

# Traffic Intelligence Dashboard - Two Reports Design

## REPORT 1: OPERATIONAL DASHBOARD

*Real-Time Traffic Monitoring & System Performance*

### TARGET AUDIENCE

Traffic Control Operators, System Administrators, Emergency Response Teams

### UPDATE FREQUENCY

Real-time (30-second refresh)

### PURPOSE

Monitor current traffic conditions, identify incidents immediately, and ensure system health

## PAGE LAYOUT - OPERATIONAL DASHBOARD

### HEADER BAR (Full Width - Dark Blue (#1E293B))



### TOP ROW: KEY PERFORMANCE INDICATORS (4 Cards)

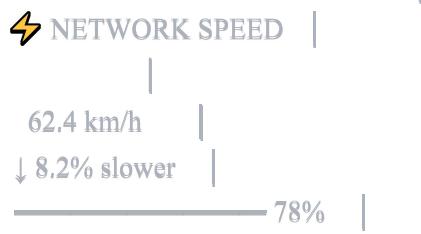
#### Card 1: Total Traffic Volume



- **Visual:** Large number with sparkline trend (last 24 hours)
- **Color:** Green if < avg, Yellow if 100-120%, Red if > 120%

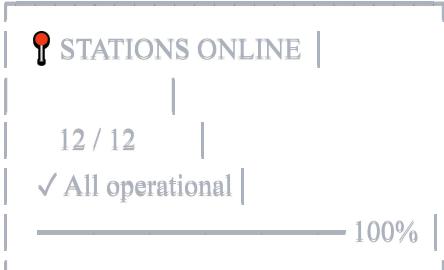
- **Metric:** Sum(BikeCount + BusCount + CarCount + TruckCount)

## Card 2: Average Speed



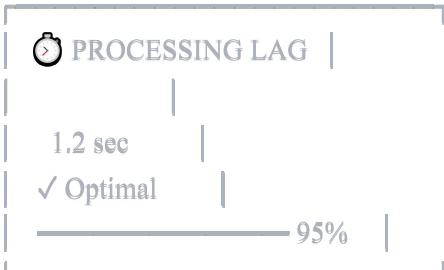
- **Visual:** Gauge chart background
- **Color:** Green (>60), Yellow (40-60), Red (<40)
- **Metric:** AVG(Speed\_kmh) across all active PartitionIds

## Card 3: Active Monitoring Stations



- **Visual:** Icon grid showing each station status
- **Color:** Green (online), Red (offline), Yellow (delayed)
- **Metric:** COUNT(DISTINCT PartitionId) where latest timestamp < 5 min ago

