

2021

TRAFFIC MANAGEMENT CENTER

Annual Report



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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 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

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

"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."

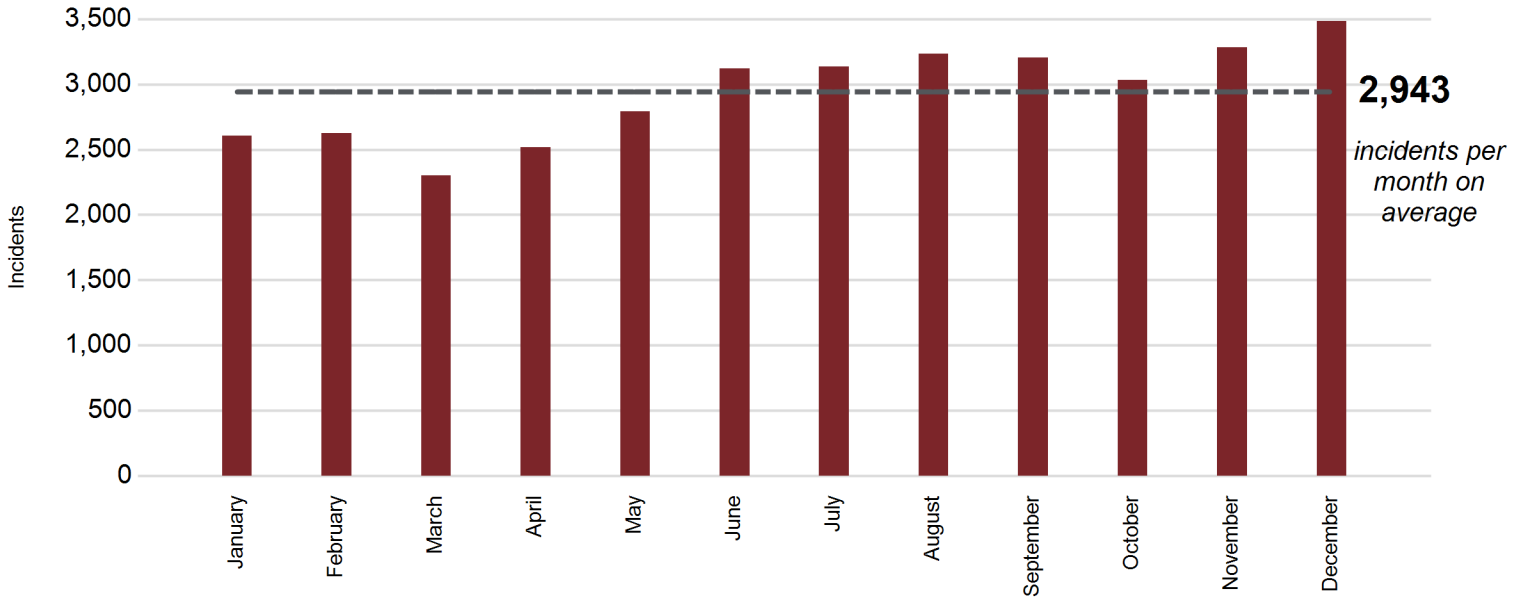
*Andrew Lewis, Director
Traffic Operations Bureau*



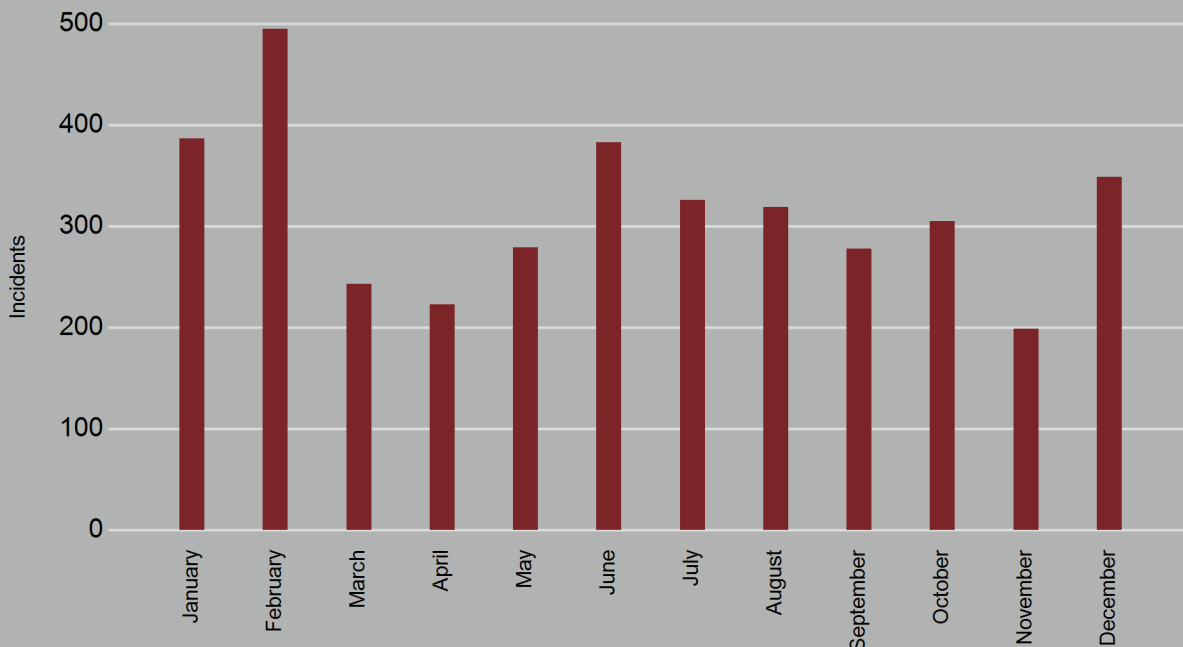
INCIDENTS

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.

