"KPI Cards"

Top Performing Dispatch Method

Hybrid Dispatch

Avg Response Time (min)

15.11

DroneUsageRate

59.74%

AmbulanceUsageRate

50.40%

Overall Mission Success Rate

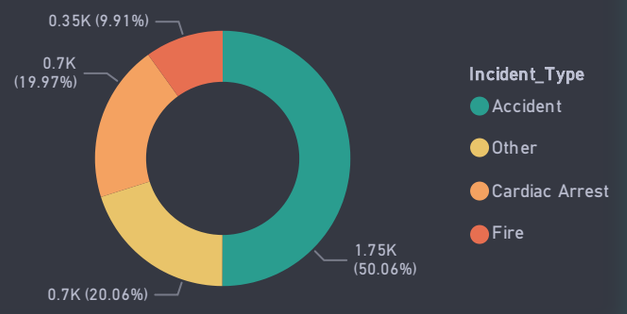
47.29%

"Rapid Response Simulation"

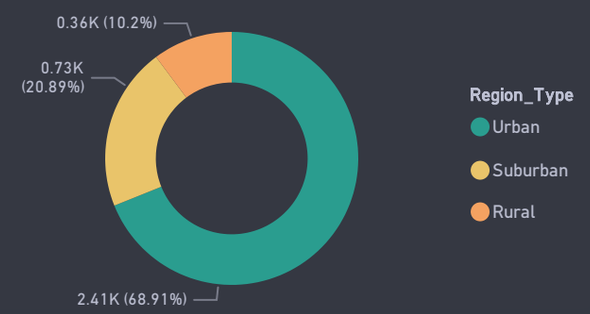
AI & Logistics in January 2024 Emergency Ops

"Executive Summary"

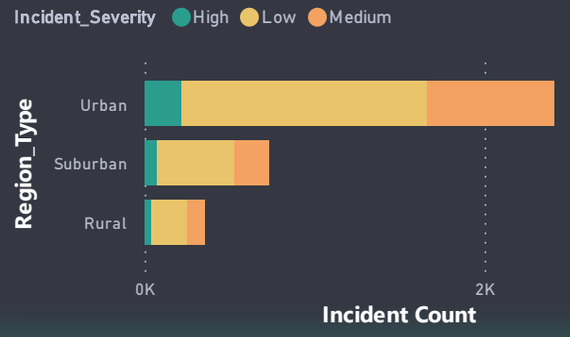
Distribution of Emergencies by Type



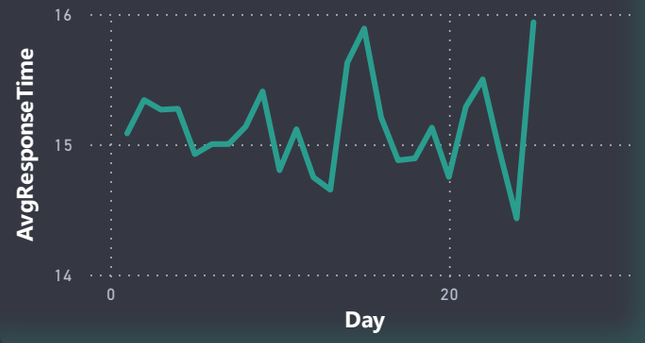
Count of Region_Type by Region_Type



Incident Severity Across Regions



Daily Trend of Avg Response Tim



"🔍 Filter Panel"

Region type

- [ ] Rural
- [ ] Suburban
- [ ] Urban

Day

- [ ] 1
- [ ] 2
- [ ] 3

Time of Day

- [ ] Afternoon
- [ ] Evening
- [ ] Morning
- [ ] Night

Incident type

- [ ] Accident
- [ ] Cardiac Arrest
- [ ] Fire
- [ ] Other

"Incident & Response Breakdown"

Response Behavior by Traffic, Region, and Emergency Type (Jan 2024)

"🔍 Filter Panel"

