

New York City Police Department

# **How might we improve crime victims' access to services, programs, and reports?**

Karishma Nageshwaran, Seunghyo Jang, Stanton Thomas, Ting-Wei Lu, Sooyeon Kim  
Industries Researched: Office of Victim Services, Safe Horizon, private investigators, Citizen,  
MD Ally, Patternizr, and LEFTA Systems

## PLAYERS: Incumbents

For crime reporting, the easiest and the most universal way of reporting a crime would be calling 911 (or the equivalent number in that country).

In some places, you could also access legal services online.

For example, in New York, you can [file and police report online](#).

For victim services, New York's [Office of Victim Services](#) currently offers a variety of support such as compensations. Also, NYPD collaborates with [Safe Horizon](#) to provide assistance, advocacy and support to victims.

## PLAYERS: Challengers

Private investigation services would be a challenger for us.

In some states, NY for example, one would need a license to become a private investigator.

Although private investigators doesn't have the right to enforce the law as the police do, there are still some reasons for a person to go to a PI:

- PIs would spend more time on behalf of a party to collect information, while the police often can't spend much time investigating a specific case
- Some PIs would have special skills, like expertise in law, that the police don't

## PLAYERS: Digital Challengers

Citizen would be an digital challenger for us. Citizen is an app that allows people to get first-hand information on crimes in the nearby area.

MD Ally: MD ally connects citizens with telehealth and local community resources for non-emergency related calls. Their hope is to free up the strain put on 911 emergency dispatch centers.

Patternizr: NYPD's ML tool used to identify potential criminals. This model has been trained by analyst hired by the NYPD.

LEFTA Systems: While not a direct challenger, LEFTA focuses on a variety of software for law enforcement and public safety to use.

## PLAYERS: Ecosystem

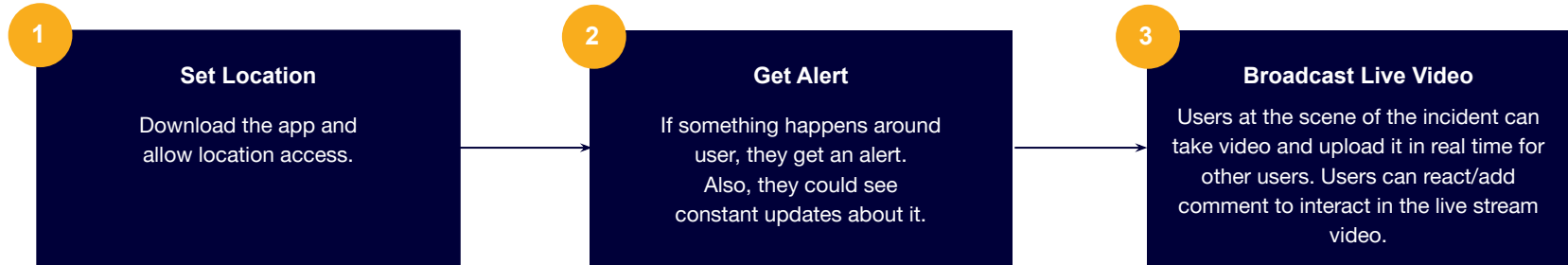
- **Suppliers:** The federal & state government
- **Partners:** Government of NYC
- **Service Providers:** Police officers, social workers, private investigators

# General Crime Prevention/Alert Process [For Victims]



Clock speed: few hours to a couple of days; depends on crime

## PROCESSES [Citizen App User]

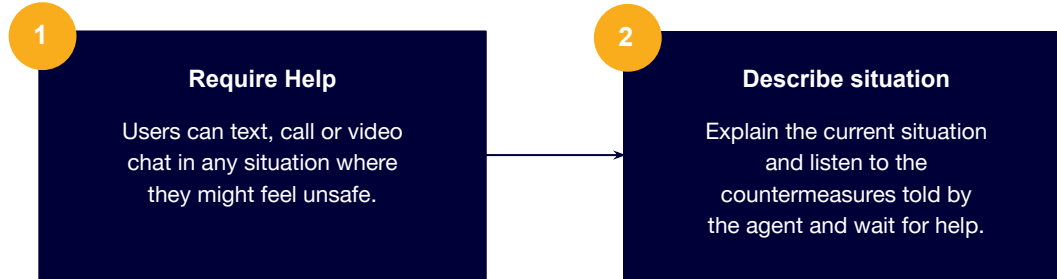


---

## PROCESSES (Business Model)



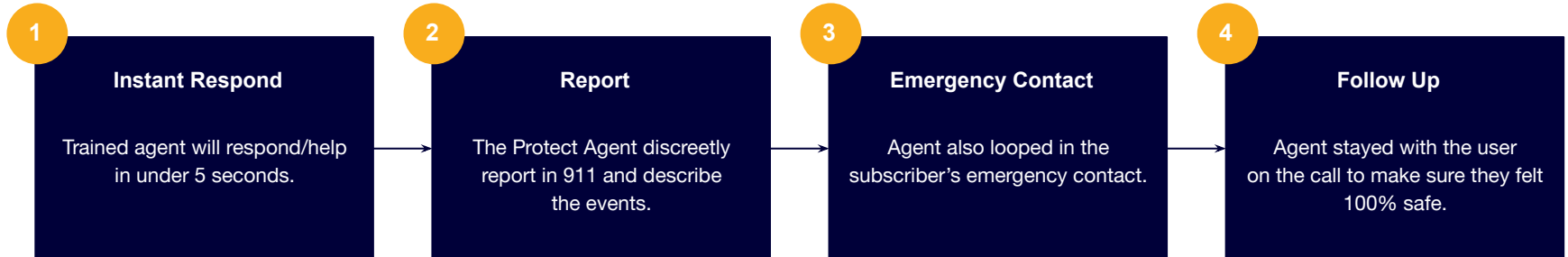
## PROCESSES [Citizen Premium User]



