APD Calls for Service Analysis

Public Safety Committee
August 6, 2020

Agenda

1. Purpose of the analysis
2. Caveats about the data
3. Dashboards & visuals
   a. General
   b. Dispatched vs officer initiated (live demo)
   c. Mental health dashboard
   d. Initial call type and disposition visual
   e. False alarm data visual
4. Next steps & future analysis
5. Closing - how might we reference calls for service data to reimagine public safety?
6. Appendix - definitions

Purpose of the analysis

A. How might we use police calls for service and related data to reimagine public safety?
B. Iteration: ***Get feedback*** on the dashboards for future development along a longer time series.
C. Of note: The dashboard is created with ***January 2020 data***. We do not yet offer conclusions, given the time limitation of the data. As we discuss data caveats, we needed to correctly architect the data framework

Data caveats

We have to consider the process + the data…

PROCESS ->   Pre-scene arrival   On scene

Caller

Call Taker

Dispatcher

Primary

Backup (s)

Officer initiated

DATA ->

Initial Problem Code

Priority Code

...and that the system was built administratively...

	Pre-scene arrival	On scene	Post incident	Arrest records

Caller Call Taker Dispatcher Primary Backup (s)

Data Element ->

Initial Problem Code

86 primary type codes Plus dispatcher codes and final type codes
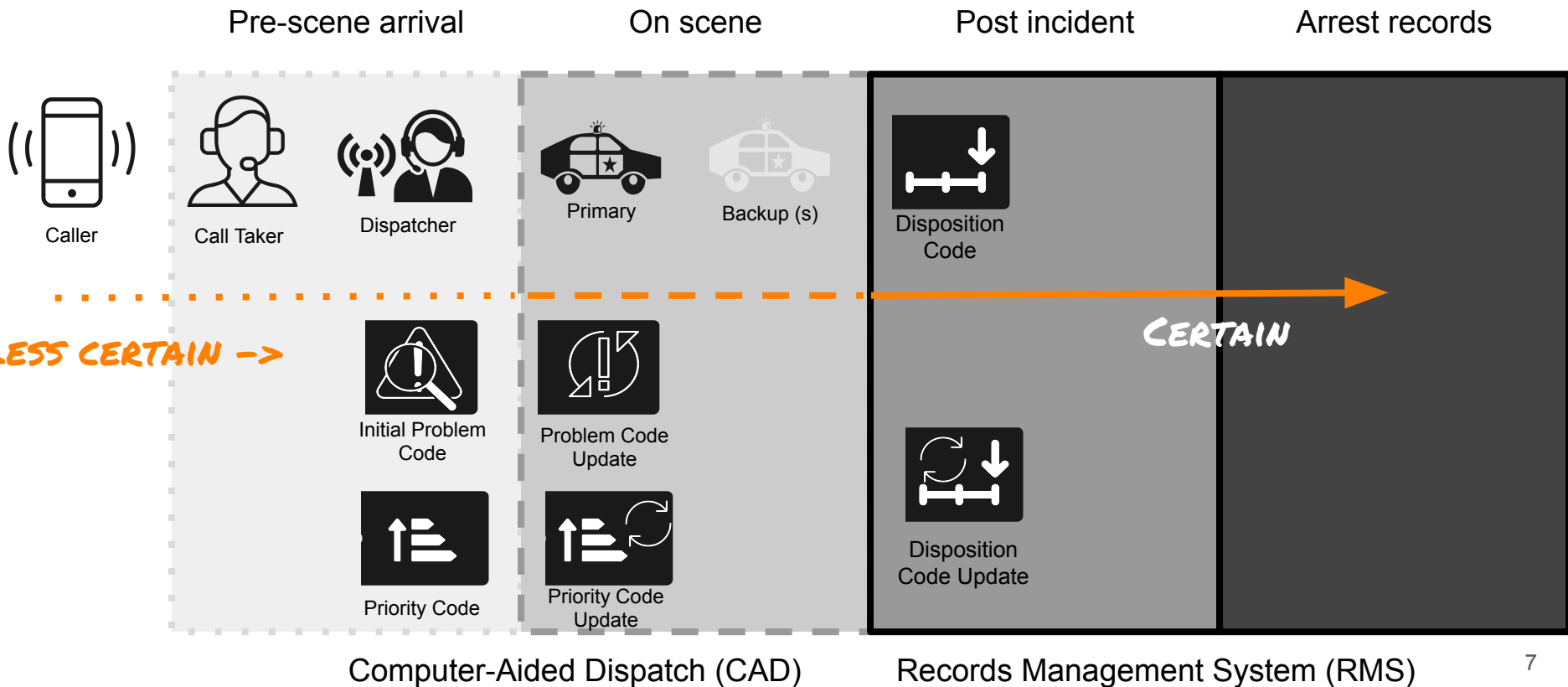
Priority Code

(5 codes)

Data sources -> Computer-Aided Dispatch (CAD) Records Management System (RMS)

6

...that **problem definition certainty** changes over time...

