limited storage and funds for supplies, and are still learning to manage the challenges of living independently from a family home. Tasks such as managing important documents and maintaining an emergency kit are not priorities to a new student. The impact of these observations is supported in previous research, which showed that students are less prepared for disasters than their non-student renting counterparts in the same city (Mulilis, 2000).

In order to promote emergency readiness in any portion of a community, there must be a present comprehension of the current resources and needs within that group. This proposed study will survey students living on campus to better understand both their perceived preparedness and actual preparedness for an emergency. The data will be applicable to disaster management procedures for the University, as well as being used to identify specific needs of the student population.

Literature Review

A review of the literature was completed to determine the existence of previous studies done on college students' emergency preparations as well as effective methods of surveying college populations. Multiple combinations of terms were used to search journals, including: campus, college students, university students, emergency preparedness, emergency readiness, disaster preparedness, disaster readiness. A basic search of databases such as PubMed, CINAHL,

and ScienceDirect only lead to the finding of three of the articles included in the literature review. All other studies were found through a reading of the reference list of the found articles. Due to the limited number of previous studies, all related articles that followed the parameter of assessing preparedness prior to an emergency were included in the review.

A total of ten articles were chosen for this literature review, all of which will be briefly categorized and overviewed in this section. The full table with details of each article can be read in Appendix B. The first category includes three articles that do not pertain directly to college populations, but are examples of reliable and validated survey methods previously used to assess emergency preparedness. The next category has four studies that assessed college student populations and focused on differences between population groups in the analysis. The final category contains three articles that surveyed college students and made specific correlational analyses between perceptions of preparedness and actual preparedness.

Survey Methods for Non-Student Populations

Each of the three articles chosen to represent previous study methodology provide separate perspectives. Two of the studies used the CDC's tool known as the Community Assessment for Public Health Emergency Response, or CASPER (Centers for Disease Control, 2019). This tool was developed by the CDC to rapidly and accurately determine the needs of a community after a disaster has occurred. It has since been adapted for use prior to a disaster. Local county public health departments are able to use CASPER to assess the lacking areas of emergency preparedness in their community's households.

A study was done using CASPER to compare the preparedness of different types of households in Oakland County, Michigan (Murti, 2014). Using the typical CASPER

methodology of door to door interviews conducted at certain intervals between houses, they gathered data from both single-detached homes and multi-unit dwellings. The questionnaire was designed by building upon the basic survey supplied by the CDC. While the current proposed study will not be doing door-to-door interviews, it will utilize the reflections on the Michigan study's survey tool. For instance, one question on the survey- "does your household have multiple routes away from your home in case evacuation is necessary?" (Murti, 2014) was interpreted differently by multiple participants. It will therefore be altered or excluded from this proposed study's survey. Another aspect of their questionnaire that will be utilized is the emergency items that were considered necessary to ask about, which will be compared against the items included in other studies.

While this article was chosen for inclusion due to its methodology, its results do also relate to the target population of this current proposed study. It was found that single-detached homes were better prepared for emergencies than multi-unit dwellings. Some of the same potential factors that caused this difference could be applied to the students living on Dominican University's campus in dormitory style housing. Factors discussed in the Michigan study included the limited storage in multi-unit dwellings, the inability to use non-electrical heat sources such as gas when power is out, and lower socioeconomic status.

Another article also centered around CASPER, this time using focus groups in Texas (Zane, 2016). These groups consisted of professionals who had conducted CASPERs in the past. The themes that arose from these discussions will be used as general guidance for assessing the community of Dominican's resident students. A total of 70 lessons were described, some of which were able to be related to a college campus. These included having clear objectives that

incorporate community leaders' input, timing the assessment properly to not compete with other events, and using past surveys as tools to build questions.

The final study in this methodology group was not a CASPER, however it was conducted by the Center for Disease Control and Prevention. During a *Ready* event designed to prepare their own staff members of the Atlanta metropolitan area for emergency situations, a questionnaire was supplied prior to the training (Ready.gov, 2019; Thomas, 2015). This questionnaire focused both on perceptions of the staff members and their preparedness level. Based off of the perceptions, the participants were ranked in categories of knowledge level, risk perception, self-efficacy, disaster experience, and social connectedness. These categories were then correlated against the same participant's emergency preparedness score. This methodology allowed the study to not only determine the areas that their staff members needed to improve most in, but also the potential reasons behind why certain areas were lacking. This same style of questionnaire was used in a study on college students, which will be reviewed later in this section.