\*Premium user: Who pay for service subscriptions

---

## PROCESSES (Business Model)



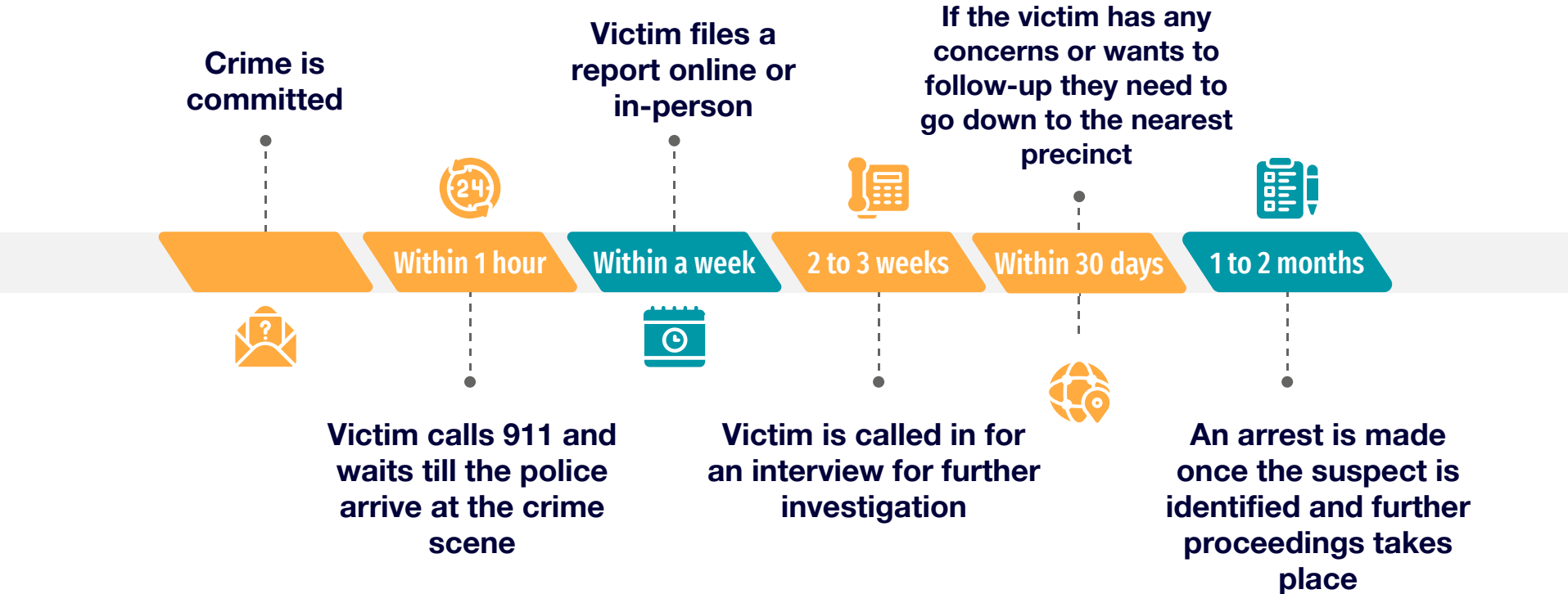


# General Crime Report/Investigation Process [For Victims]



Clock speed: Usually few months; depends on crime

# Timeline of the Report Investigation [NYPD]



## PROFITS (Example of ‘Citizen’)

- Frame, who had previously started public telecommunications company Ooma, Inc. invested \$300,000 in sp0n and recruited several engineers.
- Vigilante(Citizen’s previous name) was backed by a seed round of \$1 million, led by Founders Fund.
- In September 2017, sp0n announced that it had raised \$12.2 million in Series A funding. The app was valued at \$31 million.
- In January 2021, Citizen had raised \$73 million in new funding, with Greycroft as a new investor. The round included \$20 million from Goodwater Capital in March 2020.
- sp0n had not revealed a revenue model, but did state that Citizen would not make profits from ads or share user information.

# TECHNOLOGY RESEARCH - Rapid Response to Crime

- Essential for police forces to respond rapidly to a critical incident
- ShotSpotter detects the sound of a gunshot and locates the gunshot
  - Provides a rapid response to gun violence
  - Time saved for gunshot victims in critical condition
- Commercialized
  - A small subset of cities has access to this technology.
  - Currently used in about 120 cities, such as NYC and Chicago
- Effectiveness
  - The gunshot detection has a 97% accuracy rate with only 0.5% false positive rate across all users.
  - Transport time for gunshot victims reduced by 4 minutes with ShotSpotter in Camden, NJ.

# TECHNOLOGY RESEARCH - Public Safety

- Law enforcements and many other service providers ensure protection for people and property.
- Close Circuit Television (CCTV) cameras record visual information.
  - Improves public safety
  - Deters crime
- Commoditized
  - Almost all cities in the United States have CCTV cameras.
  - It was predicted that 85 million surveillance cameras would be available in the US in 2021.
- Effectiveness
  - According to a [study](#), CCTV cameras can reduce crime by 16%.