## Card 4: System Health

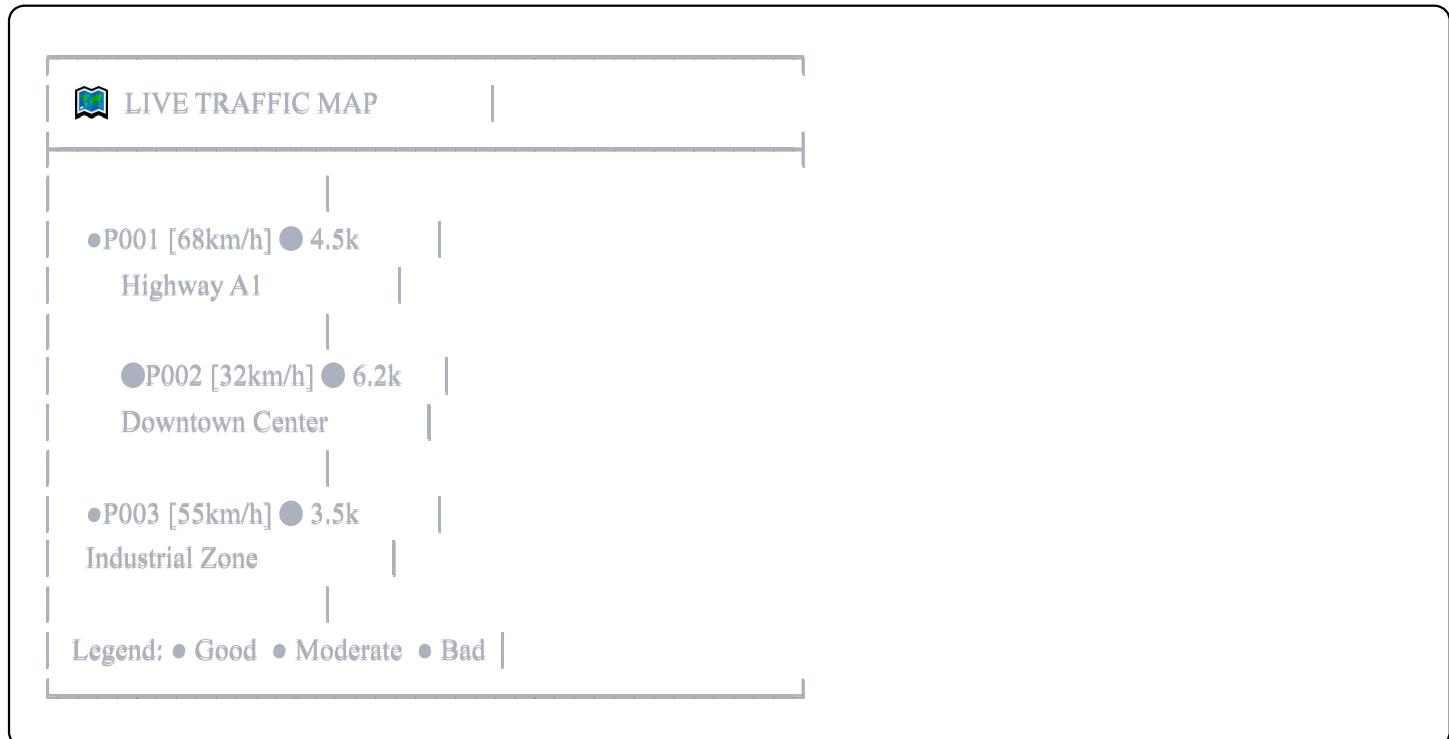


- **Visual:** Line chart showing lag over last hour
  - **Color:** Green (<2s), Yellow (2-5s), Red (>5s)
  - **Metric:** AVG(EventProcessedUtcTime - EventEnqueuedUtcTime)
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## MIDDLE SECTION: MAIN VISUALIZATIONS

### LEFT COLUMN (45% Width)

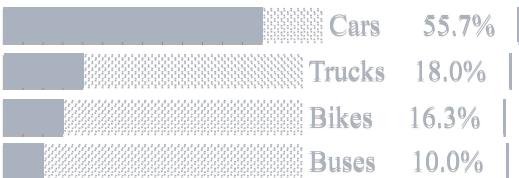
#### 1. Interactive Traffic Map



- **Visual:** Pin map with color-coded locations
- **Interaction:** Click pin → filter all other visuals to that PartitionId
- **Data:** PartitionId, latest Speed\_kmh, Total vehicle count
- **Pin Size:** Proportional to traffic volume
- **Pin Color:** Based on speed/congestion level

#### 2. Vehicle Mix - Current Hour

### VEHICLE COMPOSITION



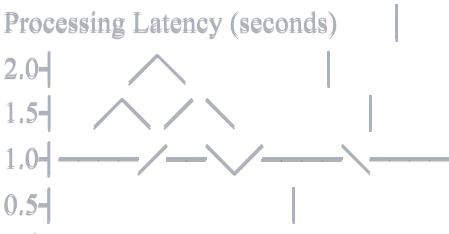
[Donut Chart in center]

