# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXECUTIVE SUMMARY</td>
<td>5</td>
</tr>
<tr>
<td>INCIDENTS</td>
<td>6</td>
</tr>
<tr>
<td>CRASHES</td>
<td>10</td>
</tr>
<tr>
<td>HIGHWAY HELPER</td>
<td>12</td>
</tr>
<tr>
<td>FREIGHT</td>
<td>18</td>
</tr>
<tr>
<td>WORK ZONES</td>
<td>20</td>
</tr>
<tr>
<td>WEATHER</td>
<td>22</td>
</tr>
<tr>
<td>COMMUNICATION</td>
<td>24</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

Iowa's Statewide Traffic Management Center (TMC) is a 24/7 center located in the Motor Vehicle Division building in Ankeny, Iowa. Iowa DOT uses the TMC to proactively monitor the transportation system in real-time, focusing mainly on the primary roadway system throughout Iowa. The highly-trained professional staff within the TMC coordinates with internal and external partners to detect disturbances to traffic flow and assist with implementing strategies that provide safe, quick clearance on the roadway. TMC staff monitors cameras and assists with state and local agencies and transportation industry stakeholders to keep travelers informed and on-scene responders protected. Tools such as 511, social media, and dynamic message signs allow broad and direct notification of incidents to those affected, aiming to reduce both traffic delay and secondary crashes.

The TMC is focused on:
- **IMPROVING** travel time reliability.
- **ELIMINATING** secondary crash conditions.
- **OPTIMIZING** the function of the existing transportation system.
- **DISSEMINATING** accurate, real-time traveler information to customers.
- **TRACKING** winter weather and special events for situational awareness.
- **MONITORING** traffic crashes, assisting partners with facilitating safe and quick clearance.
- **COLLECTING** critical data for Traffic Incident Management and overall system improvement.

The TMC collects traffic data to support real-time decisions during traffic incidents and archives the information for future use. A monthly report is generated that describes the TMC trends, with the intent of making modifications to policies, practices, and procedures to counter undesirable trends. The 2019 Annual Report presents this collected data from the past year in areas including incidents, crashes, Highway Helper, freight, work zones, weather, and communication. Key performance indicators are presented in the 2019 Snapshot.

### 2019 Snapshot

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCIDENTS</td>
<td>Number of incidents monitored by Iowa's Statewide TMC</td>
<td>41,012</td>
</tr>
<tr>
<td>CRASHES</td>
<td>Average crash clearance time</td>
<td>1 hr 5 m</td>
</tr>
<tr>
<td>HIGHWAY HELPER</td>
<td>Number of responses provided by Highway Helpers</td>
<td>16,938</td>
</tr>
<tr>
<td>FREIGHT</td>
<td>Average time to clear a lane blocking incident involving a tractor trailer</td>
<td>2 hr 9 m</td>
</tr>
<tr>
<td>WORK ZONES</td>
<td>Total work zone incidents</td>
<td>239</td>
</tr>
<tr>
<td>WEATHER</td>
<td>Total flooding events</td>
<td>285</td>
</tr>
<tr>
<td>COMMUNICATION</td>
<td>Total Emergency Incident Notification (EIN) email notifications sent</td>
<td>23,959</td>
</tr>
</tbody>
</table>

"Iowa's Statewide TMC is on the front line ensuring that our State's tools, infrastructure, and resources are optimized and used efficiently in addressing transportation safety and mobility. All who use our vast system, either commuting, traveling through, or transporting goods and services across the state, benefit from the real-time information streaming from the TMC. This 2019 Annual Report gives us the opportunity to take a look at performance and evaluate how we can keep improving this valuable service."

Andrew Lewis, Director
Office of Traffic Operations
**INCIDENTS**

Incidents are defined as any event on the roadway that affects or can affect normal traffic flow. The TMC is informed of incidents on the roadway through technology, data sources, and various personnel. These incidents are tracked, reported, and monitored by the TMC.

---

**Incidents monitored by TMC**

![Graph showing incidents monitored by TMC from January to December. The graph indicates an average of 3,417 incidents per month.]

---

**Incidents with lane blockage**

![Graph showing incidents with lane blockage from January to December. The graph indicates a total of 600 incidents.]

"Incidents with Lane Blockage" refers to the total number of incidents that resulted in at least one blocked lane of travel."
Incidents are detected by TMC operators through cameras, roadway detection, Waze alerts, or reported to the TMC through responders on the roadway.