# TECHNOLOGY RESEARCH - Crime Investigation

- Police officers collect information about crime and criminal suspects.
- Facial recognition technology uses machine learning algorithms to identify a person using their face.
  - Discovers criminal suspects whose images have been captured on camera quickly.
  - Identifies people who are physically unable to identify themselves
- Commoditized
  - 70% of police forces utilizes the facial recognition technology.
- Effectiveness
  - The efficiency and the accuracy of the algorithms are constantly evaluated by the National Institute of Standards and Technology.
  - According to NYPD, 2,510 suspects were identified by using facial recognition out of the 9,850 requests in 2019.

# **DIGITIZATION AUDIT (Levels 0-4)**

- **Rapid Response to Crime: Level 4** Automated decision making (AI)
  - ShotSpotter identifies a gunshot and shares information about the gunshot with the police automatically.
  - It also registers the potential gunfire event automatically in the police internal system for immediate response.
- **Public Safety: Level 2** Digital data communication and sharing
  - Footages from CCTV can be monitored or shared digitally.
  - Citizen app users need to manually share information about a crime with their neighbors.
- **Crime Investigation: Level 3** Digital data analysis
  - Facial recognition technology can be used to match a suspect from a collection of faces in the database automatically.
  - However, an investigator must analyze and review the resulting match from the technology manually in order to proceed.

# COLLECTIVE INTERVIEW SUMMARY

Total Amount of Interviews: 12; Total Time Duration of Interviews: 137 minutes

## **Amount of Interviewees Categorized as:**

- *Potential Users: 11*
- *Stakeholders (Experts, Service Providers, Suppliers, etc): 12*

## **What have been the *most* successful ways to source interviewees?**

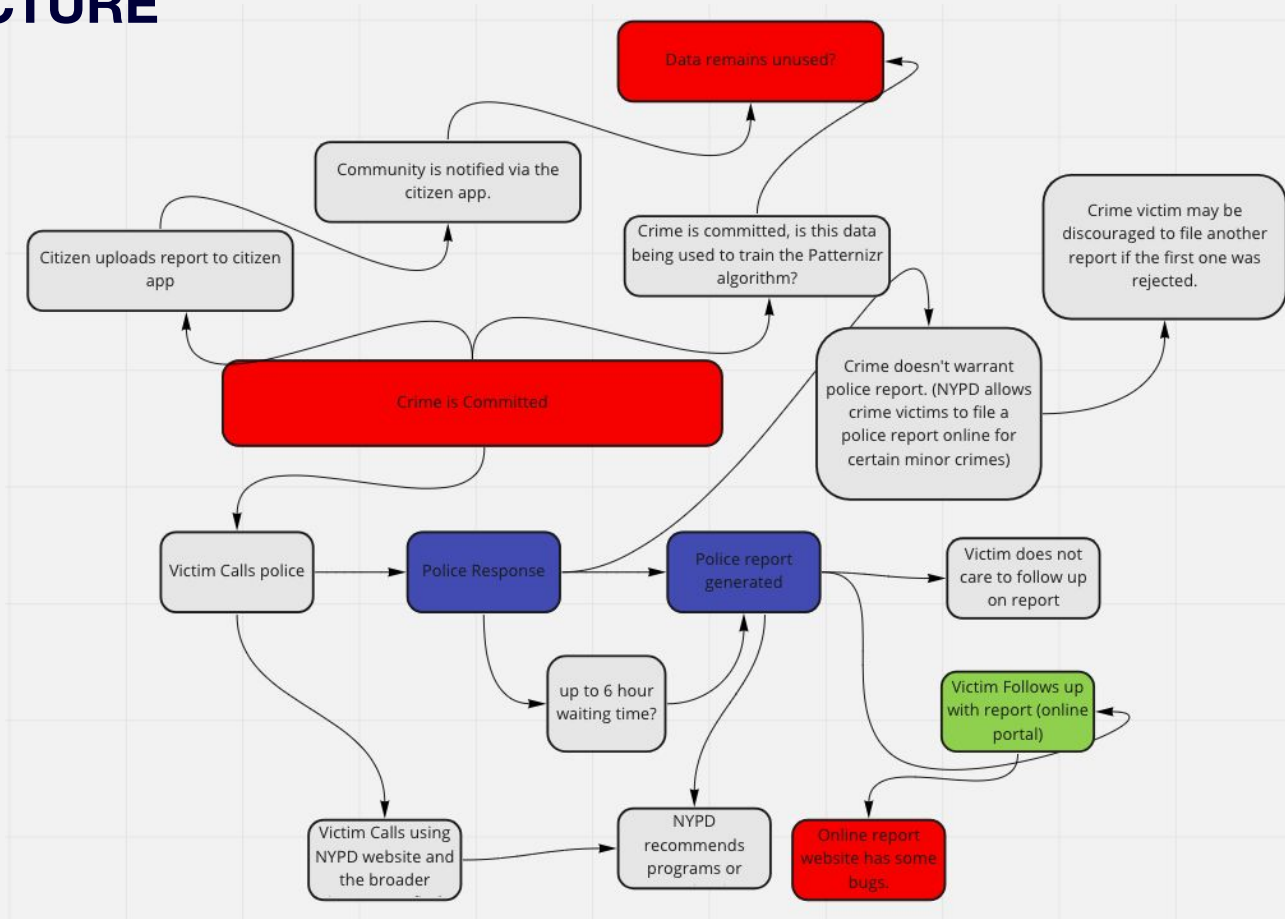
The most successful ways to source the interviewees have been through friends. They knew crime victims whom we could interview and connected us. We were able to contact the victims over phone calls and in-person.

