Developed for the:

IOWA DOT

By:

kapsch
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<td>Map of Lane Blocking Incidents</td>
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Measuring performance is key to evaluating the effectiveness of Transportation Systems Management and Operations in Iowa. With this report and other performance metrics, the department has the real-time data to assist in planning, budgeting and implementing TSMO strategies across the state. Ultimately, this helps Iowa DOT achieve our mission of getting you there safely, efficiently, and conveniently.

– Scott Marler, Director, Office of Traffic Operations Director
INTRODUCTION

Iowa’s Statewide Traffic Management Center (TMC) is a 24/7 center located in the Motor Vehicle Division building in Ankeny, Iowa. The TMC is one of Iowa DOT’s key strategies to proactively manage the transportation system by addressing recurring and nonrecurring congestion in real-time. Using advanced technology, the TMC proactively monitors the transportation system for disruptions in traffic flow, such as from crashes, work zone delays, congestion, stalled vehicles, special events, or bad weather. When disruptions occur, the TMC coordinates with internal and external partners to provide safe/quick clearance, detour routing, traffic control, and accurate and timely information to the public. Trained professional staff in the TMC actively monitor traffic conditions and coordinate responses with other DOT staff, state and local law enforcement, 911 communication centers, state and county emergency managers, neighboring states, and the towing and rail industries. The TMC uses tools such as 511, social media, media releases, and Dynamic Message Signs to help protect on-scene responders and to prevent secondary crashes when disruptions occur.

EXECUTIVE SUMMARY

Iowa DOT TMC Operations “At a Glance”

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of incidents managed by Iowa Statewide Traffic Management Center</td>
<td>24,931</td>
</tr>
<tr>
<td>Number of incidents managed by Iowa Statewide Traffic Management Center with lane blockage</td>
<td>2,595</td>
</tr>
<tr>
<td>Number of minutes on average that it takes to clear all lanes of traffic following incidents</td>
<td>52.6</td>
</tr>
<tr>
<td>Number of customers assisted by Highway Helpers</td>
<td>17,453</td>
</tr>
<tr>
<td>Number of work zones managed by Iowa Statewide Traffic Management Center</td>
<td>23,573</td>
</tr>
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The Traffic Management Center focuses on the following activities:
- Respond to and clear traffic crashes as safely and quickly as possible
- Provide timely, accurate and comprehensive traveler information to customers
- Provide critical data for statewide and regional Traffic Incident Management program activities and performance metrics
- Reduce the number of secondary crashes through pre-warning and quick clearance
- Improve travel time reliability
- Increase the situational awareness for winter weather and special events
- Maximize the use of the existing roadway capacity.
Total Incidents Managed by the TMC

The total number of incidents (24,931) during a given period. An incident is defined as any event on the roadway which affects or can affect normal traffic flow.

2,077 incidents per month on average in 2016

Secondary Incidents

Secondary incidents can be more severe than the original incident, due to slow moving traffic or stopped queues on the roadway.

One hundred and seventy seven (177) incidents were classified as secondary

Incidents by Day of the Week

Top 3:
1. Tuesday
2. Friday
3. Thursday
Incidents Managed during Peak Hours

Peak hours are defined as:
AM: 6:00-9:00
PM: 3:00-6:00

<table>
<thead>
<tr>
<th></th>
<th>AM Peak</th>
<th>PM Peak</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>5,714</td>
<td>5,722</td>
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Lane Blocking Incidents

The total number of incidents that resulted in at least one blocked lane of travel are described in the charts below.

2,595 total lane blocking incidents
Average Time to Clear a Lane-Blocking Incident

The average time for all lanes to be cleared for an incident is calculated from the incident start time until all lanes are reopened.

52.6 minutes was the average time to clear a lane blocking incident in 2016.

Incident Types

A breakdown by type of incidents logged by the Traffic Management Center (TMC) for 2016 and percentage of total incidents logged is shown with the chart.

Top 3:
1. Stalled Vehicle
2. Debris in Roadway
3. 1 Vehicle Collision

Represented the total amount of incidents (24,931) categorized by incident type.
This contains statistical and operational data of activities of the Highway Helper program for the period January 1st 2016 to December 31st 2016

**TOTAL HIGHWAY HELPER INCIDENT RESPONSES**

The total number of incidents Highway Helper responded to during a given period

- **17,453**

**INCIDENTS WITH LANE BLOCKAGE**

The total number of incidents which resulted in at least one blocked lane of travel

- **941**

**CRASHES RESPONDED TO BY HIGHWAY HELPER**

The total number of crashes during this period Highway Helper responded to

- **1,292**

**AVERAGE INCIDENTS HIGHWAY HELPER RESPONDED TO PER DAY**

The average of daily responses for Highway Helper in 2016 (calculated using a 5 day work week)

