City-wide Emergency Response Dashboard

A data analytics and visualization project transforming raw emergency incident data into actionable insights for improved emergency management and resource allocation.

Project Overview

10,000+

Emergency Incidents

Comprehensive dataset spanning 6 city neighborhoods

1 Year

Time Period

Full year of 2023 data with hourly granularity

5

Dashboard Tabs

Overview, Patterns, Map, Location Stats, Weather Impact

This interactive dashboard will enable data-driven emergency resource allocation and response optimization, transforming how our city manages emergency services.

Current Challenges & Desired Outcomes

Current State Issues

- No centralized view of incident patterns
- Reactive resource allocation
- Limited understanding of weather impact
- Difficulty identifying high-risk neighborhoods
- Manual reporting processes taking hours

Desired Outcomes

- Real-time operational dashboard
- Data-driven resource deployment
- Proactive incident forecasting
- Improved response time performance
- Automated executive reporting

Dataset Specifications

The analysis is based on 10,000+ emergency incidents with the following data structure:

Column	Description
Incident_ID	Unique identifier (INC000001-INC010000)
Date	Hourly timestamps throughout 2023
Neighborhood	6 city areas: Downtown, Uptown, Midtown, Suburbs, Industrial, Old Town
Incident_Type	Medical, Fire, Crime, Traffic Accident, Rescue
Weather	Clear, Rain, Snow, Fog, Storm
Response_Time	Minutes to first responder arrival
Outcome	Resolved, Escalated, Pending
Coordinates	Geographic latitude/longitude

Dashboard Architecture

Raw CSV Data

10,000+ incident records with comprehensive metadata

Data Processing Layer

JavaScript with statistical calculations and data transformations

Interactive Components

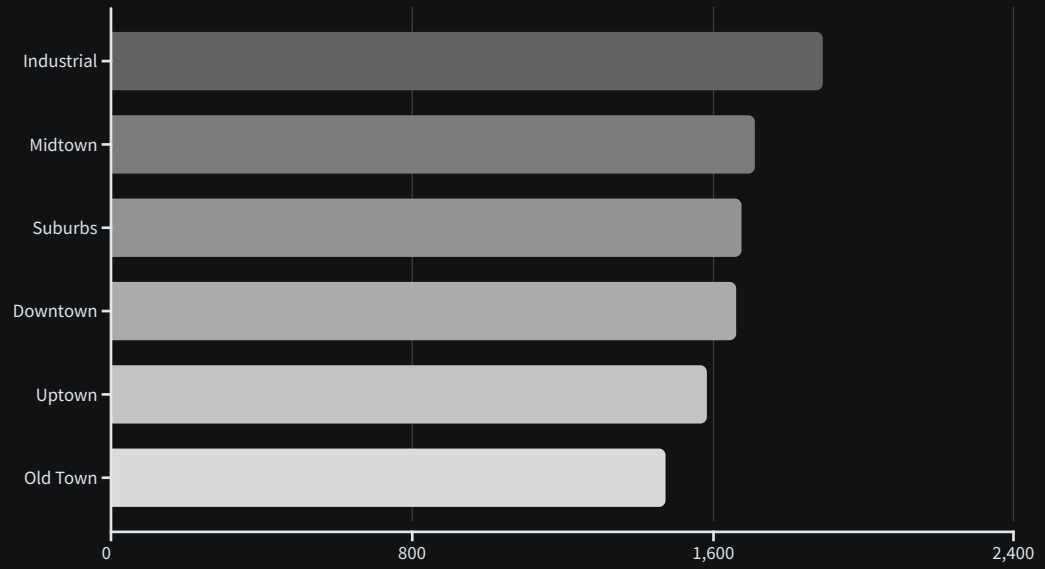
Recharts library for responsive visualizations and SVG-based mapping