College Student Population Analysis

This next group of articles assessed emergency preparedness specifically within student populations. The resulting preparedness data was compared between demographic groups.

Lovekamp and Tate surveyed students at a Midwestern University to determine their perceived preparedness, preparedness actions, and fear levels for potential disasters (2008). They focused on the concept of vulnerable populations, which college students are included within. Many previous studies have been done to show disparities in emergency readiness based off of race, income level, and gender, which lead to groupings of vulnerable populations based off of

demographic values (citation needed). These had not been repeated in college student populations, despite the disparities becoming increasingly multifactorial in this group. This study was unique in identifying vulnerable subgroups within the greater population. The results were reported as the rates of dependent variables (fear, perceived preparedness, preparedness) per each demographic group. The final analysis included statements such as women and black students being more fearful of potential disasters than males and white students. A relevant factor for this present study was the finding that students are more likely to have completed basic survival preparedness activities (having a first aid kit, flashlight, taking CPR classes), over planning tasks (written plans, insurance) or hazard mitigation (structural reinforcement of homes, cabinet latches). An extraneous factor in the article was the mix of type of students, which meant that both undergraduate freshmen living on campus and graduate students owning their own home could have been surveyed the same way. The expectations for structural reinforcement of homes, for instance, should be very different across these groups. For the proposed study, the questions will be tailored to the chosen population of on-campus resident students.

At Missouri State University, students were surveyed about their levels of disaster preparedness and knowledge (Claborn, 2010). This study serves well as a basic foundation from which to understand the state of emergency readiness on college campuses. Students were asked about the essential preparations that are expected of all citizens, including means of evacuation, plans for evacuation, and ownership of emergency items. According to this article, a significantly lower number of students maintained emergency stores of food and water when compared to the population of the United States, about 20% did not have transportation to evacuate with, and they had an overall low level of familiarity with plans for evacuation and sheltering in place (Claborn, 2010). These results indicate that the general student population of this University are poorly

prepared for a disaster, which may be extrapolated with caution to other universities in the United States.

University of South Florida also completed a study of college student preparedness, focusing on undergraduate student knowledge and readiness for hurricanes (Simms, 2013). There was a high level of knowledge gaps, for less than half of students could correctly identify hurricane season, and even fewer knew of the nearest evacuation shelters. A lack of preparedness despite experience with previous hurricanes was also found: only 28% had gathered minimal supplies for a hurricane, and only 29% had an evacuation plan. The authors identified a general lack of concern to be a major contributing factor towards low preparedness levels. This study also analyzed responses by demographic, ultimately finding that students were highly homogenous in both their answers to specific questions and in their overall responses. This article provides additional support for a greater understanding of the emergency readiness of modern college students.

Another study of college populations was completed at the University of Waterloo (Tanner & Doberstein, 2015). This survey questioned students about their demographics, wellbeing responsibility, preparedness, and ideas for further preparedness. The majority of the students felt that they were most responsible for their own wellbeing during an emergency, followed by their parents and the University. Although 72.5% of students did not have an emergency kit, the majority of students still felt neutral about their perceived level of preparedness. This study may indicate that students can be overconfident in their beliefs about their personal preparedness levels.

The articles in this category serve to build a basic understanding of the levels of emergency readiness in university students, and differences between various demographic groups. When extrapolation is limited due to differences in university settings and sizes, having multiple studies to analyze on can help piece together an overall image. These studies create a greater image of disaster preparedness of college students in the United States.

College Student Perceptions Analysis

This next category encompasses articles which move past a basic understanding of presence or lack of emergency preparedness. These studies also assess the perceptions of college students about preparedness, and then analyze for correlations that may explain individual students' variations in readiness. The perceptions were measured through questions about topics such as disaster likelihood, perceived preparedness, disaster experience, responsibility, disaster knowledge and self-efficacy. Each article was able to draw conclusions about which topics affected students' preparedness the most.

Mulilis et al. took a unique approach to assessing college student populations (2000). This group of researchers gave the same questionnaire to college students, non-student renters, and non-student homeowners in the same city in Pennsylvania. They were able to compare the results between types of housing and student status, which allows the 'student' aspect to be better isolated. Overall, the student renters were less prepared than the non-student renters. This demonstrates that there are factors outside of housing type that detrimentally effect university students in disaster preparedness. Another important finding was as perceptions of personal responsibility increases, so did the level of preparedness. Students had the lowest sense of personal responsibility for their wellbeing after a disaster, and therefore had the lowest rates of

preparedness. A serious limitation in this study was that students were offered class credit for taking the survey, which is an incentive that may be not be turned down lightly. Still, this study is integral in isolating those factors that influence the emergency readiness of students.