## **What have been the *least* successful ways to source interviewees?**

The least successful way to source the interviewees was through social media platforms like Instagram, Reddit and Facebook.



# RICH PICTURE



# DECOMPOSING HMW INTO THEMES/TOPICS

## *HMW Improve crime victims' access to services, programs, and reports?*

1. Lack of communication
  - a. Some victims feel that there is a serious lack of communication between them and the police.
  - b. Some victims don't get a clear and immediate update on their issue after the report is filed.
2. Unintuitive design
  - a. Some victims find that the website to file police reports online not user-friendly.
  - b. It is difficult to navigate the police website to find information about crime
3. Long wait time
  - a. The time taken by the police to file reports/arrive at the scene is too long.
4. Limited technology/services available to prevent/solve crime
  - a. Victims of theft usually cannot recover lost items due to limited technology.
  - b. Victims feel helpless when police cannot/are not willing to help out.

# SOURCES

- <https://nypdonline.org/link/1017>
- <https://ovs.ny.gov/>
- <https://apps.apple.com/us/app/citizen-local-safety-alerts/id1039889567>
- <https://www.met.police.uk/advice/advice-and-information/acr/after-you-report-a-crime/>
- <https://www.met.police.uk/ro/report/ocr/af/how-to-report-a-crime/>
- <https://www1.nyc.gov/site/nypd/services/victim-services/how-to-report-a-crime.page>
- <https://www.nj.gov/oag/independent-prosecutor/pdfs/OIS-Investigation-TIMELINE--05.03.18.pdf>
- <https://whocanissue.com/how-long-does-it-take-to-get-a-police-report/#:~:text=The%20officer%20will%20take%20all,yourself%20waiting%20a%20while%20longer.>
- <https://cbcny.org/research/seven-facts-about-nypd-budget>
- <https://www1.nyc.gov/assets/operations/downloads/pdf/pmmr2022/nypd.pdf>
- <https://www.icgov.org/city-government/departments-and-divisions/police-department/police-department-budget>
- <https://stephensemmler.substack.com/p/how-much-did-the-us-spend-on-police>
- <https://www.shotspotter.com/law-enforcement/gunshot-detection-technology/#how-accurate-is-shotspotters-gunshot-detection-solution>
- [https://www1.nyc.gov/assets/nypd/downloads/pdf/public\\_information/post-final/shotspotter-nypd-impact-and-use-policy\\_4.9.21\\_final.pdf](https://www1.nyc.gov/assets/nypd/downloads/pdf/public_information/post-final/shotspotter-nypd-impact-and-use-policy_4.9.21_final.pdf)
- [https://www1.nyc.gov/assets/nypd/downloads/pdf/public\\_information/post-final/cctv-systems-nypd-impact-and-use-policy\\_4.9.21\\_final.pdf](https://www1.nyc.gov/assets/nypd/downloads/pdf/public_information/post-final/cctv-systems-nypd-impact-and-use-policy_4.9.21_final.pdf)
- [https://www.wsj.com/articles/a-billion-surveillance-cameras-forecast-to-be-watching-within-two-years-11575565402?mod=hp\\_listb\\_pos1](https://www.wsj.com/articles/a-billion-surveillance-cameras-forecast-to-be-watching-within-two-years-11575565402?mod=hp_listb_pos1)
- <https://www.tandfonline.com/doi/abs/10.1080/07418820802506206>
- [https://www1.nyc.gov/assets/nypd/downloads/pdf/public\\_information/post-final/facial-recognition-nypd-impact-and-use-policy\\_4.9.21\\_final.pdf](https://www1.nyc.gov/assets/nypd/downloads/pdf/public_information/post-final/facial-recognition-nypd-impact-and-use-policy_4.9.21_final.pdf)
- <https://www.comparitech.com/blog/vpn-privacy/facial-recognition-statistics/>
- <https://www.mdally.com/faqs/>
- <https://www.safehorizon.org>
- [https://tadviser.com/index.php/Product:Patternizr\\_\(software\\_for\\_disclosure\\_of\\_crimes\)](https://tadviser.com/index.php/Product:Patternizr_(software_for_disclosure_of_crimes))
- <https://craft.co/lefta-systems>
- <https://www1.nyc.gov/site/nypd/about/about-nypd/equipment-tech/facial-recognition.page>

Product Studio Maker Day 4

# How might we improve crime victims' access to services, programs, and reports?

Team 62: Karishma Nageshwaran, Seunghyo Jang, Stanton Thomas, Ting-Wei Lu, Sooyeon Kim

