WarnMe: Is this even for me?

Summary

WarnMe: Is this even for me?: a student toolkit for understanding and evaluating the emergency mass notification alert system at UC Berkeley and other universities. This toolkit was developed to center those of us in the most need, as described by Angela Glover Blackwell's "The Curb-Cut Effect."[1] It is the hope of the research team that, regardless of their experience and background, university students can better understand the impacts of how their school applies the Clery Act and what may need to be brought into student community discourse. The intent of this project is to disrupt data access power structures and invite all people to have resources and tools to improve their lives and the systems around them.[2] A range of resources were developed, tested, and included to serve as a toolkit, or "roadmap," for that work. Thank you for considering this toolkit for deepened understanding of university emergency notification systems for students and by students.

Table of Contents

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[1] (Blackwell)
[2] (D'Ignazio and Klein)

Positionality Statement

We are a group of graduate student researchers at the University of California, Berkeley. Our research was conducted at UCB through a program requirement called the capstone project. Our identities include the Black, Global South, and

white, queer, trans, and cisgender experiences. Our research was intentionally limited to avenues and research methods we felt could be most safely replicated by students of any background attending schools federally mandated to adhere to the Clery Act. This included but is not limited to: no contact with police or police representatives and working independent of university oversight or input. We have used publicly-available data and conducted one interview with the Director of Clery Compliance.

Our work unabashedly centers those at most risk of harm: the diversity of university students, especially those with marginalized identities, with little to no avenues for feedback or input on how their university interprets and applies the Clery Act when managing their emergency alert system. It is our hope that the fear and risk of retaliation by university representatives, law enforcement, government agencies, etc. will be lessened due to the intentionally inclusive design of our research methods and the care we took to not only develop but also model their implementation.

Our university is an internationally-ranked, public university that is highly resourced, including a $6.9 Billion endowment[3]. Those resources, that we contribute to through our tuition and fees, supported every element of our project workstreams, including Google Suite, UCB Libraries, workspaces, internet access, etc. Our department reimbursed our research participant gifts for participation and provided access to numerous professors and professionals that we were able to lean on for guidance and support.

Project Background and Problem Statement

Clery Act

The Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act (20 U.S.C. § 1092) was signed in 1990 after Jeanne Clery was raped and murdered on the Lehigh University campus. The Act mandated disclosure of campus crime statistics and was built on a philosophy that, had Jeanne Clery and her parents known the LU crime statistics, she would have gone to a different school. As stated in a program review by the Department of Education: the Clery Act is "based on the premise that students and employees are entitled to accurate and honest information about the realities of crime and other threats to their personal safety and the security of their property." This legislation reflects a particular political moment as does it embed ideas about crime rates and crime prevention, etc.

All information regarding the Clery Act has been compiled by UC Berkeley students for members of the UC Berkeley community and those wishing to understand and analyze how Clery is enacted within their communities in hopes that the more we understand how and why these systems succeed and fail the more we can improve them and keep our community safe.

Clery Geography

Each public university within the scope of the Clery Act has 4 categories of geography: on-campus, on-campus student housing, off campus, and public property. When the research team spoke to Abigail Ogden, Director of Clery Compliance at UC Berkeley, she noted the fuzzy boundaries on the

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[3] (UC Berkeley Admissions Department)

map and that notifications will often be sent for incidents within and also just beyond the boundaries of Clery Geography.

Furthermore, there are some interesting implications for coding of various campus-adjacent institutions as within or outside of Clery Geography. For example, if a certain fraternity ceases to be a recognized student organization due to disciplinary measures, it also ceases to be within Clery Geography.

Clery Crimes

The Clery Act requires universities to report statistics annually on crimes that are violent crimes, Violence Against Women Act (2013) offenses, hate crimes, and liquor, drug, and weapon arrests and referrals. What is unclear is the relationship between reported or suspected crimes and those found to be actual crimes within a court of law.

Problem Statement

Over the last 30+ years, little empirical data has been gathered regarding the effectiveness of the Clery Act. One particular area of interest to our project is the student perceptions of the emergency notifications that UC Berkeley sends out to comply with the 2007 update to the Clery Act, which was motivated by the Virginia Tech shooting.

In September 2020, UC Berkeley was fined by the Department of Education 1.35 million for violating Clery including "failure to issue emergency notifications" and "failure to issue timely warnings in accordance with federal regulations"[4].

Data about emergency notification messages sent by universities may be made publicly available, but not all students may be aware or have the experience or resources to evaluate that data and information. This coupled with fear of university reprisal, targeting by law enforcement, and barriers to data access may dissuade students from utilizing Clery Act-related data. There is a need for a collection of resources and guides to understand the data and information publicly available to students so they may understand and influence how their university's emergency notification system keeps them safe and well.

UCB Emergency Notification System

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[4] US Department of Education, UC Berkeley Final Campus Crime Program Review Determination, September 17, 2019
 Editorial Board, "WarnMe sooner rather than later," Daily Californian, Feb. 22, 2024.

UC Berkeley has an emergency notification system that consists of various parts including sirens, PA systems, UC Berkeley WarnMe, etc. that directly communicates with the student and school community.

WarnMe

The Everbridge mass notification system for UC Berkeley is branded as UC Berkeley WarnMe. Each message that is sent out is one of the following types: a timely notification, an emergency notification, or a community advisory. Each message type has its own protocol, notification method (email and text, or just email), and associated templates. Templates have varying levels of information and required components within the Clery Act. Messages are primarily composed by the University of California Police Department.

Emergency Notifications

Emergency notifications are intended to let people know what is going on in the event of an emergency and how to respond. According to the 2023 Annual Security And Fire Safety Report, "[i]n the event that a significant emergency or dangerous situation occurs, UC Berkeley will; (1) confirm the existence of a significant emergency or dangerous situation; (2) determine the appropriate segment or segments of the campus community to notify; (3) determine the content of the emergency notification; and (4) initiate the emergency notification system."[5] Additionally, followup notifications are often sent to communicate when the emergency or threat is no longer active ("all clear").

Timely Warnings

Unlike emergency notifications, timely warnings are those aimed at prevention.

UCB Timely Warning Criteria [2]

"A timely warning will be sent by the university when all of the criteria below have been met:
1. A crime is reported to UCPD or a CSA;
2. The crime is a Clery Act crime;
3. The crime is reported to have occurred on the Clery Act geography of the university; and
4. The crime is considered by the institution to present a serious or ongoing threat to students and employees."

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[5] University of California, Berkeley, Annual Security And Fire Safety Report, 2023

When it comes to the Clery Act, the spirit of the law favors issuing clarifications or updates rather than waiting to know all of the facts. Abigail Ogden named this philosophy in practice at UC Berkeley: "when in doubt, send it out." The annual reports are used in part to clarify and update in a less urgent fashion. On the other hand, this can create misunderstandings, confusion and give the impression that the notification is disjointed. And what does it mean for those people who are falsely accused or cleared of Clery crime charges? Finally, Ogden notes that she hopes for a larger conversation about what is a productive, proactive conversation about campus safety, and recognizes the limits of the systems communication options, including emails or text messages that are marked as junk by some telecommunication carriers international students use.

Community Advisories

Unlike emergency notifications and timely warnings, community advisories are not mandated by the Clery Act and as such can be released at the discretion of the university and UCPD.

Research Findings

Coding WarnMe

The project collected 2 years of WarnMe messages via public records requests and 4 annotators coded the messages along the lines of location granularity, scene descriptions, and personal identifiers used within the context of victims and suspects. The team then calculated Fleiss' kappa, a statistical measure for assessing the reliability of agreement between multiple annotators, and selected the highest agreement codes for each WarnMe message, and analyzed the frequency of the various codes.

The inter-annotator agreement (a weighted average of Fleiss' kappa) across the location, description, and personal identifier codes was 0.4828. The range of IAA values was 0.4472 for location to 0.6055 for subject's personal identifier. This range and the average across all the categories shows moderate agreement between the annotators as Fleiss' kappa spans from -1 to 1.

Additionally, we performed some exploratory analysis on the WarnMe messages using the highest agreement codes for each message. One key finding was that about half of the messages were coded as referring to the location-based subject of the message as something other than a specific address or named place. The lack of location specificity in many of the messages speaks to the need for increased transparency and accuracy of reporting in these messages.

