2021
TRAFFIC MANAGEMENT CENTER
Annual Report
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<td>6</td>
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</table>
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 2021 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 2021 Snapshot.

### 2021 SNAPSHOT

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>2021 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCIDENTS</td>
<td>Number of incidents monitored by Iowa’s Statewide TMC</td>
<td>35,324</td>
</tr>
<tr>
<td>CRASHES</td>
<td>Average crash clearance time</td>
<td>1 hr 13 m</td>
</tr>
<tr>
<td>HIGHWAY HELPER</td>
<td>Number of responses provided by Highway Helpers</td>
<td>15,363</td>
</tr>
<tr>
<td>FREIGHT</td>
<td>Average time to clear a lane blocking incident involving a tractor trailer</td>
<td>2 hr 29 m</td>
</tr>
<tr>
<td>WORK ZONES</td>
<td>Total work zone incidents</td>
<td>61</td>
</tr>
<tr>
<td>WEATHER</td>
<td>Total flooding events</td>
<td>10</td>
</tr>
<tr>
<td>COMMUNICATION</td>
<td>Total Emergency Incident Notification (EIN) email notifications sent</td>
<td>18,635</td>
</tr>
</tbody>
</table>

"Iowa’s Statewide TMC continues to be a leader in the state’s transportation safety and mobility efforts. With Iowa still adjusting to the mobility changes resulting from COVID-19 disruptions, the operational performance data collected throughout 2021 allows valuable insight to our evolving transportation system needs."

Andrew Lewis, Director
Traffic Operations Bureau
**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.

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**Incidents monitored by TMC**

- **January:** 2,500 incidents
- **February:** 2,800 incidents
- **March:** 2,400 incidents
- **April:** 2,100 incidents
- **May:** 2,600 incidents
- **June:** 2,800 incidents
- **July:** 3,000 incidents
- **August:** 2,900 incidents
- **September:** 2,700 incidents
- **October:** 2,600 incidents
- **November:** 2,800 incidents
- **December:** 3,100 incidents

---

"Incidents with Lane Blockage" refers to the total number of incidents that resulted in at least one blocked lane of travel.

- **January:** 400 incidents
- **February:** 450 incidents
- **March:** 200 incidents
- **April:** 300 incidents
- **May:** 350 incidents
- **June:** 400 incidents
- **July:** 380 incidents
- **August:** 320 incidents
- **September:** 340 incidents
- **October:** 280 incidents
- **November:** 300 incidents
- **December:** 360 incidents
Incidents are detected by TMC operators through cameras, roadway detection, Waze alerts, or reported to the TMC through responders on the roadway.

**Total Incidents:** 35,324

**Incidents Detected by Camera:** 17%

**Lane Blocking Incidents:** 3,786

**Secondary Incidents Reported to the TMC:** 56

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### Incidents by Type

- **Stalled Vehicle:** 26,999
- **Debris:** 2,584
- **1 Vehicle Crash:** 2,211
- **2 Vehicle Crash:** 1,437
- **Emergency Vehicles:** 514
- **Slow Traffic:** 496
- **3+ Vehicle Crash:** 338
- **Towing Operation:** 335
- **Vehicle Fire:** 167
- **Wrong Way Driver:** 76
- **Grass Fire:** 54
- **Standing Water:** 25
- **Tow Ban:** 20
- **Flooding:** 13
- **Winter Closure:** 1

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### Incidents by Detection Source

- **Highway Helper:** 13,137
- **Waze:** 8,822
- **Camera:** 6,054
- **Law Enforcement:** 5,672
- **Other:** 543
- **DOT Personnel:** 525
- **Maintenance:** 510
- **Contractor/Construction:** 37
- **Traffic Vision:** 24
Incidents more frequently occur on weekdays versus weekends due to the volume of traffic on the roadway.

- **Incidents monitored during peak hours**
  - AM Peak (6-9am): 9,595 (27.2%)
  - Off Peak (9am-3pm, 6pm-6am): 18,058 (51.1%)
  - PM Peak (3-6pm): 7,671 (21.7%)

- **Incidents by day of the week**
  - Sunday: 2,000
  - Monday: 5,000
  - Tuesday: 5,000
  - Wednesday: 6,000
  - Thursday: 5,000
  - Friday: 6,000
  - Saturday: 2,000
The incident clearance time begins at the first notification of the incident and ends when the last responder has left the scene. This includes all incident types such as stalled vehicles, crashes, flooding, etc...