- **67**

**Total Incidents Responded to by Area**

- **Des Moines**: 6,730
- **Cedar Rapids**: 3,758
- **Council Bluffs**: 6,965

**17,453 total incidents**

**Total Incidents Responded to by Highway Helper**

- **January**: 680
- **February**: 768
- **March**: 1,031
- **April**: 1,211
- **May**: 1,436
- **June**: 1,586
- **July**: 1,580
- **August**: 1,818
- **September**: 1,869
- **October**: 1,729
- **November**: 1,766
- **December**: 1,979

**1,454 incidents per month on average in 2016**
Highway Helper Incident Response Type

- **Top 3:**
  1. Removed Debris
  2. Checked Welfare
  3. Provided Traffic Control

- Total incidents: 17,453

Incident Response by Time of Day

- **Total incidents:** 17,453

- Off Peak Hours: 9,113 (52%)
- AM Commute: 4,397 (25%)
- PM Commute: 3,943 (23%)
DES MOINES
HIGHWAY HELPER INCIDENT RESPONSE DASHBOARD

Heat Map of Highway Helper Crash Response Location Density

They were so great! Very fast and super friendly. They could not have been more helpful.
- Customer comment

Total Incidents Responded to by Highway Helper

560 incidents per month on average in 2016
Highway Helper Incident Response Type

- **Response Disregarded**: 280 - 4%
- **Mechanical Repair**: 179 - 3%
- **Push/Pull**: 34 - 0.5%
- **Provided Fuel**: 325 - 5%
- **Jump Start**: 71 - 1%
- **Abandoned/Tagged**: 584 - 9%
- **Gave Directions**: 49 - 1%
- **Flat Tire**: 657 - 10%
- **Provided Traffic Control**: 848 - 13%
- **Provided Welfare Check**: 1,516 - 22%
- **Motorist Transport**: 73 - 1%
- **Removed Debris**: 2,114 - 31%

6,730 total amount of incidents categorized by incident type

Top 3:
1. Removed Debris
2. Checked Welfare
3. Provided Traffic Control

Incident Response by Time of Day

- **Off Peak Hours**: 3,268 - 48%
- **AM Commute**: 1,671 - 25%
- **PM Commute**: 1,791 - 27%

6,730 total incidents
COUNCIL BLUFFS
HIGHWAY HELPER INCIDENT RESPONSE DASHBOARD

Heat Map of Highway Helper Crash Response Location Density

"He saved my life on the coldest day of the year. The program is wonderful. I can't thank you enough."
- Customer comment

Total Incidents Responded to by Highway Helper

580 incidents per month on average in 2016
Highway Helper Incident Response Type

6,965 total amount of incidents categorized by incident type

Top 3:
1. Removed Debris
2. Checked Welfare
3. Provided Traffic Control

Incident Response by Time of Day

6,965 total incidents

OFF PEAK HOURS
4,050 – 58%

AM COMMUTE
1,755 – 25%

PM COMMUTE
1,160 – 17%
Heat Map of Highway Helper Crash Response Location Density

“I was so relieved when I saw the truck pull up behind me. Thank you!”
- Customer comment

Total Incidents Responded to by Highway Helper

313 incidents per month on average in 2016
Highway Helper Incident Response Type

Incident Response by Time of Day

3,758 total amount of incidents categorized by incident type

Top 3:
1. Checked Welfare
2. Removed Debris
3. Provided Traffic Control

3,758 total incidents
CONGESTION

Congestion in Iowa

- Recurrent Congestion
  - Bottlenecks: 23%
  - Traffic Incidents: 27%
  - Work Zones: 12%
- Non-recurrent Congestion
  - Bad Weather: 28%
  - Poor Signal Timing - Special Events: 5%

Slow Traffic

<table>
<thead>
<tr>
<th>District</th>
<th>Slow Traffic</th>
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<tbody>
<tr>
<td>District 1</td>
<td>296</td>
</tr>
<tr>
<td>District 2</td>
<td>4</td>
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<tr>
<td>District 3</td>
<td>29</td>
</tr>
<tr>
<td>District 4</td>
<td>29</td>
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<tr>
<td>District 5</td>
<td>7</td>
</tr>
<tr>
<td>District 6</td>
<td>107</td>
</tr>
</tbody>
</table>

Heat Map of Statewide Congestion

474 slow traffic events across the state of Iowa in 2016
Of the 474 slow traffic events, 296 took place in District 1. This accounts for 62% of the slow traffic events the TMC monitored during the year.

All congestion in District 2 took place during the winter months.

The highest density congestion in District 3 took place around work zones.
The two highest areas of congestion in District 4 were Pottawattamie County (58%) and Dallas County (41%).

