911 Emergency Insight Dashboard (Power BI)

OBJECTIVE :

To analyze and visualize over 660,000 emergency 911 call records to uncover patterns in call types, time trends, and geographical hotspots. The aim was to support resource allocation, emergency preparedness, and strategic decision-making using interactive Power BI dashboards.

DATASET USED:

source: Montgomery County 911 Call Dataset (Kaggle/Public Source)
- **Rows**: 663,522
- **Key Columns**: title, zip, timeStamp, twp, reason, lat, lng

lat	lng	desc	zip	title	timeStamp	twp	addr	e
40.29788	-75.5813	REINDEER CT & DEAD END; NEW HANOVER; Station 332; 2015-12-10 @ 17:10:5	19525	EMS: BACK PAINS/INJURY	10-12-2015 17:10	NEW HANOVER	REINDEER CT & DEAD END	1
40.25806	-75.2647	BRIAR PATH & WHITEMARSH LN; HATFIELD TOWNSHIP; Station 345; 2015-12-1	19446	EMS: DIABETIC EMERGENCY	10-12-2015 17:29	HATFIELD TOWNSHIP	BRIAR PATH & WHITEMARSH LN	1
40.12118	-75.352	HAWS AVE; NORRISTOWN; 2015-12-10 @ 14:39:21-Station:STA27;	19401	Fire: GAS-ODOR/LEAK	10-12-2015 14:39	NORRISTOWN	HAWS AVE	1
40.11615	-75.3435	AIRY ST & SWEDE ST; NORRISTOWN; Station 308A; 2015-12-10 @ 16:47:36;	19401	EMS: CARDIAC EMERGENCY	10-12-2015 16:47	NORRISTOWN	AIRY ST & SWEDE ST	1
40.25149	-75.6033	CHERRYWOOD CT & DEAD END; LOWER POTTSGROVE; Station 329; 2015-12-10 @ 16:5		EMS: DIZZINESS	10-12-2015 16:56	LOWER POTTSGROVE	CHERRYWOOD CT & DEAD END	1
40.25347	-75.2832	CANNON AVE & W 9TH ST; LANSDALE; Station 345; 2015-12-10 @ 15:39:04;	19446	EMS: HEAD INJURY	10-12-2015 15:39	LANSDALE	CANNON AVE & W 9TH ST	1
40.18211	-75.1278	LAUREL AVE & OAKDALE AVE; HORSHAM; Station 352; 2015-12-10 @ 16:46:48;	19044	EMS: NAUSEA/VOMITING	10-12-2015 16:46	HORSHAM	LAUREL AVE & OAKDALE AVE	1
40.21729	-75.4052	COLLEGEVILLE RD & LYWISKI RD; SKIPPACK; Station 336; 2015-12-10 @ 16:17:0	19426	EMS: RESPIRATORY EMERGENCY	10-12-2015 16:17	SKIPPACK	COLLEGEVILLE RD & LYWISKI RD	1
40.28903	-75.3996	MAIN ST & OLD SUMNEYTOWN PIKE; LOWER SALFORD; Station 344; 2015-12-1	19438	EMS: SYNCOPAL EPISODE	10-12-2015 16:51	LOWER SALFORD	MAIN ST & OLD SUMNEYTOWN PIKE	1
40.1024	-75.2915	BLUEROUTE & RAMP I476 NB TO CHEMICAL RD; PLYMOUTH; 2015-12-10 @ 17	19462	Traffic: VEHICLE ACCIDENT -	10-12-2015 17:35	PLYMOUTH	BLUEROUTE & RAMP I476 NB TO CHEMICAL RD	1
40.23199	-75.2519	RT202 PKWY & KNAPP RD; MONTGOMERY; 2015-12-10 @ 17:33:50;		Traffic: VEHICLE ACCIDENT -	10-12-2015 17:33	MONTGOMERY	RT202 PKWY & KNAPP RD	1