**Total Incidents:** 41,012

**Incidents Detected by Camera:** 28%

**Secondary Incidents Reported to the TMC:** 174

**Lane Blocking Incidents:** 4,588

**Incidents by Type**

- Stalled Vehicle: 29,252
- 1 Vehicle Crash: 3,810
- 2 Vehicle Crash: 2,188
- Debris: 1,758
- Slow Traffic: 1,675
- Emergency Vehicles: 730
- 3+ Vehicle Crash: 648
- Flooding: 355
- Towing Operation: 261
- Vehicle Fire: 182
- Wrong Way Driver: 73
- Grass Fire: 31
- Winter Closure: 26
- Standing Water: 15
- Rock Fall: 4

**Incidents by Detection Source**

- Camera: 11,300
- Highway Helper: 10,479
- Waze: 10,083
- Law Enforcement: 6,528
- Maintenance: 1,178
- Other: 819
- DOT Personnel: 264
- Contractor/Construction: 259
- Intelligent Work Zone: 102
Incidents more frequently occur on weekdays versus weekends due to the volume of traffic on the roadway.
Average incident clearance times are calculated by type each month. This table shows the number of incidents which exceed the average clearance time for that type by one standard deviation.

<table>
<thead>
<tr>
<th>Type</th>
<th># Events</th>
<th>Average Duration</th>
<th># Semi</th>
<th># Fatality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grass Fire</td>
<td>3</td>
<td>27 min</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Stalled Vehicle</td>
<td>37</td>
<td>42 min</td>
<td>32</td>
<td>0</td>
</tr>
<tr>
<td>2 Vehicle Crash</td>
<td>78</td>
<td>1 hr 1 m</td>
<td>56</td>
<td>29</td>
</tr>
<tr>
<td>Slow Traffic</td>
<td>4</td>
<td>1 hr 2 m</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3+ Vehicle Crash</td>
<td>41</td>
<td>1 hr 3 m</td>
<td>43</td>
<td>9</td>
</tr>
<tr>
<td>1 Vehicle Crash</td>
<td>88</td>
<td>1 hr 10 m</td>
<td>55</td>
<td>10</td>
</tr>
<tr>
<td>Vehicle Fire</td>
<td>11</td>
<td>1 hr 10 m</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Debris</td>
<td>9</td>
<td>1 hr 14 m</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Towing Operation</td>
<td>8</td>
<td>4 hr 59 m</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Winter Closure</td>
<td>3</td>
<td>16 hr 36 m</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Emergency Vehicles</td>
<td>8</td>
<td>17 hr 29 m</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Flooding</td>
<td>27</td>
<td>18 days</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
CRASHES

Crashes are one specific type of incident reported in the "Incident" section. Clearance times are tracked and reported for all incidents as well as crashes separately. Some incident types may have long clearance time durations and therefore crash clearance time is a more appropriate indicator of the impacts of quick clearance initiatives.

Average incident and crash clearance time by district

<table>
<thead>
<tr>
<th>Incident Type</th>
<th>District 1</th>
<th>District 2</th>
<th>District 3</th>
<th>District 4</th>
<th>District 5</th>
<th>District 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Vehicle Crash</td>
<td>1,522</td>
<td>178</td>
<td>155</td>
<td>567</td>
<td>245</td>
<td>1,143</td>
</tr>
<tr>
<td>2 Vehicle Crash</td>
<td>1,079</td>
<td>87</td>
<td>107</td>
<td>229</td>
<td>83</td>
<td>603</td>
</tr>
<tr>
<td>3+ Vehicle Crash</td>
<td>339</td>
<td>30</td>
<td>31</td>
<td>69</td>
<td>11</td>
<td>168</td>
</tr>
<tr>
<td>Debris</td>
<td>674</td>
<td>138</td>
<td>170</td>
<td>166</td>
<td>115</td>
<td>495</td>
</tr>
<tr>
<td>Emergency Vehicles</td>
<td>210</td>
<td>60</td>
<td>91</td>
<td>104</td>
<td>88</td>
<td>177</td>
</tr>
<tr>
<td>Flooding</td>
<td>35</td>
<td>25</td>
<td>82</td>
<td>125</td>
<td>51</td>
<td>37</td>
</tr>
<tr>
<td>Grass Fire</td>
<td>14</td>
<td>0</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Rock Fall</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Slow Traffic</td>
<td>1,037</td>
<td>147</td>
<td>35</td>
<td>183</td>
<td>24</td>
<td>249</td>
</tr>
<tr>
<td>Stalled Vehicle</td>
<td>13,454</td>
<td>644</td>
<td>407</td>
<td>4,508</td>
<td>865</td>
<td>9,374</td>
</tr>
<tr>
<td>Standing Water</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Towing Operation</td>
<td>66</td>
<td>5</td>
<td>9</td>
<td>52</td>
<td>27</td>
<td>102</td>
</tr>
<tr>
<td>Vehicle Fire</td>
<td>73</td>
<td>6</td>
<td>4</td>
<td>28</td>
<td>10</td>
<td>61</td>
</tr>
<tr>
<td>Winter Closure</td>
<td>11</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Wrong Way Driver</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>51</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18,534</strong></td>
<td><strong>1,327</strong></td>
<td><strong>1,098</strong></td>
<td><strong>6,050</strong></td>
<td><strong>1,526</strong></td>
<td><strong>12,473</strong></td>
</tr>
<tr>
<td>% of all Incidents</td>
<td>45%</td>
<td>3%</td>
<td>3%</td>
<td>15%</td>
<td>4%</td>
<td>30%</td>
</tr>
</tbody>
</table>