Location Granularity	Count
Address / Specific Named	143
Radius / Area	58
All campus	46
Block	36
Intersection	25
Digital / Telephone	2

Sentiment Analysis

Background

Challenges of data access, including at the University of California, Berkeley and social media platforms can keep data out of users' hands. During the initial research phase, the research team encountered significant difficulties in accessing public data from X (formerly known as Twitter). Changes to X's API limited public access to data, posing a challenge, especially for research students. Our team spent considerable time attempting to communicate with X, but the lack of direct contact options and the high service cost proved significant obstacles. This experience further highlights the need for more transparent and accessible data policies by major platforms to support academic and educational research.
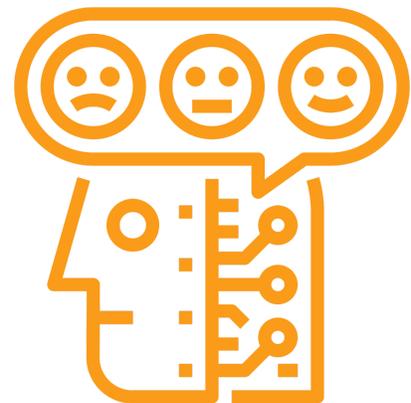
Research Team's Experience with Sentiment Analysis Resource

WarnMe-related posts on the r/berkeley subreddit were manually annotated with +/- sentiment as well as emotion (joy, love, anger, sadness, fear & surprise) labels. A BERT-based model was then trained to classify the emotion and sentiment of the messages. The model achieved 80.65% accuracy, excelling in identifying sadness and anger but struggled with surprise and love. This indicates that there is room for improvement in recognizing less frequent or subtly expressed emotions.

Issues/User Needs + Solutions and Recommendations

- Prevalence of Negative Emotions: There was a significant presence of negative emotions such as fear and anger in response to WarnMe alerts, highlighting areas where communication could be adjusted to provide reassurance and more detailed safety tips to alleviate community concerns.
- Complex Emotional Responses: The analysis revealed simple sentiments and complex emotional layers, indicating that community reactions are varied and nuanced. This underscores the need for tailored communications and content filtering options for users that address different emotional reactions to enhance the effectiveness of the WarnMe alerts.

User Experience Research

Research Team's Experience with Interview Guide Resource

User interviews were a primary research method used to understand the student experience with University of California, Berkeley's emergency mass notification system, WarnMe.[6] The stories and needs of users were collected to paint a picture of how WarnMe messages are perceived and relate to students' sense of safety on-campus. The objectives of the interviews include:

- **How does the WarnMe Emergency Alert System at UC Berkeley impact student perceptions of safety, emotions and behaviors?**
- **How can the system enhance its effectiveness in addressing safety precautions and communication?**

The research team recruited 10 participants. The participant group was composed of full-time students at the University of California, Berkeley during the Spring 2024 semester. Participants were recruited through posters, social media ad marketing with a student-led news publication, and student community groups. Participants completed an interest questionnaire, including sharing their school email to ensure student enrollment and eligibility. The group only included students who were already subscribers of WarnMe (all UCB students are automatically enrolled through their university email account). Each participant was interviewed one-on-one with a research team member for 45 mins to one hour. The interview questions are listed and the interviews conducted were semi-structured.

After interviews were completed, the research team used grounded coding to review the interview data for themes and topics. Those themes and topics were then categorized into buckets that directly informed the key findings produced for this project.

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[6] (Rosala)

User Interview Themes

User interview insights were robust and ranged across their experiences, beginning with their first enrollment into the system through to their expectations for post-emergency communication. Three key themes emerged from those semi-structured interviews that highlight user experience and opportunities for WarnMe system development. Each theme is directly informed by grounded coding methods used to center user input.

Theme One - "Oz of WarnMe"
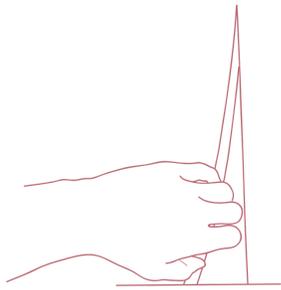
Theme Description

How users conceptualize the administrators and authors of WarnMe messages influences how they engage with the system and their sentiments towards it. The motivations of this conceptualization and expectations of these internally-constructed figures has an impact on how student users evaluate the WarnMe system and the users feelings and trust towards the system.

Background

Student users at the University of California, Berkeley are automatically enrolled in its campus emergency alert system, WarnMe. It's a resource that allows the university to send urgent messages that impact campus safety. The system is administered as a federal requirement of the Clery Act by university staff. During interviews, users commented on their assumptions of who they imagine administers and/or composes WarnMe messages to be. Understanding this conceptualization or mental image of an unknown figure determining when the university community will, or will not, be notified may impacts how students engage with the system and use it to make safety decisions

Issues/User Needs

Two key student user needs informed the development of this theme. Interviews with student users referenced not only the messages they received but voiced frustrations at who may be composing them or responsible for the alert system.

"A form of information warfare"

One student described how the university engaged in "information warfare" by not reporting all events that impacted students and being selective in when, how, or what was sent. To users there was doubt if the university representative responsible for the message was concerned with student safety or using the system to pursue institutional objectives that deprioritized student safety. Users surfaced descriptions of a removed and institution-protecting administrator during interviews. This disrupted a sense of trust or covenant that student, or community, safety was the highest priority in administering the WarnMe alert system. This largely negative orientation to administrators is an issue that needs to be addressed in how WarnMe is administered, if student users are going to trust and successfully apply urgent campus safety information.

Message motivation misalignments
One user questioned the motivations of WarnMe administrators: [in referencing the February 9th shooting] "the police saw the video go viral and then spun up the WarnMe to get ahead of the backlash." In this disclosure the student user is highlighting two things also reflected in other interviews: the university is concerned about optics over student safety and that students evaluate WarnMe in the context of university response times. Students are then pushed to other channels of safety communication that may be more insecure or have inaccuracies. One user further describes their experience being in a building directly next to the shooting on February 9th: "When you get information from What's app groups, it's speculation at most. [To get from WarnMe], information as to what happened or if you're in the area: "stay clear" [would help]. It didn't need to have a lot of detail, not even [needing to mention] a shooting at that point. But at minimum: information to stay away from the area and in doors. It needs to happen at the moment the danger was present. Hearing two hours later, is too late. I don't even need information at that point."

User Interview Data

-   Referring to February 9th, 2024 Shooting: "I thought it was funny that the police saw the video go viral and then spun up the WarnMe to get ahead of the backlash. I'd like to not think that's what happened, but it seemed like it was" — UC Berkeley student
-   "There are different degrees of threats and someone walking around with a gun vs a protest an administrator thinks is too unruly are not the same" — UC Berkeley student
-   "It was a WarnMe about somebody using a water gun on someone. It was weird for sure to read that. It was weird because it was good that incidents are reported. But using a water gun? iIt's a children's toy, not too dangerous. A WarnMe about water guns seemed unnecessary." — UC Berkeley student
-   "We even get them for protest activity on campus, which I think is strange that we are warned by protest activity. It muddles the situation, and people stop reading the texts."
-   "In my head there's some administrator (nameless administrator). I don't have a sense of the order of operations of how WarnMe messages are sent. The police being involved is more clear, but with the protest there aren't police involved and so who is sending the message is unclear to me." — UC Berkeley student

Solutions and Recommendations

1. Allow for increased student input: develop ways of understanding the student user experience through community input and leadership.
   a. Coordinate with student groups to understand how to further develop the WarnMe system and message content. This will allow the university to center student needs outside of exclusively prioritizing their interpretation of the Clery Act.
   b. Set up regular cadences of collecting student feedback through surveys and interviews. Feedback will allow for continued iteration to develop an emergency alert system that student users are more likely to use and trust.
   c. Develop a comment or community input link that is shared with each WarnMe message to allow for input on that message and its contents.
   d. UCB-supported and student-led review of the WarnMe message composition guides, developed by the university, and response time analysis.

Theme Two - "The Illusion of Safety: Evaluating the Perceived Security and Actual Effectiveness of the WarnMe System"
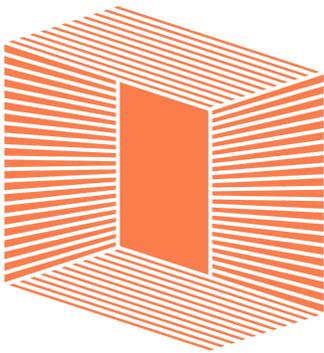
Theme Description

In this theme, the gap between the perceived security provided by the WarnMe alert system and its actual effectiveness in real-world scenarios is investigated. The research team explores how discrepancies in timeliness, relevance, and clarity of communications can create a false sense of security, leading to increased anxiety and confusion among the campus community. This gap between expected and actual performance of the alert system can lead to compromising the perceived safety and preparedness of the community.

This theme and subsequent solutions address critical questions about the effectiveness of emergency communication systems in promoting actual safety and security. By focusing on real-time updates, user customization, detailed mapping, and leveraging community platforms, the proposed solutions aim to transform WarnMe into a more reliable and trusted resource for campus safety, aligning perceived safety with actual safety outcomes.

Background

WarnMe alerts are designed to inform the campus community about potential threats in real-time. However, the effectiveness of these alerts is often compromised by delays and the lack of

actionable information. As was noted above, one student impacted by the February 9th shooting shared: "When you get information from What's app groups, it's speculation at most. [To get from WarnMe], information as to what happened or if you're in the area: "stay clear" [would help]. It didn't need to have a lot of detail, not even [needing to mention] a shooting at that point. But at minimum: information to stay away from the area and in doors. It needs to happen at the moment the danger was present. Hearing two hours later, is too late. I don't even need information at that point."