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.

### Incidents with Excessive Clearance Times

<table>
<thead>
<tr>
<th>Type</th>
<th># Events</th>
<th>Average Duration</th>
<th># Semi</th>
<th># Fatality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wrong Way Driver</td>
<td>1</td>
<td>10 min</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Grass Fire</td>
<td>3</td>
<td>33 min</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Debris</td>
<td>8</td>
<td>36 min</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Stalled Vehicle</td>
<td>26</td>
<td>48 min</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Slow Traffic</td>
<td>1</td>
<td>1 hr 6 min</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2 Vehicle Crash</td>
<td>74</td>
<td>1 hr 9 min</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>3+ Vehicle Crash</td>
<td>11</td>
<td>1 hr 15 min</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>1 Vehicle Crash</td>
<td>74</td>
<td>1 hr 17 min</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Vehicle Fire</td>
<td>10</td>
<td>1 hr 25 min</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Towing Operation</td>
<td>28</td>
<td>3 hr 12 min</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Flooding</td>
<td>2</td>
<td>6 hr 31 min</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Emergency Vehicles</td>
<td>3</td>
<td>7 hr 9 min</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Standing Water</td>
<td>3</td>
<td>8 hr 28 min</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Incidents By The Numbers

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5,629 INCIDENTS OCCURRED ON WEEKENDS</td>
<td>1 hr 40 m AVERAGE INCIDENT CLEARANCE TIME</td>
</tr>
<tr>
<td>18,058 OFF PEAK INCIDENTS</td>
<td>244 INCIDENTS EXCEEDING THE CLEARANCE TIME STANDARD DEVIATION</td>
</tr>
</tbody>
</table>

### Average clearances times for incidents

The graph shows the average clearance times for incidents by month. The average clearance time for each type is shown in the legend. The incident clearance time begins at the first notification of the incident and ends when the last responder has left the scene. This includes all incident types such as stalled vehicles, crashes, flooding, etc...
### Average incident and crash clearance time by district

![Graph showing clearance times by district]

### Incident type by district

<table>
<thead>
<tr>
<th>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>805</td>
<td>119</td>
<td>130</td>
<td>377</td>
<td>174</td>
<td>606</td>
</tr>
<tr>
<td>2 Vehicle Crash</td>
<td>676</td>
<td>70</td>
<td>60</td>
<td>140</td>
<td>101</td>
<td>390</td>
</tr>
<tr>
<td>3+ Vehicle Crash</td>
<td>178</td>
<td>12</td>
<td>18</td>
<td>35</td>
<td>8</td>
<td>87</td>
</tr>
<tr>
<td>Debris</td>
<td>820</td>
<td>128</td>
<td>149</td>
<td>684</td>
<td>98</td>
<td>705</td>
</tr>
<tr>
<td>Emergency Vehicles</td>
<td>215</td>
<td>31</td>
<td>32</td>
<td>56</td>
<td>47</td>
<td>133</td>
</tr>
<tr>
<td>Flooding</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Grass Fire</td>
<td>17</td>
<td>4</td>
<td>3</td>
<td>8</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>Slow Traffic</td>
<td>275</td>
<td>3</td>
<td>9</td>
<td>65</td>
<td>9</td>
<td>135</td>
</tr>
<tr>
<td>Stalled Vehicle</td>
<td>11,643</td>
<td>407</td>
<td>369</td>
<td>3,611</td>
<td>578</td>
<td>10,391</td>
</tr>
<tr>
<td>Standing Water</td>
<td>2</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Tow Ban</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Towing Operation</td>
<td>91</td>
<td>3</td>
<td>5</td>
<td>91</td>
<td>11</td>
<td>134</td>
</tr>
<tr>
<td>Vehicle Fire</td>
<td>58</td>
<td>10</td>
<td>7</td>
<td>30</td>
<td>12</td>
<td>50</td>
</tr>
<tr>
<td>Winter Closure</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Wrong Way Driver</td>
<td>9</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>59</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14,798</strong></td>
<td><strong>800</strong></td>
<td><strong>787</strong></td>
<td><strong>5,105</strong></td>
<td><strong>1,054</strong></td>
<td><strong>12,726</strong></td>
</tr>
<tr>
<td><strong>% of all Incidents</strong></td>
<td><strong>42%</strong></td>
<td><strong>2%</strong></td>
<td><strong>2%</strong></td>
<td><strong>14%</strong></td>
<td><strong>3%</strong></td>
<td><strong>36%</strong></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**