The total number of incidents reported in Districts 1, 4, and 6 are greater than the other Districts due to additional incident tracking by the Highway Helper program and also additional traffic volumes in those Districts.
These performance measure thresholds were developed through the Joint Operations Policy Statement (JOPS), a collaboration between DOT & DPS.

The crash clearance time begins at the first notification of the crash and ends when the last responder has left the scene. This includes only crashes and not other incident types.

### BY THE NUMBERS

- **232** RURAL CRASHES OVER 120 MINUTES
- **1 hr 5 m** AVERAGE CRASH CLEARANCE TIME
- **6,646** CRASHES MONITORED
- **73** WRONG WAY DRIVER INCIDENTS

---

### Average clearance time for crashes

The graph above shows the average clearance time for crashes per month. The clearance time begins at the first notification of the crash and ends when the last responder has left the scene. This includes only crashes and not other incident types.

### Crashes at 30, 45, 90, and 120 minute thresholds

- **> 2 hrs**
  - Rural: 9
  - Urban: 28
- **> 90 min**
  - Rural: 3
  - Urban: 15
- **> 45 min**
  - Rural: 52
  - Urban: 71
- **> 30 min**
  - Rural: 32
  - Urban: 53
- **< 30 min**
  - Rural: 65
  - Urban: 125
The TMC dispatches and tracks all Highway Helper activity. This section contains statistical and operational data of Highway Helper activities. A new route in Davenport was added in 2019. The data herein represents the new service that began in September 2019.

### Types of incidents responses

- **Stalled Vehicle**: 14,418
- **2 Vehicle Crash**: 870
- **1 Vehicle Crash**: 664
- **Debris**: 564
- **3+ Vehicle Crash**: 261
- **Emergency Vehicles**: 50
- **Vehicle Fire**: 45
- **Slow Traffic**: 37
- **Grass Fire**: 12
- **Towing Operation**: 10
- **Wrong Way Driver**: 5
- **Standing Water**: 1
- **Flooding**: 1

### Average duration of response

Average duration of response per month: 36 minutes
The most Highway Helper responses during 2019 occurred in October.

<table>
<thead>
<tr>
<th>Services Performed for the Motorist</th>
<th>By the Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>564 Debris Removal Responses</td>
<td>40% Responses Occurred During Off Peak Hours</td>
</tr>
<tr>
<td>16,938 Highway Helper Responses</td>
<td>5,707 Services Performed for the Motorist (Fuel, Flat Tire, Jump Start, Directions, Etc)</td>
</tr>
</tbody>
</table>

Responses by month

<table>
<thead>
<tr>
<th>Month</th>
<th>Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>1,412</td>
</tr>
<tr>
<td>February</td>
<td>1,200</td>
</tr>
<tr>
<td>March</td>
<td>1,350</td>
</tr>
<tr>
<td>April</td>
<td>1,400</td>
</tr>
<tr>
<td>May</td>
<td>1,450</td>
</tr>
<tr>
<td>June</td>
<td>1,500</td>
</tr>
<tr>
<td>July</td>
<td>1,550</td>
</tr>
<tr>
<td>August</td>
<td>1,600</td>
</tr>
<tr>
<td>September</td>
<td>1,650</td>
</tr>
<tr>
<td>October</td>
<td>1,700</td>
</tr>
<tr>
<td>November</td>
<td>1,750</td>
</tr>
<tr>
<td>December</td>
<td>1,800</td>
</tr>
</tbody>
</table>

Responses by time of day

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM Peak</td>
<td>5,483 (32.4%)</td>
</tr>
<tr>
<td>Off Peak</td>
<td>6,825 (40.3%)</td>
</tr>
<tr>
<td>PM Peak</td>
<td>4,630 (27.3%)</td>
</tr>
</tbody>
</table>

Legend: AM Peak (6-9am), Off Peak (9am-3pm, 6pm-6am), PM Peak (3-6pm)
Highway Helper trucks are dispatched in four operational areas from 6 a.m. to 7 p.m., Monday through Friday, including some holidays and special events.
The Highway Helper service operates twelve months a year with higher responses during winter months. Additional service is provided for special events, such as the Iowa State Fair.
The duration of the Highway Helper response is determined by tracking the time between when the Highway Helper truck arrived on scene to the time it departed.
Highway Helpers assist with lane blockages to achieve faster clearance times and protect responders.