Issues / User Needs

Feedback from users highlights significant concerns about the system's current state. A student remarked, "The first one I got was confusing. It didn't take long to figure out what it was about: some sort of emergency thing. It was confusing at first and then it was interesting." This indicates a need for clearer, more direct communication. Another user stated, "I feel that given how important locations are, it doesn't do a good job of sharing where locations are (like a map)."

User Interview Data

- "I wish there was some sort of option to unsubscribe or 'don't show me crimes like this again.' I want to know about shootings or armed standoffs." — UC Berkeley student.
- "It would be helpful to have a Google widget: a 3in x 3in map. That would make more sense to me in this context. One of the first pieces of information you get: the date and time is "2400 Block." This would be confusing for anyone not from Berkeley or the US. " — UC Berkeley student.
- "The gist I get from the WarnMes: they're more tactical level reports, without a lot of context given." — UC Berkeley student

Solutions and Recommendations

1. Immediate and Accurate Information Delivery: Implementing a more robust real-time alert system that prioritizes the speed of notifications to ensure community members receive timely updates about potential threats.
   a. Utilize a dedicated, real-time alert system with capabilities for rapid incident verification and develop protocols for rapid verification of incidents to reduce delays significantly.
   b. Example: "Need to know about ongoing and dangerous events. Information Needed: how to make immediate safety decisions."

2. Enhanced User Customization and Relevance: Allowing users to customize the types of alerts they receive, focusing on those they count most relevant to their personal safety and reducing notification fatigue.

a. Develop a user interface that allows individuals to filter the types of alerts they receive, based on their personal safety preferences.
b. Example: "How can I manage the notification system? So I'm not bombarded with 'Berkeley is crime-ridden Gotham.'"

3. Integration with Localized Mapping and Detailed Descriptions: including interactive maps in alerts to provide clear, visual representations of affected areas, enhancing users' understanding of their proximity to potential threats.
    a. Implementing interactive maps and improving the specificity of descriptions in alerts, particularly regarding the nature of the threat and recommended actions for safety.
    b. Example: "Better geographic location sharing, like a static or interactive map that people can open and orient themselves about where it happened."

4. Complementary Information Channels: Establishing partnerships with local social media platforms and community forums to create supplemental channels of communication that can offer immediate updates and community-driven insights.
    a. Partner with local social media and community forums for real-time, or promote the availability and advantages of direct SMS alerts alongside traditional email notifications to enhance the perceived urgency and visibility of important messages.
    b. Example: "Mainly WhatsApp groups. It's the best strategy. Social media applications."

Theme Three - "Bombardment of Inconsistent Language: The Effects of Constant Discrepancies that Impact Safety Decisions"
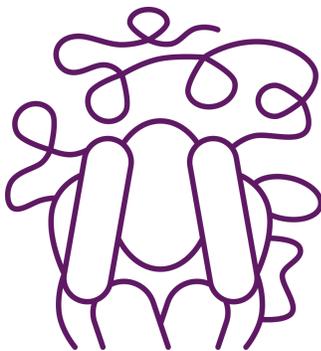
Theme Description

This theme, uncovered during the interviews, encompasses the inconsistency seen by users of the WarnMe system that ultimately affect how they comprehend WarnMe messages and how it affects their general safety decisions. These inconsistencies are attributed to the composer of WarnMe messages causing issues with digesting the formatting of the notifications. This can yield instances of rare, useless, or vague descriptions; and a lack of centralized information for future reference of an incident.

Background

The intention of WarnMes is to provide a consistent and reliable way for students to make accurate safety decisions. This is hindered by discrepancies of how WarnMe is presented to the students. Evidence of this is how WarnMe messages use both military time and civilian time, differences in

the amount of descriptions provided, and lack of updates from the campus/police on an incident that has occurred. Ultimately, this places users in a place where they have to decide if they can use the information provided to make accurate safety decisions while on-campus and off-campus or if they turn to other news sources, communication channels, or first-hand accounts for information to aid their decisions.

Issues/User Needs

Users of the WarnMe system stated that WarnMe often does nothing for them and that it is "nice to have and not need, but it's pretty middling." Many users often don't include WarnMe in their safety decisions even if they check the WarnMe notifications they receive. One incident that occurred on campus, the "Banana incident," was brought up by numerous interviewees when describing a notable incident that occurred on campus, mainly due to the fact that they believed it wasn't worth reporting on and gave "odd details." It is these incidents that make peculiar reports stand out and one interviewer described it as breaking free from the "desensitization" they feel from the constant influx of WarnMes, which is inherently grim. Lastly, users expressed issues with the way text was presented in the email titles, email descriptions, and text notifications that left them with an "unsettling feeling."

User Interview Data

1. "It doesn't impact [my overall experience] alot. When immediate safety and security was at risk, it was lacking. My general sense of safety is not supremely increased by the Warnme or safety measures." — UC Berkeley student
2. "The information they pass is highly perishable. If I had to go back and read a WarnMe, I wouldn't know why." — UC Berkeley student
3. "You get random ass notifications, you would think they could give information that is actually helpful to students" — UC Berkeley student
4. "The police are transparent when it is easier to them but not for the sake of the students"
5. "No need to bombard people in terms of font/language" — UC Berkeley student
6. "Language of WarnMe is written in a threatening way" — UC Berkeley student

Solutions and Recommendations

1. Transparent Method and Centralized Information Location: Provide case numbers for incidents within WarnMe report and a website to track incidents that have occurred

   a. By providing a case number, users can have an easy and efficient way to stay updated on a case since updates currently are not sent out through WarnMe.
   b. A status bar could also be of use to track how far along a case is which could be included on a website that houses information about every WarnMe that has been

sent out for users to be able to search for WarnMes for as far back as they would like, instead of just through their email of when they started school.

   c. Example: "In shipping they have a status update bar, something similar to that would give me some piece of mind of where they are in the process (the assault, next steps, etc.)"

2. Consolidated Method of Writing WarnMe Messages: More intentional and consistent about descriptions provided for an incident and a general, centralized way to write WarnMes
   a. As there are inconsistencies with the way WarnMes are written, there should be a standard report for WarnMe messages to follow to provide the maximum amount of description as possible, including specific language that is consistent across similar incidents as to not confuse users when trying to comprehend a WarnMe message.
   b. Example: "The information they pass is highly perishable. If I had to go back and read a WarnMe, I wouldn't know why."

User Diary Study

Research Team's Experience with Diary Study Guide Resource

A diary study was selected as a research method to understand what happens real-time when students receive emergency alert messages from the university.[7] For this research, the context of and impressions made from those messages were assumed as important factors in how the user understood the message's utility for their safety needs. The objectives of the diary study include:

- **How does the WarnMe Emergency Alert System at UC Berkeley impact student perceptions of safety, emotions and behaviors?**
- **How can the system enhance its effectiveness in addressing safety precautions and communication?**

The diary study recruited 14 participants. Each participant was an enrolled, full-time student at the University of California, Berkeley during the Spring 2024 semester. Participants were recruited through posters, social media marketing through a student-led news publication ad, and student community groups. Participants completed an interest questionnaire, including sharing their school email to ensure student enrollment. Prior to being recruited, participants had already subscribed to the emergency mass notification system called WarnMe at UCB either through email and/or text message. In total, 11 students completed the Diary Study; each completing three to six diary entries. Each diary entry recorded their responses to the same nine questions, informed by the diary study objectives. Those questions are listed and consist of five multiple choice questions and four open response questions.
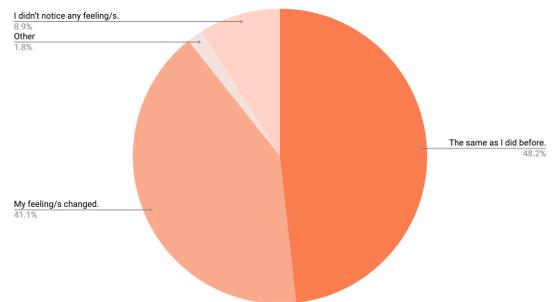
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[7] (Salazar)

Over two weeks, respondents were asked to complete their diary entry through Google Form links. A pre-written email with a unique diary entry Google Form link was queued to be sent by an assigned Research Team member once a WarnMe alert message was sent. A total of six WarnMe messages were sent to participants–the only two WarnMe alert messages sent to students during the Diary Study two-week window and four WarnMe alert messages previously sent by the university that were repurposed by the Research Team for this Diary Study. A total of 56 diary entries were recorded.

Diary Study Themes Description

Users reported experiencing a change in emotions after reading University of California, Berkeley WarnMe messages. Those emotional changes may be impacted by message references to violent incidents and who or what is the target of those incidents. Their unique experiences come with varying needs that can largely be categorized around incident location descriptions, more robust incident details, and accessible terminology and context.