40.08416	-75.3084	BROOK RD & COLWELL LN; PLYMOUTH; 2015-12-10 @ 16:32:10;	19428	Traffic: VEHICLE ACCIDENT -	10-12-2015 16:32	PLYMOUTH	BROOK RD & COLWELL LN	1
40.17413	-75.0985	BYBERRY AVE & S WARMINSTER RD; UPPER MORELAND; 2015-12-10 @ 17:15:4	19040	Traffic: VEHICLE ACCIDENT -	10-12-2015 17:15	UPPER MORELAND	BYBERRY AVE & S WARMINSTER RD	1
40.06297	-75.1359	OLD YORK RD & VALLEY RD; CHELTENHAM; 2015-12-10 @ 17:12:47;	19027	Traffic: VEHICLE ACCIDENT -	10-12-2015 17:12	CHELTENHAM	OLD YORK RD & VALLEY RD	1
40.09722	-75.3762	SCHUYLKILL EXPY & CROTON RD UNDERPASS; UPPER MERION; 2015-12-10 @ 17:09:49		Traffic: VEHICLE ACCIDENT -	10-12-2015 17:09	UPPER MERION	SCHUYLKILL EXPY & CROTON RD UNDERPASS	1
40.22378	-75.2354	STUMP RD & WITCHWOOD DR; MONTGOMERY; 2015-12-10 @ 17:31:00;	18936	Traffic: VEHICLE ACCIDENT -	10-12-2015 17:31	MONTGOMERY	STUMP RD & WITCHWOOD DR	1
40.24326	-75.2866	SUSQUEHANNA AVE & W MAIN ST; LANSDALE; Station 345B; 2015-12-10 @ 17:	19446	EMS: RESPIRATORY EMERGENCY	10-12-2015 17:42	LANSDALE	SUSQUEHANNA AVE & W MAIN ST	1
40.31218	-75.5743	CHARLOTTE ST & MILES RD; NEW HANOVER; Station 332; 2015-12-10 @ 17:41:	19525	EMS: DIZZINESS	10-12-2015 17:41	NEW HANOVER	CHARLOTTE ST & MILES RD	1
40.11424	-75.3385	PENN ST & ARCH ST; NORRISTOWN; Station 308A; 2015-12-10 @ 17:43:29;	19401	EMS: VEHICLE ACCIDENT	10-12-2015 17:43	NORRISTOWN	PENN ST & ARCH ST	1
40.20934	-75.1353	COUNTY LINE RD & WILLOW DR; HORSHAM; 2015-12-10 @ 17:45:23;	18974	Traffic: DISABLED VEHICLE -	10-12-2015 17:45	HORSHAM	COUNTY LINE RD & WILLOW DR	1
40.11424	-75.3385	PENN ST & ARCH ST; NORRISTOWN; 2015-12-10 @ 17:43:45;	19401	Traffic: VEHICLE ACCIDENT -	10-12-2015 17:43	NORRISTOWN	PENN ST & ARCH ST	1
40.11795	-75.2098	CHURCH RD & REDCOAT DR; WHITEMARSH; 2015-12-10 @ 17:53:22;	19031	Traffic: DISABLED VEHICLE -	10-12-2015 17:53	WHITEMARSH	CHURCH RD & REDCOAT DR	1
40.19901	-75.3001	LILAC CT & PRIMROSE DR; UPPER GWYNEDD; 2015-12-10 @ 17:59:24-Station:S	19446	Fire: APPLIANCE FIRE	10-12-2015 17:59	UPPER GWYNEDD	LILAC CT & PRIMROSE DR	1

Tools & Techniques

Power BI Desktop: Data transformation, modeling, and dashboarding

Power Query: Data cleaning, column extraction (Hour, Month, Day), handling nulls

DAX: Calculated columns and measures for custom KPIs

Visuals Used: Donut chart , Bar chart , Line Graph , Map visuals , Card KPI , Slicer.