**Responses to crashes only by operational area**

- Cedar Rapids: 993 responses
- Council Bluffs: 532 responses
- Davenport: 202 responses
- Des Moines: 68 responses

**Responses to lane blockage incidents**

Highway Helpers assist with lane blockages to achieve faster clearance times and protect responders.

**By the Numbers**

- 1,206 responses to lane blocking incidents
- 37 min average response duration
- 85% responses to stalled vehicles
- 1,795 responses to crashes

**By Operational Area**

- Cedar Rapids: 993 responses
- Council Bluffs: 532 responses
- Davenport: 202 responses
- Des Moines: 68 responses

**Average response duration**

- 37 minutes
Incidents involving freight transportation are specifically tracked as they are reported to the TMC. This section contains statistical and operational data regarding freight.

Types of incidents involving a semi

- 8,627 Stalled Vehicle
- 667 1 Vehicle Crash
- 439 2 Vehicle Crash
- 159 Towing Operation
- 109 3+ Vehicle Crash
- 68 Vehicle Fire
- 22 Emergency Vehicles
- 5 Debris
- 2 Slow Traffic
- 1 Wrong Way Driver
- 1 Flooding

Number of vehicles involved in semi related crashes

- 678 (34.8%) 3+ Vehicle Crash
- 881 (45.3%) 2 Vehicle Crash
- 387 (19.9%) 1 Vehicle Crash

Incidents involving a semi have the potential to be more impactful on traffic since they are a larger vehicle which may take additional time to clear. The TMC specifically tracks when an incident or crash involves a semi to better understand these traffic impacts.
AVERAGE CLEARANCE TIME FOR LANE BLOCKING INCIDENTS INVOLVING A TRACTOR TRAILER

BY THE NUMBERS

210 RAIL INCIDENTS

129 SEMI ROLLOVERS

23 HAZMAT SPILLS

Freight incidents by time of day

- AM Peak (6-9am): 2,116 (21%)
- Off Peak (9am-3pm, 6pm-6am): 5,774 (57.2%)
- PM Peak (3-6pm): 2,210 (21.9%)

Freight incidents by month

- 842 incidents per month on average
Work zone activity is tracked by the TMC for each change in a work zone, not a project as a whole. An event is logged into the system for each work zone configuration change or lane closure on a project.

Work zone project days by district

The data is used by the TMC to provide messages on the DMS, manage work zone contact information, and situational awareness.

Number of work zone project days by month
Construction slowdowns are tracked and measured by vehicle detection in intelligent work zones.

By the Numbers

- **239** Work Zone Incidents
- **858** Slowdowns Detected
- **31,744** Total Roadwork Project Days

**Intelligent Work Zones**

- **32** Work Zone Incidents
- **239** Slowdowns Detected
- **858** Total Roadwork Project Days

**Work Zone Crashes by District**

*As reported to the TMC*

**Construction Slowdowns**

Construction slowdowns are tracked and measured by vehicle detection in intelligent work zones.
WEATHER

Weather can have a serious impact on the safety and mobility of roadway users. The TMC responds to dynamic conditions by using technology and communication tools to assist partners in restoring the transportation system to normal conditions.

Road conditions by type

This chart displays the percentage of time during the month over all segments where adverse winter weather conditions were reported.

Snow plow hits per district

<table>
<thead>
<tr>
<th>District</th>
<th>Number of Hits</th>
</tr>
</thead>
<tbody>
<tr>
<td>District 1</td>
<td></td>
</tr>
<tr>
<td>District 2</td>
<td></td>
</tr>
<tr>
<td>District 3</td>
<td></td>
</tr>
<tr>
<td>District 4</td>
<td></td>
</tr>
<tr>
<td>District 5</td>
<td></td>
</tr>
<tr>
<td>District 6</td>
<td></td>
</tr>
</tbody>
</table>
These winter events were determined based on a Winter Warning or Advisory where at least one crash has been reported to the TMC within the affected counties.