212
RURAL CRASHES
OVER 120 MINUTES

1 hr 13 m
AVERAGE CRASH CLEARANCE TIME

3,986
CRASHES MONITORED

76
WRONG WAY DRIVER INCIDENTS

**3,986 CRASHES MONITORED**

**3,986 CRASHES MONITORED**

**212 RURAL CRASHES OVER 120 MINUTES**

**1 hr 13 m AVERAGE CRASH CLEARANCE TIME**

**76 WRONG WAY DRIVER INCIDENTS**

**Average clearance time for crashes**

![Graph showing average clearance time by month.]

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

<table>
<thead>
<tr>
<th>Time Threshold</th>
<th>Rural</th>
<th>Urban</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 2 hrs</td>
<td>56</td>
<td></td>
<td>212</td>
</tr>
<tr>
<td>&gt; 90 min</td>
<td>34</td>
<td>97</td>
<td>131</td>
</tr>
<tr>
<td>&gt; 45 min</td>
<td></td>
<td>120</td>
<td>186</td>
</tr>
<tr>
<td>&gt; 30 min</td>
<td>178</td>
<td></td>
<td>215</td>
</tr>
<tr>
<td>&lt; 30 min</td>
<td>354</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The TMC dispatches and tracks all Highway Helper activity. This section contains statistical and operational data of Highway Helper activities.

**Types of incidents responses**

- Stalled Vehicle: 13,010
- Debris: 1,134
- 2 Vehicle Crash: 484
- 1 Vehicle Crash: 410
- 3+ Vehicle Crash: 135
- Emergency Vehicles: 54
- Vehicle Fire: 46
- Towing Operation: 42
- Slow Traffic: 27
- Grass Fire: 15
- Wrong Way Driver: 3
- Standing Water: 3

**Average duration of response**

- Average duration: 46 minutes

This chart provides an overview of the number and types of Highway Helper responses.
The most Highway Helper responses during 2021 occurred in December.

**BY THE NUMBERS**

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGHWAY HELPER RESPONSES</td>
<td>15,363</td>
</tr>
<tr>
<td>DEBRIS REMOVAL RESPONSES</td>
<td>1,134</td>
</tr>
<tr>
<td>SERVICES PERFORMED FOR THE MOTORIST</td>
<td>2,648</td>
</tr>
</tbody>
</table>

47% RESPONSES OCCURRED DURING OFF PEAK HOURS

**Responses by month**

- January: 1,200
- February: 1,200
- March: 1,200
- April: 1,200
- May: 1,200
- June: 1,200
- July: 1,200
- August: 1,200
- September: 1,200
- October: 1,200
- November: 1,200
- December: 1,200

**Responses by time of day**

- AM Peak (6-9am): 7,205 (46.9%)
- Off Peak (9am-3pm, 6pm-6am): 4,041 (26.3%)
- PM Peak (3-6pm): 4,117 (26.8%)
Highway Helper trucks are dispatched in four operational areas from 5am to 9pm Monday through Friday and 10am to 6pm Saturday in Des Moines, 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 departed.
Highway Helpers assist with lane blockages to achieve faster clearance times and protect responders.

