

## Assignment [1]

[The information on the calls received by the Fire Departments of San Francisco for unit 71]

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## Introduction

The dataset is regarding the calls received by the Fire Departments of San Francisco for unit 71. In the data, information has been collected for unique "Call Number" and a unique "Incident Number" has been linked to it by DEM. The information for each "Incident Number"/ "Call Number" consists of numerous variables. (45 columns in total)

The variables which are used to bring out some major insights are :

- **Incident Number**- Unique 8 digit number for each incident assigned by DEM
- **Call Number**-Unique 9 digit number assigned to each call by DEM
- **Received Date Time**-Date and Time when call is received
- **Response Date Time**- Date and time the unit acknowledges the dispatch and records that the unit is en route to the location of the call
- **Available Date Time**- When unit is available for another dispatch
- **Final Priority**- Final Call Priority (2-Non-Emergency, 3-Emergency)
- **Call Type group**- 4 groups viz. Fire, Alarm, Potential Life Threatening, and Non Life Threatening

The following queries are being considered:

- Percentage of Call out group incidents by city location
- Percentage of call out groups given a final priority ( Emergency or Non Emergency)
- Time required for each incident
- Total time spent at each call type

## Methods

The dataset fire\_department\_calls\_for\_service\_71.xlsx (sourced from <https://data.sfgov.org>) has been considered.

**MS Excel** software has been used to analyse the data. In Excel different methods have been used to cater to different questions based on what's most suitable.

Pivot charts and pivot tables have been used to gather information and draw the conclusions. MS Excel formulas have also been used at some places to make calculations required for analysing the data.

## Results

### Concern 1 : Percentage of Call out group incidents by city location

	Daly	Fort Mason	Hunters Point	Presidio	San Francisco	Treasure Isla	Yerba Buena	others
Alarm	0.0%	0.0%	0.0%	7.1%	2.8%	3.1%	0.0%	0.0%
Fire	0.0%	16.7%	33.3%	0.0%	0.6%	3.1%	0.0%	2.1%
Non Life-threatening	100.0%	16.7%	66.7%	50.0%	40.3%	40.6%	57.1%	32.9%
Potentially Life-Threatening	0.0%	66.7%	0.0%	42.9%	56.3%	53.1%	42.9%	65.0%

Figure 1 Pivot Table to summarise the type of callout group by the city location

**Assumptions:** The values under the column city namely BN, FM, OAK, PR, SF, SFO, TI, Treasure Island, YB, Blanks have been put under others.

**Discrepancy :** It seems that SF, SFO stands for San Francisco, FM for Fort Mason, PR for Presidio, TI and Treasure Island for Treasure Isla, YB for Yerba Buena but these columns have not been merged because there is no discrete mention of it anywhere.

**Sheet Name:** Answer1-Pivot table

### Major Insights:

Daily reports cent percent cases from Non Life threatening incidents.

Fort Mason holds the record of calls related to Life threatening cases (66.7%) majorly

Treasure Isla and San Francisco witness both Potentially Life Threatening and Non- Life threatening calls in high proportion.