Total: 45,678 vehicles

- **Visual:** Donut chart + horizontal bars
- **Colors:** ● Cars, ● Trucks, ● Bikes, ● Buses
- **Metrics:** SUM by vehicle type for current hour

### 3. Processing Performance

#### SYSTEM PERFORMANCE



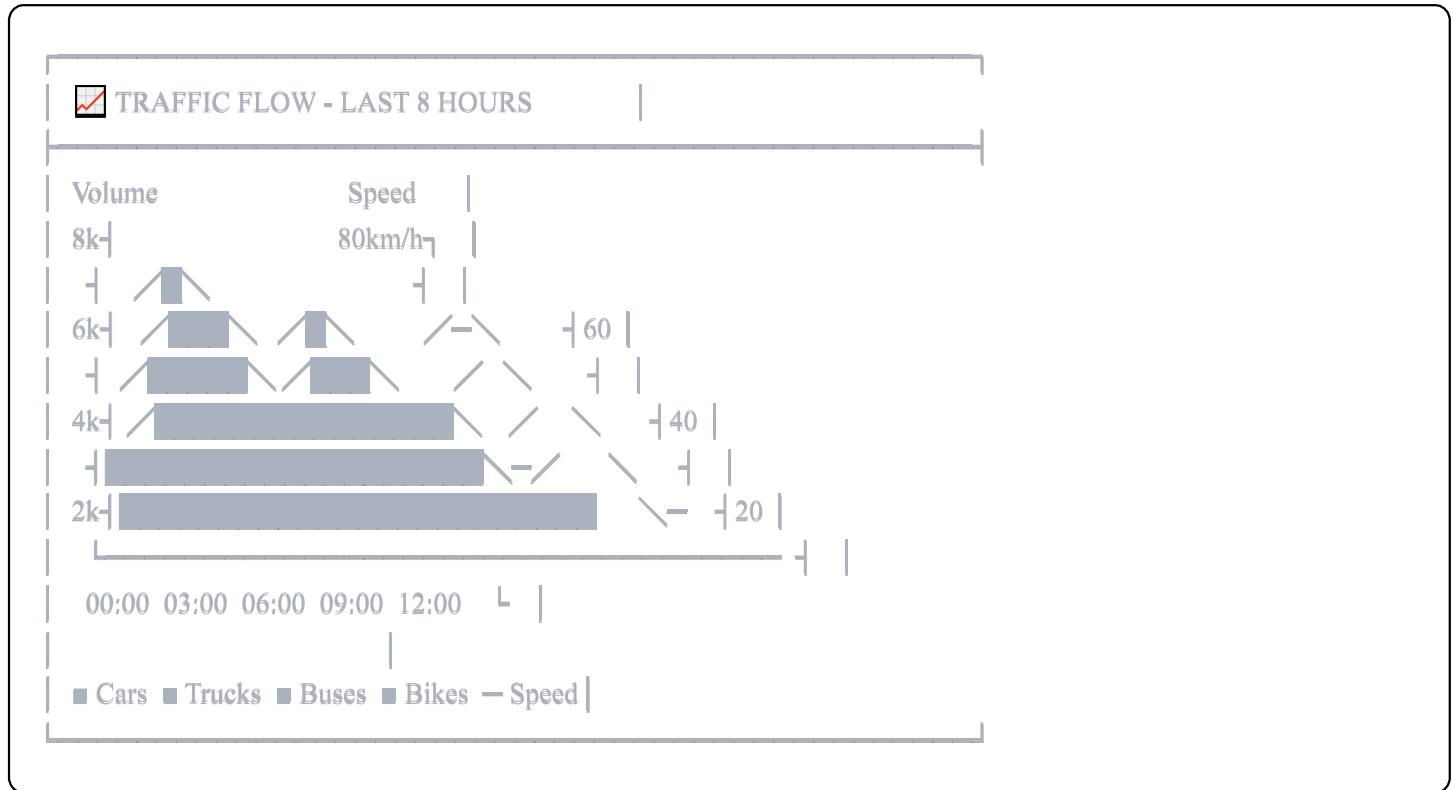
Current Queue Depth: 58 events

✓ Within normal range

- **Visual:** Dual-axis line chart
- **Lines:** Latency (primary), Queue depth (secondary)
- **Alert:** Show warning icon if latency > 5 seconds