Figure D.3 "After reading this WarnMe, I feel..." (n = 56)

- I didn't notice any feeling/s. 8.9%
- Other 1.8%
- The same as I did before. 48.2%
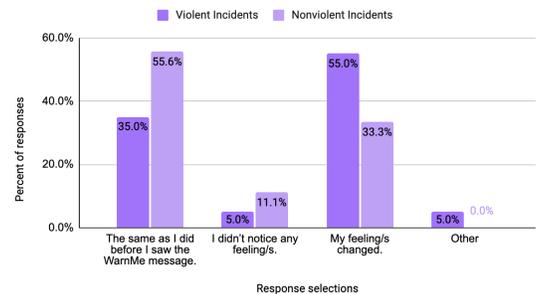- My feeling/s changed. 41.1%

Theme One - "Emotional Impact of WarnMe Messages"

Emotional changes were reported through user diary study entries. Across all entries users reported a change and feeling "after reading [the] WarnMe" in 41% of their diary entries; while, 57.1% reported either no noticeable feeling change or feeling "the same as...before" reading the WarnMe. To further investigate why user feelings may change the content of the WarnMe message was filtered in two ways:

1. Figure D.6 - references the users' emotional responses to WarnMe messages with content about violent incidents vs nonviolent incidents. In this diary study, users more frequently reported no change in their feelings after reading a WarnMe message about nonviolent incidents and more frequently reported that "[their] feeling/s changed" for messages about violent incidents. This could indicate an underlying need of emotionally-informed language choices when composing alert messages and increased user input on certain topics, like filtering certain violent incidents like sexual assault.

Figure D.6 "After reading this WarnMe, I feel..."

Violent Incidents · Nonviolent Incidents

- The same as I did before I saw the WarnMe message. — 35.0% / 55.6%
- I didn't notice any feeling/s. — 5.0% / 11.1%
- My feeling/s changed. — 55.0% / 33.3%
- Other — 5.0% / 0.0%

Percent of responses / Response selections

2. Figure D.7 - reinforces the need for care when composing university emergency alert messages with topics or information that may be of increased concern for users. The figure displays how the responses change when we filter for who or what was impacted by the incident described in the WarnMe message. In the responses from participants, they more frequently reported that their feelings were unmoved when the message was about how the "campus community" was impacted. In contrast, their feelings more frequently changed when an "individual" was impacted by an incident. It is important to note that all WarnMe messages that impacted "individuals" in the diary study were categorized under "violent crimes."

Figure D.7 "After reading this WarnMe, I feel…"
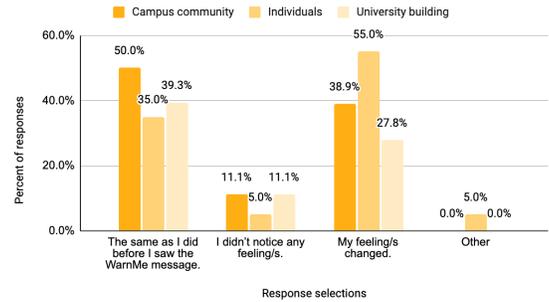
Theme Two - "Sense of Safety and User Action"

Figure D.8 "Did the WarnMe message change your current sense of personal safety?"
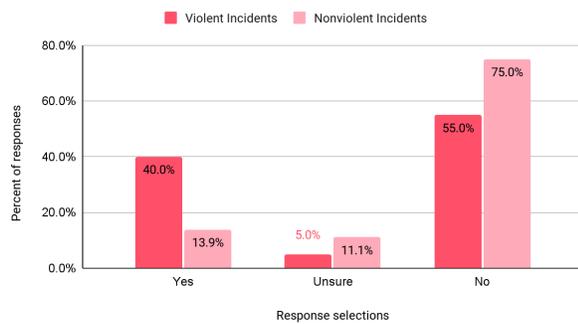
Figure D.10 "Did the WarnMe message change your current sense of personal safety?"
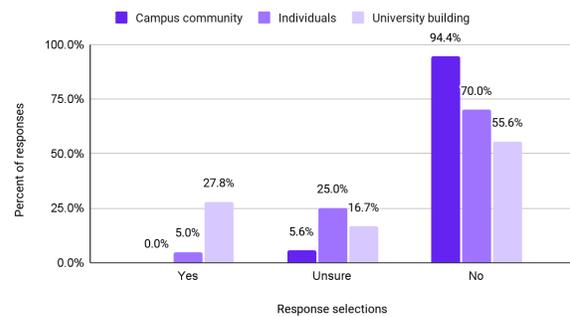
Figure D.9 "Did your behavior or plans change after reading this WarnMe?"
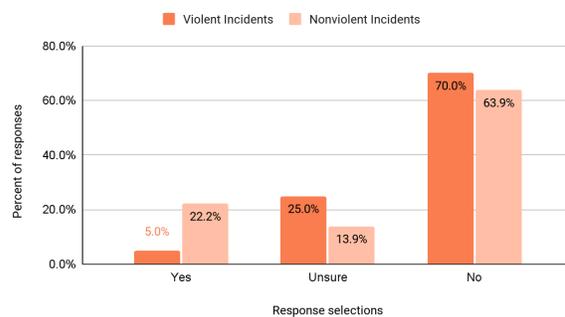
Figure D.11 "Did your behavior or plans change after reading this WarnMe?"

The diary study results indicated an important area of insight: users more frequently reported having their "current sense of personal safety" change after reading a WarnMe message about a violent incident than nonviolent incidents; although, users more frequently planned to change their

behavior or did change their behavior for nonviolent incidents. Messages with content about violent incidents may be impacting users' sense of safety more frequently, but users are less frequently reporting changed behavior or plans than they do when they read messages referencing nonviolent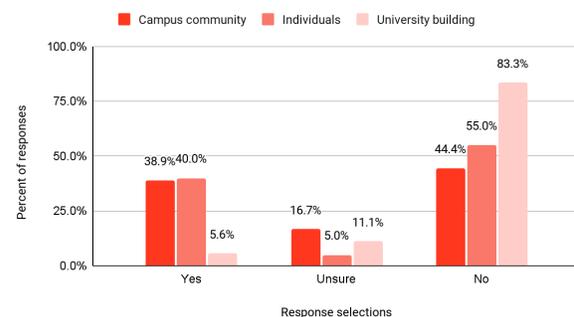 incidents. Similarly, no users reported a change in their "current sense of personal safety" after reading a message indicating the "Campus community," but they reported changing their behavior and plans in 38.9% of diary study entries.

Each of the findings in Figures D.8 - D.11, indicate divergence in how students use information shared in WarnMe messages and their sense of personal safety. Diary entries indicate safety concerns aren't the only motivator for changed behavior when reading an emergency alert message. Other priorities and needs may also be served. More understanding of user needs may indicate what actions they can take or plans they could make to address changes in their "sense of safety."

Theme Three - "User Comprehension"

In 92.9% of diary entries, submitted about the six messages included in the study, respondents self-reported they "understood what the message intended to convey." Comprehending an emergency alert message is an important initial step in being able to apply its contents to a user's safety needs. What it took to comprehend this message was further explained through the open-response prompt:

"Why did you rate the message's comprehension this way?"

- Short length and clear language: a short, well structured message is key to quick and accurate understanding from the point of view of users.

    - "Pretty simple wording"
    - "Clear explanation of problem"
    - "Simple language, clear bullet point list"

- Vocabulary selection: technical or language associated with emergency response agencies (i.e., law enforcement, ambulance staff, etc.) influenced how users perceived the information

    - "It had fancy jargon but I understood what the crime was"
    - "Had to google what a strong armed robbery is"
    - "It was relatively easy to understand the situation and what may have happened"

- Rereads: highlighting the need to read the message twice or multiple times were needed to understand the message. Users being asked to complete a diary entry may have impacted their motivation to reread the message to be able to complete the entry.

- "While it was not necessarily difficult to understand, I had to re-read the message to ensure I was understanding who struck who and where/why this may have occurred."
- "It was not too difficult, but I had to read it twice."
- "I had to sift through a lot of words to parse out the important details (what, where, when)"

Diary Study Problem Background or Pain Points/Needs

Themes of dissatisfaction and frustrations about WarnMe from this project's interviews, most notably voiced about the University of California, Berkeley's response to a shooting on February 9, 2024, propelled the research team to further investigate what real-time experiences users were having with WarnMe messages. The diary study results highlighted unique pain points and needs that have been coded and categorized below:

- Location Information: Location information and descriptions were a common pain point. WarnMe messages or the design of the system could offer better location descriptions that support users in quickly processing where the incident took place so they can make good safety decisions.

  - "It provided sufficient detail. However, I'm not sure where the West Crescent is."
  - "Generally understandable, but I don't understand the [extent] of the area closure"
  - "I understand the warning and am vaguely familiar with the location"

- WarnMe message language and formatting: Users indicated in their diary entries that the language used in alert messages and how those messages are organized impacts its digestibility and usability.