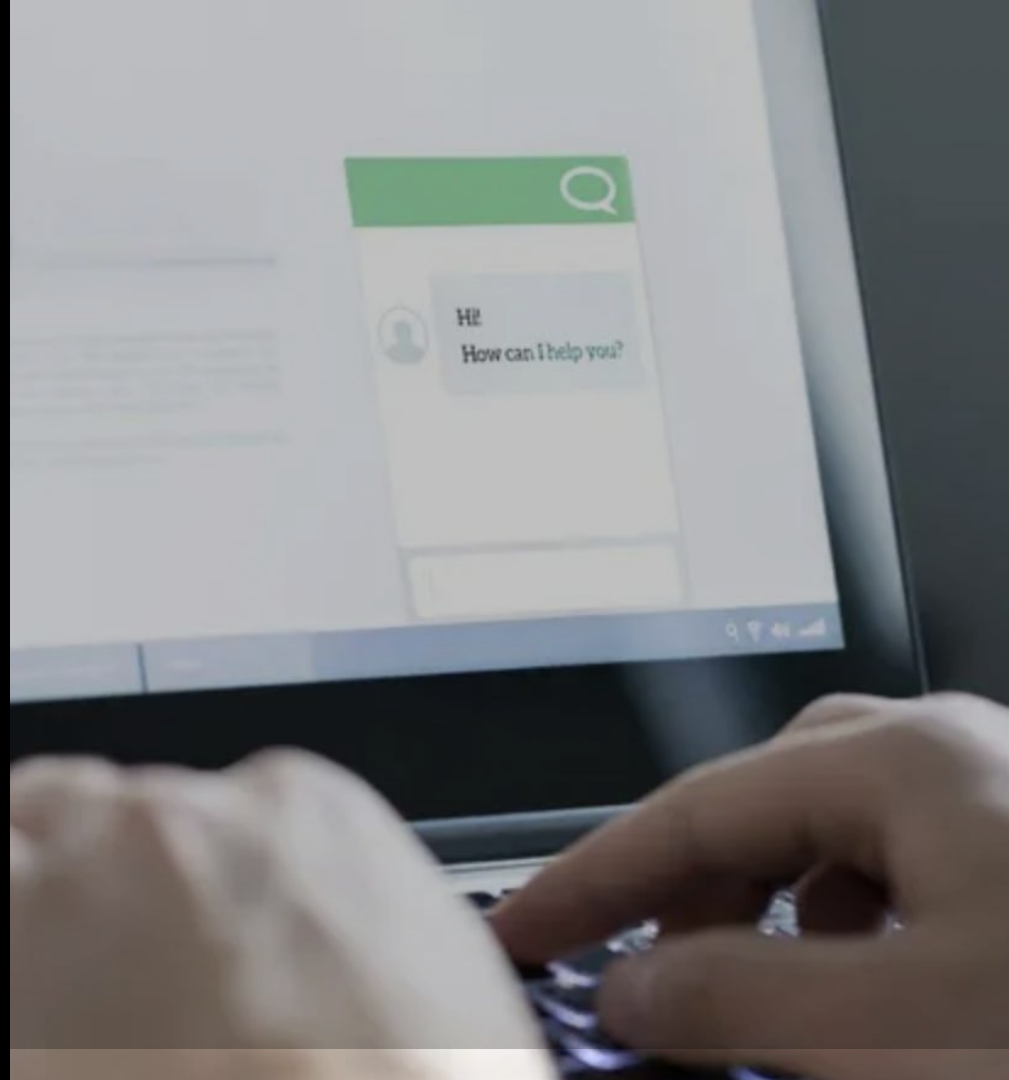


## Status Quo

- ❶ Lack of communication between police and victims
- ❷ Long wait time during reporting process
- ❸ Limited technology available to solve crime

## **Report Eligibility Chatbot /** **A concise central business logic**

- Assess whether a crime warrants a criminal investigation based on the circumstances of the victim
- Automate initial interaction between the victim and the police
- Provide resources/information to the public who wants to know their rights and laws



## 1. Equivalent Experiment

# Generating a Comprehensive List of Keywords

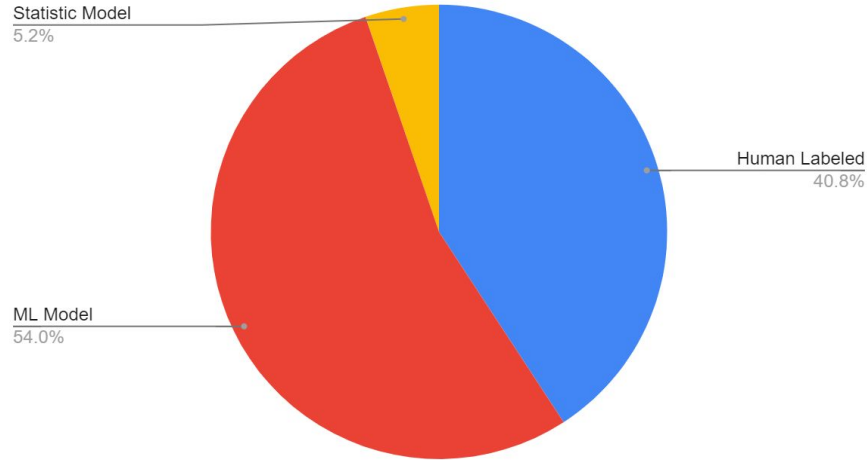
- ① Provide a realistic scenario of that crime to participants
- ② Present three sets of keywords, generated by different approaches, for a specific crime
  - Human Annotated
  - Statistic Model
  - ML Model
- ③ Ask participants which set of keywords describes the scenario better
- ④ Analyze which approach would give us a more comprehensive list of keywords