**RIGHT COLUMN (55% Width)**

#### 4. Real-Time Traffic Flow



- **Visual:** Stacked area chart (volume) + line (speed)
- **X-Axis:** Time (last 8 hours, 15-min intervals)
- **Y-Axis Left:** Vehicle count (stacked by type)
- **Y-Axis Right:** Average speed
- **Insight Box:** "Peak congestion: 18:00-19:00"

#### 5. Traffic Situations - Current Status



## TRAFFIC CONDITIONS BY LOCATION

[Pie Chart]

58%



### Status Breakdown:

Free Flow

7

Moderate

3

Congested

2

### ALERTS:

- P002 Downtown - Heavy congestion
- P007 Bridge - Accident reported

- Visual:** Pie chart + alert list
- Data:** TrafficSituation field
- Colors:** Green, Yellow, Red
- Alerts:** Bottom section with scrollable list

## 6. Speed Analysis by Location



## SPEED MONITORING

Highway A1

68/80 km/h ✓

Downtown

32/50 km/h △

Industrial

55/80 km/h ✓

Suburban

72/80 km/h ✓

Airport Road

48/70 km/h ✓

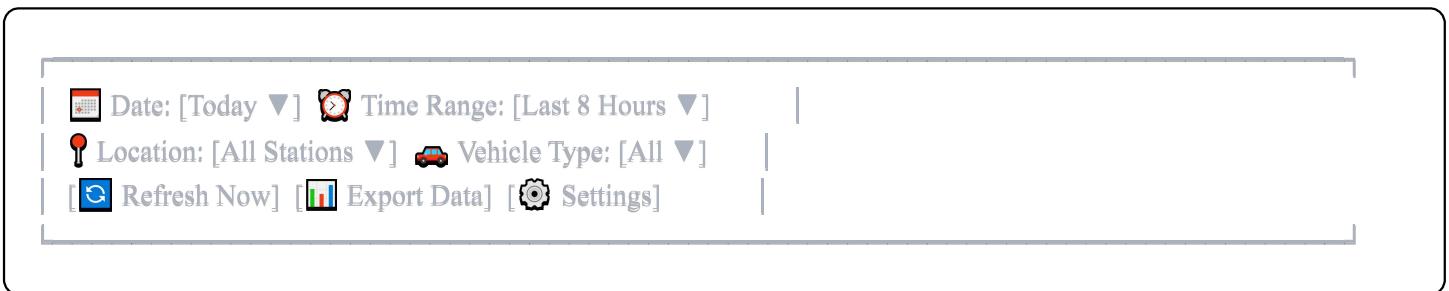
Legend: Current / Speed Limit

✓ Optimal △ Below Optimal ✗ Congested

- Visual:** Horizontal bullet charts
- Metrics:** Current speed vs speed limit per PartitionId

- **Colors:** Green (>70% of limit), Yellow (50-70%), Red (<50%)
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## BOTTOM ROW: FILTERS & CONTROLS



## REPORT 2: ANALYTICAL INSIGHTS DASHBOARD

*Historical Trends, Patterns & Strategic Planning*

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### TARGET AUDIENCE

Traffic Planners, City Managers, Strategy Teams, Analysts

### UPDATE FREQUENCY

Daily (or on-demand)

### PURPOSE

Identify patterns, forecast trends, optimize infrastructure, support decision-making

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## PAGE LAYOUT - ANALYTICAL DASHBOARD