  - "It didn't seem to give an impression of the seriousness of the issue. If someone was injured, I feel like it would be important to include. There is no level of danger that it seems to portray effectively."
  - "It feels like the detailed bit are shrouded by the formatting of the message (ie., the bold text and resources chunk)"
  - "Increase specific details"

Recommendations/solutions

- Incident location descriptions: Users need better location descriptors from their emergency alert system. The current WarnMe system could provide better location information options like including a map within a pin indicating the location or a link to a navigation app, like Google Maps. Alternatively, an app-based university emergency alert system could provide

a digital map of campus and provide an in-app pin for the user where the incident took place.

- Diary study user solutions
    - "Provide a map that shows where the incident occurred; I have no idea where Gayley Road is"
    - "Include a map of where west crescent is"
    - "Adding an image/map of where West Crescent is"
    - "How far away this place is from me"
    - "A map to get a better idea of where the burglary happened"
    - "A map!"

- More robust incident details: Users indicated wanting more information about the incident as well as who or what was affected. This does not need to come immediately after an incident, but it remains an expectation for users to be able to apply being notified of safety concerns. Additionally, the quality of recommended next steps in an alert message may need to improve for users to better incorporate them into their safety planning and actions.

    - Diary study user solutions
        - "Maybe adding more detail on the crime and further actions"
        - "It would be nice to have more information around what property was taken and what it's value was"
        - "Maybe alternative ways to seek WiFi or what services are [impacted]"
        - "Say the general size of object and extent of the victim's harm. Also it's 2h after the incident."
        - "More information on why this may have happened and actions that one may take to decrease the chance of this occurring again"

- Accessible terminology and context: what language is used and the unique safety planning context of each incident influences how students are able to access and use information shared through emergency alert systems. Possibly, more "civilian" or user-centered terminology could improve the usability of WarnMe message information.

    - Diary study user solutions
        - "More information around what defines extreme heat"
        - "What is meant by "unknown projectile" and the timeframe (how long it took for this event to take place) - not just the time at which it may have happened"
        - "Definition of the crime"

Service Design

To better illustrate user experience from the perspective of a student, interview and diary study data was used to develop a Customer Journey Map. The map details the actions, touchpoints, emotions, needs/pain points, and opportunities of a student, or client, from the point of enrollment through taking safety actions after having received a WarnMe message.

WarnMe Student Journey Map
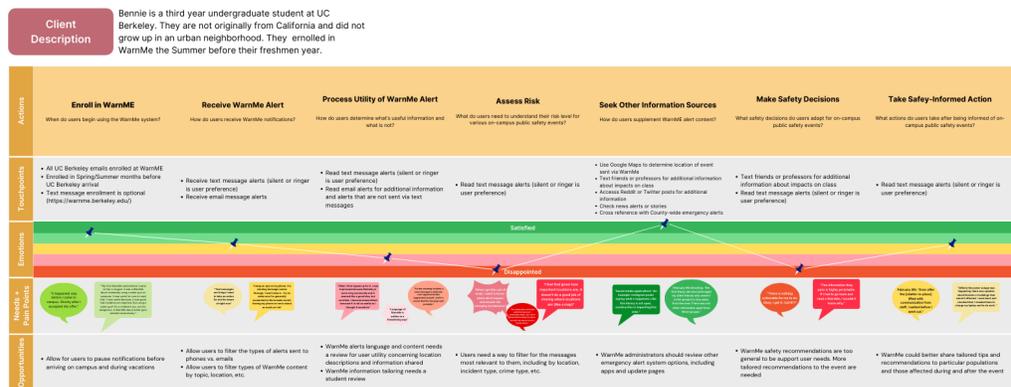
Usability Heuristics Analysis

The WarnMe system, in terms of the ability for users to interact with the interface, has a few design flaws with not only the system itself, but the content found in the notifications. The researchers used the "10 Usability Heuristics for User Interface Design" to assess how themes from the interviews and diary study fit into the 10 categories. Six categories fit the interview and diary study themes. Below are the definition of the Usability Heuristics, the coded themes, and the reasoning why the themes fit in the category.[8]
Source: [10 Usability Heuristics](#)

1. Visibility of system status
   a. Definition: "the design should always keep users informed about what is going on, through appropriate feedback within a reasonable amount of time"
   b. Codes:
      i. Lacking: timeliness
      ii. Lacking: follow-up
   c. Reasoning: The WarnMe system often is not consistently timely when sending out notifications to users of the system and often provides no ability to follow-up with an incident.

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[8] (Nielsen)

2. Match between the system and the real world
    a. Definition: "The design should speak the users' language. Use words, phrases, and concepts familiar to the user, rather than internal jargon. Follow real-world conventions, making information appear in a natural and logical order"
    b. Codes:
        i. Type of language: accessibility
        ii. Lacking: appropriate location details
    c. Reasoning: The WarnMe notifications sent out sometimes have words that are not understood by everybody when thinking about cultural backgrounds or language differences and don't always provide definitions. Additionally, people that are not from the area or haven't lived in an urban area, often have issues understanding where incidents happen.

3. Consistency and standards
    a. Definition: "Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform and industry conventions"
    b. Codes:
        i. Message content
        ii. Decisions informed by WarnMe
    c. Reasoning: The WarnMe system has issues in terms of consistency of descriptions and terms used across different similar WarnMe notifications that can confuse users and affect their safety decisions.

4. Recognition rather than recall
    a. Definition: "Minimize the user's memory load by making elements, actions, and options visible. The user should not have to remember information from one part of the interface to another. Information required to use the design (ex. Field labels or menu items) should be visible or easily retrievable when needed"
    b. Codes:
        i. Message content: location
    c. Reasoning: The WarnMe system does not provide maps for understanding where an incident happens from the WarnMe notification.

5. Aesthetic and minimalist design
    a. Definition: "Interfaces should not contain information that is irrelevant or rarely needed. Every extra unit of information in an interface competes with the relevant units of information and diminishes their relative visibility"
    b. Codes:
        i. Lacking: details deemed important to user
        ii. Lacking: helpful tips and guidance

      c.   Reasoning: WarnMe notifications often contain irrelevant information to users that don't help them make accurate safety decisions. When users see information that they deem "useless" to them, which can desensitize them to different types of WarnMe messages.

6. Help and documentation
      a.   Definition: "It's best if the system doesn't need any additional explanation. However, it may be necessary to provide documentation to help users understand how to complete their tasks"
      b.   Codes:
          i.   How interpreting happens
         ii.   Message content: location
      c.   Reasoning: WarnMe messages often need additional explanation in terms of wording or overall confusion with where an incident occurs or because of lack of details. Users often turn to other sources, such as first person accounts, their friends, or other news sources to find more detailed information.

Toolkit Research Products - Evaluating University Emergency Alert Messages

Coding Emergency Alert Messages

Find the code and supporting documentation to perform inter-annotator agreement, select highest agreement codes and create some exploratory data visualization in one of our [GitHub repositories](#).

Conducting Sentiment Analysis on Emergency Alert Messages

Find the code to perform sentiment analysis in one of our [GitHub repositories](#).

Conducting User Experience Research

Interview Guide

WarnMe Toolkit: Interview Guide and Protocol Resource

Research Objectives
- How does the WarnMe's Notification System at UC Berkeley impact student emotions, behaviors, and perceptions of safety?
- How can the system enhance its effectiveness in addressing crime, precautions, and safety communication?

Research Project Background

College campuses across the country use emergency alert systems to send messages that alert the campus community of incidents that are perceived threats to their school community's safety. As directed by the Clery Act, all federally-funded university campuses must track those emergency alert messages and make them publicly available. The University of California, Berkeley's emergency alert system, titled "WarnMe," sends messages through email and text message and they are tracked by UCB's Cleary Compliance Office.

This project employs user experience research to analyze how the Clery Act policy unfolds within UCB's WarnMe system. The research team seeks insights into students' comprehension, barriers to use, and the emotional impacts of WarnMe alerts. The qualitative interviews serve as a way to collect information and

Interview Opening Statement

Hello, and thank you for participating in our study. My name is [enter name]. We are a group of graduate students/researchers working on our final capstone project, focusing on understanding and designing a toolkit for a university alert or emergency system, specifically examining the WarnMe system here at UC Berkeley and campus safety. We aim to explore your experiences and thoughts regarding WarnMe and its impact on campus safety.

Please remember that there are no right or wrong answers, and you are not obligated to answer any questions that make you uncomfortable. In addition, we want to assure you that this conversation will not be recorded. If at any point you wish to be withdrawn from the study, you can do so, and your information will be promptly deleted. This session is expected to last about 30-45 minutes.

Do you have any questions before we begin?

Interview Questions
Introduction / / Warm Up // Comprehension
1. Could you please share a little about yourself, including your major or area of study and any particular interests or activities you're involved in at UC Berkeley?