A study done at a Southeastern University used perceptions of students as predicting values for their actual preparedness (Tkachuck, 2018). They analyzed six domains of questions: disaster likelihood, disaster concerns, perceived preparedness, actual preparedness, university preparedness, and disaster experience. It was found that increased disaster experience, concern, and likelihood were all predictors of increased actual preparedness in students. A limitation was in the manner through which this study determined actual preparedness. The questionnaire only asked about whether students owned specific items, ignoring important activities such as having an evacuation plan or taking first aid training. The development of a survey for this current proposed study will learn from both Tkachuck's strengths and limitations. Many of the perception domains will be included, as well as a more in-depth actual preparedness assessment.

Goddard et al. based their questionnaire after one done by the CDC, which was summarized in a previous category (Goddard, 2018; Thomas, 2015). The methodology and survey layout remained similar, but the population of focus was shifted to students of Missouri State University. Students scored better for disaster preparedness if they had advanced knowledge, high risk perception, high self-efficacy, and previous enrollment in disaster trainings. Very few students had whistles, maps, or radios in their emergency kits, all of which are integral items.

The assessment of perceptions is an essential step towards improving university students' disaster readiness. Knowing whether the cause of decreased preparedness is a lack of knowledge,

experience, responsibility, etc. can lead to targeted interventions. The lessons learned from each of these articles will be incorporated into the present proposed study.

Literature Review Conclusion

College students have been determined to be less prepared than the general population of the United States and their renting counterparts in the same city (Claborn, 2010; Mulilis, 2000). There was a significant lack of evacuations plans, hazard mitigation, and disaster knowledge across studies (Claborn, 2010; Lovekamp, 2008; Simms, 2013). Factors that lead to increased actual preparedness included advanced knowledge, high risk perception, high self-efficacy, previous enrollment in disaster trainings, disaster experience, and sense of personal responsibility (Goddard, 2018; Mulilis, 2000; Tkachuck, 2018). No studies were found that constricted the study pool to on-campus resident students only. Resident students have many differences from commuting students. They may not own a car, they may have less storage space, and they have limited renter rights in their dorm room. Many of these were evidenced by the campus evacuation in October of 2019 during a Public Safety Power Shutoff (PG&E, 2019). Those without cars or family in the area had to find emergency shelter and may not have had the necessary supplies that should be kept in an emergency kit for such events. Therefore, the preparedness of on-campus students needs to be specifically addressed to prevent harm during future emergency events.

Research Proposal

There is an absence in research done on the perceptions and actual preparedness of on-campus resident college students. This assessment could be done at every university in the nation, for emergency readiness is a necessity that every institution should address. The proposed

study will not only fill the research gap of on-campus disaster preparedness, but will also provide basic information to assist in university procedures and future interventions.

Theoretical Framework

The theoretical framework to guide this study is the theory of planned behavior (Ajzen, 1991). Self-efficacy beliefs, social norms, and attitude are considered the main influences on pre-determined behaviors in this theory. Emergency preparedness is a behavior that requires planning by the individual, therefore the factors leading to the presence or absence of such planning should be examined. The survey's questions are designed to capture each of these qualities and correlate them to actual preparedness of students.

Primary Aims

The primary research aims of the study are:

- Determine the perceptions of on-campus students about emergency preparedness.
- Determine the actual preparedness of on-campus students for emergencies.
- Calculate potential correlations between perceptions and actual preparedness behaviors.

Research Design & Methodology

This survey will collect minimal personal information from the participants, none of which could be traced back to any individual. The three demographic factors within the survey are residence hall, grade level, and major. Each have been deemed to be necessary data in order to have applicable results. All answers will be anonymous. If a lottery prize is offered upon completion of the survey to increase recruitment rates, it will be a donated item from a local

community group. No monetary compensation will be given to participants, and no monetary allocation will be supplied by the student researcher.

The study will be a mixed-methods, correlational survey collected from the population of Dominican University's on campus resident students. A total of about 470 students live on campus (P. Raccanello, personal interview, Nov 6, 2019). After a meeting with campus administrators, a goal of 150 responses was set by those administrators. This researcher would consider a minimum of 50 responses sufficient for analysis. The survey will be distributed via email by the Dean of Students to all residents of Pennafort, Fanjeaux, Edgehill Village, and the Townhomes. An initial goal was outlined for having it distributed by the third week of the Spring 2020 semester.