**BY THE NUMBERS**

- **51** Winter Events
- **285** Flooding Events
- **601** Incidents during Winter Events
- **18 days** Average Duration of Flooding Closures

**Winter events**

**Flooding events resulting in a lane closure**

(Duration categories: < 1 day, > 1 day, > 2 days, > 4 days, > 10 days, > 15 days, > 20 days)
Communication technologies play a crucial role in traffic operations. Effective traffic management, largely stemming from the TMC, relies on efficient communications and information systems to provide accessible guidance to the traveling public.

Visits to 511 website

![Bar chart showing visits to 511 website per month with an average of 723 visits per month.]

511 mobile application downloads

![Bar chart showing mobile application downloads per month with a significant peak in February.]
The information tracked by the TMC is shared through multiple reports with internal and external stakeholders.

**BY THE NUMBERS**

- **160,624** 511 APP DOWNLOADS
- **236,910** PHONE CALLS TO 511
- **8,675,489** VISITS TO 511 TRAVELER INFORMATION WEBSITE (ALL VERSIONS)
- **2,212** TMC DATA REPORTS GENERATED

---

**511 phone calls by month**

- January: [Graph showing call volume]
- February: [Graph showing call volume]
- March: [Graph showing call volume]
- April: [Graph showing call volume]
- May: [Graph showing call volume]
- June: [Graph showing call volume]
- July: [Graph showing call volume]
- August: [Graph showing call volume]
- September: [Graph showing call volume]
- October: [Graph showing call volume]
- November: [Graph showing call volume]
- December: [Graph showing call volume]

**TMC data reports generated by type**

- Claims: 365
- APS Alert: 365
- Work Zone Slowdown: 312
- District Incidents: 312
- Construction: 312
- Performance Measurements: 216
- Active Flooding: 64
- Roadwork Enforcement Request: 52
- Restriction: 52
- Pink Sign Pilot: 52
- Panic Button: 31
- Radio Issues: 28
- Work Zone Measurement: 22
- Flood: 16
- Railroad: 12
- Employee Crash: 1
Dynamic Message Signs (DMS) are operated by the TMC and the message content, duration and types are tracked.

This chart provides an overview of the number of unique DMS messages posted for different incident types utilized by the TMC.

### DMS messages by type

- Closure: 28.8%
- Travel Times: 26.8%
- Monday Message: 2.8%
- Weather: 2.7%
- Incident: 38.0%
- Special Event: 1.0%

### DMS messages by incident type

<table>
<thead>
<tr>
<th>Incident Type</th>
<th># Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crash</td>
<td>1,683</td>
</tr>
<tr>
<td>Slow Traffic</td>
<td>959</td>
</tr>
<tr>
<td>Stalled Vehicle</td>
<td>594</td>
</tr>
<tr>
<td>Debris</td>
<td>89</td>
</tr>
<tr>
<td>Vehicle Fire</td>
<td>77</td>
</tr>
<tr>
<td>Emergency Vehicles</td>
<td>63</td>
</tr>
<tr>
<td>Wrong Way Driver</td>
<td>52</td>
</tr>
<tr>
<td>Towing Operation</td>
<td>37</td>
</tr>
<tr>
<td>Grass Fire</td>
<td>3</td>
</tr>
<tr>
<td>Flooding</td>
<td>1</td>
</tr>
<tr>
<td>Standing Water</td>
<td>1</td>
</tr>
</tbody>
</table>
Emergency Incident Notifications (EINS) are e-mail alerts sent by the TMC for more impactful events on the transportation system.

**By the Numbers**

- 3,559 Incidents utilizing DMS Messages
- 23,959 Email Notifications Sent
- 38% Unique DMS Messages Related to Incidents
- 79% Email Notifications Sent on Weekdays

### Email Notifications sent by district

<table>
<thead>
<tr>
<th>District</th>
<th>Notifications Sent</th>
</tr>
</thead>
<tbody>
<tr>
<td>District 1</td>
<td>10,000</td>
</tr>
<tr>
<td>District 2</td>
<td>1,000</td>
</tr>
<tr>
<td>District 3</td>
<td>1,000</td>
</tr>
<tr>
<td>District 4</td>
<td>2,000</td>
</tr>
<tr>
<td>District 5</td>
<td>1,000</td>
</tr>
<tr>
<td>District 6</td>
<td>6,000</td>
</tr>
</tbody>
</table>

### Email Notifications sent by weekday

- Sunday: 2,000 Notifications Sent
- Monday: 4,000 Notifications Sent
- Tuesday: 3,000 Notifications Sent
- Wednesday: 4,000 Notifications Sent
- Thursday: 3,000 Notifications Sent
- Friday: 2,000 Notifications Sent
- Saturday: 1,000 Notifications Sent