### HEADER BAR (Full Width - Deep Purple (#4C1D95))



## TOP ROW: SUMMARY METRICS (4 Cards)

### Card 1: Monthly Total

### TOTAL VOLUME

1,247,890

+15.2% vs last mo

Trend: ↗ Growing

### Card 2: Peak Hour

#### BUSIEST HOUR

18:00-19:00

Avg: 8,945 vehicles

Mon-Fri pattern

### Card 3: Efficiency Score

#### NETWORK SCORE

78/100

+3 pts vs last mo

Rating: Good

### Card 4: Busiest Route

#### TOP LOCATION

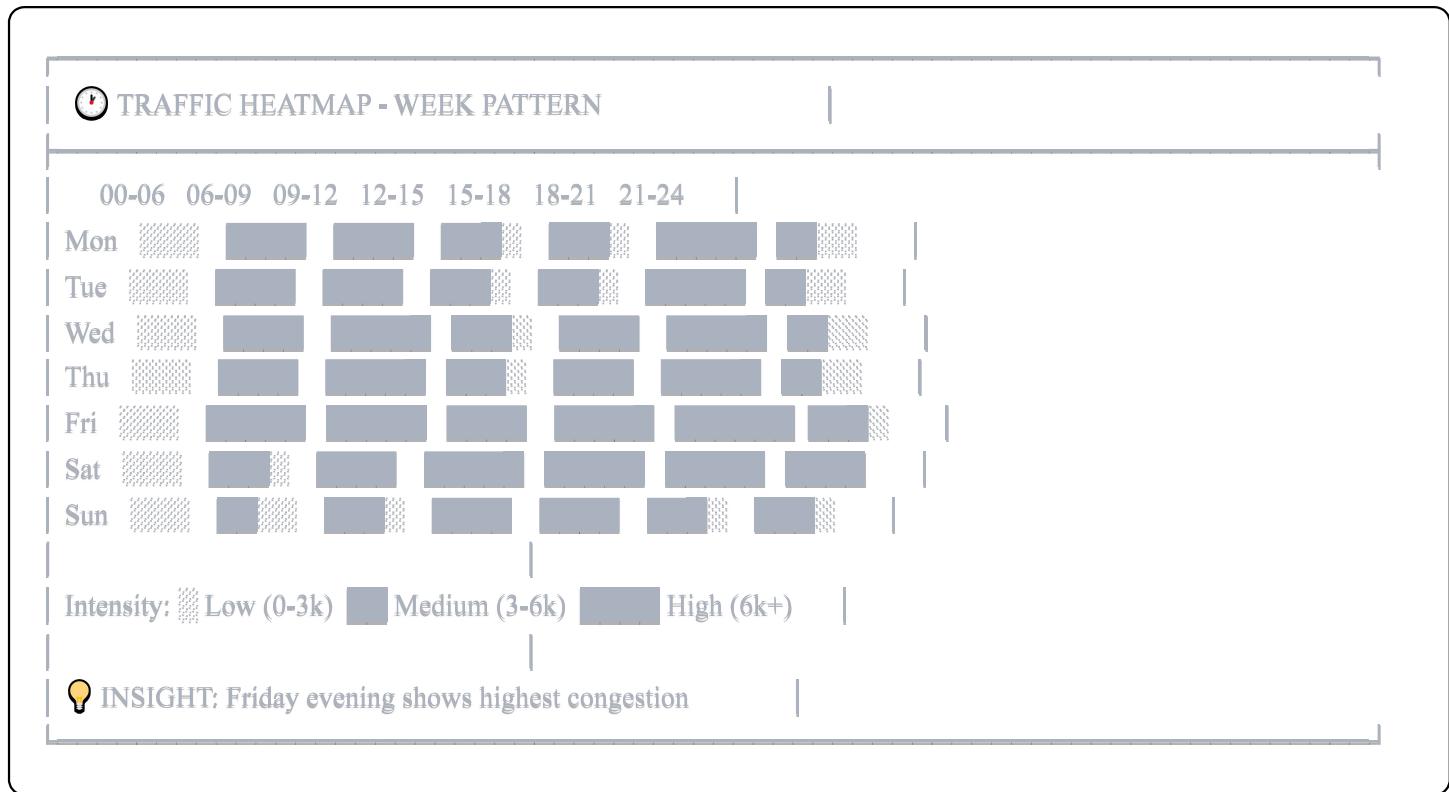
Downtown Center

186,234 vehicles

15% of total

