MNP DIGITAL

Ottawa Police Service Mental Health Calls for Service Study

Prepared for Ottawa Police

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Contents

Executive Summary

- The objective of the study was to determine an estimate for the prevalence of incidents relating to a Perceived Mental Health Condition (PMHC) within calls to police in the City of Ottawa geographic area. No further analysis was performed on sociodemographic factors as they are not recorded.
- Three sources of data were analyzed – CAD, RMS, & Audio from four phone lines (911, OPS Other Emergencies, OPS Police Reporting Unit (PRU) & OPS PRU Priority), from September 1st 2021 – August 31st 2022.
- To accurately determine the prevalence of calls related to a PMHC, a key term list was developed[1] and used to determine if the contents of the call or remarks within either system contained terms related to a PMHC and therefore if the call itself was related to a PMHC.
- The classification of the calls within CAD and RMS was also analyzed to validate the findings.
- The audio analysis was found to be unreliable as the key terms were often used in a non PMHC context, which resulted in a high number of false positives and thus was excluded from further analysis This means that analysis can only be done on data recorded by dispatchers and police, rather than data coming directly from the caller.
- Within the CAD system, 8.9% of records were determined to be related to a PMHC based on the analysis of the remarks within the record.
- Within the RMS system, 11.4% of records were determined to be related to a PMHC based on the analysis of the remarks within the record.
- The CAD and RMS systems had slightly different prevalances as the systems are used to record notes at different stages of the incident. CAD notes are taken during the initial call, whereas RMS notes are taken once police have attended.

Introduction

In the Ottawa area, thousands of calls are made to 911 emergency and non-emergency police lines per day, a proportion of which are related to PMHCs. If these calls result in police being dispatched, the details of the calls are initially entered into the police computer aided dispatch system (CAD). If police determine that the incident requires a report to be recorded, then the details are also entered into the police record management system (RMS). In each of these systems, records can be identified as related to a PMHC in two ways. Firstly, records are manually classified or categorized into certain case types in the CAD and RMS systems respectively, which can indicate that the record is related to a PMHC (the classifications/categories can be found in the analysis sections for both CAD and RMS). Secondly, there are remarks within each record that are captured by the dispatcher during the call and officer once the incident has been attended, which can give an indication as to if the record is related to a PMHC.

Prior to this study, the frequency of calls related to PMHCs to Ottawa Police Services (OPS) was unknown. This study is designed to estimate the prevalence of calls related to PMHCs to police i.e. the

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[1] Refer to Appendix for full list of key terms

number of calls that come into police that relate to a PMHC as a proportion of the total calla that come in. Understanding the prevalence of calls related to PMHCs within the Ottawa population can assist in determining potentially better responses to the situations. A similar previous study[3], which was used as a template for this study, outlines the importance of understanding the prevalence of calls – *"Indeed, as discussed earlier, not knowing the true extent to which the police and PwPMI[4] are intertwined within day-to-day police activity can stifle informed discussions around disentangling mental health from the broader police mandate. As such, further efforts in identifying PwPMI within police calls for service data are required as they can not only contribute to generating a more accurate figure on the proportion of calls that involve PwPMI but also can shed light on which specific call classifications have a higher likelihood of encompassing a PwPMI."*

An additional research question was to understand any available sociodemographic characteristics of the callers. Variation in the frequency of calls by sociodemographic characteristics is not shown because this information is not collected from the caller.

Methodology

Study Population

To understand the occurrence rate of calls to police services that were related to a PMHC we looked at data from 3 sources: RMS, CAD, and audio files of calls to four lines – 911, OPS Other Emergencies, OPS Police Reporting Unit (PRU) & OPS PRU Priority Line. All calls for services originated from within the Ottawa region.

For the analysis, all records within RMS and CAD from September 1st 2021 to August 31st 2022 were used. Due to complexities in extracting and analyzing the audio files it was determined that the entire population of calls between September 1st 2021 to August 31st 2022 would be too large to process. 37 random days were picked between September 1st 2021 to August 31st 2022 and audio was extracted from all calls that came in during those days. 10,000 calls were then randomly picked from the full 37 day sample and used in the analysis.

Data Sources

Each audio record consisted of raw audio of a call to police services, which was then transcribed using an offline tool created specifically for the study.