Incidents monitored by TMC



Incidents with lane blockage



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

BY THE NUMBERS

35,324

TOTAL INCIDENTS

17%

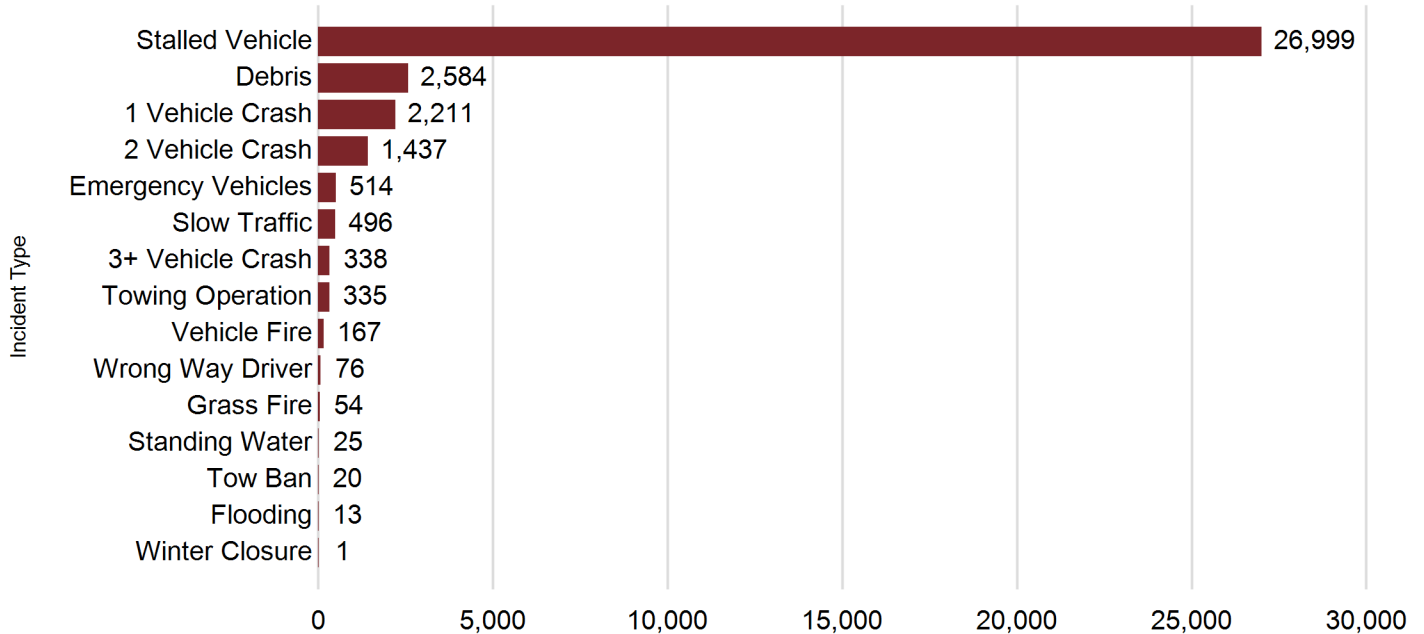
INCIDENTS DETECTED BY CAMERA

3,786

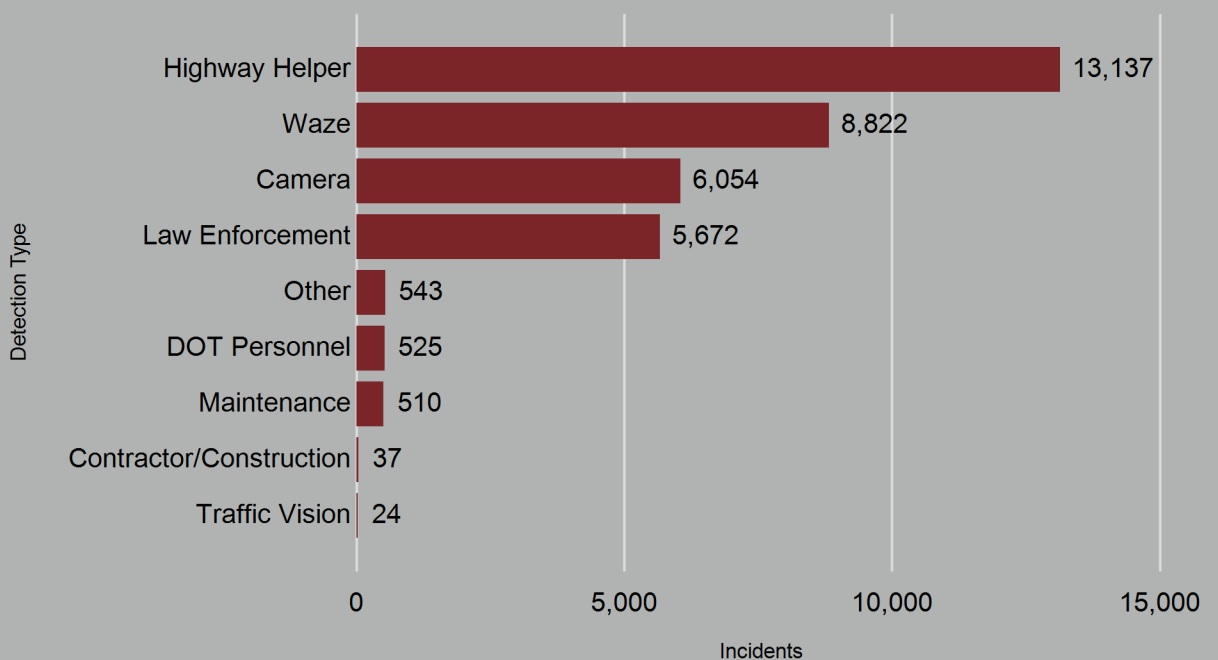
LANE BLOCKING INCIDENTS

56 SECONDARY INCIDENTS REPORTED TO THE TMC

Incidents by type



Incidents by detection source

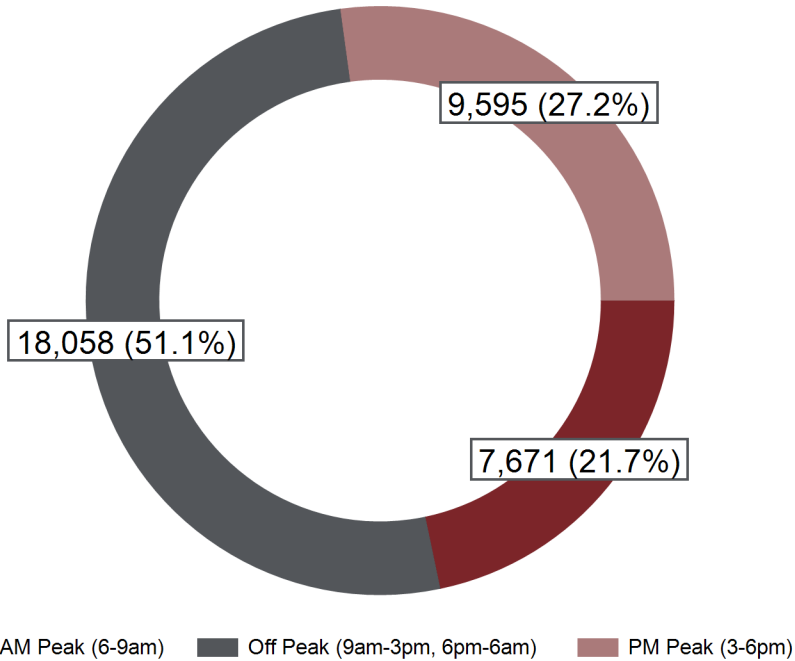


Incidents are detected by TMC operators through cameras, roadway detection, Waze alerts, or reported to the TMC through responders on the roadway.

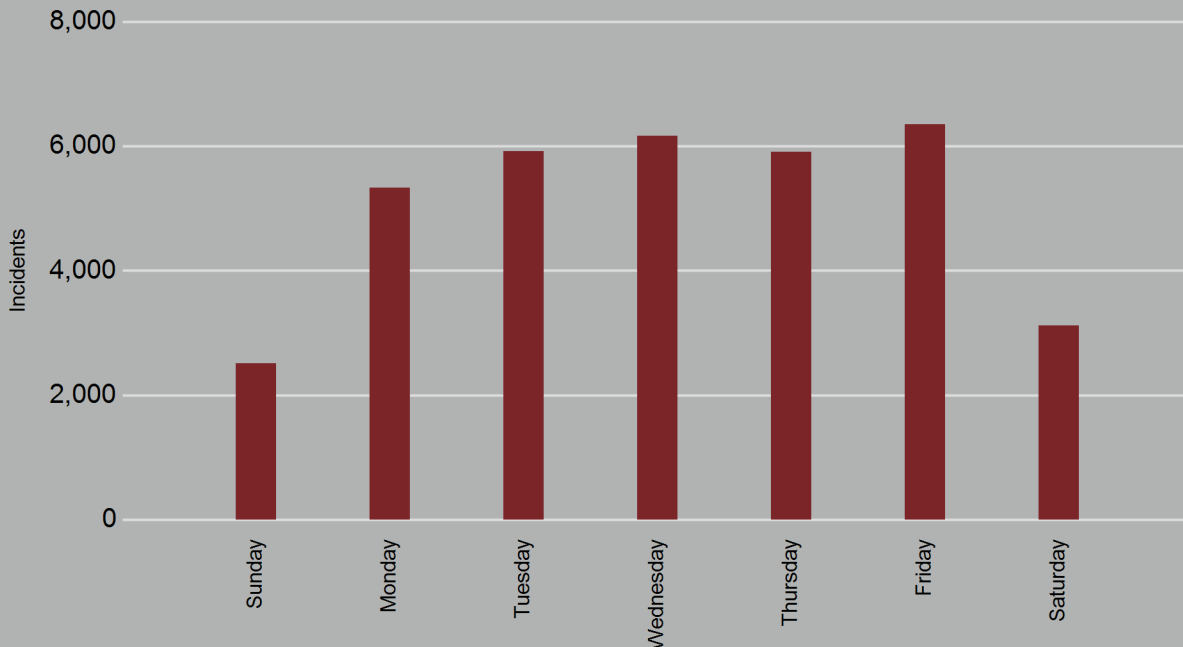


INCIDENTS

Incidents monitored during peak hours



Incidents by day of the week



Incidents more frequently occur on weekdays versus weekends due to the volume of traffic on the roadway.

5,629

INCIDENTS OCCURRED ON WEEKENDS

1 hr 40 m

AVERAGE INCIDENT CLEARANCE TIME

244

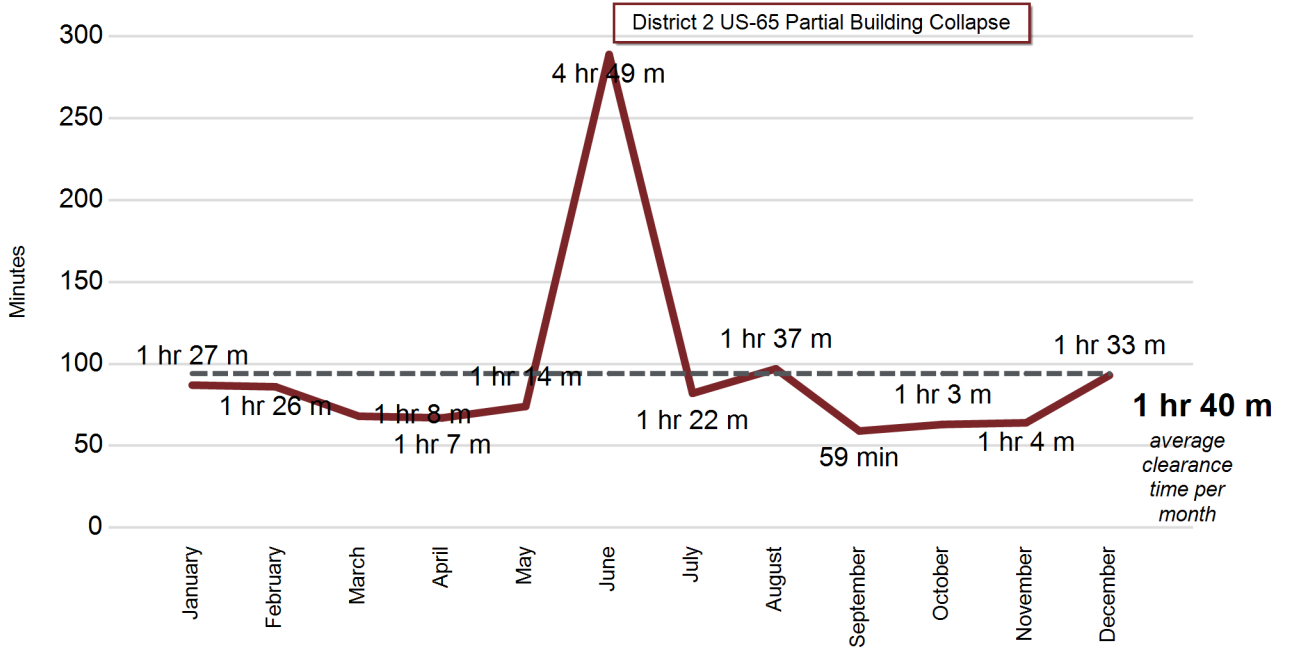
INCIDENTS EXCEEDING THE CLEARANCE TIME STANDARD DEVIATION

18,058 OFF PEAK INCIDENTS

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.