Pre-scene arrival | On scene | Post incident | Arrest records

Caller | Call Taker | Dispatcher | Primary | Backup (s) | Disposition Code

Less certain ->

Certain

Initial Problem Code | Problem Code Update | Disposition Code Update

Priority Code | Priority Code Update

Computer-Aided Dispatch (CAD) | Records Management System (RMS)

...and how time spent analysis works...

Pre-scene arrival   On scene   Post incident   Arrest records

Caller

Call Taker

Dispatcher

Primary

Backup (s)

Response Timestamp

Arrived Timestamp

Arrived Timestamp

Call cleared Timestamp

RELIABILITY ISSUES ->

12K OUT OF 48K RECORDS HAVE NO BACKUP ARRIVAL TIMESTAMP

Computer-Aided Dispatch (CAD)   Records Management System (RMS)
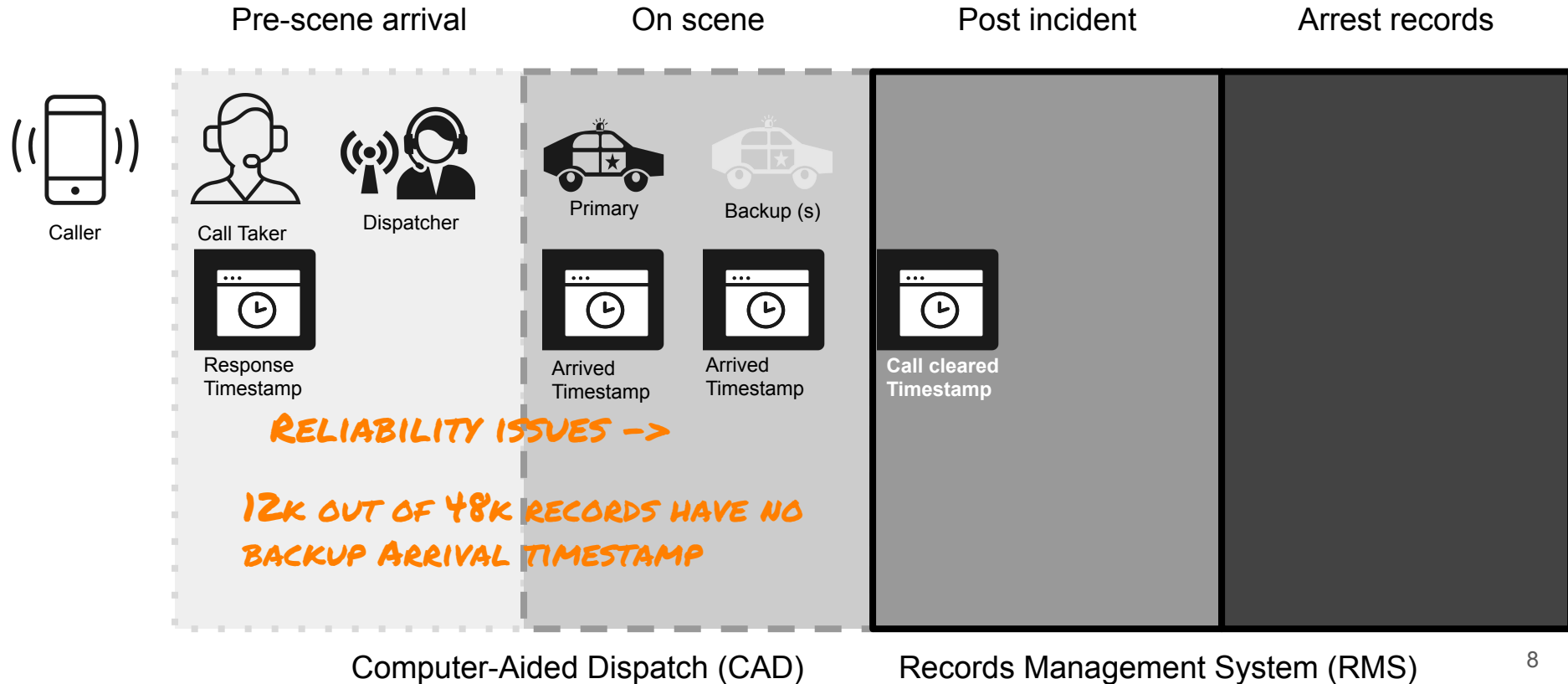
Data differences - AH Datalytics report and this work