To increase recruitment, a potential award will be offered for completing the Google Forms survey. The prize would be related to the contents of the survey, such as a packed emergency kit or specific emergency items. Anonymity will be conserved by having the 'completion' message include a link to an optional secondary survey through which an email address can be entered. There will be no possible way to connect primary survey responses to email address prize entries in the secondary survey. Additional recruitment measures may include posting flyers in residence halls with a QR code that leads to the survey, or announcements in classes that mainly consist of on-campus students.

Prior to the survey contents, a message explaining the purpose and content of the questions will be included. An affirmation of anonymity will follow. No personal data will be recorded in the main survey, and the entering of the prize contest will be optional. See a copy of the survey tool in Appendix A. The formatting differs with its transcription to Google Forms.

The content of the survey questions is supported by the literature review. An attempt to predict extraneous variables was made along with attempts to address them. For example, there was a concern about students considering the resources of their Resident Assistants (RAs) to mean that the students themselves do not have to prepare as adequately. During the meeting with campus administrators, the RAs were confirmed to have first aid and CPR training certifications as well as first aid kits in their rooms. Therefore, the questions about first aid kits and trainings were purposefully designed in order to target what the student personally owned, rather than what they may have access to on their dormitory floor. Overall, the University expects students to be personally prepared in terms of supplies and evacuation plans.

Data Analysis

Basic descriptive statistics will be utilized to summarize and present the data set. In addition, independent sample t-tests will be done between groups. The groups will be defined by categorizing the survey answers, such as those with high self-efficacy beliefs and those with low self-efficacy beliefs. The perceptions groupings will be analyzed for possible correlations with actual preparedness scores. With this data, the three objectives of the study will be fulfilled.

Data collection was interrupted by the global outbreak of COVID-19. It was determined that collecting information about emergency preparedness during an emergency is a threat to internal validity. The collection of data will be delayed until students again reside in Dominican's dormitories, expected in Fall 2020.

Impact of Emergencies on Research Around the World

In place of an analysis of the data, a review of previous literature related to research studies impacted by disaster was completed. The presence of previous research regarding this

topic is limited, especially literature specific to disease outbreak. A book authored by the National Academies of Sciences, Engineering, and Medicine summarizes the effect of previous disasters on studies, *Strengthening the Disaster Resilience of the Academic Biomedical Research Community* (2017). They note the impacts of disaster across the spectrum of every study, from the individual researcher to the academic research institution, the sponsor, and on overall scientific discoveries. While often put in the context of natural disasters or extreme weather events, many of these same impacts are also applicable in the presence of the COVID-19 outbreak. For instance, the individual researcher is presumed to be effected if the following events occur due to a natural disaster: loss of ability to get to and from work, loss of work environment, loss of employment, personal and psychological impacts, and career impacts. These are all losses that researchers are currently experiencing in the pandemic. Due to shelter in place orders in areas across the world, non-essential researchers must stay home from work and they may have lost employment. Mental health resources are expected to be increasingly relied upon to support those feeling socially isolated or stressed from other related factors (Galea, 2020). Individual researchers may have their careers impacted with delayed graduations or doctoral defenses. Specific barriers faced by current studies have included the complete halting of field research, limitation of resources to care for live organisms, and the stopping of clinical trials that gave terminal patients hope (Kimborough, 2020; NPR, 2020).

The parallels between the previous impacts of natural disasters and the current impacts of COVID-19 are numerous. This may indicate that similar strategies can be used in emergency preparedness for research institutions. Every institution should establish a continuity of operations plan that addresses how research will best preserved in different scenarios. With the novelty of the COVID-19 outbreak, many institutions were not prepared for a multi-month

shelter in place order. Universities and other research groups should consider factors such as the minimal staffing level essential for the preservation of samples and data security, what resources and equipment must be maintained, and if any samples could be displaced to a home environment. There should be a cross-sharing of knowledge between researchers so that multiple people have the skills to maintain necessary systems.

Individual researchers should also consider emergency preparedness during the proposal of their study. Topics to address include whether access to a specific campus or building is needed, what is the minimum equipment needed, and a general analysis of external factors that could be a threat to the validity of their research.

Emergency preparedness is an ever-evolving topic. As new emergencies are presented, the world must adapt to be ready for the next iteration. In the case of research, having an emergency plan in place could mean the preservation of years of data for one individual researcher or graduating on time for another. COVID-19 has instigated a new reality for the world, a reality in which multiple months of sheltering in place is possible. Researchers and their institutions now have the responsibility to incorporate related preparedness plans into their study's proposal.