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[3] Koziarski, J., Ferguson, L., & Huey, L. (2022). Shedding Light on the Dark Figure of Police Mental Health Calls for Service. CrimRxiv. https://doi.org/10.21428/cb6ab371.cb8507ac , Page 5
[4] Person with Perceived Mental Illness

Calls to all four lines with a short duration were manually reviewed and it was determined that calls under 15 seconds long tended to be accidental ("pocket dials"), calls between 15 and 45 seconds tended to be transferred to another department or service, and calls between 45 and 60 seconds tended to be non-emergency calls where the operator directs them to contact a different service, such as bylaw. Based on these results, all calls that were shorter than one minute were excluded from the sample as these were deemed to be irrelevant to the study.

Within the 10,000 calls that were sampled for the study, there were four different phone lines that the calls came in to. The distribution is below:

Line	Description	Count
911	Calls from the pubic made to 911	5,267
OPS Other Emergencies	Calls made to the OPS 10-digit emergency number	2,507
OPS Police Reporting Unit (PRU)	Calls made to the OPS non-emergency line to report a crime	1,830
OPS PRU Priority Line		396

The CAD is used to record details of calls that come into dispatch and are directed to police services. The records are filled out by both dispatch and the attending officers. Each record provided to the study from CAD consisted of:

- A unique ID for the record
- Two numerical classification codes, one for the initial classification (typically filled out by dispatch) and one for the final classification (typically filled out by an attending officer), along with textual descriptions of what those codes represented, outlining the nature of the incident associated with the record.
- A remarks field that contained notes from the person who created the record
- The date and time the record was created.
- No personal or sociodemographic data was provided as this is not recorded.

The RMS is used to create reports that contain the details and actions taken by the reporting officer regarding a specific incident. Each record provided to the study from RMS consisted of:

- A unique ID for the record
- Up to four numerical categorization codes, along with textual descriptions of what those codes represented, outlining the nature of the incident
- A remarks field that contained notes from the person who created the record
- The date and time the record was created.
- No personal or sociodemographic data was provided as this is not recorded

Analysis

To determine if the remarks within RMS & CAD, and the transcriptions from the audio files contained words related to a PMHC, a list of key terms was established. The initial list was taken from a similar study[5] and was combined with additional terms provided by the Guiding Council. These terms can be found in the appendix.

Audio

The audio files, which were raw recordings of the incoming phone lines, were transcribed using a tool created for the study to generate a text file for each call. These text files were then analyzed to determine if they contained key terms related to a PMHC, generating a dataset containing the number of times each key term was found in each recording.

A sample of the audio files were also manually reviewed to determine if:

1. The call contained a PMHC key term
2. The call related to a PMHC

This was done to determine if there was a positive correlation between calls that contained PMHC key terms and calls that involved a PMHC, to validate the relevancy of the automatic transcription analysis.

The audio data consisted of 10,000 call files, all of which were automatically transcribed. 250 calls were also manually reviewed to measure the accuracy and validity of the automatic transcription.

It was determined that the audio analysis was not sufficiently accurate and should be discounted for two reasons. Firstly, a call containing a PMHC key term was not a reliable indicator that the call was related to a PMHC upon manual review. Secondly, the key term search within the automatic transcription was done without any consideration for context. This resulted in a number of calls being flagged as containing a PMHC key term, where the term was not used in a PMHC context or was used by the dispatcher and not the caller.

CAD

The CAD records contained two classification fields, one for the initial classification of the record, and one for the final classification. The initial classification is entered by the individual who first initiates the record, typically the dispatcher. Once the incident has been closed, the final classification is entered by whoever is closing the record, typically the officer who attended, depending on the nature of the record. Each contained one classification from a pre-determined list. The following classifications were determined to indicate a record related to a PMHC:

- MENTAL HEALTH ACT (IN PROGRESS)
- MENTAL HEALTH ACT (MOBILE RESPONSE)
- MENTAL HEALTH ACT – FORM TO BE EXECUTED
- MENTAL HEALTH ACT – IMMINENT DANGER (IN PROGRESS)

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[5] Koziarski, J., Ferguson, L., & Huey, L. (2022). Shedding Light on the Dark Figure of Police Mental Health Calls for Service. CrimRxiv. https://doi.org/10.21428/cb6ab371.cb8507ac

- MENTAL HEALTH ACT
- MHA FORM 2
- MHA – OTHER
- MHA SEC. 17 APPREHENSION
- MENTAL HEALTH ACT (REPORT)
- MHA HOSPITAL VOLUNTARY
- MHA FORM 1

The CAD records also have a "remarks" field, which contains the free text added by the dispatcher describing the call. These remarks were analyzed to determine if they contained any of the PMHC related key terms identified in the previous section.