All congestion in District 5 was around work zones on I-35.

57% of the congestion in District 6 took place on the I-380 corridor.
FREIGHT INCIDENTS

137,125 total permits issued
114,403 oversize/overweight permits
95,707 single trip (routed) permits
16,951 annual (non-routed) permits

137,125 total permits issued
114,403 oversize/overweight permits
95,707 single trip (routed) permits
16,951 annual (non-routed) permits

2 hours 23 minutes
average time to clear a lane blocking incident involving a tractor trailer

12 hazmat spills from vehicles hauling hazmat

61 tractor trailer roll-overs

163 rail incidents

The TMC provides rail reports for any incident involving rail, regardless of impact to the road network.
Traveler Information
www.511ia.org or dial 511

3,395,928 total visits to 511 traveler information website (includes all versions of website)

71,582 total 511 App downloads

129,827 total number of calls to 511
Roadwork is tracked by each change in a work zone, not the project as a whole. If the project is not continuous, e.g. night work only, each night is logged in our system. 67 projects utilized extra law enforcement provided by Motor Vehicle Enforcement, Iowa State Patrol or local Police departments.

There were 64 Traffic Critical Projects during the 2016 construction season; of those, 34 had intelligent work zone systems.

23,573 roadwork

Map of Work Zone Crashes

110 workzone crashes
The Iowa DOT splits the state into 6 different districts. This section is a breakdown of incidents and work zones in each district.

**Total Incidents by District**

<table>
<thead>
<tr>
<th>District</th>
<th>Total Incidents</th>
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<tr>
<td>District 1</td>
<td>9,969</td>
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<td>District 2</td>
<td>398</td>
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<td>District 3</td>
<td>567</td>
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<td>District 4</td>
<td>6,619</td>
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<td>District 5</td>
<td>391</td>
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<td>District 6</td>
<td>5,676</td>
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**Lane Blocking Incidents**

<table>
<thead>
<tr>
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<th>Lane Blocking Incidents</th>
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<td>District 2</td>
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<td>District 4</td>
<td>401</td>
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<td>District 5</td>
<td>123</td>
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<td>District 6</td>
<td>665</td>
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**Average Time to Clear Lanes**

<table>
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<tr>
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<th>Average Time to Clear Lanes</th>
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<tr>
<td>District 1</td>
<td>37.4</td>
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<tr>
<td>District 2</td>
<td>89.6</td>
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<tr>
<td>District 3</td>
<td>70.4</td>
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<td>District 4</td>
<td>56.9</td>
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<td>District 5</td>
<td>87.8</td>
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<tr>
<td>District 6</td>
<td>52.3</td>
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</tbody>
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**54 total pavement blowouts**

**20 total bridge hits**
Incidents – 9,969 Total

- Stalled Vehicle: 6,843 – 68%
- Slow Traffic: 296 – 3%
- Debris: 944 – 9%
- Winter Closure: 1 – 0%
- 1 Vehicle Crash: 671 – 7%
- 2 Vehicle Crash: 768 – 8%
- 3+ Vehicle Crash: 291 – 3%

Roadwork – 6,195 Total

- Construction Work: 4,177 – 67%
- Road Maintenance Operations: 1,250 – 19%
- Bridge Construction: 487 – 8%
- Bridge Maintenance Operations: 35 – 1%
- Utility Work: 155 – 1%
- Paint Crew: 91 – 1%
37.4 average time to clear lanes

1,031 lane blocking incidents

80 secondary crashes

25 workzone crashes
DISTRICT 2

Incidents – 398 Total

- Winter Closure: 1% (0%)
- Stalled Vehicle: 89% (22%)
- Flooding: 45% (11%)
- Debris: 76% (19%)
- Slow Traffic: 4% (1%)
- Emergency Vehicle: 18% (5%)
- 1 Vehicle Crash: 101% (25%)
- 2 Vehicle Crash: 58% (15%)
- 3+ Vehicle Crash: 6% (2%)

Roadwork – 2,670 Total

- Construction Work: 433% (91%)
- Bridge Construction: 48% (2%)
- Bridge Maintenance Operations: 16% (1%)
- Utility Work: 43% (2%)
- Paint Crew: 14% (0%)
- Road Maintenance Operations: 116% (4%)

Heat Map of Incidents

- District 2
- Mason City
- New Hampton
- Other areas

4 pavement blowouts
0 bridge hits
Map of Lane Blocking Incidents

89.6 average time to clear lanes
141 lane blocking incidents

Heat Map of Workzone Crashes

3 secondary crashes
3 workzone crashes
Incidents – 567 Total

- SLOW TRAFFIC: 28 – 5%
- WINTER CLOSURE: 4 – 1%
- STALLED VEHICLE: 119 – 24%
- 1 VEHICLE CRASH: 119 – 21%
- 2 VEHICLE CRASH: 106 – 19%
- DEBRIS: 111 – 19%
- EMERGENCY VEHICLE: 35 – 6%
- FLOODING: 8 – 1%
- 3+ VEHICLE CRASH: 22 – 4%