## 1. Equivalent Experiment

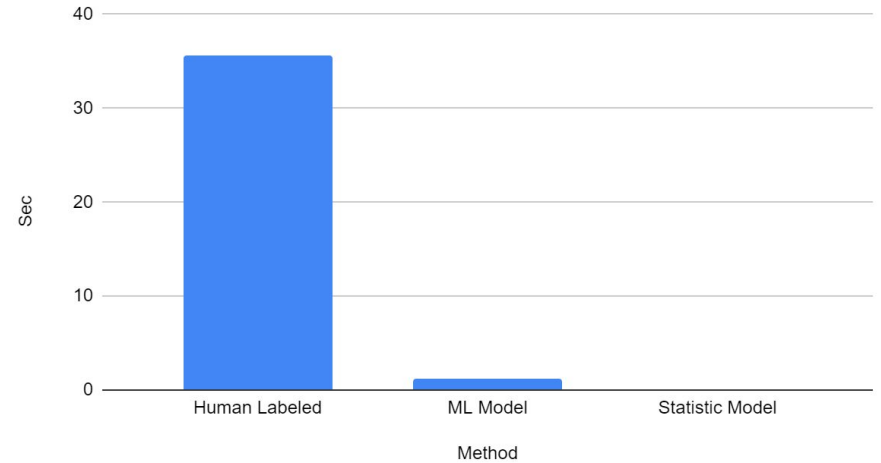
# Generating a Comprehensive List of Keywords

Results Analysis: we believe that the ML approach would be the most feasible to our use case

Percentage of Time Ranked as 1st



Time Needed to Process





## Experiment 2: Prototype

# Users prefer to interact with humans over a chatbot.

- Asked participants to find out if they are eligible to file a report given a crime scenario.
- Control: Interact directly with one of us over the phone
- Treatment: Interact with our prototype which uses pre-populated responses generated by us.
- Data collected: Time duration of interaction and satisfaction rating



**Chatbot** 11/10/2022 8:41 PM

**Pre-populated responses go here** (edited)

Hello, how can I help you today?

Please choose from the following:

- 1 Ask about report eligibility
- 2 Learn about programs/services/resources offered to you
- 3 Ask a general question (edited)



**Chatbot** 11/10/2022 8:53 PM

What type of crime do you wish to report? (e.g. scam, graffiti, petit larceny, lost property, etc)



**Chatbot** 11/10/2022 9:27 PM

Enter the date of the incident in MM/DD/YYYY form.

[date] is invalid. Please enter the date of the incident in MM/DD/YYYY form.

Enter the time the incident occurred. Enter "NA" if you don't know the time.

Enter the exact address for the incident. Use the nearest intersection if you don't know the exact address.

Is 2 W Loop Rd, New York, NY 10044 the correct address? (edited)

We cannot validate the address. Please enter the address again. Use the nearest intersection if you don't know the exact address.

Some pre-populated responses for our chatbot

## Experiment 2: Prototype

# Experiment Run



**Chatbot** Yesterday at 3:57 PM

Hello, how can I help you today?

Please choose from the following:

- 1 Ask about report eligibility
- 2 Learn about programs/services/resources offered to you
- 3 Ask a general question



**Faul Tier** Yesterday at 3:57 PM

2



**Chatbot** Yesterday at 3:57 PM

What type of crime do you wish to report? (e.g. scam, graffiti, petit larceny, lost property, etc)



**Faul Tier** Yesterday at 3:58 PM

petit larceny



**Chatbot** Yesterday at 3:58 PM

Enter the date of the incident in MM/DD/YYYY form.



**Faul Tier** Yesterday at 3:58 PM

11/11/2022

## Experiment 2: Prototype

# Experiment Run – Continued



**Faul Tier** Yesterday at 4:00 PM

2



**Chatbot** Yesterday at 4:00 PM

What type of product was stolen? (e.g. phone, laptop, etc)



**Faul Tier** Yesterday at 4:00 PM

bike



**Chatbot** Yesterday at 4:00 PM

What is the model name of the bike? Enter “NA” if not applicable or unknown. (edited)



**Faul Tier** Yesterday at 4:01 PM

Harper 7 Commuter Bike



**Chatbot** Yesterday at 4:01 PM

What is the approximate price of the stolen item?



**Faul Tier** Yesterday at 4:01 PM

\$400



**Chatbot** Yesterday at 4:01 PM

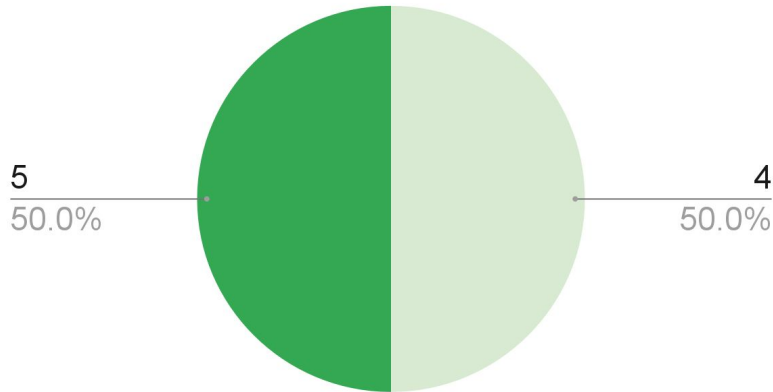
Your case is eligible for police reports. Use the following reference code to file a report with the police: EBCAW13910

## Experiment 2: Prototype

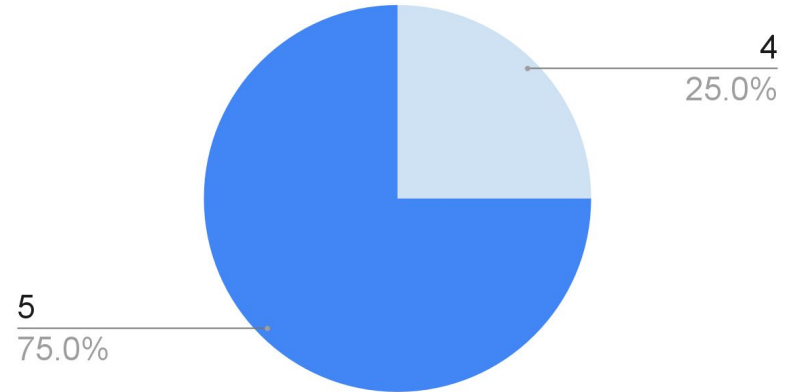
# Results and Analysis – Satisfaction Rating

Participants who interacted with the chatbot seem to have a better experience with those who interacted over the phone.