## Concern 2: Percentage of call out groups given a final priority (Emergency or Non Emergency)

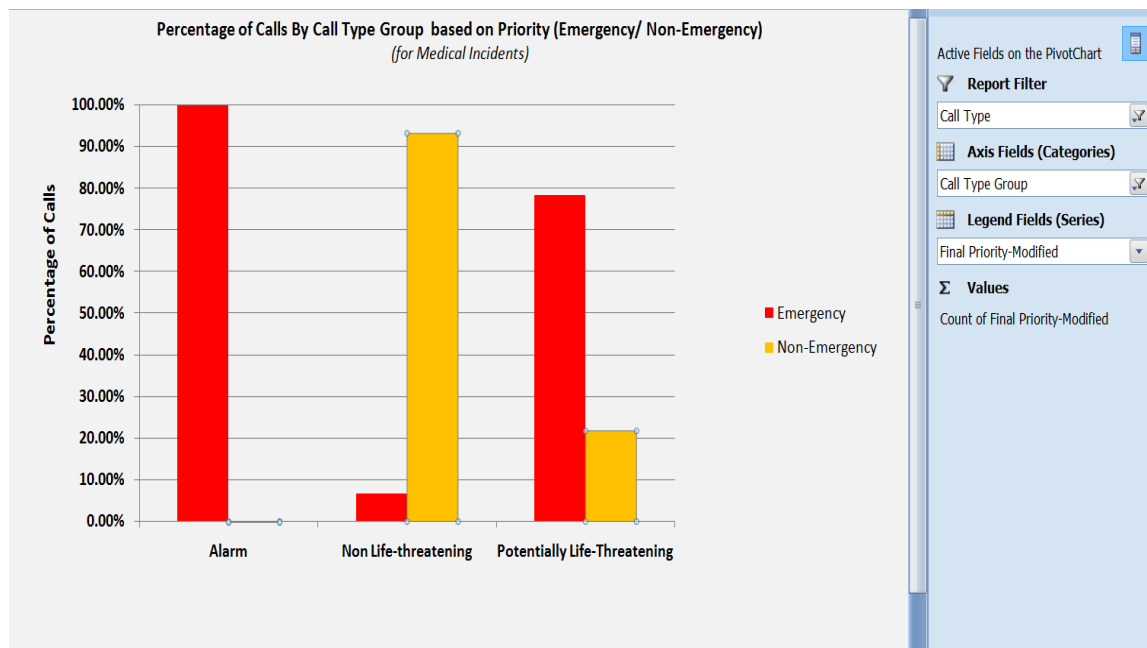


Figure 2 Pivot Chart to show the percentage of calls, by call type group, that are given a final priority of Emergency or Non Emergency

### Insights:

Majority of the Alarm and Potentially Life-Threatening cases have been given high priority (Emergency) by the authority on the other hand Non-Life Threatening cases have been prioritized as Non Emergency cases.

**Sheet Name:** Answer 2-Pivot Chart

**Concern 3: Time required for each incident**

1	Call Number	Incident Number	Response Dt Tm modified	Available DtTm-Duplica	Difference in min-Answer 3	
2	163473854	16139041	12-12-2016 20:11:40	12-12-2016		0.00
3	163473852	16139040	12-12-2016 20:11:14	12-12-2016		0.00
4	163473850	16139039	12-12-2016 20:10:34	12-12-2016		0.00
5	162082224	16082112	26-07-2016 15:18:01	26-07-2016		0.02
6	161110549	16043994	20-04-2016 6:54:37	20-04-2016		0.02
7	153602690	15138909	26-12-2015 19:45:44	26-12-2015		0.02
8	141781959	14061440	27-06-2014 15:36:41	27-06-2014		0.02
9	162753035	16109113	01-10-2016 17:37:18	01-10-2016		0.03
10	162843832	16113107	10-10-2016 21:19:56	10-10-2016		0.03
11	93390173	9102559	05-12-2009 14:23:28	05-12-2009		0.03
12	71990277	7057142	18-07-2007 17:19:53	18-07-2007		0.03
13	151731595	15066047	22-06-2015 13:07:32	22-06-2015		0.05
14	70310367	7009273	31-01-2007 19:48:08	31-01-2007		0.05
15	161360670	16053623	15-05-2016 7:07:40	15-05-2016		0.07
16	101170323	10036284	27-04-2010 23:12:02	27-04-2010		0.07
17	82630303	8080652	19-09-2008 18:05:52	19-09-2008		0.07
18	163600451	16144248	25-12-2016 6:54:40	25-12-2016		0.08
19	160532095	16021253	22-02-2016 15:09:53	22-02-2016		0.08
20	80570286	8017860	26-02-2008 16:51:09	26-02-2008		0.08

Figure 3 The time required for each incident (defined as the time between Response and Availability)

**Discrepancy**

**Missing Values** The Entries for which either Response DtTm or Available DtTm or both are missing

**Wrong Data Entry** The Entries for which entered Available DtTm value is less than entered Response DtTm value and therefore counts as wrong data entry.

For viewing complete table consisting of 16415 rows visit excel book. Out of these 184 are under "Missing Values" and 6 under "Wrong Data Entry"

**Formula Used** (subtraction of Available DtTm and Response DtTm)

And Formatting for Date time (dd-mm-yyy h:mm:ss) to make subtraction meaningful

**Sheet Name:** Answer 3

**Insight:**

Time required for each incident varies between zero minutes to 1438.88 minutes (without considering Missing values or wrong data entry values)

**Concern 4: Total Time spent on each call type**

	Total Time in minutes	Total Time in hours
Potentially Life-Threatening	18393.7	306.6
Non Life-threatening	16292.5	271.5
Alarm	1558.2	26.0
Fire	501.3	8.4
Unknown	17065.2	284.4

Figure 4 Total time spent at each call type by unit 71

**Discrepancy:**

Missing Values: The entries for which "Response DtTm" or "ReceivedDtTm" or both are missing

**Formula used:** *VLOOKUP* for generating corresponding time values for required time values for each unique "Call Number" or "Incident Number". And *SUMIF* for calculating total time for each call type.