Pre-scene arrival — On scene — Post incident * — Arrest records *

Caller

Incident Type

Officer initiated

Pre-scene arrival: Call Taker, Dispatcher, Response Timestamp, Initial Problem Code, Priority Code

On scene: Primary, Backup (s), Time arrived Timestamp, Time arrived Timestamp, Problem Code Update, Priority Code Update

Post incident: Disposition Code, Time call cleared Timestamp, Disposition Code Update

Arrest records: NIBRS Codes (FBI Offense Codes)

Computer-Aided Dispatch (CAD)

Records Management System (RMS)

...so therefore, we are working with Jan 2020 data

Architect with a smaller sample size to work through complexity

Honor, unpack, and align data to the **lines of inquiry** council that council members and aides, civil society groups, and management gave us

Get your feedback on the dashboards, and iterate based on suggested changes

Then update the dashboards with more time series data

Example lines of inquiry:

- Time spent on mental health calls
- Time spent analysis
- Repeat properties & signals for preventative intervention
- Does "no report" signal we can solve for something differently
- What are the ranges of different problem types, like "disturbance"
- What is the time spent on specific problem types
- What is the day in the life of an officer according to the data

Dashboards and visuals
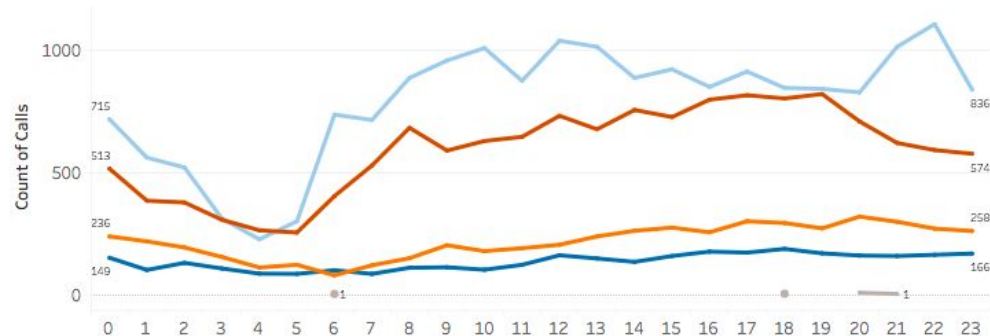
GENERAL TRENDS - JANUARY 2020

Cancelled Calls are Removed

Count of Calls for Service By Priority
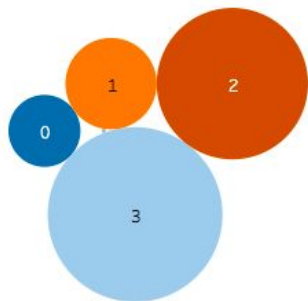
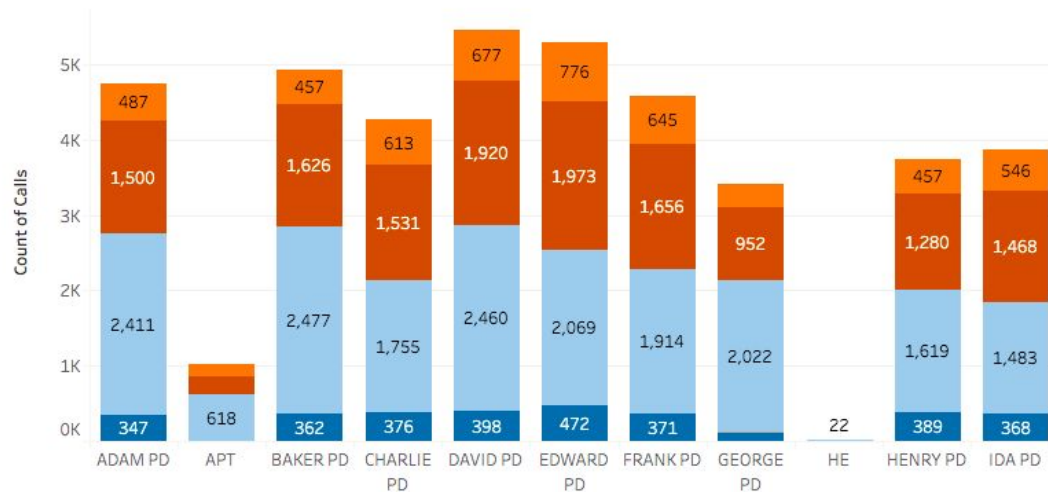
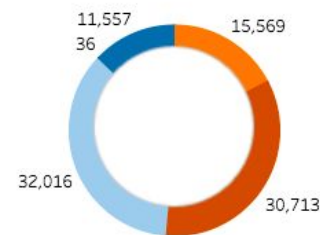|	
1	5,149
2	14,143
3	18,850
4	10
0	3,197