   Follow-up question options:
   a. When did you first join campus, and did you feel safe at that time?
   b. Please share your thoughts on the main issue of safety.

   c. Can you recall the first time you received a WarnMe message?

d. Could you share an experience when receiving one felt particularly uncomfortable or caused you stress?

2. Activity showing them old WarnMe's and asking them to share: Do you understand what the Warnme is trying to communicate here?
   a. Is the language useful to help you comprehend the situation?
   b. Do you have what you need to make safety decisions?
   c. What, if anything, is missing?
   d. How would you rate the usefulness of this WarnMe? (Just regarding the specific WarnMe not generalizing)

Safety
3. When thinking about WarnMe and its role in campus safety, what are your feelings towards the system?
4. Are there any particular aspects or implications of WarnMe, in its role as a campus safety tool, are beneficial or not beneficial for you (that concern you)?

Interpreting and Emotional Impact
5. Are you aware of the incident on February 9th near Sproul Plaza?
6. Reflecting on a recent event, most specifically, if you are aware, the incident on February 9th near Sproul Plaza where there was a shelter-in-place order due to a shooting, how did you first become aware of the situation, and what steps did you take to ensure your safety?
   a. Can you walk me through your actions and decisions during that time?
   b. Can you recall a time when you received a WarnMe alert that particularly stood out to you?
   c. What was the situation, and how did you react to the information provided?
7. Considering your experience with the WarnMe system, can you describe a scenario where the system worked exactly as you hoped?
   a. What made that experience stand out, and what, if anything, would you consider a "leap of faith" in relying on the WarnMe system in such situations?

8. How about a time when WarnMe didn't work as you hoped? How was the experience, walk us through?

Impact (Campus safety/practices)
9. In your time on campus, can you describe the strategies or resources you utilize to stay informed and safe?
   a. How does WarnMe fit into these strategies?
   b. If not, what sources or channels do you trust the most, and how does WarnMe compare to these?
Needs

10. Have you ever sought out information from a WarnMe alert without receiving a direct notification?
    a. If so, what prompted you to do so, and what was the outcome of that situation?
11. Can you describe an instance where you felt the WarnMe system could have better supported your needs during a campus incident?
    a. What was missing or lacking in the communication you received?
12. How do you typically receive and prefer to receive WarnMe alerts (e.g., SMS, email)?
    a. Does the method of delivery affect your perception of the urgency or importance of the alert?
13. How can WarnMe more effectively reach and educate the student community about its alerts and messages?

Overall Impact
14. Reflecting on your overall experience with campus safety measures, including WarnMe, how do you feel they contribute to your sense of security on campus?
    a. Are there areas where you see room for improvement?
    b. If so, how important do you think it is for WarnMe to integrate feedback from the student community into its operations?
    c. Can you suggest a way this could be accomplished?
15. Finally, thinking about the broader context of campus safety and emergency communication, how do you see the ideal role of a system like WarnMe in ensuring the safety and well-being of the campus community?

[If time, permits]
16. Considering the incident at People's Park and the university's response, how do you think WarnMe could be used to bridge the gap between university actions and community concerns, especially in tense situations involving significant law enforcement presence?
    a. How do you envision the ideal communication system that addresses both urgent alerts and ongoing safety concerns, like the People's Park?

Participant Communication Templates

Interview Interest Introduction Email Template

Interview Invite Email Subject: "WarnMe Research Participation + Compensation"
Interview Invite Email Template:

"Hello!

My graduate capstone group is looking to interview people about their experiences with the UC Berkeley WarnMe system to understand how students comprehend WarnMe messages, barriers to using the WarnMe system, and the emotional impact WarnMes have on them.

We are conducting interviews and a diary study. Interviews will be approximately 45 minutes - one hour and participants compensated with $20. The diary study will be either 2-3 weeks or up to 10 WarnMes with a compensation of $10.

We appreciate your participation and please fill out the interest form if you would like to be included in an interview, diary study, or both! If you have any questions, please message me! Thank you!

Interest Form:

[Insert Scheduling Link Here]

Thank you for your participation,"

Interview Invite Email Template

Interview Invite Email Subject: "WarnMe Research Interview"
Interview Invite Email Template:

"Good Afternoon,

:) My team and I are conducting a study on the UC Berkeley WarnMe alert system and you have previously filled out an interest form stating you would like to participate in our study. Interviews will be conducted over the next few weeks and the diary study will start in April. We will reach out to you again for the diary study if you selected on the interest form that you were also interested in that part of the study, if you did not, you will only need to complete the interview.

Just to reiterate, the interviews are approximately 30 minutes - 1 hour with compensation of $20. The diary study will be either 2-3 weeks or up to 10 WarnMes with a compensation of $10. Participants are allowed to sign up for both the interviews and diary study. If you have any questions, please respond to this email.
Please use the link below to sign up for an interview time with one of my team members below:

[Insert Scheduling Link Here]

Thank you for your participation,"

WarnMe Toolkit: Diary Study Guide Resource

Research Objectives
- How does the WarnMe's Notification System at UC Berkeley impact student emotions, behaviors, and perceptions of safety?
- How can the system enhance its effectiveness in addressing crime, precautions, and safety communication?

Research Project Background

College campuses across the country use emergency alert systems to send messages that alert the campus community of incidents that are perceived threats to their school community's safety. As directed by the Clery Act, all federally-funded university campuses must track those emergency alert messages and make them publicly available. The University of California, Berkeley's emergency alert system, titled "WarnMe," sends messages through email and text message and they are tracked by UCB's Cleary Compliance Office.

This project employs user experience research to analyze how the Clery Act policy unfolds within UCB's WarnMe system. The research team seeks insights into students' comprehension, barriers to use, and the emotional impacts of WarnMe alerts.The Diary Study serves as a way to collect real-time data on the experiences and impact of UCB's WarnMe messages.

Diary Study Questions
1. Did you understand what the message intended to convey?
   a. Yes
   b. No
   c. Unsure
   d. I did not receive this message.
   e. Not applicable
   f. Other
2. How easy or difficult was it to comprehend the WarnMe message?
   a. Very easy
   b. Easy
   c. Neutral
   d. Difficult
   e. Very Difficult
3. Why did you rate the message's comprehension this way?
   a. [Open Response]
4. After reading this WarnMe, I feel...

      a. The same as I did before I saw the WarnMe message

      b. My feeling/s changed.

      c. I didn't notice any feeling/s.

      d. I did not receive this message.

      e. Not applicable

      f. Other

5. If any, what feeling/s are you experiencing after reading this WarnMe (ex: [Feelings Wheel](#))?

      a. [Open Response]

6. Did your behavior or plans change after reading this WarnMe?

      a. Yes

      b. No

      c. Unsure

      d. I did not receive this message

      e. Not applicable

      f. Other

7. Did the WarnMe message change your current sense of personal safety?

      a. Yes

      b. No

      c. Unsure

      d. I did not receive this message

      e. Not applicable

      f. Other

8. If at all, what would you change or update about this WarnMe message?

      a. [Open Response]

9. Do you have any additional comments you'd like to make about this message or your experience receiving it?

      a. [Open Response]

Participant Communication Templates

Diary Study Invitation Email Template

Email Subject:

      :) Welcome! Your Diary is ready (WarnMe)

Email Body:

      Good Afternoon,

      :) We hope this message finds you doing well. If you are receiving this message you indicated interest in participating in diary study research about the UC Berkeley WarnMe system.

The diary study starts tomorrow, *Monday, April 8th at 12P*.

We so much appreciate your time and look forward to hearing your *real-time thoughts* on WarnMe messages.

The study will run from April 8th - April 19th OR until 10 - 12 WarnMe's have been sent by the university (whichever comes first). We will notify you if the study concludes before April 19th. If NO or very few WarnMe's are sent between now and April 19th, the team will send old WarnMe messages to supplement your responses.

Diary Study Process:

1. A WarnMe email is sent by UC Berkeley (no text messages will be reviewed by participants).
2. The research team sends a unique link to participants (you) to include their thoughts about that WarnMe message.
3. Participants (you) complete the questionnaire, see attached.
4. Repeat until April 19th or the research team ends the project early.

If you would like to participate:

- No response is needed, please review the upcoming WarnMe messages and complete the unique survey for each message.
- Complete at least five questionnaires about WarnMe messages in order to qualify for the gift card. We'd love to hear you respond to each one.
- *Optional Text Reminders*: If you'd prefer to receive a text message of the questionnaire instead of an email, please respond directly to this message with that phone number. A research team member will text you the questionnaire for each WarnMe message.
- Please complete the questionnaire as soon as you get the WarnMe message or a message from the research team with the questionnaire.

If you do not want to participate

- Respond to this email declining participation and we will remove you from the email list.

Thank you for your time! We can't wait to hear from you.

Best,

Diary Entry Prompt Email Template (for actual university alert messages)

Diary Entry Prompt Email Subject (message directly from university):
   "Please complete: WarnMe Msg Survey # - [Enter WarnMe Topic]"

Diary Entry Prompt Email Template (message directly from university):

   Hello!