Conclusion

Previous studies have addressed the preparedness of college students for disaster emergencies and have even correlated students' perceptions against their actual preparedness (Claborn, 2010; Goddard, 2018; Lovekamp, 2008; Mulilis, 2000; Simms, 2013; Tanner, 2015; Tkachuck, 2018). There has been no previous literature which confines such a study to the on-campus resident population. This information is important to university administrators, public

health organizations, and nursing practice. Even clinical nurses will encounter the effects of emergencies in their practice. If students are congruent with the national population, encouraging the preparedness of students will decrease resulting physical injuries, disease outbreaks, and psychological impacts of emergencies (CDC, 2015). In turn, this will decrease the effect of student disabilities and resources needs on hospitals and clinical nurses.

The information from this study can be directly used to identify proper interventions to be taken by Dominican University of California. These interventions will help to increase the emergency preparedness knowledge and behaviors of the students. Further studies may choose to address off-campus students, other universities in the Bay Area, and effectiveness of specific interventions. The goal of all such research should be to increase the preparedness of all residents for disaster emergencies, therefore mitigating the negative impacts and promoting health in every population. With COVID-19, we have seen a global shut-down that has not been achieved before in modern history. Researchers must adapt to this outbreak with their own plans for data preservation.

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Appendix A: Survey Tool

Purpose and Anonymity:

The purpose of this survey is to learn about the level of emergency preparedness of on-campus students at Dominican. All results are anonymous, and your email address is not recorded.

Demographics

1. What is your grade level? (Circle one)
    a. Freshman
    b. Sophomore
    c. Junior
    d. Senior
    e. Graduate student
2. Which residence hall do you live in? (Circle one)
    a. Fanjeaux
    b. Pennafort
    c. Edgehill Village
    d. Townhomes
    e. I do not live within campus housing
3. What is your major?

    _____

Perceptions

4. First responders recommend that community members be prepared to survive independently for 3 days following an emergency while waiting for assistance to arrive. How prepared do you feel to survive independently for 3-5 days after an emergency?
    1= not prepared at all, 7= completely prepared

    Circle a number: 1 2 3 4 5 6 7

5. How prepared do you feel the university is to respond to a potential emergency?
    1= not prepared at all, 7= completely prepared

    Circle a number: 1 2 3 4 5 6 7

6. To what level do you agree with the following: I am capable of building an emergency kit and writing an emergency plan.
    1= strongly disagree, 2= disagree, 3= somewhat disagree, 4= neutral, 5= somewhat agree, 6= agree, 7= strongly agree

    Circle a number: 1 2 3 4 5 6 7

7. To what level do you agree with the following: Having an emergency kit and written emergency plan will help mitigate the harmful effects of this disaster.

1= strongly disagree, 2= disagree, 3= somewhat disagree, 4= neutral, 5= somewhat agree, 6= agree, 7= strongly agree

a. Power outage 1 2 3 4 5 6 7
b. Fire 1 2 3 4 5 6 7
c. Earthquake 1 2 3 4 5 6 7
d. Flood 1 2 3 4 5 6 7
e. Mass violence 1 2 3 4 5 6 7

Preparedness

8. Do you have a dedicated emergency kit in your dorm room or car, with items specifically collected and maintained for emergency purposes?
   a. Yes b. No
9. Which of these supplies do you have available in your dorm room or car, whether in an emergency kit or not? (Check all that apply)

Flashlight or headlight	
3-day supply of water	
3-day supply of non-perishable food	
7-day supply of medications	
Radio: battery powered or hand crank	
Portable charger/power bank for cell phone	
First aid kit	
Multipurpose tool	
Cash	
Copies of personal documents	
Family and emergency contact info	

10. Do you have a written emergency plan?
    a. Yes b. No

11. Have you completed any of the following activities: CPR training, first-aid training, emergency response training?
    a. Yes b. No

12. To what level do you agree with the following: This barrier prevents me from being fully prepared for an emergency.
    1= strongly disagree, 2= disagree, 3= somewhat disagree, 4= neutral, 5= somewhat agree, 6= agree, 7= strongly agree
    a. Cost of items 1 2 3 4 5 6 7
    b. Feeling like the items/plans will never be used 1 2 3 4 5 6 7
    c. Lack of storage space to keep emergency items 1 2 3 4 5 6 7
    d. Lack of experience with disasters 1 2 3 4 5 6 7
    e. Lack of knowledge about how to be prepared 1 2 3 4 5 6 7
    f. Lack of awareness about the need to be prepared 1 2 3 4 5 6 7

g. Other barrier(s) not listed:

_____

13. Do you have any medical conditions that would:
    a. Make it more difficult to prepare adequately for an emergency?
        i. Yes ii. No
    b. Make it more difficult to evacuate campus if needed?
        i. Yes ii. No
    c. Require additional equipment to be maintained during an emergency (ex: fridge for medications)
        i. Yes ii. No

14. During the campus evacuations due to the public safety power shutoff in October 2019, where did you evacuate to? (Circle one)
    a. My parent's or legal guardian's home
    b. The home of another family member or friend within 2 hours of driving
    c. The home of another family member or friend more than 2 hours of driving away
    d. An emergency shelter
    e. I did not live on campus during the Fall 2019 semester
    f. Other _____

Interventions

15. To what level do you agree with the following: I would be interested in attending this activity if offered on campus at no cost.
    1= strongly disagree, 2= disagree, 3= somewhat disagree, 4= neutral, 5= somewhat agree, 6= agree, 7= strongly agree
    a. Emergency kit packing night 1 2 3 4 5 6 7
    b. CPR training on campus 1 2 3 4 5 6 7
    c. CERT training on campus (Community Emergency Response Team) 1 2 3 4 5 6 7

16. What do you feel the university can do to help you be better prepared?

_____

_____

_____

Confirmation Message

Thank you for completing the survey!

Link to drawing for emergency kit: https://forms.gle/6Tcur1Cy35NGoNGb9

Want to learn how to prepare for an emergency? Follow these links: https://readymarin.org/ and https://www.ready.gov/

Appendix B: Literature Review Table

Authors/Citation	Purpose/Objective of Study	Sample - Population of interest, sample size	Study Design	Study Methods	Major Finding(s)	Strengths	Limitations
Murti, M., Bayleyegn, T., Stanbury, M., (2014). Household emergency preparedness by housing type from a community assessment for public health emergency response (CASPER), Michigan. Disaster medicine and public health preparedness, 8(1), 12–19. doi:10.1017/dmp.2013.111	To find associations between CASPER emergency preparedness data and household type for residents of Oakland County, Michigan	192 surveys were completed, 150 single-detached homes and 42 multi-unit dwellings.	Comparative survey research	Trained survey staff teams conducted interviews through door-to-door data collection, per CASPER protocol. The questionnaire was two-pages of self-reported household emergency preparedness data. Teams also classified each household as a type of housing.	Type of housing had no significant effect on demographics (except income) and medical condition presence. Single-detached homes were equally or better prepared for emergencies than multi-unit dwellings in all categories. Statistically significant categories included: owning a generator, owning a back-up heat source, having a way to cook without utilities, and having a 3-day supply of water.	Avoided sensitive data to allow for high response rate. Detailed description of methods and sampling, followed the reliable and validated CASPER model directly.	Income levels from census, may not be current and accurate. Other demographic factors may be affecting results (ethnicity, education level). Household response rate either not collected or not reported. Differing interpretations of same question by participants.
Thomas, T. N., Leander-Griffith, M., Harp, V., & Cioffi, J. P. (2015). Influences of preparedness knowledge and beliefs on household disaster preparedness. Morbidity and Mortality Weekly Report. https://doi.org/10.15585/mmwr.mm6435a2	To correlate actual preparedness (per specific items and actions) against risk perception, preparedness perception, knowledge level, and self-efficacy beliefs	439 CDC staff members living in metropolitan Atlanta	Quantitative correlational survey research	Survey was administered as a pre-assessment to a *Ready CDC* training session. Questions on knowledge level, risk perception, self-efficacy, disaster experience, and social connectedness were correlated against specific emergency preparedness items/behaviors.	Significant differences in preparedness behaviors against knowledge level. Stronger risk perception beliefs correlated with having an emergency kit, but not a plan or community involvement. Preparedness beliefs and self-efficacy beliefs were associated with both having a kit and plan. Those with higher preparedness knowledge and social connectedness were high adopters of household preparedness.	Large study done on a unique population, those who are employed in a sector where a certain degree of preparedness is expected. Survey tool well developed, used in future studies by other researchers.	Low enrollment rate for both event & survey. Not easily generalizable to the US population, due to type of employment and education levels.