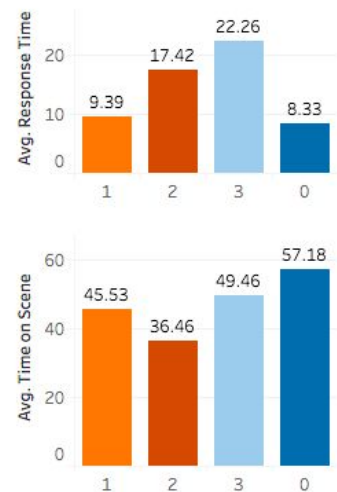## Calls Recieved by hour of the day

Count of Calls by Police Sectors

Count of Primary and Backup Police Officer Responses
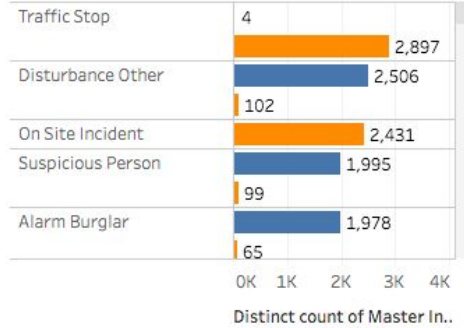

Time Spent Analysis

CALLS FOR SERVICE TRENDS - JANUARY 2020
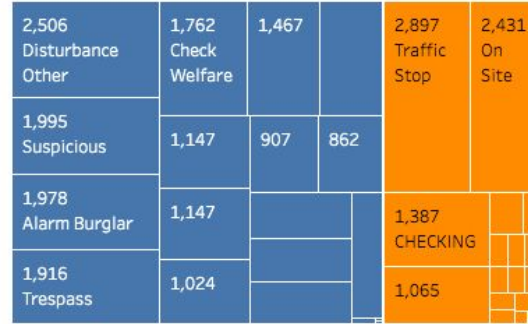## DISPATCHED VS. OFFICER INITIATED

Count of Calls for Service

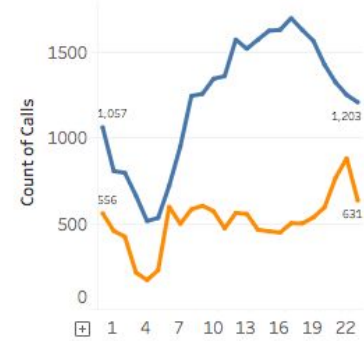Dispatched Calls
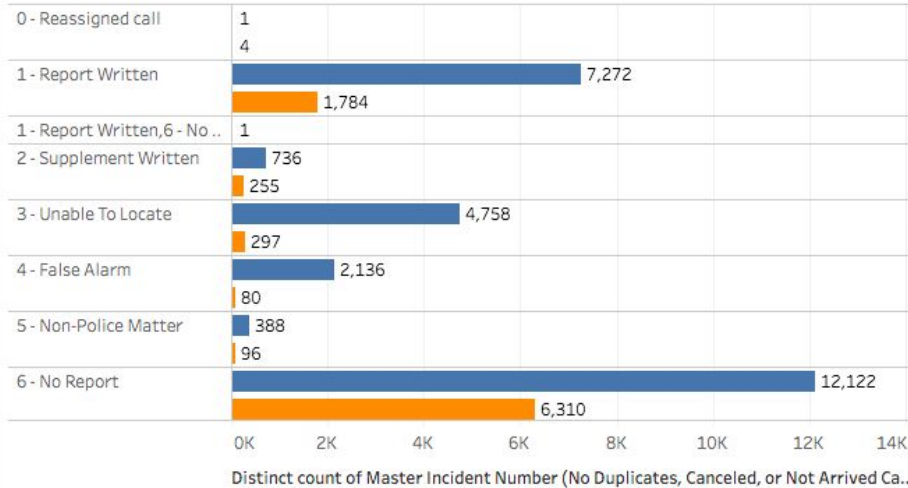29,163
Officer Initiated
12,186

Dispatched Calls

Officer Initiated

Category of Calls - List View

Traffic Stop	4
	2,897
Disturbance Other	2,506
	102
On Site Incident	2,431
Suspicious Person	1,995
	99
Alarm Burglar	1,978
	65

0K 1K 2K 3K 4K

Distinct count of Master In..