   Thanks for participating in our Diary Study about the WarnMe system. The survey link for WarnMe ## is here:

   Link Here ## [Insert hyperlink to Google form]

   If you have any questions, please contact us at: [Insert research team contact email or point].

   Best,"

Diary Entry Prompt Email Template (for alert messages fabricated by research team)

Diary Entry Prompt Email Subject:
   "Please complete: WarnMe Msg Survey # - [Enter Fabricated WarnMe Topic]"

Diary Entry Prompt Email Template (message fabricated by research team)
   "Hello!

   Thanks for participating in our Diary Study about the WarnMe system. We have not received enough WarnMe messages from the university to meet our Diary Study goals.

   Attached is a *[Enter Fabricated WarnMe Topic]*. This is not a real warning from the university and is only intended for research purposes. Please reflect on the attached WarnMe message as if it were real and complete the below form.

   In the absence of more WarnMe messages from the university. The research team will continue sending one fabricated WarnMe message every day at 4P for participants to complete. The Diary Study will conclude on Friday, April 19th. Thanks for your diligence in participating.

   Thanks for participating in our Diary Study about the WarnMe system. The survey link for WarnMe #6 is here:

Link Here ## <mark>[Insert hyperlink to Google form]</mark>

If you have any questions, please contact us at: <mark>[Insert research team contact email or point]</mark>.

Best,"

Case Study for Understanding University Emergency Alert Responses

Case Study : February 9th

Section One - Event Description

Detailed timeline of the incident by The Daily Californian in their February 10, 2024, newspaper under the title 'From Shots Fired to All Clear: A Timeline of the Shooting at Lower Sproul Plaza.'

A typical Friday night, AFC dance (Student Dance organization) was practicing in a large tent at lower Sproul Plaza. A man arrived on a motorcycle demanding that students turn the music down and give him a phone charger. Students called the police as he became more agitated; eventually, he pulled out a gun and fired shots into the air[9].

- **8:40 p.m.** — Several shots ring out at Lower Sproul Plaza. A video taken by a student near the scene shows the suspect firing at least six shots into the air.
- **8:41 p.m.** — UCPD arrest the suspect within one minute of the shots. Police were already en route to the scene because of the earlier altercation between the individual and the dance group. No official shelter-in-place order was sent.
- **8:50 p.m.** — Students witness police handcuff an individual at the Bancroft Way entrance to Lower Sproul. With a lack of official information from campus, rumors begin to circulate on social media that multiple shooters remain at large, although these speculations are eventually shut down.
- **9:20 p.m.** — The first WarnMe email about the situation arrives in UC Berkeley inboxes, 40 minutes after the shots were fired. The brief notice describes the incident as an "aggravated assault" and advises people to avoid the area of Lower Sproul — it also incorrectly states that the incident occurred at 9:15 p.m.

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[9] (Cooke & Liu, 2024)

- **9:50 p.m.** — The shelter-in-place order is lifted, according to another WarnMe email that also confirmed one suspect was arrested. The arrest occurred more than an hour prior to the email, and there was no official shelter-in-place order after the initial incident.
- **11:45 p.m.** — A campuswide email from administrative officials describes the event as an "altercation" and repeats the information from the second WarnMe. This email also confirms that there are no victims or additional shooters, and includes resources for students and staff who need support.
- **11:27 a.m. Saturday** — An email from campus spokesperson Janet Gilmore describes the suspect as a 59-year-old male who is not affiliated with campus. He will be charged with possession of a loaded firearm and negligent discharge of a firearm, Gilmore added.'[10]

Section 2: Overview of the Clery Act and UCPD Compliance

The Clery Act Overview

The Clery Act, officially known as the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act, is a federal mandate aimed at promoting transparency around campus safety and security practices[11]. The act requires all institutions of higher education (IHEs) in the U.S. that participate in federal financial aid programs to adhere to the following **three key requirements**:

1. Crime Reporting: IHEs must collect, classify, and count crime reports and statistics. They are obligated to disclose these statistics for specified crimes (including but not limited to homicide, assault, sexual offenses, theft, and hate crimes) on campus, in unobstructed public areas immediately adjacent to or running through the campus, and at certain non-campus facilities like fraternity houses and remote classrooms.
2. Timely Warnings and Emergency Notifications: Institutions must provide timely warnings for crimes that pose a serious or ongoing threat to students and employees. Additionally, they must develop and disseminate emergency response and evacuation procedures for a variety of situations that could affect the health and safety of campus community members.
3. Annual Security Reports: By October 1 each year, IHEs must publish and distribute an Annual Security Report to current and prospective students and employees. This report must include the campus crime statistics for the past three years, plus details about the school's security policies[12], crime prevention programs, and procedures to follow during emergencies and criminal incidents[13].

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[10] (Cooke & Liu, 2024)
[11] (*The Clery Act*, n.d.)
[12] (*Clery Act Policy*, n.d.)
[13] (*THE JEANNE CLERY DISCLOSURE OF CAMPUS SECURITY POLICY AND CAMPUS CRIME STATISTICS ACT (THE CLERY ACT)*, 2024)

Compliance Analysis of the February 9th Incident:

Crime Reporting

- Event Classification: The incident was classified as "aggravated assault," a category pertinent under the Clery Act.
- Reporting Delay: The initial crime alert was issued 40 minutes post-incident at 9:20 p.m., which raises concerns about the timeliness in critical situation handling.

Timely Warnings and Emergency Notifications

- Initial Alert Timeliness: The first "WarnMe" alert inaccurately stated the event time as 9:15 p.m., issued 40 minutes after the actual incident occurred, thereby compromising the urgency and accuracy expected under the Clery Act.
- Emergency Notification: The requirement for a clear and immediate emergency notification appeared to be partially unmet, as the message did not reflect the exact nature of the threat at the time it was active.

Annual Security Reporting:
- Impact on Future Reporting: This incident is expected to appear in the next Annual Security Report, influencing how crime data and campus safety measures are viewed by the campus community and potentially the broader public.
- Policy Disclosure: The effectiveness of the university's policies concerning emergency notifications and timely warnings may be scrutinized and could necessitate revisions to ensure compliance with the Clery Act.

Potential Areas for Improvement

1. Enhancing Response Protocols: UCPD and campus administrators might need to reassess and potentially revise their emergency response protocols to ensure that notifications are not only timely but also accurate.
2. Training and Simulation Drills: Implementing more frequent training sessions and simulation drills could help prepare the campus police and administration for swift actions in emergency situations, aiming to reduce response times and increase the accuracy of initial reports.
3. Community Engagement and Feedback: Engaging the campus community in safety discussions and gathering feedback on the effectiveness of current policies and notifications can help identify gaps and areas for enhancement in the existing safety protocols.

Section 3 - Public Perception and Institutional Response

Public Perception and Immediate Reactions

The February 9th incident at Lower Sproul Plaza triggered a variety of responses from the UC Berkeley community, highlighting concerns over campus safety and communication efficiency. Feedback from students, staff, and faculty emphasized a mix of confusion, anxiety, and frustration, stemming primarily from the delayed and initially inaccurate WarnMe alerts.

Immediate Reaction

- Confusion and Anxiety: Many students and staff reported feeling uncertain and scared as the events unfolded. The lack of immediate and clear information contributed to a heightened sense of vulnerability among those on or near the campus.
- Frustration with Delays: The 40-minute delay in issuing the first alert was a common point of contention, as community members expected quicker responses in such critical situations.

Critiques of Institutional Communication

The university's handling of the communication surrounding the incident drew significant criticism, particularly concerning the timeliness and accuracy of the information disseminated through the "WarnMe" system.

Communication Critiques

- <u>Reactive vs. Proactive Communication:</u> The community criticized the university for what was perceived as a reactive approach to communication. The delay in alert issuance after the incident was seen as reactive, especially given the capabilities of modern communication technology.
- <u>Accuracy and Clarity of Information:</u> The initial "WarnMe" alert inaccurately reporting the time of the incident added to the confusion and mistrust among the campus community. Accurate and clear information is crucial for ensuring community safety and trust in institutional systems.

Community Quotes

Feedback collected from various campus groups provided direct insights into the perceptions and feelings of those impacted by the incident.

- "An indictment of the WarnMe system: people thought the WarnMe would be ahead of social media." — UC Berkeley student.
- "Delayed communication leads to speculation. Immediate, even if brief, information is crucial during such incidents." — UC Berkeley student.

- "The 'WarnMe' system needs to preempt social media to be effective. Otherwise, it loses credibility. We look to official sources first for safety information." — UC Berkeley staff member.
- "I felt left in the dark during those initial moments. Faster and more transparent communication would have eased a lot of fears. Nobody explained what was really happening, so then I hopped onto Reddit, specifically r/berkeley, and saw messages like 'stay away from Sproul Hall.' I was just following that thread, refreshing it for about 2 hours to get updates until the situation was defused. But for a long time, I was just sitting there, wondering what the hell was going on on campus." — UC Berkeley student.
- "Staff said something had happened. But we didn't know what it was. I found out from the whatsapp group what happened, it's unsettling to hear about a shooting through rumors." — UC Berkeley student.