Select Emergency Category

- [ ] Accident
- [ ] Cardiac Arrest
- [ ] Fire
- [ ] Other

Select Traffic congestion

- [ ] High
- [ ] Low
- [ ] Moderate

Select Region Type

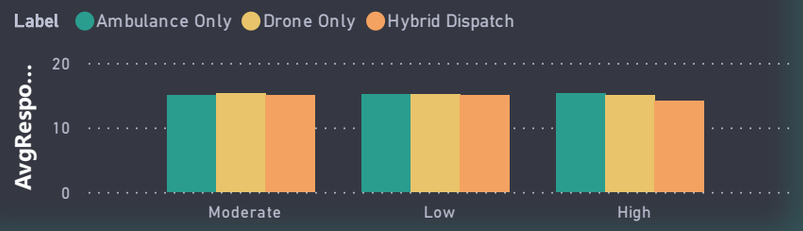
- [ ] Rural
- [ ] Suburban
- [ ] Urban

Select Incident Severity

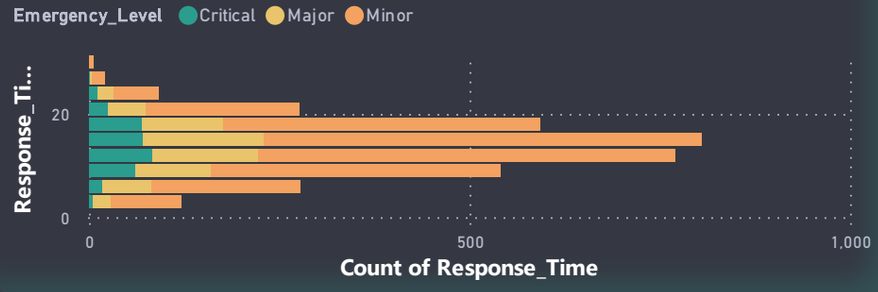
- [ ] Critical
- [ ] Major
- [ ] Minor

Region_Type	Accident	Cardiac Arrest	Fire	Other	Total
Urban	1903	699	350	700	3652
Suburban	529	235	116	218	1098
Rural	247	107	59	133	546
Total	2679	1041	525	1051	5296

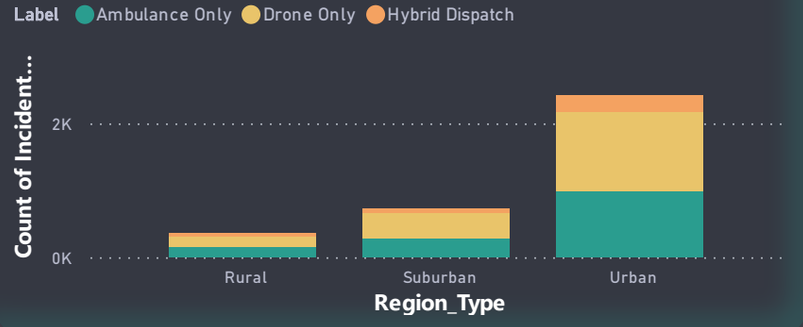
AvgResponseTime by Traffic_Congestion and Label



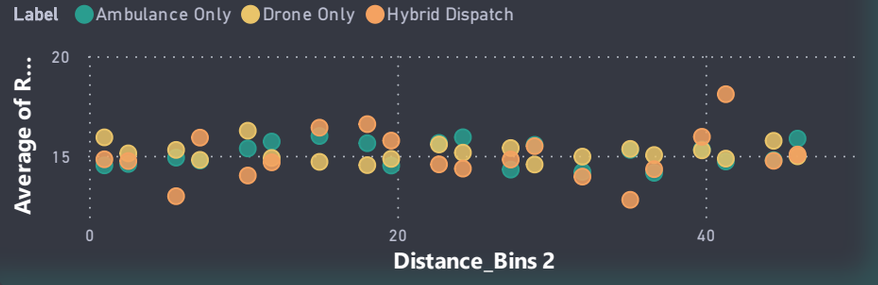
Count of Response_Time by Response_Time (bins) and Emergency_Level



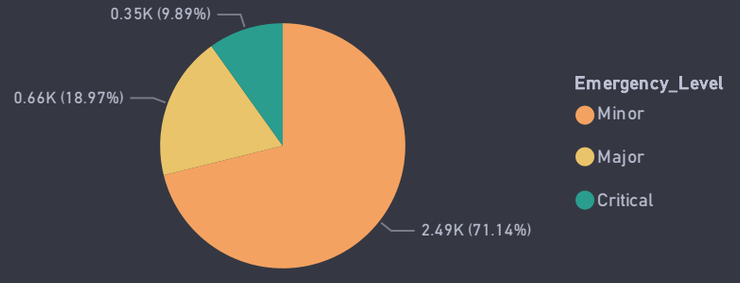
Count of Incident_Severity by Region_Type and Label



Average of Response_Time and First Traffic_Congestion by Label and Distance_Bins 2



Distribution of Emergency Incident Types



"Real-World Conditions Impact"

Operational Impact of Fuel, Battery, Weather & Traffic Constraints

"🔍 Filter Panel"