Average clearance times for incidents



Incidents with excessive clearance times

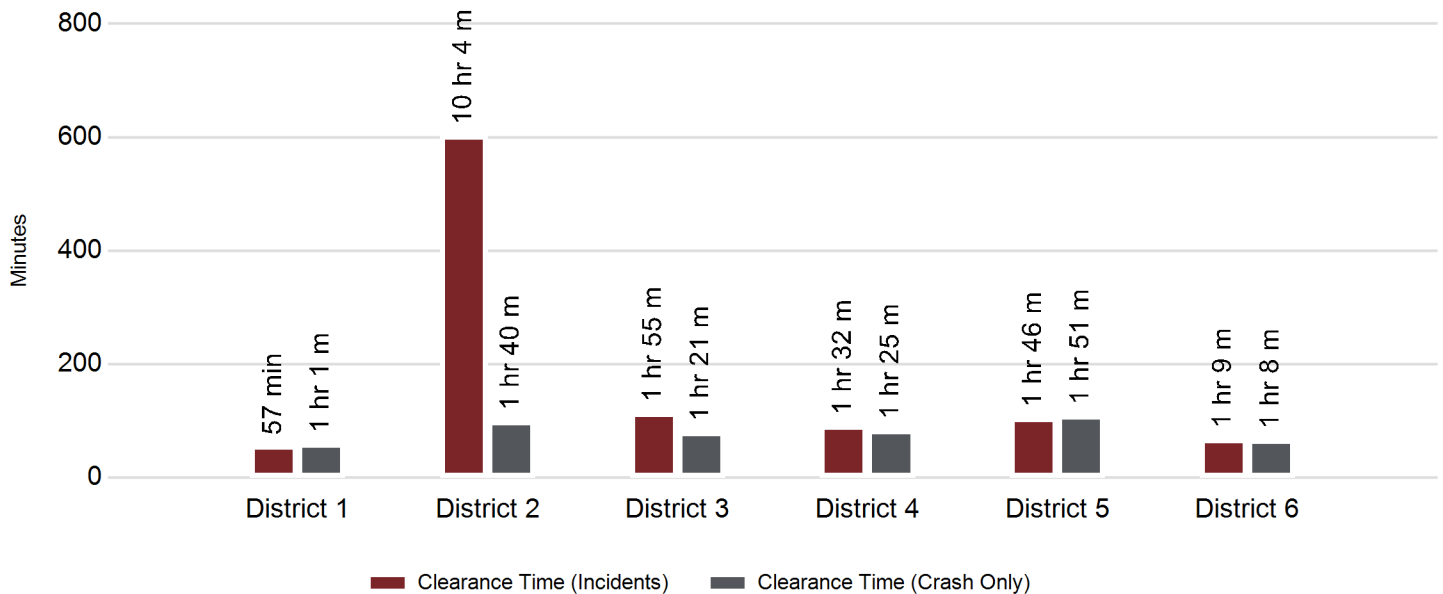
Type	# Events	Average Duration	# Semi	# Fatality
Wrong Way Driver	1	10 min	0	0
Grass Fire	3	33 min	0	0
Debris	8	36 min	0	0
Stalled Vehicle	26	48 min	0	0
Slow Traffic	1	1 hr 6 m	0	0
2 Vehicle Crash	74	1 hr 9 m	0	21
3+ Vehicle Crash	11	1 hr 15 m	3	0
1 Vehicle Crash	74	1 hr 17 m	4	3
Vehicle Fire	10	1 hr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



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



Incident type by district

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

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.

212

RURAL CRASHES
OVER 120 MINUTES

1 hr 13 m

AVERAGE CRASH
CLEARANCE TIME

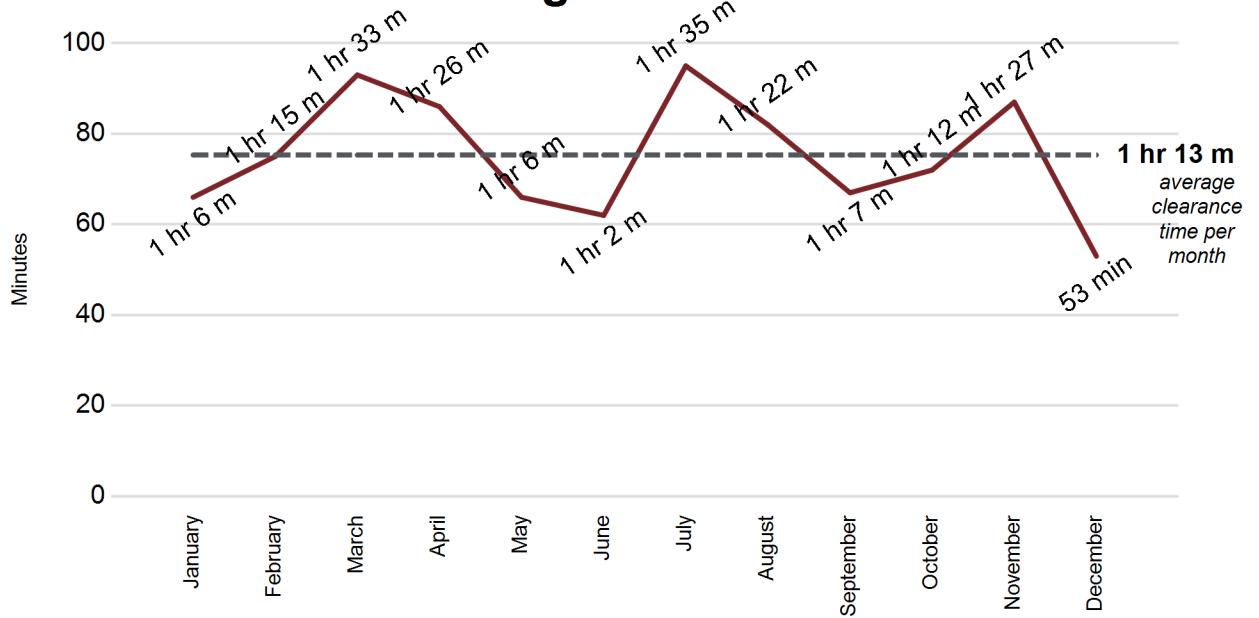
3,986

CRASHES
MONITORED

76 WRONG WAY DRIVER INCIDENTS

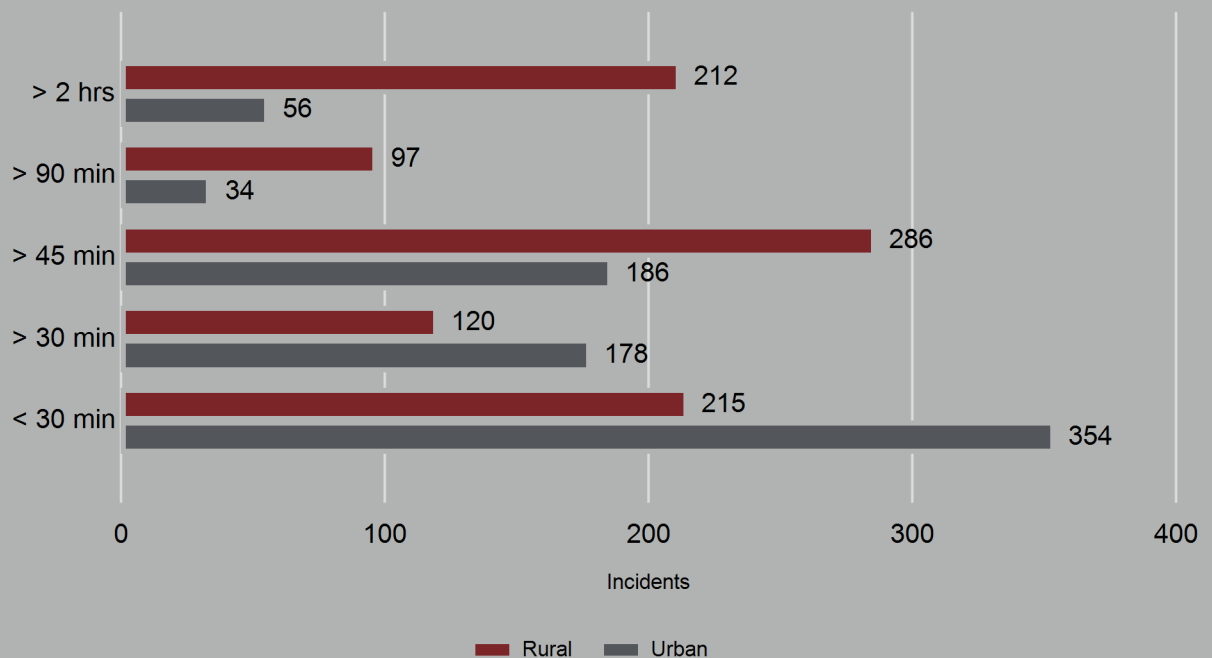
The crash clearance time begins at the first notification of the crash and ends when the last responder has left the scene. This includes only crashes and not other incident types.

Average clearance time for crashes



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

These performance measure thresholds were developed through the Joint Operations Policy Statement (JOPS), a collaboration between DOT & DPS.