## SECTION 1: TEMPORAL ANALYSIS (Full Width)

### Weekly Pattern Heatmap

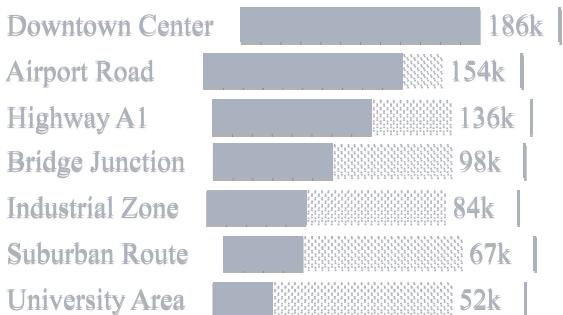


- **Visual:** Heatmap matrix
- **Axes:** DayOfWeek × Time periods
- **Color:** Intensity gradient based on average volume
- **Data:** Group by DayOfWeek and Time buckets

## SECTION 2: LOCATION COMPARISON (Split View)

### LEFT: Volume by Location (50%)

### TRAFFIC VOLUME BY LOCATION (30D)

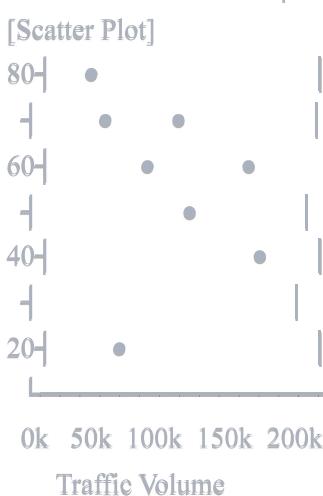


Total Network: 1,247,890 vehicles

- **Visual:** Horizontal bar chart
- **Sorted:** Descending by volume
- **Data:** SUM(all vehicle types) GROUP BY PartitionId