Category of Calls- Relational View

2,506 Disturbance Other	1,762 Check Welfare	1,467	2,897 Traffic Stop	2,431 On Site
1,995 Suspicious	1,147	907	862	
1,978 Alarm Burglar	1,147		1,387 CHECKING	
1,916 Trespass	1,024		1,065	

Calls Received by hour of the day

Count of Calls

1,057   1,203
1500
1000
556   631
500
0

1 4 7 10 13 16 19 22

Count of Calls by Disposition

0 - Reassigned call	1
	4
1 - Report Written	7,272
	1,784
1 - Report Written,6 - No ..	1
2 - Supplement Written	736
	255
3 - Unable To Locate	4,758
	297
4 - False Alarm	2,136
	80
5 - Non-Police Matter	388
	96
6 - No Report	12,122
	6,310

0K 2K 4K 6K 8K 10K 12K 14K

Distinct count of Master Incident Number (No Duplicates, Canceled, or Not Arrived Ca..

Count of Calls by Police Sectors

Count of Calls

ADAM PD	APT	BAKER PD	CHARLIE..	DAVID PD	EDWAR..	FRANK P..	GEORGE..	HE	HENRY P..	IDA PD
3,154 / 1,591	446 / 578	3,308 / 1,614	3,174 / 1,101	4,057 / 1,398	4,068 / 1,222	3,496 / 1,090	1,782 / 1,638	22	2,647 / 1,098	3,031 / 834

6K
4K
2K
0K

Count of Calls by Priority

Count of Calls

1	2	3	4	0
5,083 / 66	13,405 / 738	7,527 / 11,323	10	3,148 / 49

20K
15K
10K
5K
0K

Time Spent Analysis

Avg. Respo..
25.32   4.88
30
20
10

Avg. Time o..
43.044   52.695
60
40
20

Mental Health Related Trends- January 2020

Count of Calls for Service

-	7,935
Confirmed or potential M..	3,823
Counselor transfer eligibl..	242
No or unknown MH compo..	29,332
Not Categorized	17

Count of Calls by Top Initial Problem Categories

Initial Call Problem

Category	Count of Calls
Check Welfare Urgent	798
Check Welfare Service	595
Disturbance Other	474
Suspicious Person	431
Trespass Urgent	330
Service	256
Disturbance Urgent	124
*Assist Non Emergency	117
Nature Unknown Urgent	115
-Disturbance HS	99

Count of Calls

Count of Calls by Disposition

Disposition	Count of Calls
1 - Report Written	936
2 - Supplement Written	
3 - Unable To Locate	603
4 - False Alarm	
5 - Non-Police Matter	
6 - No Report	1,190
8 - 10/8 From Traffic	
11 - Report Written MH	800
12 - No Report MH	
C - Cancelled Incident	

Count of Calls

Calls Recieved by Hour of the Day

Distinct count..

130 ... 176
19 ... 2 ... 2 ... 16

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

Time Spent Analysis

Response Time

Time on Scene

Confirmed or potential MH compo..   Counselor transfer eligible call, h..   Not Categorized

Count of Primary and Backup Police Officer Responses

613

10,297

Mental Health Call
- Confirmed or potential MH component
- Counselor transfer eligible call, how...
- Not Categorized

Initial Call Problem Category by Disposition and Priority

Initial Call Problem	Call Disposition	Count of Calls
Traffic Stop	6 - No Report	153
	1 - Report Written	410
	3 - Unable To Locate	1
	8 - 10/8 From Traffic	2,306
	2 - Supplement Written	25
	12 - No Report MH	1
	5 - Non-Police Matter	2
	10-District Representativ..	2
Disturbance Other	6 - No Report	43 69 878 65
	1 - Report Written	78 49 651 99
	3 - Unable To Locate	323 31
	8 - 10/8 From Traffic	
	4 - False Alarm	
	11 - Report Written MH	76
	2 - Supplement Written	
	12 - No Report MH	56
	5 - Non-Police Matter	73
On Site Incident	6 - No Report	1,385
	1 - Report Written	677
	3 - Unable To Locate	31
	8 - 10/8 From Traffic	141
	4 - False Alarm	9
	11 - Report Written MH	40
	2 - Supplement Written	99
	12 - No Report MH	12
	5 - Non-Police Matter	13
	10-District Representativ..	2
	C - Cancelled Incident	12
	T - Test call	6
	0 - Reassigned call	2
Suspicious Person	6 - No Report	873