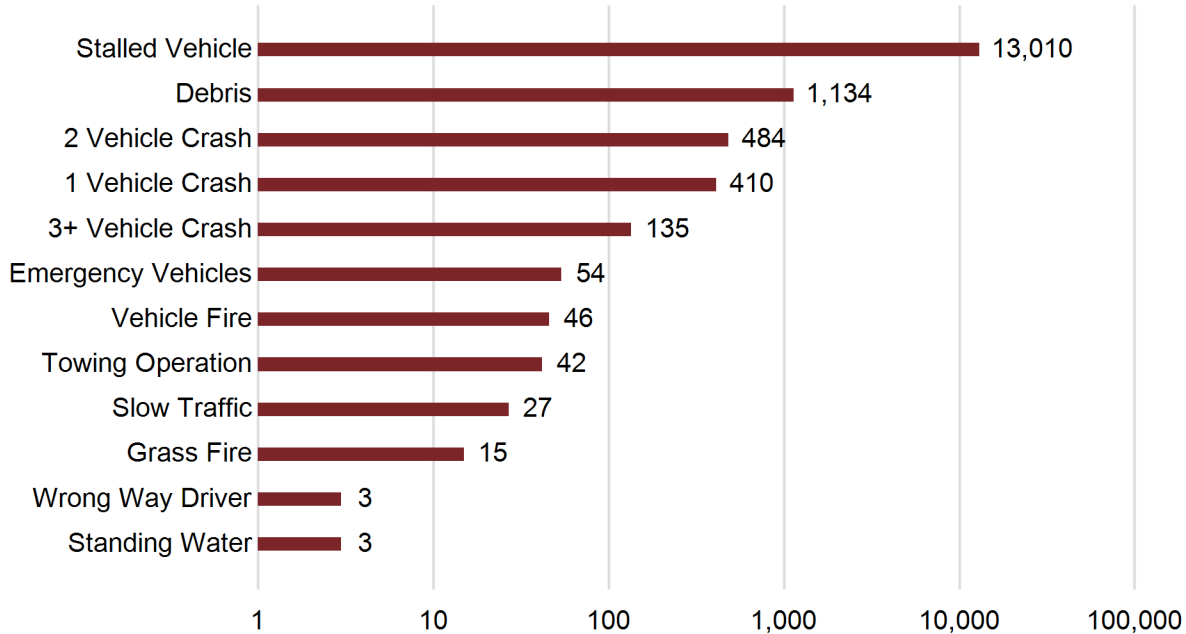




HIGHWAY HELPER

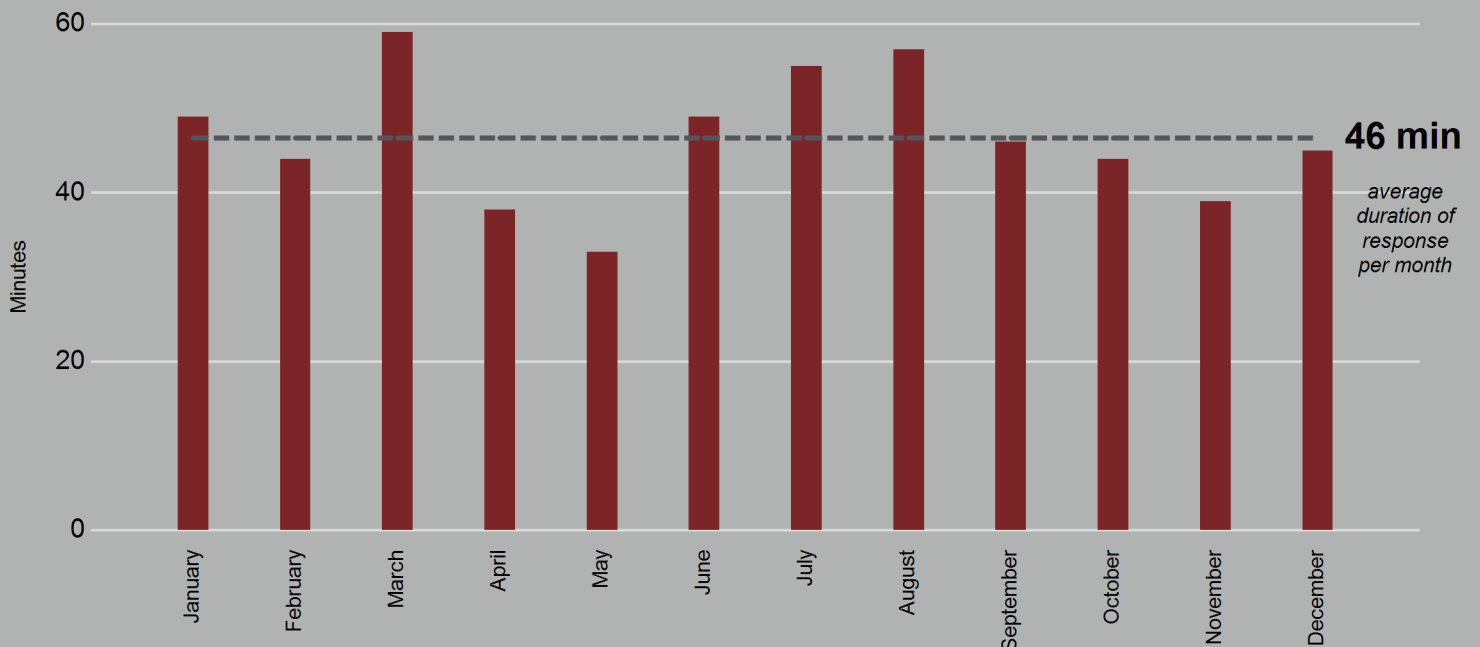
The TMC dispatches and tracks all Highway Helper activity. This section contains statistical and operational data of Highway Helper activities.

Types of incidents responses



This chart provides an overview of the number and types of Highway Helper responses.

Average duration of reponse



BY THE NUMBERS

15,363

HIGHWAY HELPER
RESPONSES

1,134

DEBRIS REMOVAL
RESPONSES

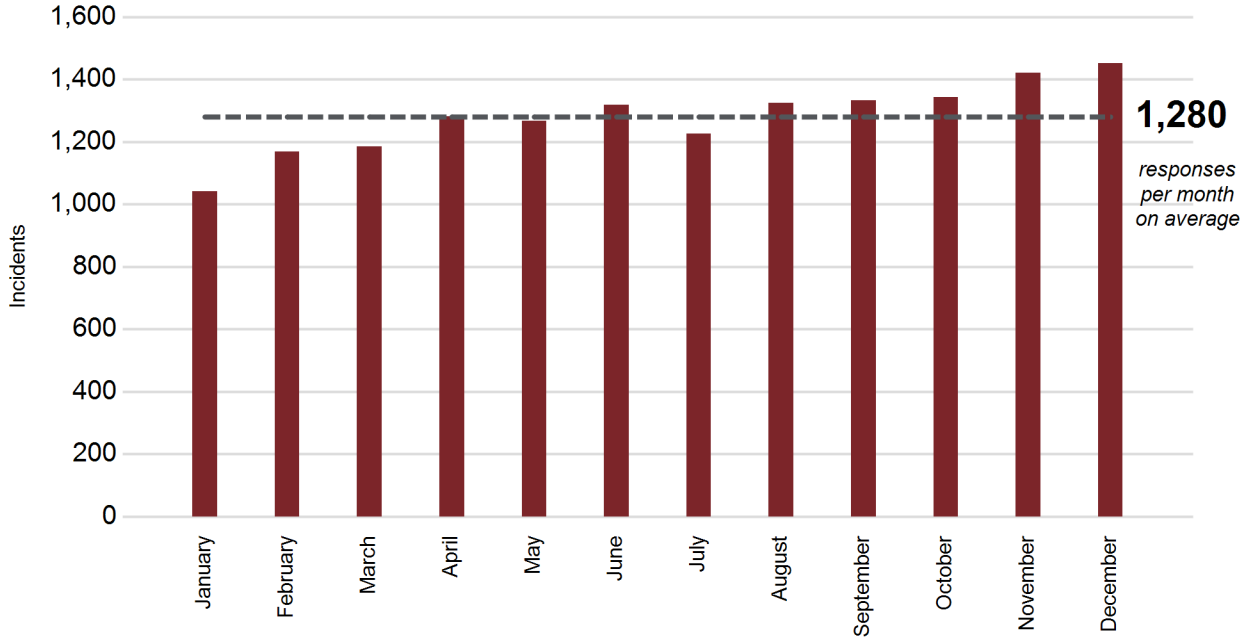
2,648

SERVICES PERFORMED
FOR THE MOTORIST
(FUEL, FLAT TIRE, JUMP START,
DIRECTIONS, ETC)

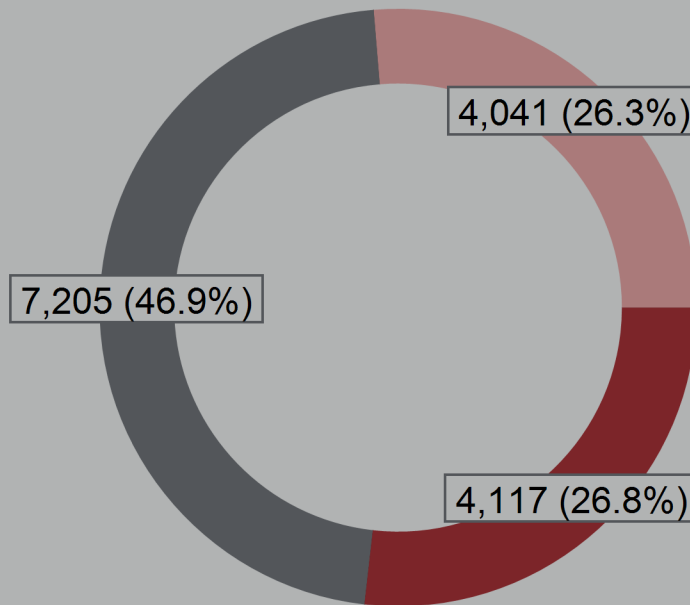
47% RESPONSES OCCURRED DURING OFF
PEAK HOURS

The most Highway Helper responses during 2021 occurred in December.