### RIGHT: Speed Performance (50%)

#### AVERAGE SPEED BY LOCATION

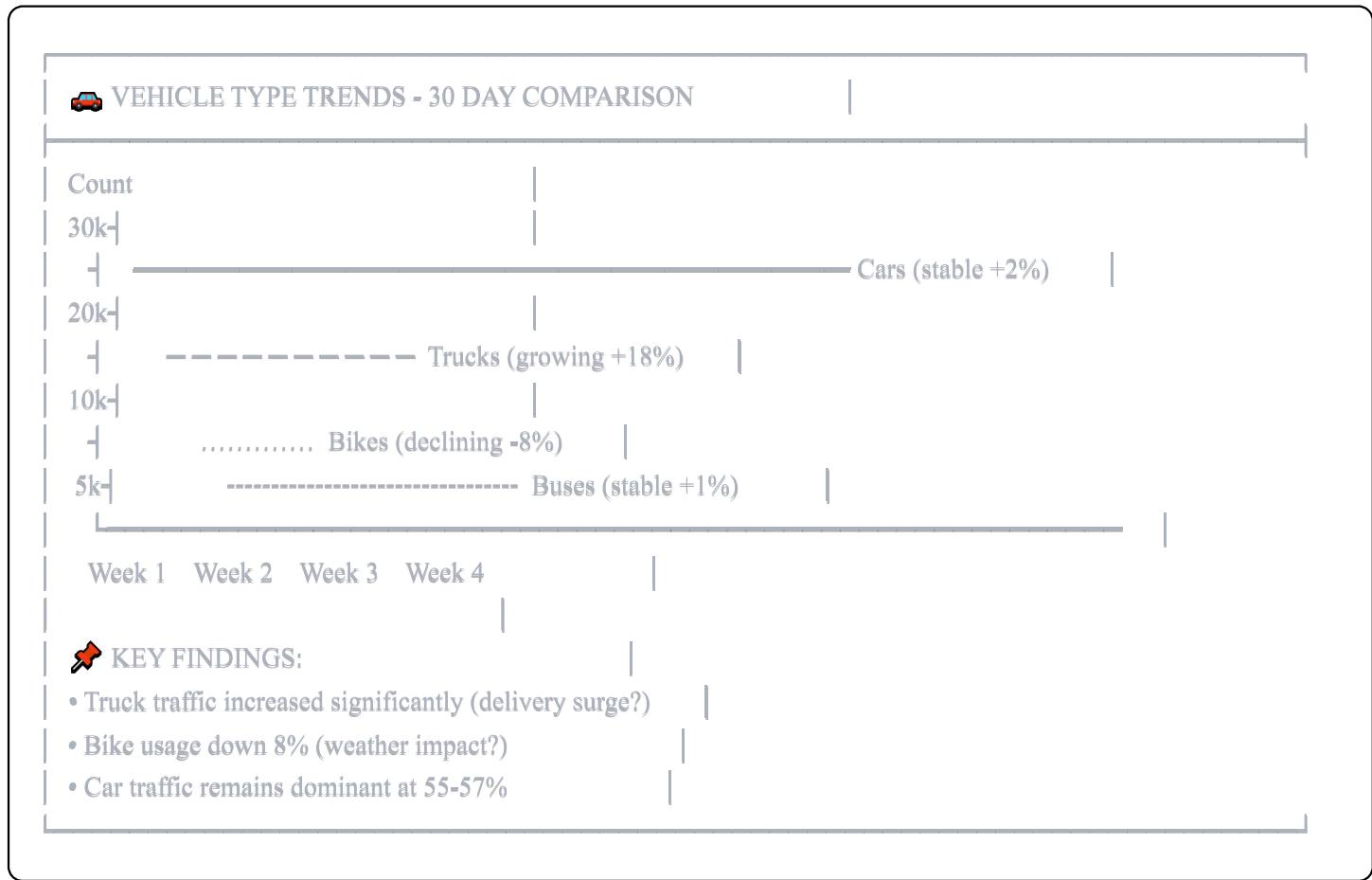


Downtown: High volume, low speed

Highway A1: Optimal performance

- **Visual:** Scatter plot
  - **X-Axis:** Total volume
  - **Y-Axis:** Average speed
  - **Bubble Size:** Number of incidents
  - **Insight:** Identify bottlenecks
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## SECTION 3: VEHICLE TYPE TRENDS (Full Width)



- **Visual:** Multi-line chart
  - **Lines:** One per vehicle type
  - **Trend:** Show % change annotations
  - **Period:** 30 days, weekly aggregation
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## SECTION 4: COMPARATIVE ANALYSIS (Three Columns)

**LEFT: Day Type Comparison (33%)**

### WEEKDAY vs WEEKEND

Weekday Avg: 42,340

Weekend Avg: 31,280

Difference: -26.1%

Peak Hours:

- Weekday: 18:00
- Weekend: 14:00

### CENTER: Month-over-Month (33%)

#### MONTHLY TREND

[Line Chart]

1.3M

1.1M

0.9M

Aug Sep Oct Nov

Growth Rate: +4.2%/month

Forecast Dec: 1,310k

### RIGHT: Time Period Split (33%)

## DAY vs NIGHT

[Donut Chart]

Day (06-20)



Night (20-06)



Day Avg Speed: 54 km/h

Night Avg Speed: 71 km/h

 Night: 31% faster

## SECTION 5: PREDICTIVE INSIGHTS (Full Width)

### FORECASTING & RECOMMENDATIONS

PREDICTED PEAK TIMES (Next 7 Days):