Priority
(Multiple values) ▼

Initial Call Problem ▼
(All) ▼

Priority
- 1
- 2
- 3
- 4
- 0

☑ (All)
☑ 911 CELL PHONE HANG UPS
☑ -Attempted Suicide HS
☑ -Bomb HS
☑ -Burglary HS
☑ -Crash HS
☑ -Disturbance HS
☑ -Gun HS
☑ -Kidnapping Abduction HS
☑ -Missing HS
☑ -Officer Needs Assistance HS
☑ -Pedestrian on HSR
☑ -Prowler HS
☑ -Robbery HS
☑ -Sex Crime HS
☑ -Shoot/Stab HS
☑ -Traffic Hazard HS
☑ -Wrong Way Motorists on HSR
☑ *Assist Code 3
☑ *Assist Non Emergency
☑ *Call From TCSO - Emergency
☑ *Call From TCSO - Non Emergenc
☑ *Public Safety Assist Urgent
☑ ABANDONED VEHICLE
☑ ABUSE OF 911
☑ AGG ASSAULT
☑ AGG RAPE
☑ AGG ROBBERY/DEADLY WEAPON

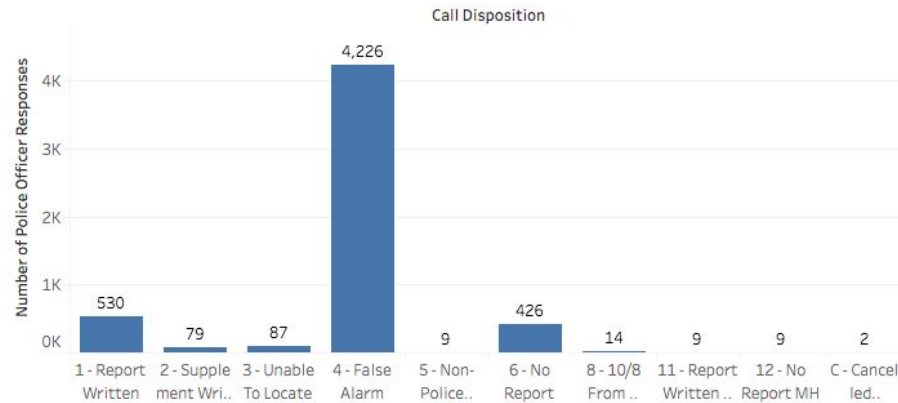Count of Calls

False Alarm Indicator

Calls which have "alarm, robbery, burgalry" word in the initial call problem are considered. Call disposition shows how many of them are False.
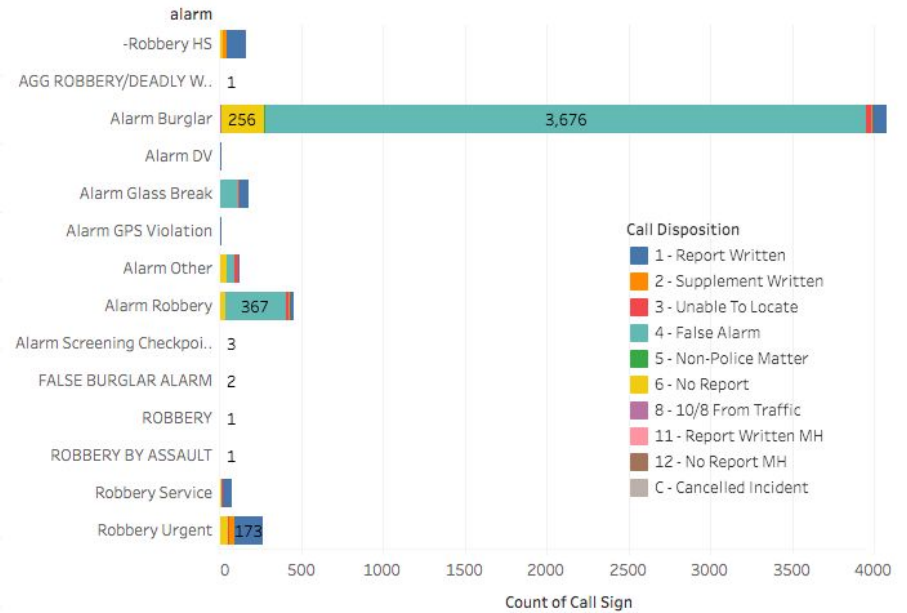