**Sheet Name:** Answer 4- Table

**Insight:**

Maximum time has been spent on dealing with "Potentially Life Threatening" cases and minimum for Fire related cases.

**Concern 5:**

*If difference between On Scene DtTm and Response DtTm would also have been considered FOR Life threatening cases then another insight could be drawn regarding maximum amount of time taken by the concerned authority to reach the location after the incident has been brought to notice.*

1	Call Number	Response Dt Tm modified	On Scene DtTm-M	Difference in Minutes	Answer	Call Type Group
2	171973555	16-07-2017 21:45:02	16-07-2017 21:36:00	Wrong Data Entry		Potentially Life-Threatening
3	171993163	18-07-2017 17:31:32		Missing Value		Potentially Life-Threatening
5	171973344	16-07-2017 20:27:07		Missing Value		Potentially Life-Threatening
7	171900063	09-07-2017 0:27:30		Missing Value		Potentially Life-Threatening
9	171923041	11-07-2017 17:49:08		Missing Value		Potentially Life-Threatening
10	171940406	13-07-2017 5:53:09		Missing Value		Potentially Life-Threatening
11	171940324	13-07-2017 4:17:06		Missing Value		Potentially Life-Threatening
16	171821041	01-07-2017 9:59:48		Missing Value		Potentially Life-Threatening
17	171773280	26-06-2017 18:05:12		Missing Value		Potentially Life-Threatening
18	171773203	26-06-2017 17:46:35		Missing Value		Potentially Life-Threatening
20	171773196	26-06-2017 17:44:59		Missing Value		Potentially Life-Threatening
21	171772362	26-06-2017 14:32:30		Missing Value		Potentially Life-Threatening
24	171851175	04-07-2017 11:09:57		Missing Value		Potentially Life-Threatening
27	171743933	23-06-2017 21:38:23		Missing Value		Potentially Life-Threatening
28	171741490	23-06-2017 11:27:56		Missing Value		Potentially Life-Threatening
29	171811341	30-06-2017 11:21:13		Missing Value		Potentially Life-Threatening
30	171702917	19-06-2017 17:39:11		Missing Value		Potentially Life-Threatening
33	171701110	19-06-2017 10:10:06		Missing Value		Potentially Life-Threatening
34	171692797	18-06-2017 17:29:17		Missing Value		Potentially Life-Threatening
37	171680742	17-06-2017 7:52:14		Missing Value		Potentially Life-Threatening
38	171661888	15-06-2017 13:01:36		Missing Value		Potentially Life-Threatening
39	171660405	15-06-2017 5:19:16		Missing Value		Potentially Life-Threatening
40	171633517	Missing Response Time		Missing Value		Potentially Life-Threatening

**Discrepancy**

<i>Missing Values</i>	The Entries for which either Response DtTm or On Scene DtTm or both are missing
<i>Wrong Data Entry</i>	The Entries for which entered On Scene DtTm value is less than entered Response DtTm value and therefore counts as wrong data entry.

*For complete table refer Excel Workbook.*

**Formula Used:** *Difference between On Scene DtTm and Response DtTm*

**Sheet Name :** *Answer 5-F*

**Insight:**

*The maximum time taken to reach On Scene for potentially life threatening case by the concerned body is 719.72 minutes (app. 12 hrs)*

**Conclusion**

The analysis drawn helps us to conclude that:

Daly reports 100% cases from Non Life threatening incidents. Fort Mason holds the record of calls related to Life threatening cases (66.7%) majorly. And Treasure Isla and San Francisco witness both Potentially Life Threatening and Non- Life threatening calls in high proportion. Majority of the Alarm and Potentially Life-Threatening cases have been allotted high priority by the authority on the other hand Non-Life Threatening cases have been majorly prioritized as Non Emergency cases. Time required for each incident varies between zero minutes to 1438.88. Maximum time has been spent on dealing with "Potentially Life Threatening" cases and minimum for Fire related cases. And Lastly, The maximum time taken to reach On Scene for potentially life threatening case by the concerned body is 719.72 minutes (app. 12 hrs)

**References**

Data sourced from

data.sfgov.org <https://data.sfgov.org/Public-Safety/Fire-Department-Calls-forService/nuek-vuh3>