COLUMNS CREATED

1.EXTRACTING COLUMNS

GOAL → Frome the *timestamp* column we will extract :

- Date (without time)
- Hour
- Day of the week
- Month
- Year

2. Day Name

```
Day Name =  SWITCH( VALUE('911'[Day of Week]),
                    0, "Sunday",
                     1, "Monday",
                    2, "Tuesday",
                     3, "Wednesday",
                      4, "Thursday",
                      5, "Friday",
                     6, "Saturday",
                      "Unknown“ )
```

3. Is Weekend

```
Is Weekend = IF( '911'[Day Name] = "Saturday" || '911'[Day Name] =
                                    "Sunday",  "Weekend", "Weekday" )
```

4. DayOfWeekName

```
DayOfWeekName = SWITCH( VALUE ('911'[Day of Week]),  0, "Sunday", 1, "Monday", 2, "Tuesday",

                                    3, "Wednesday",  4, "Thursday",  5, "Friday",    6, "Saturday" )
```

5. Month Name

```
Month Name = SWITCH( '911'[Month],1, "January",
                                  2, "February",
                                  3, "March",
                                  4, "April",
                                  5, "May",
                                  6, "June",
                                   7, "July",
                                   8, "August",
                                   9, "September",
                                  10, "October",
                                  11, "November",
                                  12, "December",
                                 "Unknown")
```

6. HourSlotOrder

```
HourSlotOrder = SWITCH( TRUE(), ‘911'[hour] >= 0 && '911'[hour] < 6, 1,
                                '911'[hour] >= 6 && '911'[hour] < 12, 2,
                                '911'[hour] >= 12 && '911'[hour] < 18, 3,
                                '911'[hour] >= 18 && '911'[hour] <= 23, 4, 0)
```

7. Time Slot

```
Time Slot = SWITCH(TRUE(),
                '911'[Hour] >= 5 && '911'[Hour] < 12, "Morning",
                ‘911'[Hour] >= 12 && '911'[Hour] < 17, "Afternoon",
                 '911'[Hour] >= 17 && '911'[Hour] < 21, "Evening",
                  "Night")
```

8. HourSlot

```
HourSlot =  SWITCH( TRUE(),
                    '911'[hour] >= 0 && '911'[hour] < 6, "Midnight - 6 AM",
                     '911'[hour] >= 6 && '911'[hour] < 12, "6 AM - 12 PM",
                    '911'[hour] >= 12 && '911'[hour] < 18, "12 PM - 6 PM",
                    '911'[hour] >= 18 && '911'[hour] <= 23, "6 PM - Midnight",
                    "Unknown“ )
```

9. ZipVolumeBucket

```
ZipVolumeBucket =  VAR Calls = CALCULATE(COUNTROWS('911'), ALLEXCEPT('911', '911'[Zip Code]))
                                                    RETURN
                                                    SWITCH( TRUE(), [Total Calls] > 5000, "High",
                                                                    [Total Calls] > 2000, "Medium",
                                                                      "Low"    )
```

MEASURES

1. TOTAL CALLS

```
Total Calls = COUNTROWS('911')
```

2. Total Fire Calls

```
Total Fire Calls =
                CALCULATE(COUNT('911'[reason]),'911'[reason]="Fire")
```

3. Total EMS Calls

```
Total EMS Calls =  CALCULATE(  COUNT('911'[reason]), '911'[reason] = "EMS“ )
```

4. Total Traffic Calls

```
Total Traffic Calls =  CALCULATE(  COUNT('911'[reason]),
                                   '911'[reason] = "Traffic")
```

Project Highlights:

- Created a fully interactive dashboard with filters for Zip Code, Emergency Type, and Time.
- Designed with a clean, recruiter-friendly layout, using slicers and decomposition for drill-down.
- Implemented custom measures and KPIs using DAX.
- Focused on real-world decision use-cases like ambulance deployment, city planning, and surge preparedness.

Outcome & Value :

This project showcases how data from emergency systems can help improve:

- Response time and resource readiness.
- Urban safety planning.
- Healthcare and traffic policy decisions.

THANK YOU