Count of Calls by Disposition

Call Disposition

Disposition	Count
1 - Report Written	130
2 - Supplement Wr..	9
3 - Unable To Locate	38
4 - False Alarm	2,091
5 - Non-Police..	5
6 - No Report	182
8 - 10/8 From ..	4
11 - Re port..	4
12 - No Repor..	3
C - Cancel led..	1
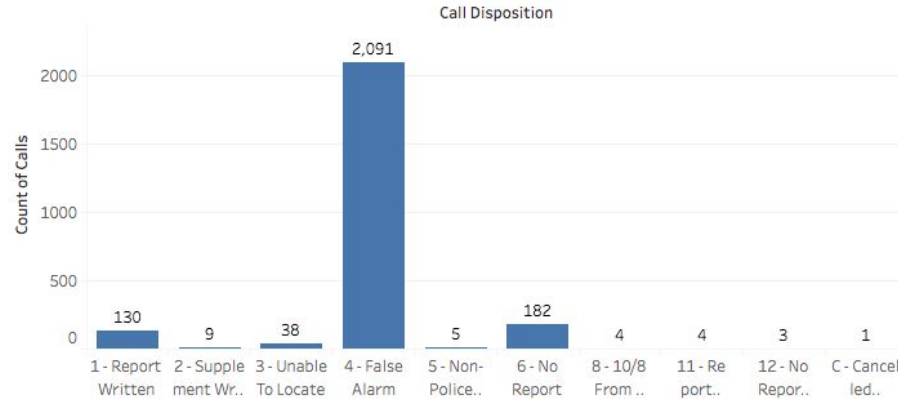
Count of Police Officer Responses by Disposition

Call Disposition

Disposition	Count
1 - Report Written	530
2 - Supple ment Wri..	79
3 - Unable To Locate	87
4 - False Alarm	4,226
5 - Non-Police..	9
6 - No Report	426
8 - 10/8 From ..	14
11 - Report Written ..	9
12 - No Report MH	9
C - Cancel led..	2

Count of Calls by Initial Problem Category

alarm

Category	Values
-Robbery HS	
AGG ROBBERY/DEADLY W..	1
Alarm Burglar	256 / 3,676
Alarm DV	
Alarm Glass Break	
Alarm GPS Violation	
Alarm Other	
Alarm Robbery	367
Alarm Screening Checkpoi..	3
FALSE BURGLAR ALARM	2
ROBBERY	1
ROBBERY BY ASSAULT	1
Robbery Service	
Robbery Urgent	173

Call Disposition
- 1 - Report Written
- 2 - Supplement Written
- 3 - Unable To Locate
- 4 - False Alarm
- 5 - Non-Police Matter
- 6 - No Report
- 8 - 10/8 From Traffic
- 11 - Report Written MH
- 12 - No Report MH
- C - Cancelled Incident

Count of Call Sign

Next steps & future analysis

1. Extending the dashboards to longer time horizons
2. Call problem transformation - continue w/ RMS data
3. Call outcomes - continue w/ RMS data
4. False Alarm - continue analysis; consider how modeling and prediction can help
5. Location based analysis
6. Gentrification maps and calls for service correlation
7. Incident-level analysis - range of officer count per incident/ range in types of incidents.
8. Journey maps - a day in the life of an officer responding to calls
9. Open Data - Dallas and San Antonio each have slightly different representation of calls for service data in their open data portal

"Analysis of calls for service data provides a huge and largely untapped opportunity for researchers and practitioners to inform and transform policy and practice."

- Vera Institute of Justice, July 2019

The 911 Call Processing System: A Review of the Literature as it Relates to Policing

Appendix

Priority definitions

Priority 0 - An incident involving physical harm or injury to person or property, which is **in progress and/or all involved parties are still on scene**. (E.g. shooting/stabbing)

Priority 1 - An incident involving physical harm or perceived threat to person(s) or property, which **just occurred and/or suspect(s) may still be in the area; where a quick response might aide in apprehension**. (E.g. robbery)

Priority 2 - In progress property crimes or just occurred crimes against persons. An incident warranting a rapid police response, however, **poses a minimal threat or no immediate threat, which either is in progress or just occurred**. (E.g. Suspicious Person)

Priority 3 - Incidents where life or property is **not at risk** and an **immediate police response will not likely prevent further injury, loss of property or adversely affect an investigation**. (E.g. DOC/City Ordinance Violation)

Priority 4 - Incidents where **a police response is not required**, however, the **incident does require the documentation and/or dissemination of information** to law enforcement personnel.

Disposition definitions

0 – Reassigned Call: The call was reassigned (CAD system does not provide the reason)

1 – Report Written: An officer wrote a report for the call

2 – Supplement Written: An officer wrote a supplement either to the report or another report

3 – UTL: Unable to locate the complainant

4 – False Alarm: When a Burglar or Robbery Alarm was not an actual break-in or robbery.