RMS

Each RMS record contained a set of between one and four categorization fields that were made up of options chosen from a pre-determined list, to categorize the nature of the call, such as "BREACH PROBATION" or "CHILD POSS ABUSE". These categories are entered by the officer who is recording the incident once the report has been completed. For the purposes of the study the following selected categories were used to indicate a record had been categorized as related to a PMHC:

- MHA – OTHER *(Various incidents related to the Mental Health Act)*
- MHA SEC 17 APPRE *(Section 17 (Threat of causing harm to themselves or others) apprehension under Mental Health Act)*
- MHA FORM 2 *(Execution of a mental health form 2)*
- MHA FORM 1 *(Execution of a mental health form 1)*
- MENTAL ELOPEE *(Calls related to detention orders under the Mental Health Act)*

The RMS records also contained a "remarks" field that contained free-text comments about the call. It is our understanding that these comments would be added by the police officer after the call. These remarks were analyzed to determine if they contained any of the PMHC related key terms identified in the previous section.

Results

CAD

The CAD data contained 337,479 individual records of calls that came into dispatch over the study period. Of these, 30,185 (8.9%) of records were related to a PMHC, determined by the key terms found within the remarks field.

To validate these findings, the classification of the record was also considered. There were 12,088 (3.6%) records classified as PMHC related based on the two classification fields. The results are below:

PMHC related initial classification and final classification counts of calls within CAD

Classification	Initial Count	Final Count
MENTAL HEALTH ACT (IN PROGRESS)	5,853	3
MENTAL HEALTH ACT (MOBILE RESPONSE)	1,568	2
MENTAL HEALTH ACT – FORM TO BE EXECUTED	942	0
MENTAL HEALTH ACT	396	0
MENTAL HEALTH ACT – IMMINENT DANGER (IN PROGRESS)	58	1
MHA FORM 2	18	543
MENTAL HEALTH ACT (REPORT)	6	0
MHA - OTHER	5	3,623
MHA SEC. 17 APPREHENSION	3	2,168
MHA HOSPITAL VOLUNTARY	1	1,167
MHA FORM 1	1	387

RMS

The RMS data contained 96,164 individual records of calls to OPS that resulted in the dispatch of an officer over the study period. Of these, 10,918 (11.4%) records were related to a PMHC, determined by the key terms found within the remarks field.

To validate these findings, the categorization of the record was also considered. There were 6,922 (7.2%) records categorized as PMHC related based on the four categorization fields. The results are below (note there is some overlap as a PMHC category could be found in multiple fields in one record):

PMHC related categorization counts of calls within RMS

Category	Count
MHA – OTHER	3,857
MHA SEC 17 APPRE	2,326
MHA FORM 2	397
MHA FORM 1	327
MENTAL ELOPEE	29

Further CAD Analysis

Another interesting point that can be found in the analysis is to look at the relationship between the initial classification , the final classification, and the remarks field in the CAD data. Identifying records that were ultimately classified as PMHC related, or contained a PMHC key term, and looking at the initial classification can give us some insight into how PMHC related incidents are first classified.

For the subset of records where the remarks field contains a PMHC key term (30,185 records), we can look at the initial classification . The top 10 most frequent classifications are found in the table below.

Initial classification of calls within CAD that contained a PMHC key term within the remarks.

Code	Description	Priority	Count
59003	Mental health call	3	3,219
59002	Mental health call	2	2,028
11033	Disturbance	3	1,689
31002	Paramedic assistance	2	1,601
31003	Paramedic assistance	3	1,466
15003	Suspicious incident	3	1,072
59004	Mental health call	4	1,048
33014	911 activation/hangup	4	1,019
15004	Suspicious incident	4	994
59013	Mental health form execution	3	870

For the subset of records where the final classification is PMHC related (7,894 records), we can look at the initial classification . The top 10 most frequent classifications are found in the table below.

Initial classification of calls within CAD that had a PMHC related final classification.

Code	Description	Priority	Count
59003	Mental health call	3	1,582
59002	Mental health call	2	1,322
59013	Mental health form execution	3	655
59004	Mental health call	4	584
31002	Paramedic assistance	2	471
31003	Paramedic assistance	3	405
11033	Disturbance	3	324
15004	Suspicious incident	4	226
15003	Suspicious incident	3	225

The priority descriptions can be found in the appendix.