Responses by month



Responses by time of day



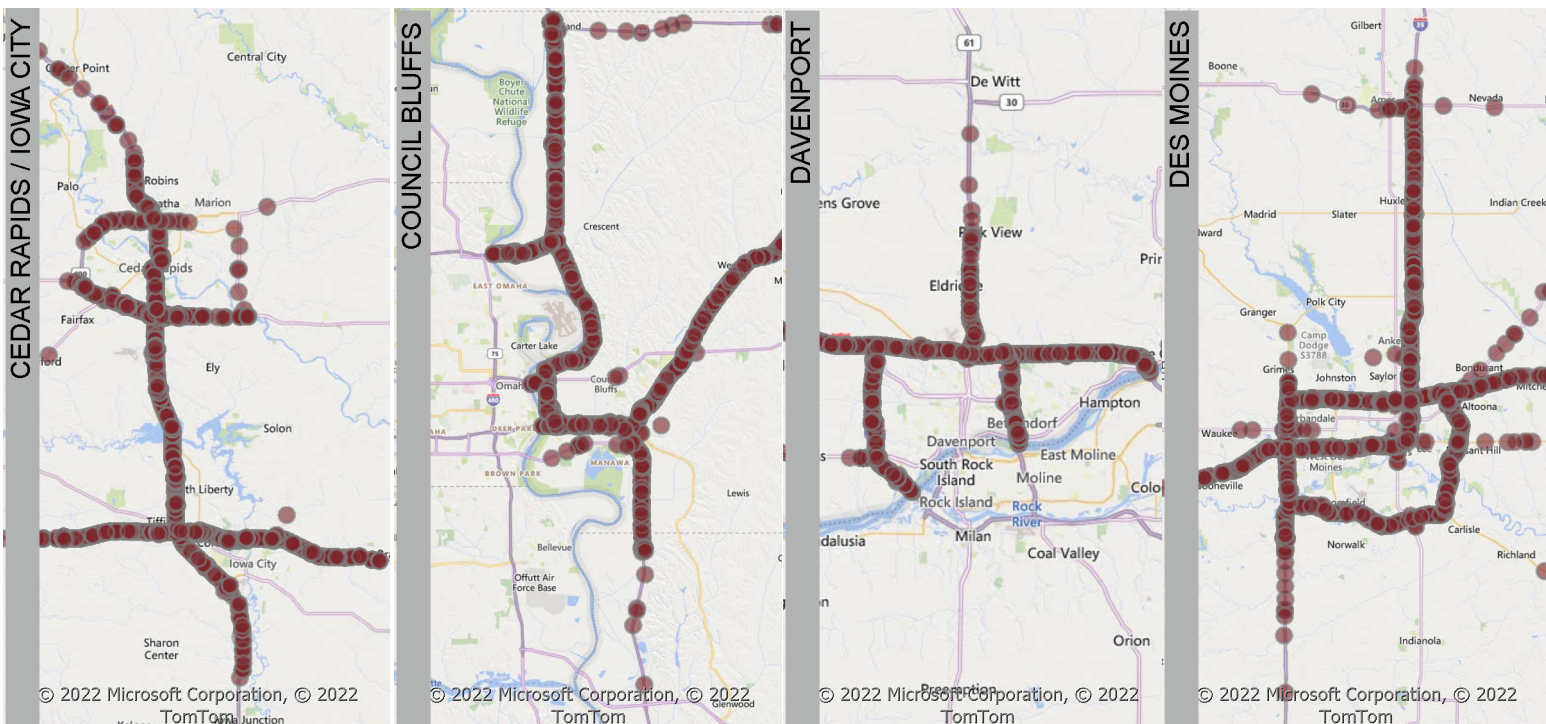
AM Peak (6-9am) Off Peak (9am-3pm, 6pm-6am) PM Peak (3-6pm)



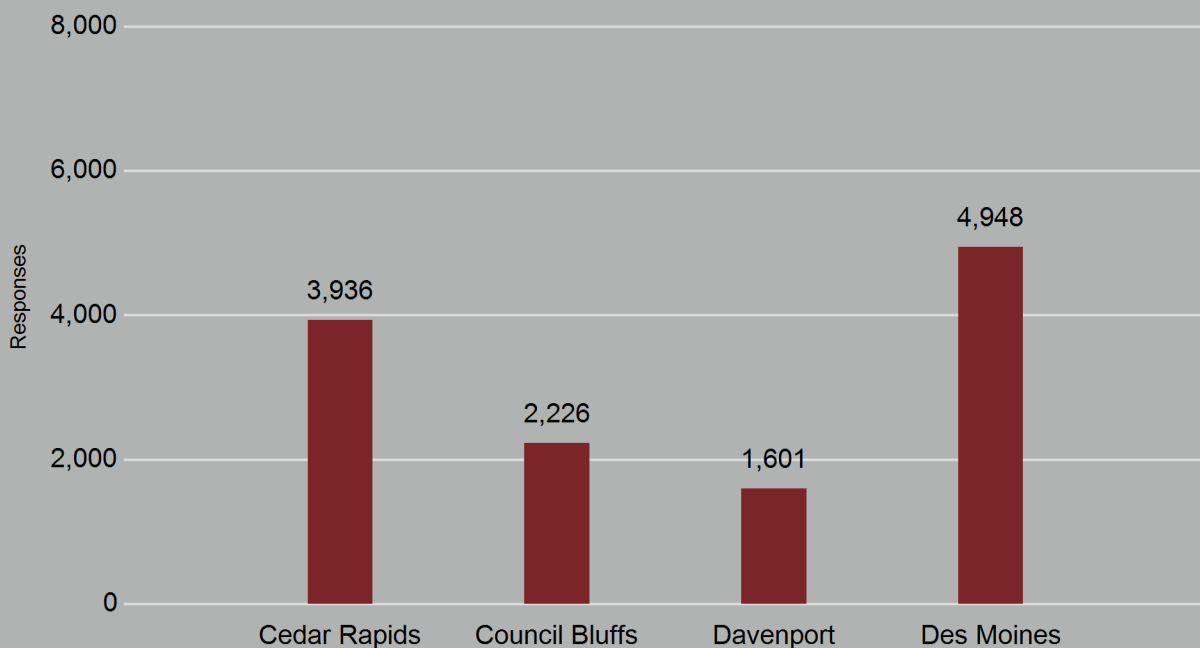
HIGHWAY HELPER



All responses by operational area



All responses by operational area



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.

27%

RESPONSE DURING AM PEAK HOURS

26%

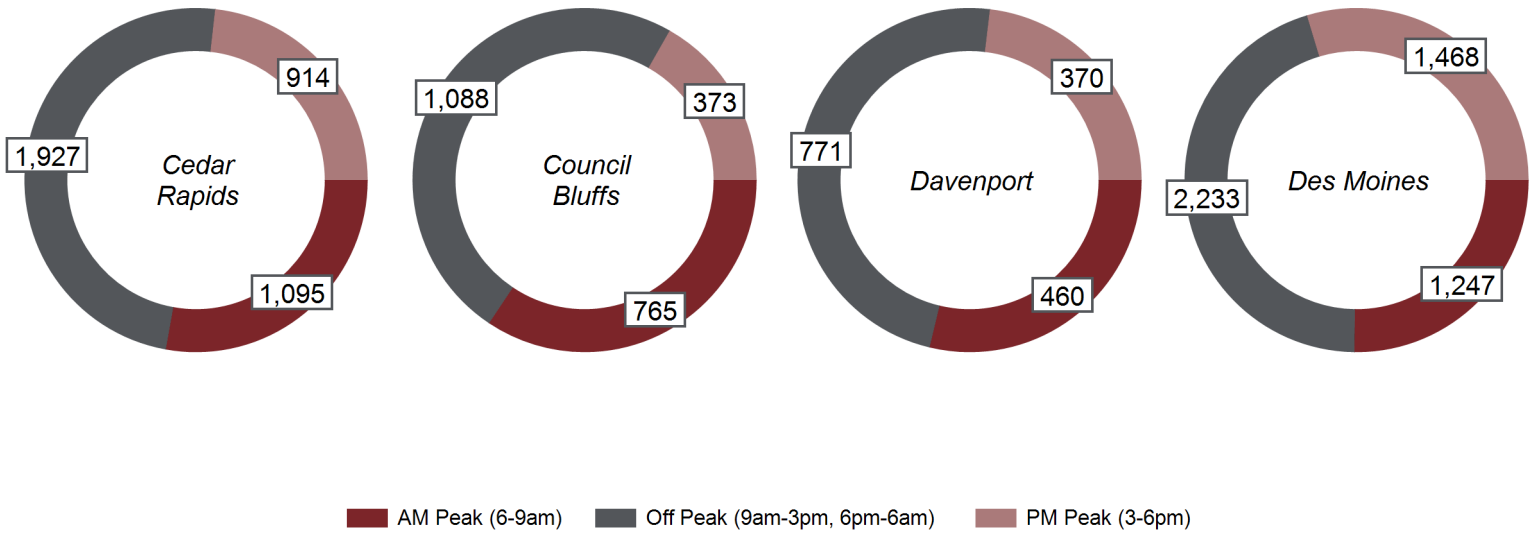
RESPONSE DURING PM PEAK HOURS

4,948

HIGHWAY HELPER RESPONSES IN DES MOINES

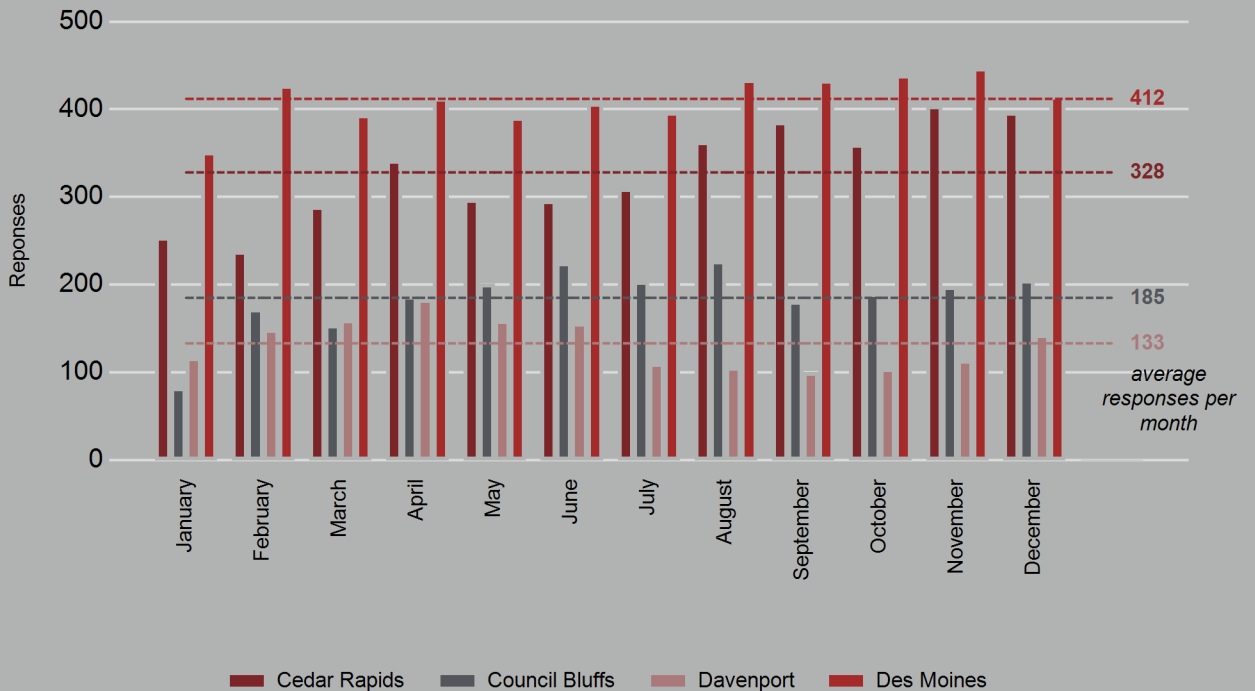
15,363 TOTAL RESPONSES IN 2021

All responses by time of day by operational area



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.