Date	Time	Expected Vol	Congestion Risk
Nov 26 Tue	18:00-19	9,234	 Medium
Nov 27 Wed	18:15-19	9,456	 Medium
Nov 28 Thu	17:45-19	9,678	 High
Nov 29 Fri	17:30-19	10,234	 High

### RECOMMENDED ACTIONS:

1. Deploy additional traffic officers Thu-Fri evening
2. Consider dynamic speed limits on Highway A1 during peaks
3. Investigate Downtown Center bottleneck (sustained high vol)
4. Promote off-peak travel for freight (reduce truck congestion)

### SYSTEM EFFICIENCY TRENDS:

- Processing latency improved 23% this month

- Station P008 needs maintenance (intermittent data gaps)
- Overall network capacity at 73% (27% buffer available)

## BOTTOM ROW: EXPORT & SHARING

-  **EXPORT OPTIONS:**

[ Download PDF] [ Excel Report] [ Email Schedule]

 **SHARE DASHBOARD:**

[ Copy Link] [ Share with Team] [ Mobile View]

## DESIGN SPECIFICATIONS

### Color Palette

- **Report 1 (Operational):** Dark blues, bright alerts
  - Primary: #1E293B (background)
  - Accent: #3B82F6 (blue)
  - Success: #10B981 (green)
  - Warning: #F59E0B (yellow)
  - Danger: #EF4444 (red)
- **Report 2 (Analytical):** Professional purples, data viz colors
  - Primary: #4C1D95 (background)
  - Charts: #8B5CF6, #EC4899, #14B8A6, #F59E0B
  - Text: #F8FAFC (light) on dark background

### Typography

- Headers: Bold, 18-24px
- Body: Regular, 14-16px
- Metrics: Bold, 32-48px for KPIs
- Labels: 12px, uppercase for category labels

## Interaction Patterns

- **Hover:** Show detailed tooltip with exact values
  - **Click:** Filter/drill-down to detailed view
  - **Cross-filtering:** Selecting one visual filters others
  - **Zoom:** Timeline charts allow zoom into specific periods
  - **Export:** Every visual has download option
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## DATA REQUIREMENTS BY VISUAL

### Report 1 Queries

1. **KPI Cards:** Real-time aggregates from last 24h
2. **Map:** Latest record per PartitionId (last 5 min)
3. **Vehicle Mix:** SUM by type for current hour
4. **Traffic Flow:** 15-min buckets, last 8 hours
5. **Processing:** EventProcessed - EventEnqueued

### Report 2 Queries

1. **Monthly Summary:** 30-day aggregates
  2. **Heatmap:** DayOfWeek × Time bucket averages
  3. **Location Bars:** GROUP BY PartitionId, 30-day totals
  4. **Trends:** Daily totals by vehicle type
  5. **Forecast:** Statistical model on historical patterns
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## KEY DIFFERENCES BETWEEN REPORTS

Aspect	Report 1: Operational	Report 2: Analytical
Time Focus	Right now (real-time)	Historical patterns
Update	30 seconds	Daily
User Action	Immediate response	Strategic planning
Visuals	Gauges, alerts, maps	Trends, comparisons
Data Depth	Current snapshot	30-90 days

Aspect	Report 1: Operational	Report 2: Analytical
Alerts	Active incidents	Recommendations

## USAGE SCENARIOS

### Report 1 Use Cases

- Traffic operator monitoring rush hour
- Emergency services checking route conditions
- System admin verifying data pipeline health
- Incident response team coordinating actions

### Report 2 Use Cases

- Monthly traffic planning meeting
- Infrastructure investment decisions
- Public transportation route optimization
- Environmental impact assessment
- Budget allocation for traffic management

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This design provides comprehensive coverage of both operational needs and strategic insights from your traffic data!