Institutional Response and Future Directions

In response to the incident and the feedback received, UC Berkeley may need to consider several steps to enhance their emergency communication system and rebuild trust within the community:

- Enhancing Communication Systems: Implementing more robust and faster communication technologies that can deliver alerts without delay.
- Regular Testing and Updates: Conducting regular tests of the "WarnMe" system to ensure its effectiveness and reliability during real emergencies.
- Community Involvement: Engaging with students, staff, and faculty in developing and refining emergency protocols, potentially through workshops or focus groups.
- Transparency and Follow-Up: Providing transparent updates about steps being taken to improve safety and communication systems, and offering detailed follow-ups after incidents to explain what happened and why.

Section 4 - Reflection, Analysis, and Policy Implications

Reflection and In-depth Analysis

The February 9th incident at UC Berkeley's Lower Sproul Plaza serves as a critical case study in campus safety and emergency communications. It has exposed several systemic issues in how urgent situations are managed and communicated within an academic environment. Reflection on this incident reveals two major areas of concern: the mechanism of initial emergency response and the broader implications of communication lapses.

Key Reflection Points

- **Emergency Response Mechanisms**: The quick apprehension of the suspect highlights the effectiveness of the UC Berkeley Police Department's immediate response capabilities. However, the subsequent communication process failed to mirror this efficiency, suggesting a disconnect between on-ground action and communication protocols.
- **Impact of Misinformation:** The initial misreporting of the event time in the "WarnMe" alerts contributed to confusion and could potentially have hindered the safety of individuals by spreading misinformation during a critical time.

Policy Implications and Recommendations

The incident shows a need for comprehensive reforms in several key areas to enhance safety and trust among the campus community.

Enhancing Timeliness and Accuracy

- Immediate Alert System Review: Conduct a thorough review and potential overhaul of the "WarnMe" system to ensure alerts are sent out immediately following verification of facts. This may involve integrating more advanced technology or establishing a dedicated crisis communication team that operates with clear, predefined protocols during emergencies.
- Accuracy in Communications: Implement checks and balances to verify the accuracy of information being disseminated, especially concerning critical details like timings and nature of the incident.

Training and Preparedness

- Regular Drills and Training: Increase the frequency of emergency response drills for both the police department and the broader campus community to ensure everyone is better prepared for various types of emergencies.
- Training on Communication Tools: Ensure that all operatives involved in emergency management are proficient in using communication tools effectively under pressure to avoid delays and errors in information dissemination.

Creating a Culture of Safety

- Community Involvement: Engage students, faculty, and staff in safety seminars and feedback sessions that allow them to voice concerns and suggestions for improving campus safety protocols.
- Transparency and Continuous Improvement: Establish a transparent process for reporting on improvements made to safety protocols and communications systems post-incident. This could include publishing annual reviews of incident management and lessons learned.

Legal and Regulatory Compliance

- Clery Act Compliance Audit: Regular audits to ensure ongoing compliance with Clery Act requirements, focusing on accurate crime reporting, timely warnings, and emergency notifications. This will help in aligning the institution's policies with federal mandates and ensuring legal accountability.
- Review and Update Policies: Regularly update emergency policies to reflect the latest best practices and technological advancements in crisis management.

Conclusion

The February 9th shooting incident at UC Berkeley serves as a clear reminder of the critical importance of efficient emergency management and communication within university settings. By addressing the gaps in current practices, UC Berkeley and other universities can improve not only its compliance with federal safety regulations but also its overall campus safety, as the result it can reinforce the trust and security of its community members. This analysis should guide future policy developments and serve as a blueprint for other institutions aiming to refine their emergency response strategies.

Exploratory Interviews

Research Objectives:
- Understand the user needs of university emergency alert systems
- Identify user pain points and hurdles with alert system

Hello, and thank you for participating in our study. We are a group of graduate students/researchers working on our final capstone project, focusing on understanding and designing a toolkit for a university alert or emergency system, specifically examining the emergency alert mass notification system at UC Berkeley and campus safety. We aim to explore your experiences and thoughts regarding your school's mass alert notification system and its impact on campus safety. Please remember that there are no right or wrong answers, and you are not obligated to answer any questions that make you uncomfortable. You will not be recorded and if at any point you wish to be withdrawn from the interview, you can do so. Let me know if that happens, and we will stop. This session is expected to last about 15 - 30 minutes.

Do you have any questions before we begin?

Part 1: Needs

- Tell me about the last time you remember some urgent situation or emergency happening on campus that you had to respond/react to?
    - Follow-up?: If that's never happened on campus, tell me about the last time you had some sort of emergency that you had to prepare for at home, on the street, at a restaurant.
- Has an incident or event happened on campus that you needed to be alerted to?
    - Likely will come up: Air quality, heat waves, crime reports, etc.

Part 2: Experiences

- Does your school have a mass notification or emergency alert system (ex. Sirens, PA systems, notifications through email/text, etc.)?
    - How does it work?
    - How do you engage with your school's system/do you use it?
- Can you share a memorable time you were alerted by the emergency alert system?
    - How did you receive the message?
    - What do you remember it telling you?
        - Follow-up?: What event was being alerted?
    - How do you feel about the message?

Part 3: Improvements

College campuses across the country use emergency alert mass notification systems to send messages that alert the campus community of incidents that are perceived threats to their school community's safety. As directed by the Clery Act, all federally-funded university campuses must track those emergency alert messages and make them publicly available. The University of California, Berkeley's emergency alert system, titled "WarnMe," sends messages through email and text message and they are tracked by UCB's Clery Compliance Office.

- Do you believe your school is fulfilling its requirements to the Clery Act?
- What improvements would you make to your school's emergency alert system?
- Have you ever been curious about how your school's emergency alert system works?
    - Follow-up: What are you curious about?

Appendix

Data Safety Precautions

Upon project completion, research data identifying users was deleted, including online and downloaded. All data was kept in UCB managed systems throughout the duration of the research project. Data identifying users was not shared outside of research team members.

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References

Blackwell, Angela G. "The Curb-Cut Effect." *Stanford Social Innovation Review*, vol. Winter, no. 2017, 2017, p. 7, https://ssir.org/articles/entry/the_curb_cut_effect.

Clery Act Policy. (n.d.). California Community Colleges. Retrieved April 30, 2024, from https://www.cccco.edu/About-Us/Chancellors-Office/Divisions/General-Counsel/Guidelines-Policies-and-Forms/Clery-Act-Policy

Cooke, R., & Liu, A. (2024, February 10). From shots fired to all clear: A timeline of the shooting at Lower Sproul Plaza. *The Daily Californian*. https://www.dailycal.org/news/campus/from-shots-fired-to-all-clear-a-timeline-of-the-shooting-at-lower-sproul-plaza/article_e6273f72-c873-11ee-9251-03d9116c8137.html

D'Ignazio, Catherine, and Laren Klein. "Data Feminism." Data Feminism, https://data-feminism.mitpress.mit.edu/. Accessed 3 May 2024.

Editorial Board, "WarnMe sooner rather than later," Daily Californian, Feb. 22, 2024.

Nielsen, Jakob. "10 Usability Heuristics for User Interface Design." *Nielsen Norman Group*, 24 April 1994, https://www.nngroup.com/articles/ten-usability-heuristics/. Accessed 2 May 2024.

Rosala, Maria. "User Interviews 101." *Nielsen Norman Group*, 17 September 2023,

      https://www.nngroup.com/articles/user-interviews/. Accessed 2 May 2024.

Salazar, Kim. "Diary Studies: Understanding Long-Term User Behavior and Experiences." *Nielsen*

      Norman Group, 29 March 2024, https://www.nngroup.com/articles/diary-studies/.

      Accessed 2 May 2024.

The Clery Act. (n.d.). Clery Center. Retrieved April 20, 2024, from

      https://www.clerycenter.org/the-clery-act

The Jeanne Clery Disclosure Of Campus Security Policy And Campus Crime Statistics Act (The

      Clery Act). (2024, March 05). Rems (Readiness And Emergency Management For Schools).

      Https://Rems.Ed.Gov/

The Noun Project. "The Noun Project." Noun Project: Free Icons & Stock Photos for Everything,

      2024, https://thenounproject.com/. Accessed 6 May 2024.

UC Berkeley Admissions Department. "Cal Facts 2023 brochure." *Office of Undergraduate*

      Admissions,

      https://admissions.berkeley.edu/wp-content/uploads/Cal-Facts-2023-brochure.pdf.

      Accessed 1 May 2024.

University of California, Berkeley, Annual Security And Fire Safety Report, 2023

US Department of Education, UC Berkeley Final Campus Crime Program Review Determination,
      September 17, 2019