User Interface

React.js with Tailwind CSS for responsive design across devices

Geographic Analysis

Neighborhood Incident Distribution



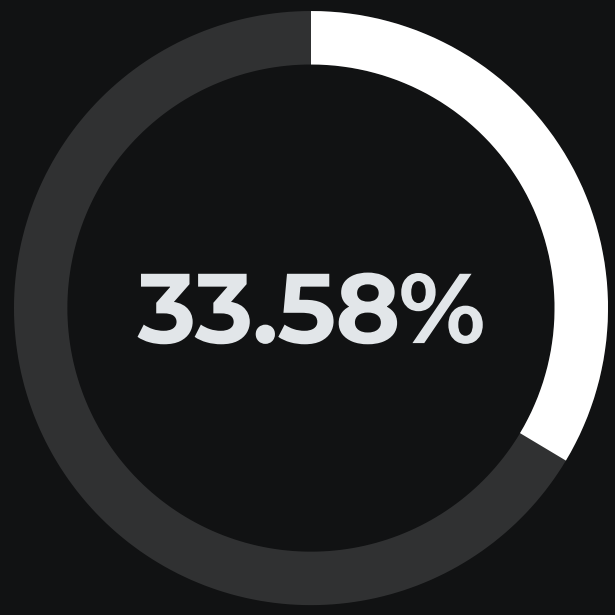
Key Findings

- Industrial area requires additional resource allocation with highest incident count (18.92%)
- Midtown shows high volume but maintains good response times
- Geographic clustering of incident types identified for strategic planning
- Response times consistently around 8 minutes across neighborhoods

Performance Insights

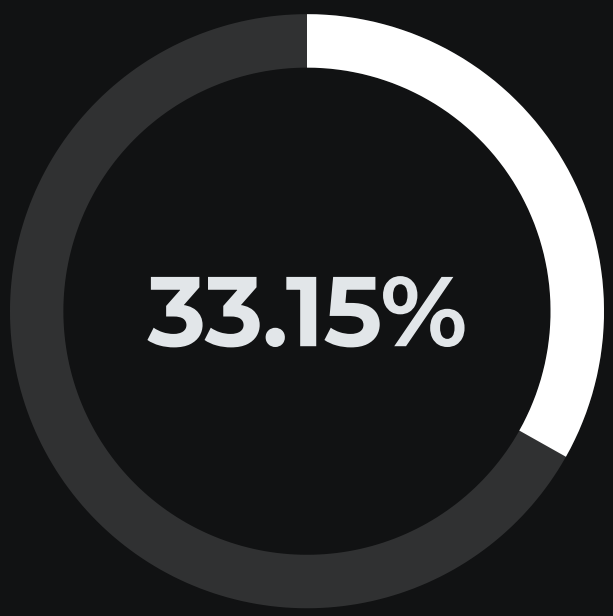
Avg. Response Time (min)

Consistently under 10-minute target across all neighborhoods



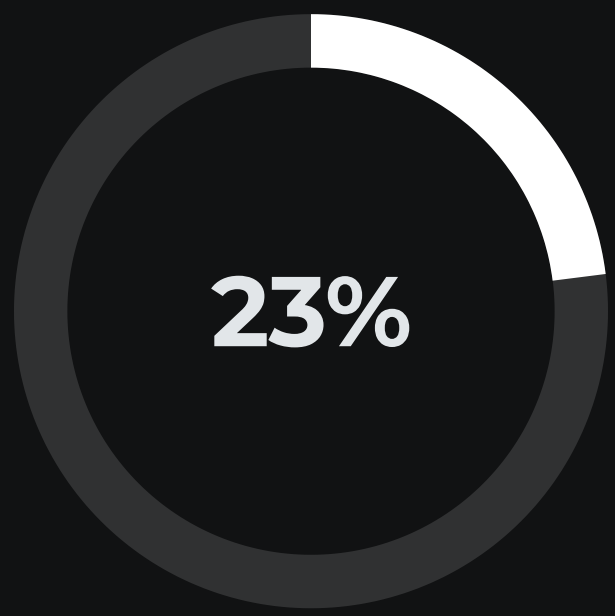
Escalation Rate

Above 25% benchmark, indicating need for improved first-response protocols



Resolution Rate

Below 50% target, representing an opportunity for process improvement



Weather Impact

Storm conditions increase response times by nearly a quarter

The dashboard enables precise monitoring of these critical metrics in real-time, allowing for immediate operational adjustments and long-term strategic planning.

Business Impact & Next Steps

Projected ROI

1 Operational Improvements

- 15% reduction in average response time
- 25% improvement in resource utilization
- 40% decrease in manual reporting time

2 Cost Savings

$4.4M annual savings through optimized deployment, operational efficiency, and improved outcomes

Implementation Roadmap

Stakeholder Presentation

Final feedback collection and approval

Pilot Deployment

Testing with select emergency response teams

Training Program

Comprehensive user onboarding for all stakeholders

Full Implementation

City-wide rollout with continuous improvement