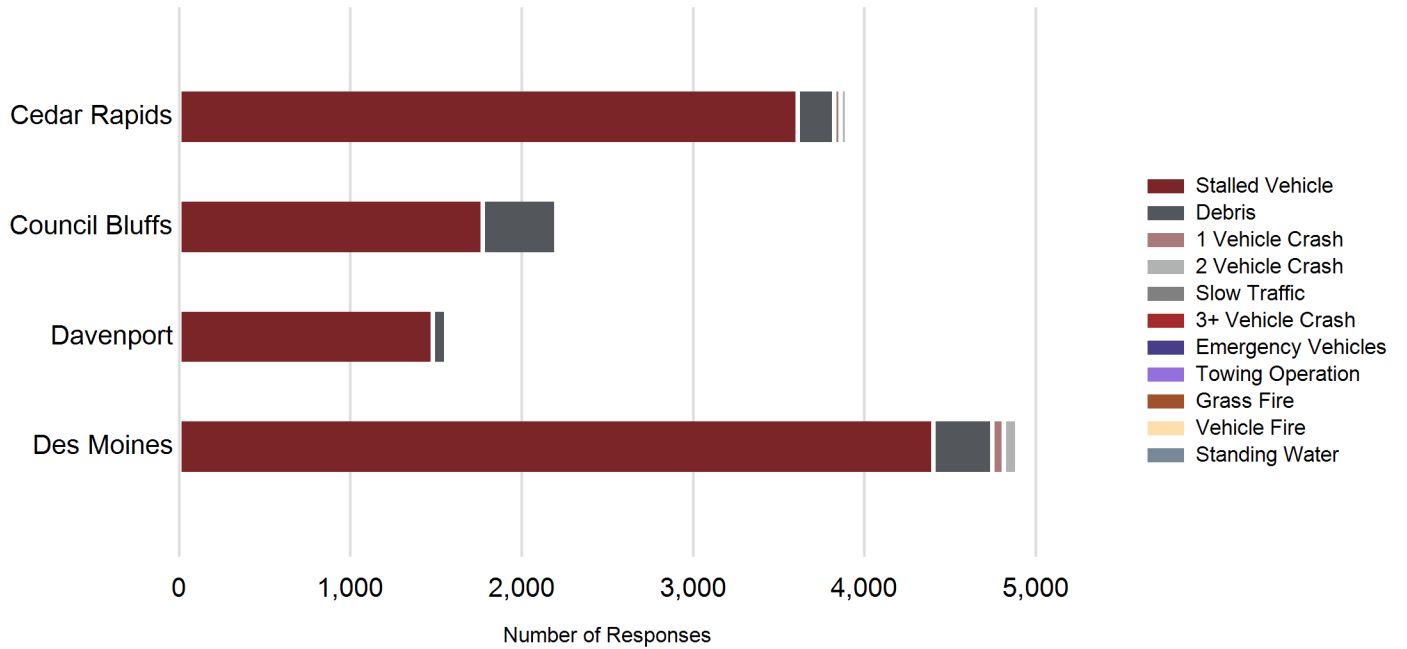
All responses by month by operational area



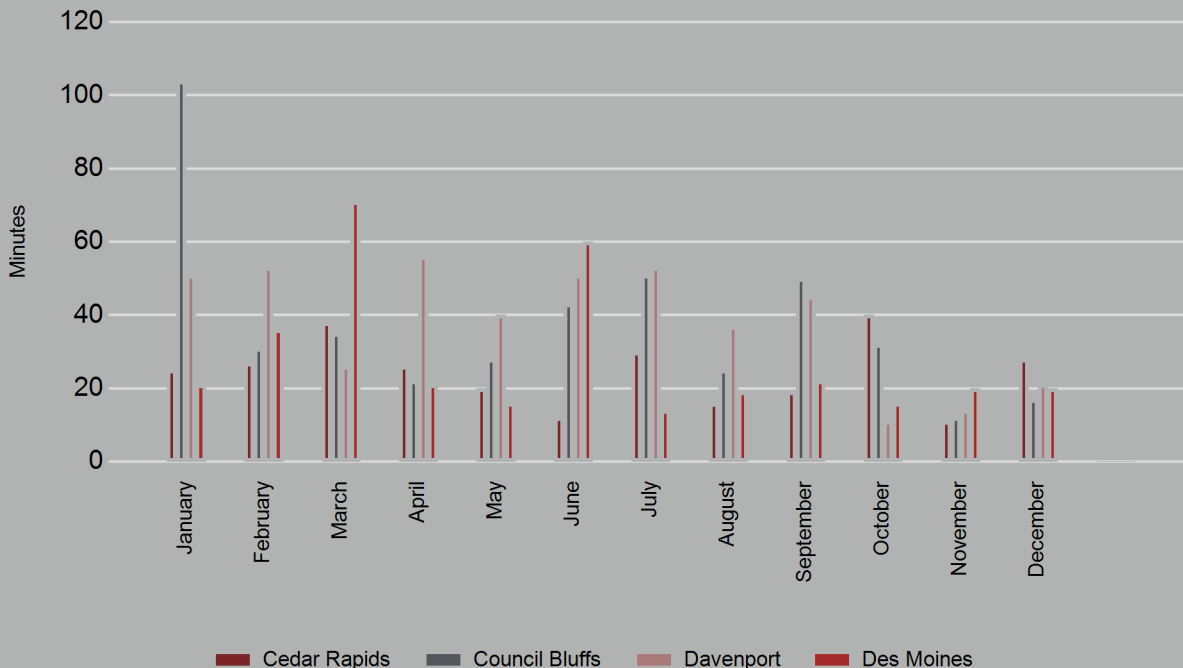


HIGHWAY HELPER

Types of incident response by operational area



Average duration of response by operational area



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.