Fuel Level Range
- ☐ High
- ☐ Low
- ☐ Medium

Battery Level Range
- ☐ >60%
- ☐ 30–60%

Time of Day
- ☐ Afternoon
- ☐ Evening
- ☐ Morning
- ☐ Night

Weather Condition
- ☐ Clear
- ☐ Rainy
- ☐ Stormy

Hospital Capacity by Region & Specialist Availability (Heatmap)

Region_Type	Available	Unavailable	Total
Urban	55.13	54.11	54.53
Suburban	54.43	54.93	54.74
Rural	55.82	56.88	56.46
Total	**55.06**	**54.57**	**54.77**

Overall System Efficiency (%)

% Incidents with Resource Issues

% Resource Failures

37.71%

Most_Common_Air_Traffic

Low

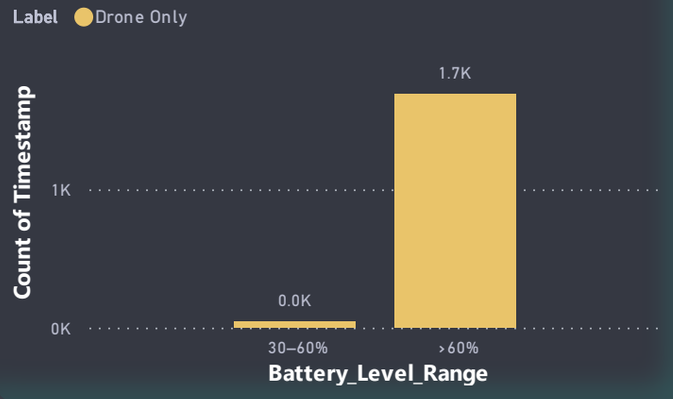
Average of Battery_Life

79.89

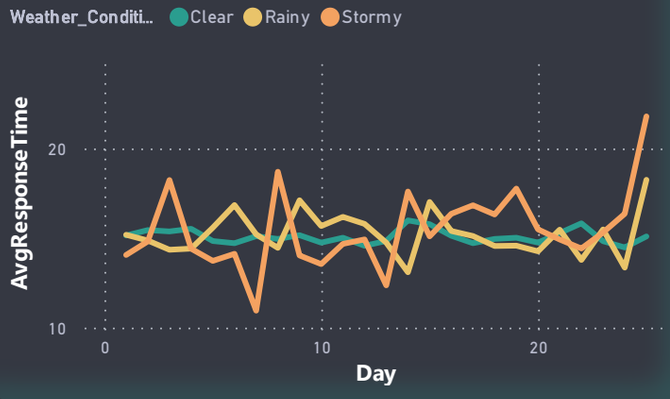
Average of Fuel_Level

69.88

Drone Failures by Battery Level Range



AvgResponseTime by Day and Weather_Condition



"AI Optimization & Predictive Dispatch"

Simulate, Compare & Optimize Emergency Dispatch Decisions

"🚨 Emergency Response Simulation Panel"

Use the sliders below to simulate different emergency scenarios based on:

- **Distance to the incident**
- **Payload weight to be carried**
- **Number of injuries reported**

The **Recommended Dispatch** card dynamically updates based on these inputs to suggest the optimal response method: **Drone or Ambulance**.

Recommended Dispatch

Drone

Distance_to_Incident_Sim

1

Number_of_Injuries_Sim

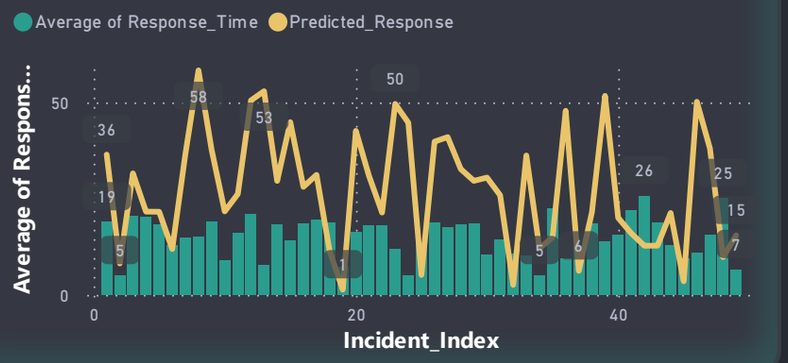
1

Payload_Weight_Sim

1

This visual compares predicted vs actual response time. The predicted time is calculated using ideal speed assumptions for drones and ambulances, while the actual time reflects real-world conditions. Differences highlight areas where performance can be improved.