5 – Non-Police Matter: Civil Matter

6 – No Report: The officer did not write a report

8 – 10/8: Back in Service from a call for service or a Traffic Stop

10 – District Representative: Call transferred to a District Representative

11 – Report Written MH: Mental Health component to the call and the officer wrote a report

12 – No Report MH: Mental Health component to the call and the officer did not write a report

C – Cancelled Incident: The complainant cancelled police response before officers arrived on scene

P – Primary Unit will advise: Should not be used as a disposition

T – Test Call: Used during testing or training at Emergency Communications.

N – No 911 Call Entered: The complainant cancelled the call prior to the 911 Operator entering the calls for patrol response.

Top initial call problem definitions

*Assist Non Emergency: Any request for non-emergency assistance from another agency.

Alarm Burglar: Activations for premise(s) indicating unlawful entry that are in progress.

Auto Theft Service: Incidents where a motor vehicle is missing and the complainant does not know when it was taken, who may have taken it, and/or subject is refusing to return the vehicle. Incidents involving found motor vehicle thefts, and/or unauthorized use of a motor vehicle (UUMV's). Any report of an attempted auto theft.

Checking Area: An officer patrolling a high crime area for criminal activity.

Check Welfare Service: Incidents where the well-being of an individual and/or property is being questioned that does not require immediate police response and is not likely to negatively impact an investigation.

Check Welfare Urgent: Any person down due to an unknown circumstance and/or police response is warranted. Any report of abandoned/endangered person(s) that exposes the subject to intentional risk or imminent danger. Any person who is contemplating/threatening suicide; or having suicidal/homicidal thoughts.

Top initial call problem definitions con't

Crash Urgent: Collisions involving unknown/non-life threatening injuries and/or that are blocking secondary roadways. HSR collisions that have since been pulled to the shoulder or median and are no longer blocking.

Directed Patrol: An officer patrolling an area requested by a citizen for extra patrol, or an area identified by a supervisor or District Representative/Crime Analyst as a high crime area.

Disturbance HS: An incident involving physical harm or immediate threat of injury to person that is in progress and all involved parties are still on scene; which may or may not involve a weapon.

Disturbance Other: Incidents involving non-violent (verbal) disturbances that are in progress or just occurred (within five (5) minutes).

Disturbance Service: Any violent or non-violent incident that is no longer in progress, did not just occur, and no longer poses an immediate threat.

Disturbance Urgent: An incident involving physical harm or perceived threat of injury to person(s), which may or may not involve a weapon that just occurred (within five (5) minutes).

DOC / C.O. Violation: Any city ordinance violation that requires a law enforcement response.

Top initial call problem definitions con't

Hang-ups: Any call received from a business or coin phone that is either abandoned, or a hang up; communicated to be a misdial by the caller; or an open line with no apparent disturbance heard in the background.

Nature Unknown Urgent: An unclear incident that is in progress with a perceived threat to person(s) and/or property.

On Site Incident: An officer initiated call for service because an officer was waived down by a citizen or observed a law or city ordinance violation.

Service: Any incident that does not fit into any other call type category and does not pose an immediate threat to life, public safety, or property.

Suspicious person: An incident involving person(s) suspected of some suspicious and/or lewd activity that is in progress or just occurred (within five (5) minutes).

Suspicious unknown: Unclear incident(s) that may be significant but do not pose an immediate threat to person(s) and/or property.

Suspicious vehicle: Incident involving vehicle(s) suspected of suspicious activity that is in progress or just occurred (within five (5) minutes).

Top initial call problem definitions, con't

Subject Stop: An officer initiated call for service for an officer stopping a pedestrian because the officer observed suspicious activity or observed a law or city ordinance violation.

Theft: Incidents that are in progress or just occurred (within five (5) minutes) where a person intentionally takes property that is not their own without consent.

Traffic Hazard: Impediments located on minor roadways not posing an immediate hazardous situation, however, if not addressed could cause future problems. Persons soliciting at a high speed roadway (HSR) or major thoroughfare. Pedestrians in a lane of travel on a minor roadway.

Traffic Hazard HS: Any hazard on high speed roadways (HSR), including frontage roads, which may cause a collision, injuries, or otherwise cause undue traffic congestion except pedestrians or solicitors at HSR intersections or thoroughfares.

Traffic Stop: An officer initiated stop of a motor vehicle for a traffic/equipment violation.

Trespass Urgent: Any person on a premise without consent and/or refusing to leave that is in progress.

Working Traffic: An officer patrolling a designated location or intersection where there have been a high number of traffic violations or collisions. Working a school zone while school is in session may also fall into this category.