BY THE NUMBERS

1,294

RESPONSES TO
LANE BLOCKING
INCIDENTS

47 min

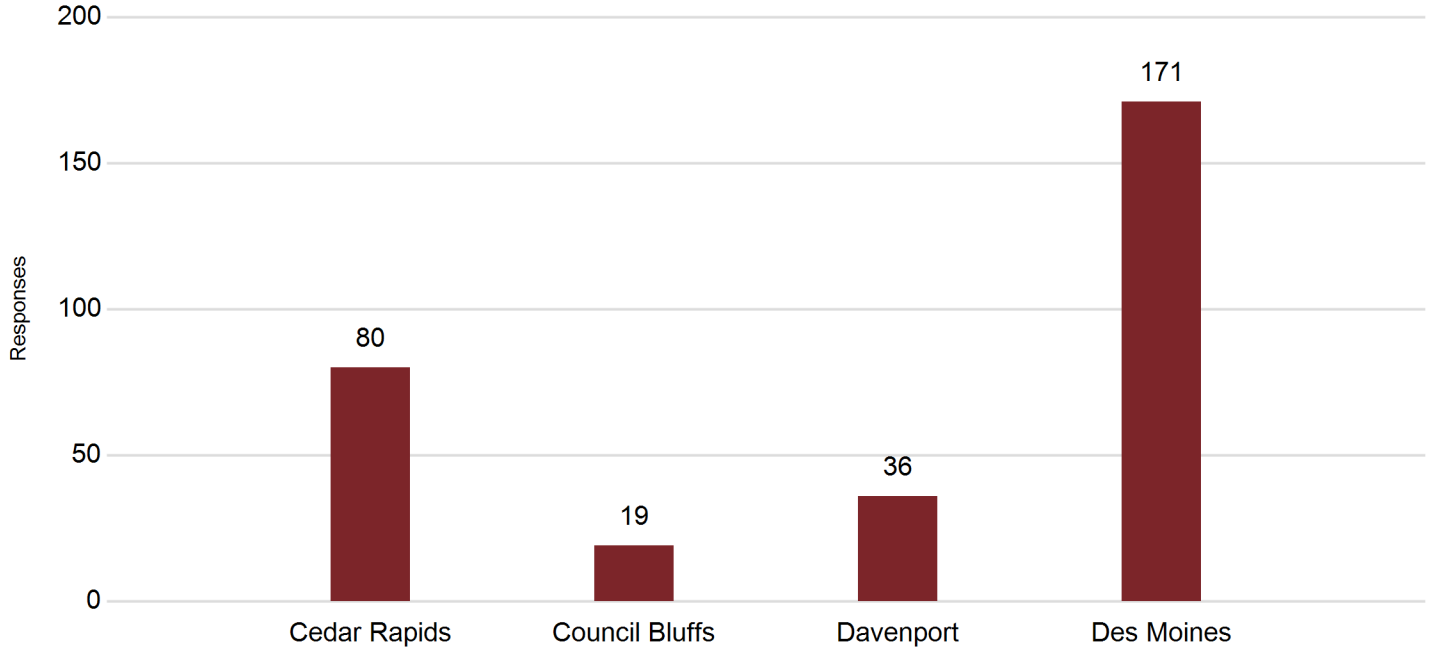
AVERAGE RESPONSE
DURATION

85%

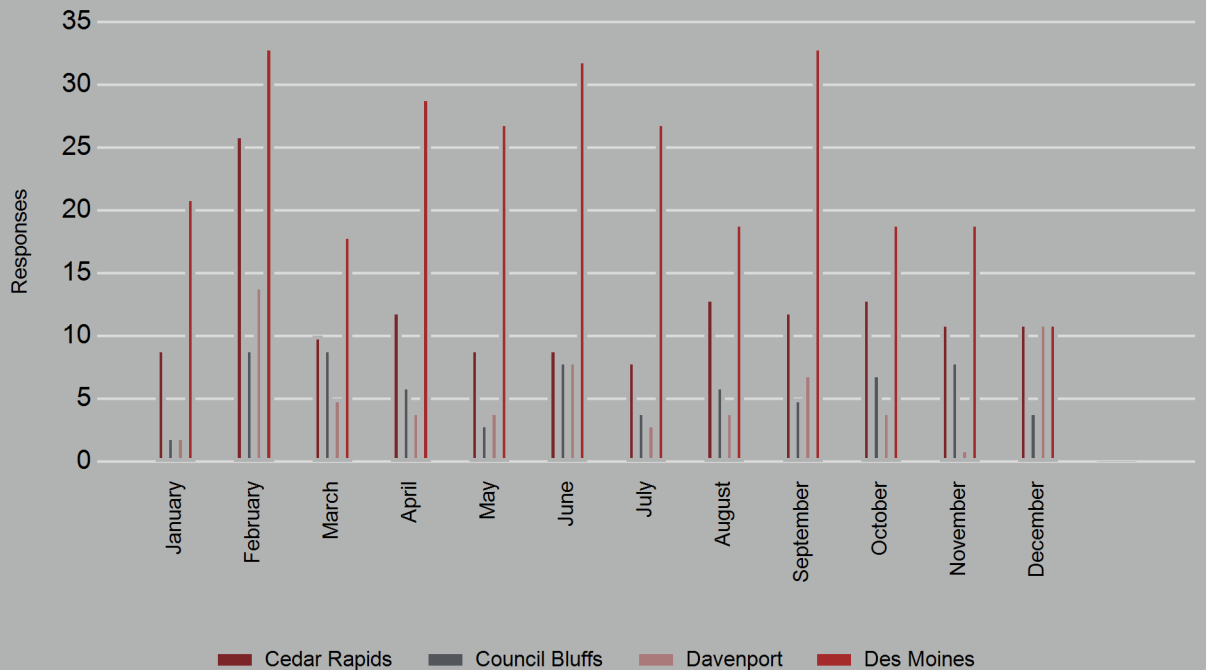
RESPONSES
TO STALLED VEHICLES

1,029 RESPONSES TO CRASHES

Responses to crashes only by operational area



Responses to lane blockage incidents



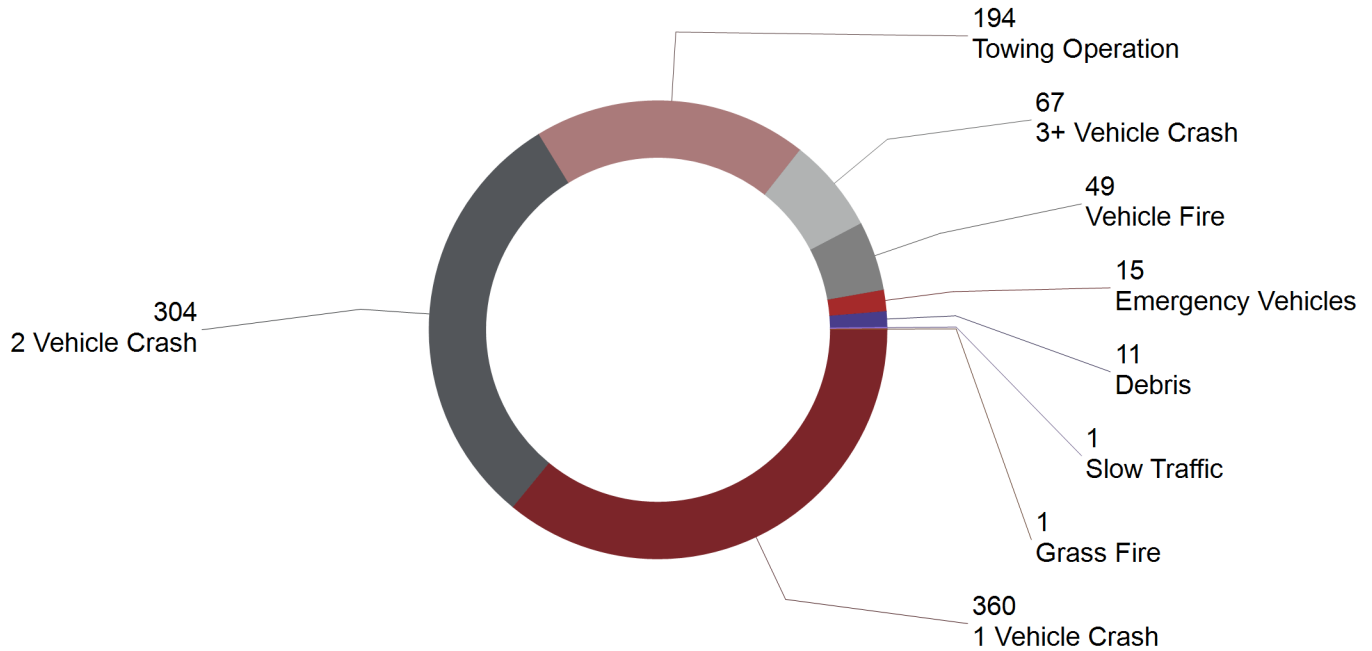
Highway Helpers assist with lane blockages to achieve faster clearance times and protect responders.



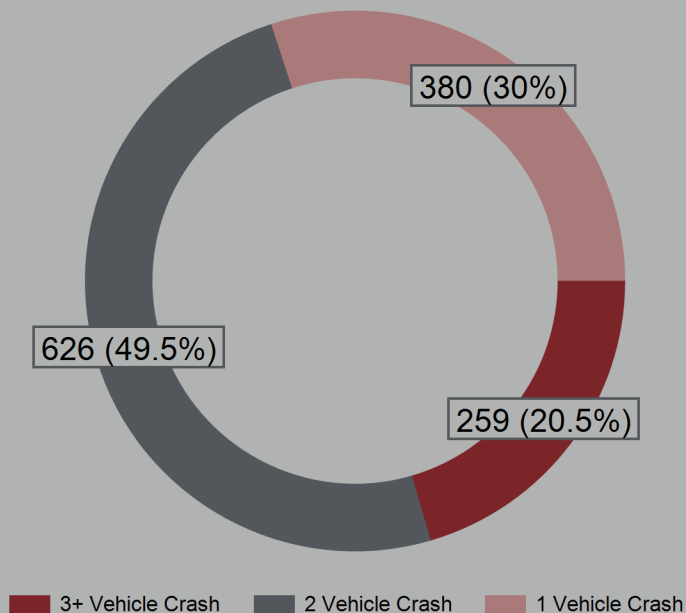
FREIGHT

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



Number of vehicles involved in semi related crashes



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.