Average of Response_Time and Predicted_Response by Incident_Index



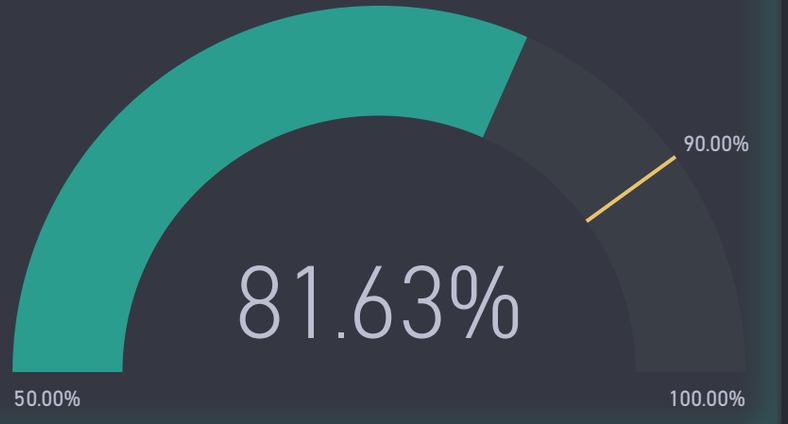
This gauge estimates the success rate of emergency response using available resources.

Factors include:

- Drone/Ambulance availability
- Fuel/Battery status
- Traffic conditions

A higher score means a higher chance of timely response.

Predicted Emergency Response Success Rate



"🔍 Filter Panel"

Air Trafiic

- High
- Low
- Medium

Ambulance Availability

- Available
- Unavailable

Drone Availability

- Available
- Unavailable

Min Battery Threshold

- 43.81
- 44.42
- 46.11

Available Fuel

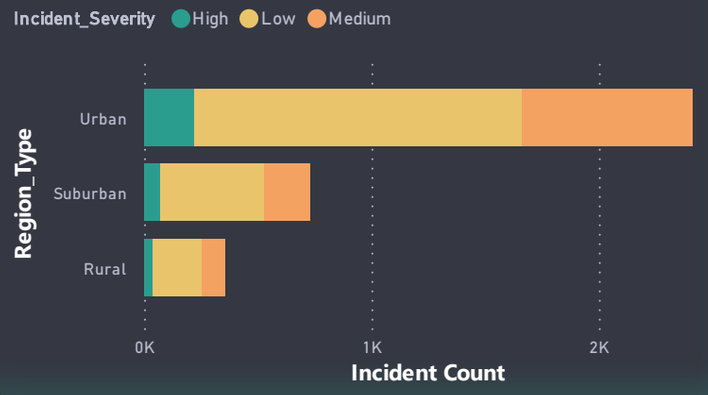
- 19.31
- 21.51
- 22.97

"📄 Executive Summary & Key Insights"

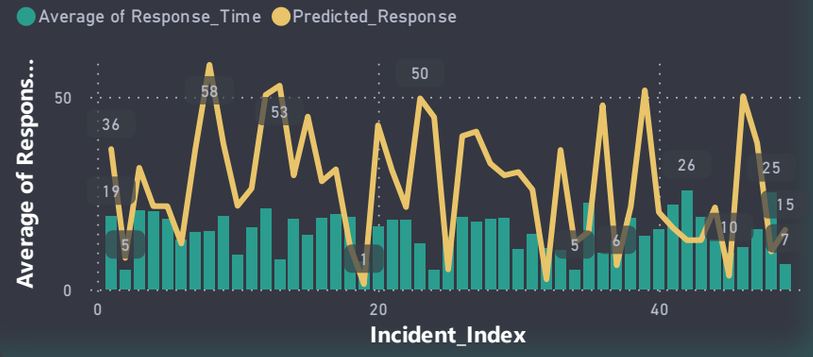
📊 Top 5 Actionable Insights

1. **High Response Time Correlates with Poor Resource Availability** – Longer response times are strongly linked with low ambulance/drone availability and poor weather conditions.
2. **Weather & Air Traffic Significantly Impact Emergency Logistics** – Severe weather and high air traffic consistently increase delays, affecting drone and ambulance dispatch efficiency.
3. **Urban vs Rural Disparity in Incident Handling** – Urban regions have faster response times due to better infrastructure, while rural zones face longer delays and lower specialist availability.
4. **Battery Life & Fuel Level Are Critical for Fast Deployment** – Low battery and fuel levels increase delays, especially during high emergency levels.
5. **Hospital Capacity Directly Affects Dispatch Decision-Making** – Overloaded hospitals force rerouting and delay responses; coordination needs to consider real-time hospital load.

Incident Severity Across Regions



Average of Response_Time and Predicted_Response by Incident_Index



Overall System Efficiency (%)

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