Roadwork – 2,931 Total

- CONSTRUCTION WORK: 2,826 – 97%
- BRIDGE CONSTRUCTION OPERATIONS: 33 – 1%
- BRIDGE MAINTENANCE OPERATIONS: 6 – 0%
- UTILITY WORK: 10 – 0%
- ROAD MAINTENANCE OPERATIONS: 44 – 1%
- PAINT CREW: 12 – 1%
Map of Lane Blocking Incidents

- 70.4 average time to clear lanes
- 234 lane blocking incidents

Heat Map of Workzone Crashes

- 13 pavement blowouts
- 4 bridge hits
- 4 secondary crashes
- 12 workzone crashes
Map of Lane Blocking Incidents

Heat Map of Workzone Crashes

56.9 average time to clear lanes
401 lane blocking incidents

46 secondary crashes
14 workzone crashes
Incidents – **391 Total**

- **STALLED VEHICLE** 70 – 18%
- **SLOW TRAFFIC** 9 – 2%
- **EMERGENCY VEHICLE** 22 – 6%
- **DEBRIS** 88 – 22%
- **FLOODING** 6 – 1%
- **1 VEHICLE CRASH** 97 – 25%
- **2 VEHICLE CRASH** 89 – 23%
- **3+ VEHICLE CRASH** 10 – 3%
- **FLOODING** 6 – 1%
- **1 VEHICLE CRASH** 97 – 25%
- **2 VEHICLE CRASH** 89 – 23%
- **3+ VEHICLE CRASH** 10 – 3%

Roadwork – **3,465 Total**

- **BRIDGE CONSTRUCTION** 104 – 3%
- **Bridge Maintenance Operations** 54 – 2%
- **UTILITY WORK** 59 – 2%
- **PAINT CREW** 73 – 2%
- **CONSTRUCTION WORK** 2,428 – 70%
- **ROAD MAINTENANCE OPERATIONS** 744 – 21%

**Heat Map of Incidents**

- **District 5**
- **14 pavement blowouts**
- **3 bridge hits**

**District 5 Map**

- Warrenton
- Marion
- Mahaska
- Keokuk
- Washington
- Muscatine
- Tipton
- Decatur
- Wapello
- Jefferson
- Henry
- Des Moines
- Mt. Pleasant
- Lee

- **Road Maintenance Operations**
- **Construction Work**
- **Bridge Construction**
- **Bridge Maintenance Operations**
- **Utility Work**
- **Paint Crew**
- **Pavement Blowouts**
- **Bridge Hits**

Map of Lane Blocking Incidents

Heat Map of Workzone Crashes

- **87.8** average time to clear lanes
- **123** lane blocking incidents

- **2** secondary crashes
- **16** workzone crashes
Incidents – 5,676 Total

- 3+ VEHICLE CRASH: 119 (2%)
- 2 VEHICLE CRASH: 401 (7%)
- 1 VEHICLE CRASH: 448 (8%)
- STALLED VEHICLE: 3,712 (65%)
- SLOW TRAFFIC: 107 (2%)
- DEBRIS: 770 (14%)
- EMERGENCY VEHICLE: 91 (2%)
- FLOODING: 28 (0%)

Roadwork – 5,145 Total

- CONSTRUCTION WORK: 4,146 (81%)
- ROAD MAINTENANCE OPERATIONS: 618 (11%)
- BRIDGE MAINTENANCE OPERATIONS: 66 (1%)
- BRIDGE CONSTRUCTION: 50 (1%)
- UTILITY WORK: 72 (2%)
- PAINT CREW: 193 (4%)

Heat Map of Incidents:

- 9 pavement blowouts
- 3 bridge hits

District 6 Map:

- Buchanan
- Delaware
- Dubuque
- Benton
- Linn
- Jones
- Jackson
- Clinton
- Scott
- Cedar
- Davenport

Incidents:

- 30 pavement blowouts
- 3 bridge hits

- 4,146 construction work
- 618 road maintenance operations
- 50 bridge construction
- 72 utility work
- 193 paint crew
- 728 debris
- 3712 stalled vehicle
- 107 slow traffic
- 91 emergency vehicle
- 28 flooding
Map of Lane Blocking Incidents

Heat Map of Workzone Crashes

52.3 average time to clear lanes
665 lane blocking incidents

42 secondary crashes
40 workzone crashes