Findings & Limitations

- Prior to this study, the volume of PMHC related calls to police was unknown; in order to inform alternate responses to PMHC call it is important to know how many occur and what percentage of calls to police are PMHC related.
- Within CAD, between September 2021 and August 2022, 8.9% of records (30,185 of 337,479 total records) were related to a PMHC.
- Within RMS, between September 2021 and August 2022, 11.4% of records (10,918 of 96,164 total records) are related to a PMHC.

- The CAD and RMS systems had slightly different prevalances as the systems are used to record notes at different stages of the incident. CAD notes are taken during the initial call, whereas RMS notes are taken once police have attended.
- Within CAD, the records that were found to be PMHC related most often initially classified as the following:
  - Mental health call
  - Disturbance
  - Paramedic assistance
  - Suspicious incident
  - 911 activation/hangup
  - Mental health form execution
- A small number of audio files (250) could be manually reviewed, due to resource constraints.
- The transcription of the audio files was done using an offline speech recognition tool, due to the sensitivity of the data and concerns over using online tools. Using an online tool may have resulted in a more accurate analysis as the individual voices within the call could have been separated and identified, which would have mitigated some of the issues regarding the context words were used in.
- The key term search within the audio transcriptions and the remarks from RMS and CAD had no consideration for context. Often, PMHC related terms were used in a context that was not PMHC related. For example, the dispatcher could ask if the caller is suicidal, and the caller could respond that they are not. This would be picked up by the key term search as PMHC related but upon reviewing the context it is clear that the call is not PMHC related. This is less of an issue within CAD and RMS as in the audio, as the remarks only contain relevant information, rather than the entire contents of the interaction.
- The key term list is a subset of words that can be PMHC related; it is not possible to have an exhaustive list.
- Many terms found in the key term list are substance use related as well as mental health related, so were often found outside of PMHC contexts. For example, a call regarding a vehicle collision could mention that the driver had been drinking. "Drinking" is included in the PMHC key term list, and therefore in the prevalence estimates, but may not be related to PMHC in this context.
- The pathway that police came into contact with the person who is the subject of the call was not studied. Knowing the context behind the record, such as a healthcare provider calling on behalf of a mentally ill patient, could give more accurate results.
- Data provided for the study from RMS and CAD contained no sociodemographic data, as this is not recorded, so no analysis could be done on the populations that are represented in PMHC calls

Appendix

Key terms from article[6]

mental health, mh, mental illness, mental ill, mentally ill, schizophrenia, schizo (also scizo due to spelling errors), ADHD, attentive deficit, ADD, OCD, autism, depression, depressed, bipolar, manic, mania, psychosis, delusional, deluded, psych, psychiatric, psych issues, hallucinating, hallucination, suicidal, suicidal ideation, suicide, anxiety, anxious, mental disorder, disorder, PTSD, post-traumatic stress disorder, crazy, nervous breakdown ,breakdown, unstable, paranoid, paranoia, neurosis, self-harm, cutting(also cut), post-partum, wants to die (also wanted, wanting, and die), hearing voices(also heard and voice), CMHA, MHA (also mental health act), kill him/herself, and hang self (also hung)

Additional key terms from Guiding Council Secretariat:

Drug abuse, overdose, substance use, drinking, drunk, intoxicated, intoxication, ecstasy, needle use, passed out, Opioids, heroin, cocaine, harm, harm reduction, withdrawal, hangover, alcoholic, alcohol, stress, pills, dead, dying, blackout, seeing people, mad, strange behaviour, abnormal, naloxone, blood, bleeding, vomiting, throwing up

Descriptions of the priority codes found within Table 1 & Table 2.

Priority	Description
2	Known presence of weapons or Apparent serious injuries or Serious Criminal offences in progress against a person All events that require a rapid police response where there is potential for serious bodily harm to occur.
3	Criminal Code offense in progress or Apparent risk of injuries Incidents in which there is a reasonable belief that an extended delay in response may place persons, property or evidence at risk.
4	Incidents requiring a mobile response Offences not in progress where witnesses are on scene Offences not in progress where evidence can be collected at the scene All calls of a non-emergency nature where police presence at the scene is necessitated

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[6] Koziarski, J., Ferguson, L., & Huey, L. (2022). Shedding Light on the Dark Figure of Police Mental Health Calls for Service. CrimRxiv. https://doi.org/10.21428/cb6ab371.cb8507ac