Zane, D. F., Haywood, T., Adams, B., et. al (2016). Lessons Learned from the Field: Community Assessment for Public Health Emergency Response (CASPER). Texas Public Health Journal, 68(1), 6–13.	To identify lessons learned by those who have conducted CASPERs and sharing the lessons with public health professionals to benefit future community assessments.	Key informants at agencies and organizations in Texas that conducted CASPERs from 2008-2015. A snowballing method was used to find 18 total participants.	Qualitative descriptive, focus groups	Semi structured focus group interviews and email communications were used to gain insight on various topics involved in a CASPER study. The lessons were then categorized in relation to the pre-existing phases of CASPER.	70 total lessons learned. These included specifics such as developing clear objectives, expense planning, proper team training, utilizing social media, sharing field report within 48 hrs of data collection for rapid disaster response.	Previously under-researched topic. Thorough assessment and analyzing of data. Good sample size for such a specific population.	No IRB approval was sought, considered not be a requirement. Experts limited to one state, despite CASPERs being done nationally.
Claborn, D. (2010). Emergency Preparedness of Individual Students at a Large State University in Missouri. Journal of the Institute of Justice and International Studies, 10, 33–44.	To assess the level of emergency preparedness of college students, determining their status as a potentially vulnerable population.	370 surveys completed by undergraduate students at Missouri State University	Correlational Survey research	Convenience sample of students gathered by recruiting volunteers from a central part of campus. A written survey was given of 14 questions about perceptions of risk and level of preparedness, with additional questions about demographics included.	Most respondents had personal transportation to evacuate with and most would go to their parent's household. For most emergency supplies, the students had less than the national population. Few students were familiar with either evacuation plans or shelter in place plans.	Unique study for the time it was done, referenced by other articles in the same field. Large sample size for the total population.	High rate of surveys completed incorrectly (almost 20%) indicates need for the problematic question to be rewritten. May be hard to apply to universities of different sizes.
Lovekamp, W. E., & Tate, M. L. (2008). College student disaster risk, fear and preparedness. International Journal of Mass Emergencies and Disasters, 26(2), 70–90.	To examine perceived risk and actual preparedness of students. Various hypotheses made about vulnerable populations within the student body.	192 students from a Midwestern University	Quantitative correlational survey research	Students recruited during two different semesters of the same class. Given a paper survey, which could be dropped off later or taken online instead.	Students believed that a tornado was much more likely to affect them than an earthquake. However, they felt more prepared for a tornado, and felt as if the University was also more prepared for a tornado. Students were most likely to have completed survival preparedness activities (first aid kit, flashlight, CPR classes), over planning tasks (plans, insurance) or hazard mitigation (structural reinforcement of homes, cabinet latches).	Demographics of sample matched the University population. Vulnerable populations emphasized. Anonymity and voluntary participation encouraged and handled appropriately. Survey based off of previously proven outlines.	Some questions not applicable to undergraduate students, who often do not have control over insurance or home renovations. Small sample for the population size and the potential total sample size.