Phone Call Satisfaction Rating



Chatbot Satisfaction Rating



## Experiment 2: Prototype

# Results and Analysis – Time Duration

The distributions of time duration for the two groups are similar but the average time duration for the chatbot was slightly shorter than that of the control group.

	Phone Call	Chatbot
Average Time Duration (s)	191.125	185

Overall, we can conclude that users feel more satisfied with chatbot interaction than the phone call and the chatbot improves the time duration of interaction slightly.

### 3. Prototype

## Assessing the Interface of the Chatbot

- ❶ Give guidelines to 2 user groups to find the same information
  - Set 1 (Control): A group of people checking eligibility via NYPD's reporting site.
  - Set 2 (Treatment): A group of people checking eligibility via the chatbot.
- ❷ Create a chatbot prototype on Figma.
- ❸ Set 1 would be provided with a mobile version of this prototype to navigate the prototype and to assess the report's eligibility.
- ❹ Set 2 would be asked to do the same task of submitting the report but through the NYPD's reporting site.
- ❺ Evaluate the usability satisfaction and the time difference between the two sources.

### 3. Prototype

#### Basic Info

## Report Type

Please select type of Report you wish to enter \*

- ☐ Lost Property 
- ☐ Petit Larceny 
- ☐ Criminal Mischief 
- ☐ Graffiti 

#### Petit Larceny

##### What is petit larceny?

Property valued at **\$1000 or less** that was taken without permission or authority.

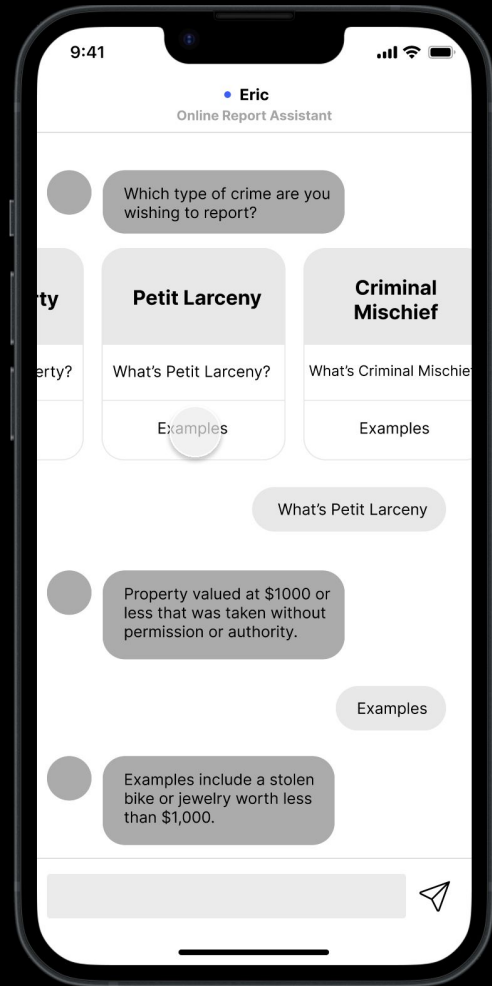
##### What is not petit larceny?

Petit larceny **does not** include the theft of credit or debit cards, property that was taken forcibly from you, or property taken directly off your person. Examples of crimes that do not qualify as petit larceny include having your wallet taken from your pocket by a pickpocket, or someone grabbing your cell phone from your hand. These examples are of a more serious nature and require you to make a report in person.

##### What are examples of petit larceny?

Examples include a stolen bike or jewelry worth less than \$1,000.

OK

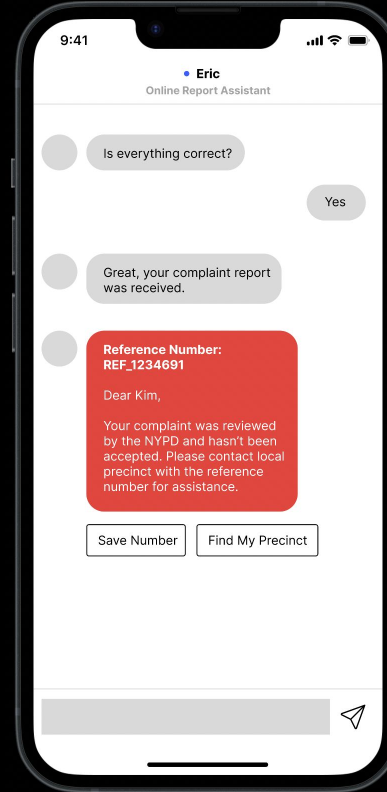
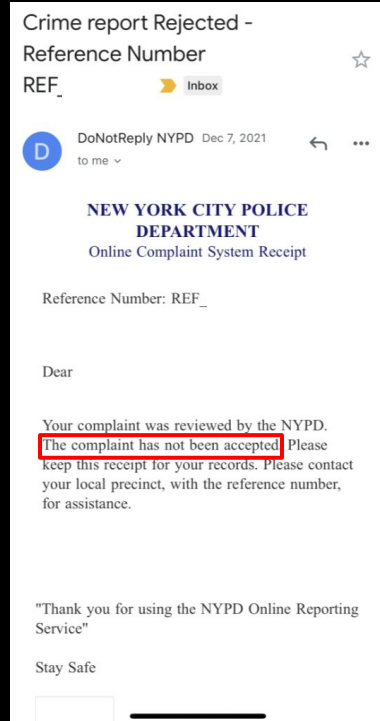