**Responses to crashes only by operational area**

- **Cedar Rapids**: 80 responses
- **Council Bluffs**: 19 responses
- **Davenport**: 36 responses
- **Des Moines**: 171 responses

**Responses to lane blockage incidents**

- Cedar Rapids
- Council Bluffs
- Davenport
- Des Moines

- **Average response duration**: 47 min
- **85% responses to stalled vehicles**
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**

- 304 2 Vehicle Crash
- 194 Towing Operation
- 67 3+ Vehicle Crash
- 49 Vehicle Fire
- 15 Emergency Vehicles
- 11 Debris
- 1 Slow Traffic
- 1 Grass Fire
- 360 1 Vehicle Crash

**Number of vehicles involved in semi related crashes**

- 626 (49.5%) 2 Vehicle Crash
- 380 (30%) 3+ Vehicle Crash
- 259 (20.5%) 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

187 RAIL INCIDENTS
121 SEMI ROLLOVERS
18 HAZMAT SPILLS

1 hr 37 m

Freight incidents by time of day

AM Peak (6-9am)
Off Peak (9am-3pm, 6pm-6am)
PM Peak (3-6pm)

591 (59%)
214 (21.4%)
197 (19.7%)

Freight incidents by month

84 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 events 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 events by month

The data is used by the TMC to provide messages on the DMS, manage work zone contact information, and situational awareness.
There were more work zone crashes reported in District 6 due to the I-80/380 construction project.

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

**Work zone crashes by district**

*As reported to the TMC*

**Construction slowdowns**

<table>
<thead>
<tr>
<th>District</th>
<th>Total Roadwork Events</th>
<th>Work Zone Incidents</th>
<th>Slowdowns Detected</th>
</tr>
</thead>
<tbody>
<tr>
<td>District 1</td>
<td>5,191</td>
<td>61</td>
<td>286</td>
</tr>
<tr>
<td>District 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>District 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>District 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>District 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>District 6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**By the Numbers**

- 61 Work Zone Incidents
- 286 Slowdowns Detected
- 5,191 Total Roadwork Events
- 39 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.

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

Road conditions by type

Snow plow hits per district

- District 1
- District 2
- District 3
- District 4
- District 5
- District 6

Number of Hits
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

<table>
<thead>
<tr>
<th>Winter Events</th>
<th>Flooding Events</th>
<th>Average Duration of Flooding Closures</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>10</td>
<td>6 hr 31 m</td>
</tr>
</tbody>
</table>

335 Incidents During Winter Events

Winter events

Flooding events resulting in a lane closure

![Map showing flooding events](image-url)
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

Two separate 511 mobile applications are available for download. The Highway app includes traffic events, speeds, cameras, and winter road conditions while the Trucker app focuses on data pertinent to truck travel, such as weigh station locations and restrictions.
The information tracked by the TMC is shared through multiple reports with internal and external stakeholders.

### By the Numbers

- **3,568,104 VISITS TO 511 TRAVELER INFORMATION WEBSITE (ALL VERSIONS)**
- **104,781 PHONE CALLS TO 511**
- **3,162 TMC DATA REPORTS GENERATED**
- **511 APP DOWNLOADS**
  - **511 APP**
  - **75,787**

### 511 Phone Calls by Month

- January: 26,500 calls
- February: 9,700 calls
- March: 8,000 calls
- April: 5,000 calls
- May: 8,000 calls
- June: 8,000 calls
- July: 8,000 calls
- August: 8,000 calls
- September: 8,000 calls
- October: 8,000 calls
- November: 8,000 calls
- December: 8,732 calls on average

### TMC Data Reports Generated by Type

- Highway Helper Export: 364
- Claims: 364
- APS Alerts: 350
- Stalled Vehicles: 312
- Work Zone Slowdowns: 312
- District Incidents: 312
- Construction: 312
- TMC Performance Measurements: 206
- COVID-19 Test Site PDMS Incidents: 197
- Roadwork Enforcement Request(s): 52
- Restriction: 52
- Radio Issues: 52
- Quality Check Incidents: 52
- Pink Sign Pilot: 52
- Dashboard Issues: 52
- Panic Button Test Results: 21
- Sensor Status: 20
- Work Zone Measurements: 16
- Railroad: 12

The information tracked by the TMC is shared through multiple reports with internal and external stakeholders.
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.
Emergency Incident Notifications (EINS) are email alerts sent by the TMC for more impactful events on the transportation system.

**By the Numbers**

- **4,066** Incidents utilizing DMS messages
- **18,635** Email notifications sent
- **57%** Unique DMS messages related to incidents
- **80%** Email notifications sent on weekdays

### Email Notifications Sent by District

![Bar chart showing email notifications sent by district](chart1)

### Email Notifications Sent by Weekday

![Bar chart showing email notifications sent by weekday](chart2)