Simms, J. L., Kusenbach, M., & Tobin, G. A. (2013). Equally unprepared: Assessing the hurricane vulnerability of undergraduate students. Weather, Climate, and Society. https://doi.org/10.1175/WCAS-D-12-00056.1	To examine the self-reported perceptions and preparedness of students as well as the level of homogeneity within the group.	503 undergraduate students	Mixed methods survey research	In-person surveys conducted in high traffic areas of campus. Survey consisted of 39 questions, mostly yes/no and Likert scale.	There was a high level of knowledge gaps (less than half of students could correctly identify hurricane season, even fewer knew of the nearest evacuation shelters), lack of preparedness despite experience (28% had gathered minimal supplies for a hurricane, 29% had an evacuation plan), and lack of concern. Students were highly homogenous in both their answers to specific questions and in their overall responses.	Large enough sample size for total population. Specific details about survey questions included. This study is commonly referenced in related literature.	Not truly random sampling, more biased to those willing to stop at a table and answer questions. External factors may influence results, factors that were not investigated in this survey.
Tanner, A., & Doberstein, B. (2015). Emergency preparedness amongst university students. International Journal of Disaster Risk Reduction. https://doi.org/10.1016/j.ijdrr.2015.08.007	To assess the emergency preparedness of university students by evaluating their personal qualities and their stored supplies.	80 off-campus students from the University of Waterloo in Southern Ontario.	Inductive, mixed methods survey research	Online survey distributed via convenience sampling to off-campus students in non-parental housing. The survey included both open ended (1) and closed ended (19) questions. Participants gathered through in-class announcements, posters, and handouts.	The majority of the students felt that they were most responsible for their own wellbeing during an emergency, followed by their parents and the University. 72.5% of students did not have an emergency kit, although many had the individual components throughout their home. The majority of students felt neutral about their perceived level of preparedness. Students wanted information about what should be in a first aid kit, emails from admin about what should be in a kit and what should be done in an emergency.	Multiple perspectives were used to gain accurate information (in addition to asking about whole emergency kit, survey listed individual items). Consistent population. Underrepresented group.	Many of the students who completed the study were those taking a course on Natural Hazards, they may have better knowledge than general population. Small sample size compared to total campus. Specific survey questions rarely included/described.
Goddard, S., Sheppard, M., & Thompson, K. (2018). Disaster Preparedness Knowledge, Beliefs, Risk-Perceptions, and Mitigating Factors of Disaster Preparedness Behaviors of Undergraduate Students at a Large Midwest University. Journal of Public Health Issues and Practices, 2. https://doi.org/10.33790/jphip1100115	To assess differences in disaster preparedness of college students based off of levels of knowledge, risk perception, beliefs, CERT or first aid training, and self-efficacy.	390 undergraduate students from Missouri State University	Correlational quantitative survey research	Convenience sample of students collected through both a general education class, and by tabling in a high traffic part of campus. The written survey was based off of a previous study done by the CDC and had a total of 27 questions. Scores were assigned based off of the number of emergency supplies or behaviors chosen, and analyzed against 5 additional qualifications.	Students scored better for disaster preparedness if they had advanced knowledge, high-risk perception, high self-efficacy, and previous enrollment in CERT/CPR. The most common items to have packed were flashlights, hygiene items, first-aid kit. The least common items were whistles, maps, and radios.	Total participants exceeded the minimum sample size needed to be statistically significant. Similar to results from previous study at the same university. Similar distribution of demographics to overall university population.	Survey tool was not initially developed for undergraduate students. Data collected during same time for each period, may represent only a portion of the student population.

				Demographic data was collected as well.			
Mulilis, J. P., Duval, T. S., & Bovalino, K. (2000). Tornado preparedness of students, nonstudent renters, and nonstudent owners: Issues of PrE theory. Journal of Applied Social Psychology, 30(6), 1310–1329. https://doi.org/10.1111/j.1559-1816.2000.tb02522.x	To determine the underlying factors of the differences in preparedness between types of housing: student renters, non-student renters, and homeowners.	63 undergraduate students of Pennsylvania State University, 145 nonstudent residents of Monaca, Pennsylvania (91 homeowners, 54 renters).	Correlational quantitative survey research	Students recruited from a intro psych class, completed survey for class credit. 205 houses randomly selected and approached up to ten times in an attempt to complete the questionnaire. Survey consisted of 13 demographic questions, 27 preparedness questions, 2 responsibility questions, and 17 perceptions questions.	As perceptions of personal responsibility increased, so did level of preparedness. The lowest of these were students, the highest nonstudent homeowners. In addition, homeowners had the most resources and considered themselves to need the least amount of additional resources during a tornado. Students were on the opposing side of the spectrum.	Many aspects based off of previous studies and proven theories (survey style, psychosocial theories, methodology). Typical response rate for the type of survey.	Students were offered class credit for taking the survey, which may lead to biased responses. For the length of the survey, very few groups/themes were determined (example: 17 item psychosocial section was parred down to whether the participants felt they had enough resources for a tornado).
Tkachuck, M. A., Schulenberg, S. E., & Lair, E. C. (2018). Natural disaster preparedness in college students: Implications for institutions of higher learning. Journal of American College Health. https://doi.org/10.1080/07448481.2018.1431897	To evaluate the factors that influence the preparedness of students for emergencies.	765 undergraduate and graduate students at a southeastern US university.	Exploratory cross-sectional survey	Online survey distributed via email to all students currently enrolled in classes. 30 questions, including 9 demographic questions and 2 open ended questions. The six domains were: disaster likelihood, disaster concerns, perceived preparedness, actual preparedness, university preparedness, and disaster experience.	Disaster experience, concern, and likelihood were all predictors of actual preparedness in students. In some students, the less concerned they were for disasters, the more prepared they perceived themselves to be. For some, the more confidence they had in the University's preparedness, the more emergency supplies they reported having. Those with more experience with disasters had higher expectations of the University to be prepared.	Specifics about questions in the survey where included. Frequently compares its results directly against previous studies. Large sample size.	Other factors likely influenced results that could/were not included in the survey. Actual preparedness was assessed only by asking what supplies were in the household (ignoring activities like having a plan, signing up for alerts, etc)