

Tutorial 4: Data Gathering and Analysis in HCI

Case Study: CommunityGuard User Survey

Objective:

Understand the fundamentals of data analysis in HCI by interpreting survey data. Using the case study of a hypothetical community engagement & neighborhood watch platform, “Community Guard,” students will review findings from survey methods, perform statistical analysis, and make inferences.

Research Questions:

1. How safe do community members feel walking in their neighborhood at night?
 2. What are the predominant safety concerns within the community?
 3. What do community members believe would enhance safety in their neighborhood?
 4. How easy is it for community members to report safety concerns?
 5. How do community members feel about the response they get after reporting concerns?
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Appendix: Community Guard User Survey

Sample Data Statistics:

1. Night Safety (Safety feeling at night, scale 1-5):

- 1: 80
- 2: 150
- 3: 100
- 4: 50
- 5: 20

2. Unfamiliar Concern (Concerns about unfamiliar cars/people):

- Yes: 280
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- No: 120

3. Info Source (Primary safety information source):

- Local News: 150
- Word of Mouth: 100
- Police Newsletters: 70
- Community Meetings: 50
- Social Media Groups: 30

4. Willing To Pay (Monthly payment for premium features):

- Free: 300
- \$1 - \$5: 90
- \$6 - \$10: 10

5. Safety Solutions (Solutions to improve safety):

- Greater police presence: 220
- Organized neighborhood patrols: 180
- Better social services: 100

6. Lack Of Communication (Frequency of feeling a lack of safety communication):

- Very Often: 170
- Occasionally: 150
- Rarely: 50
- Never: 30

7. Report Difficulty (Difficulty in reporting safety concerns):

- Yes: 210
- No: 190

8. Concerns Not Taken Seriously (Experience after reporting concerns):

- Authorities are responsive: 70
- Authorities take time but respond: 120
- Neighbors don't take concerns seriously: 130
- Never received a response: 80

Exercise:

1. Interpret the provided data. What can you deduce about the general sentiment in the community regarding safety? Summarize the findings of the research via citing statistics for each question.

eg "While 80% of students claim there is no link between performance and the availability of doubles, 70% of had better grades when there was a doubles stand on campus vs when not"

2. Identify the main pain points for community members.
3. Suggest possible features for the "CommunityGuard" platform based on the insights drawn from the data.
4. Perform basic statistical analysis: identify means, medians, modes, and trends in the data.
5. Discuss how these findings can inform iterative design decisions for the "CommunityGuard" platform.

Answers

1. Insights

Question	Insight
1. Night Safety	A majority of respondents feel somewhat unsafe at night. The most frequent response is a 2 out of 5 on the safety scale, indicating a prevalent feeling of unease. 58% respondents gave a 2 or lower in the safety scale
2. Un familiar Concern	An overwhelming 70% of respondents express concerns about unfamiliar cars or people. This is a significant signal for the need for improved community surveillance or awareness.
3. Info Source	The predominant sources of safety information are the “Local News” followed by “Word of Mouth”, suggesting potential trust issues with more official channels or a lack of their efficacy, given the relatively lower reliance on “Police Newsletters”.
4. Willing to Pay	While a significant portion (300 respondents) expects the platform to be free, a segment (100 respondents) are willing to pay, with the \$1 - \$5 range being the least popular.
5. Safety Solutions	“Greater police presence” is identified as the top solution to improve community safety, with “Organized neighbourhood patrols” closely following. These solutions hint at the community’s desire for more structured, official interventions. “Better social services” being chosen by 100 respondents also showcases a recognition of underlying societal issues that could be contributing to safety concerns.
6. Lack of Communication	With 170 respondents feeling a “lack of communication” very often, and an additional 150 feeling it occasionally, there’s a strong sentiment that communication regarding safety issues is inadequate in the community. This represents a clear opportunity for “CommunityGuard” to fill this communication gap.
7. Reporting Difficulty	More than half of the respondents (210) find it difficult to report safety concerns. This indicates potential barriers in the reporting process, whether they are bureaucratic, technical, or related to the community’s structure and dynamics.
8. Concern not taken seriously	A notable portion of respondents feels that their concerns are not taken seriously, especially by neighbours. With 130 respondents feeling their neighbours don’t value their concerns and another 80 never receiving a response, there’s a clear sentiment of disillusionment. This can have implications for community cohesion and trust.

2. Main Pain Points:

- **Feeling of UnSafety:** Especially during nighttime.
- **Presence of Unfamiliar Entities:** Many residents are uneasy about unfamiliar cars or people.
- **Lack of Effective Communication:** A gap in communication regarding safety issues, with many feeling this lack “very often” or “occasionally.”
- **Difficulty in Reporting:** Over half of the participants find it challenging to report safety concerns.
- **Dissatisfaction with Reporting Feedback:** Many feel that either their neighbors or even authorities don’t take their concerns seriously.

3. Suggested Features for “CommunityGuard”:

- **Night Watch Feature:** Allows residents to report and view recent nighttime incidents or suspicious activities.
- **Car & Individual Logger:** Cameras and CV to log and check unfamiliar cars.
- **Communication Hub:** A forum or chat for residents to discuss safety concerns and share updates. This can bridge the communication gap.
- **Simple Reporting Interface:** Easy-to-use and straightforward reporting with instant acknowledgment, allow for upvoting reports instead of creating redundant reports. Possibly conversations to contribute details to a report. AI to start conversations, give follow up questions and get additional details.
- **Feedback System:** After reporting, users should get updates about the actions taken or the status of their report.
- **Reporting victim verification:** When a community member is identified as a victim of an incident, there should be features for notification and verification of these claims. (several considerations should be made in the case of phone theft and authentication of claims made by victims)
- **Community Collaboration Features:** Promote neighbourhood watch initiatives, share safety tips, or even organize community meetings.
- **Premium Features:** Real-time safety alerts, advanced communication tools, or even collaboration with local police for quick updates.

4. Basic Statistical Analysis:

- **NightSafety:** The average (mean) rating is 2.8, the median is 3, and the mode (most common response) is 2. This indicates a generally low feeling of safety at night.
- **UnfamiliarConcern:** 70% (280 out of 400) respondents are often concerned, showing a dominant sentiment.
- **InfoSource:** The mode for this is “Local News,” indicating it’s the most popular information source.
- **WillingToPay:** The mode is the \$1-\$5 range, suggesting that while users are willing to pay, they prefer a more affordable range.
- **LackOfCommunication:** A mean can’t be determined due to categorical data, but with “Very Often” having the highest frequency, it’s clear that communication is a prevalent issue.

5. Informing Iterative Design Decisions:

- Considering the feedback on reporting and communication issues, the design should prioritize a seamless reporting feature and an efficient feedback mechanism.
- Emphasizing community collaboration, given the data on the lack of seriousness perceived by neighbours, can bridge trust gaps.
- Integration of trusted information channels (like Local News) can enhance platform credibility.