### 3. Prototype

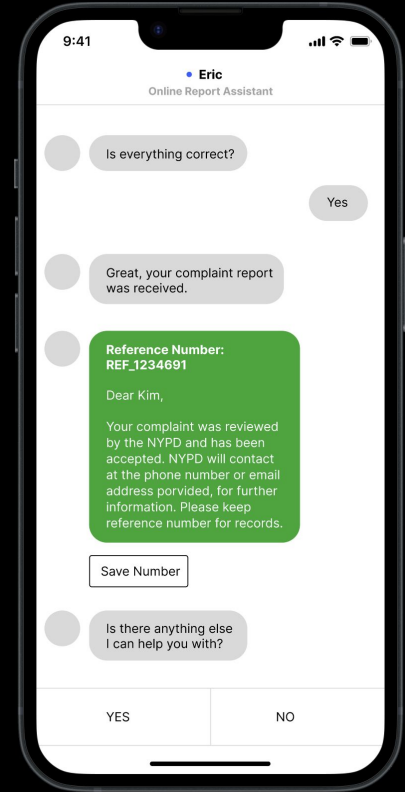
#### Final Response: Reporting Site vs Chatbot



NYPD Reporting Service



Report Eligibility Chatbot

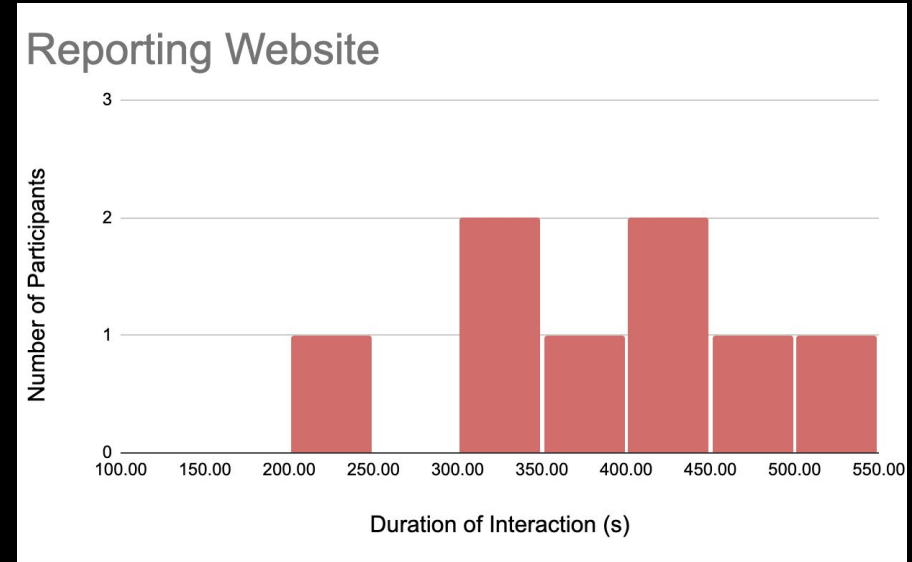
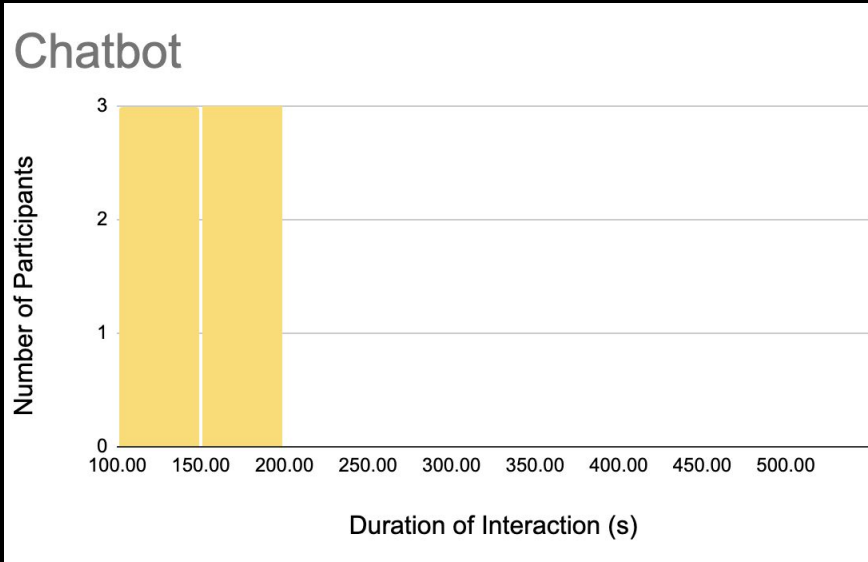




### 3. Prototype

## Results and Analysis – Time Duration

The average time for using the chatbot was found to be significantly less than for using the reporting website, making it more efficient.



Final Verdict

## Next Steps

While we realize that NYPD may be short on resources and time. As a team we suggest that NYPD should adopt our chatbot idea to help improve the overall experience with crime reporting in New York City. This should be looked at as an investment for the future, as the chatbot will save both victims and police officers countless hours of time.

**Thank You!**