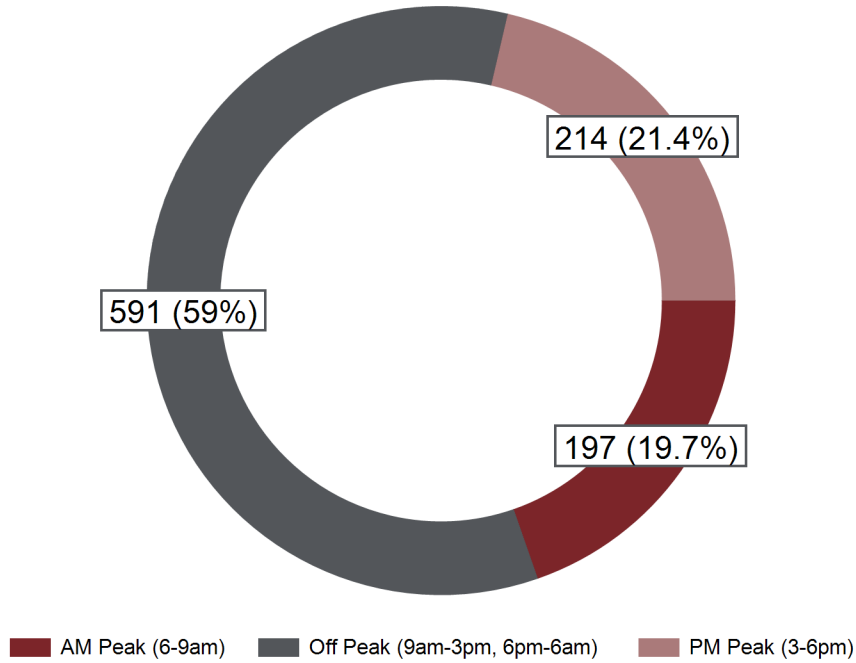
187
RAIL INCIDENTS

121
SEMI ROLLOVERS

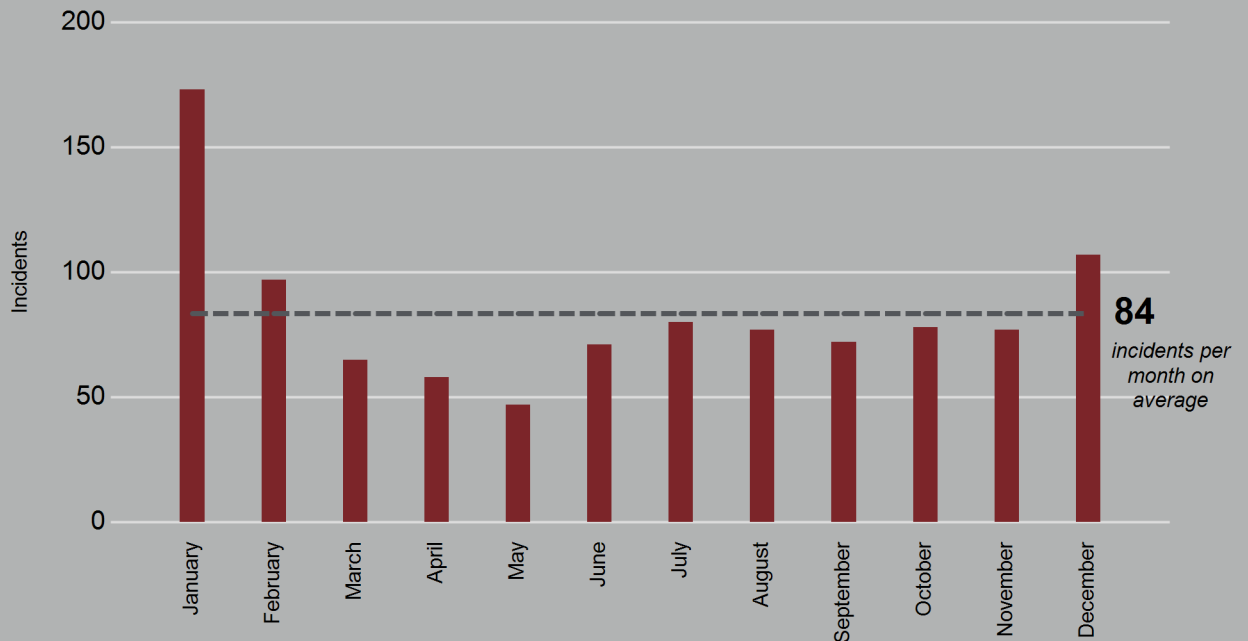
18 HAZMAT SPILLS

1 hr 37 m
AVERAGE CLEARANCE TIME
FOR LANE BLOCKING INCIDENTS
INVOLVING A TRACTOR TRAILER

Freight incidents by time of day



Freight incidents by month



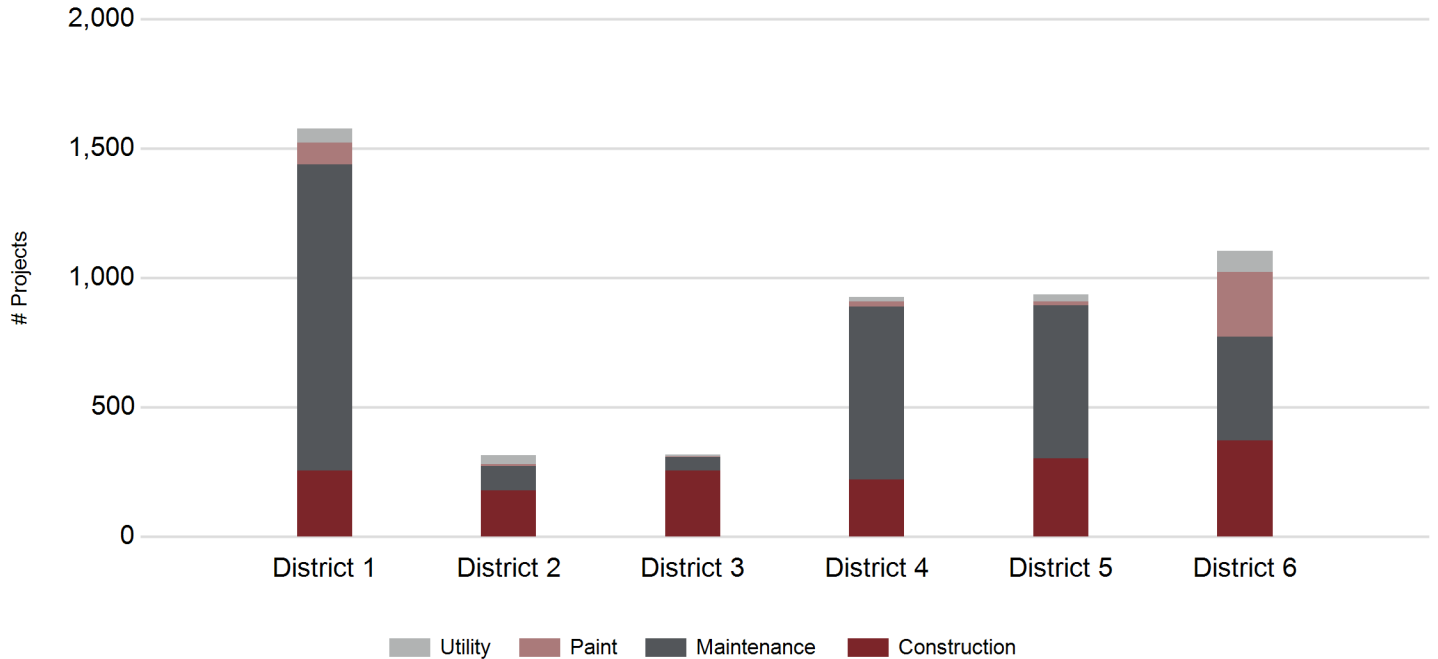
Freight incidents are incidents involving semis or railroads.



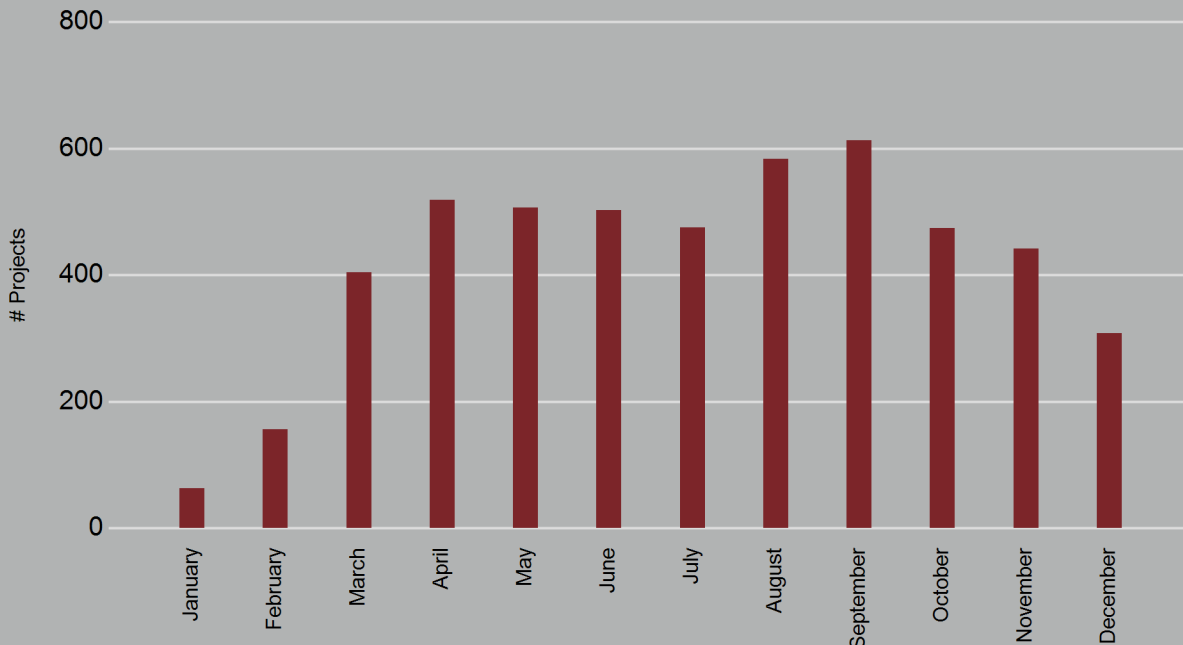
WORK ZONES

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



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.

61

WORK ZONE INCIDENTS

286

SLOWDOWNS DETECTED

5,191

TOTAL ROADWORK EVENTS

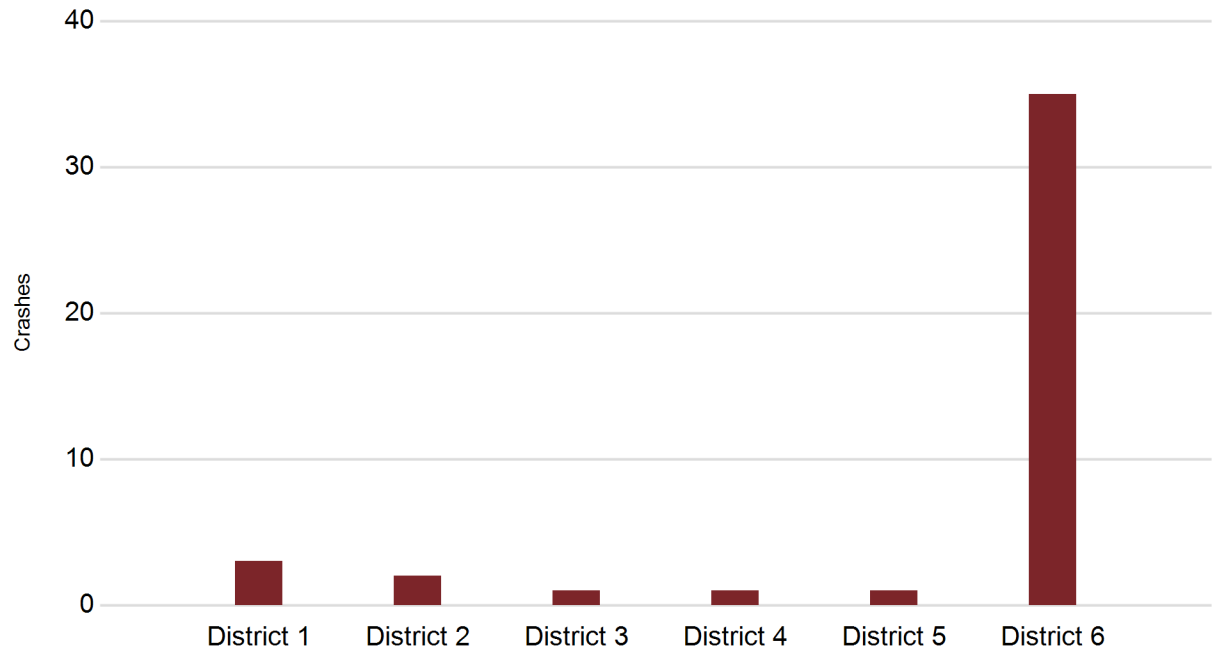
39

INTELLIGENT WORK ZONES

There were more work zone crashes reported in District 6 due to the I-80/380 construction project.

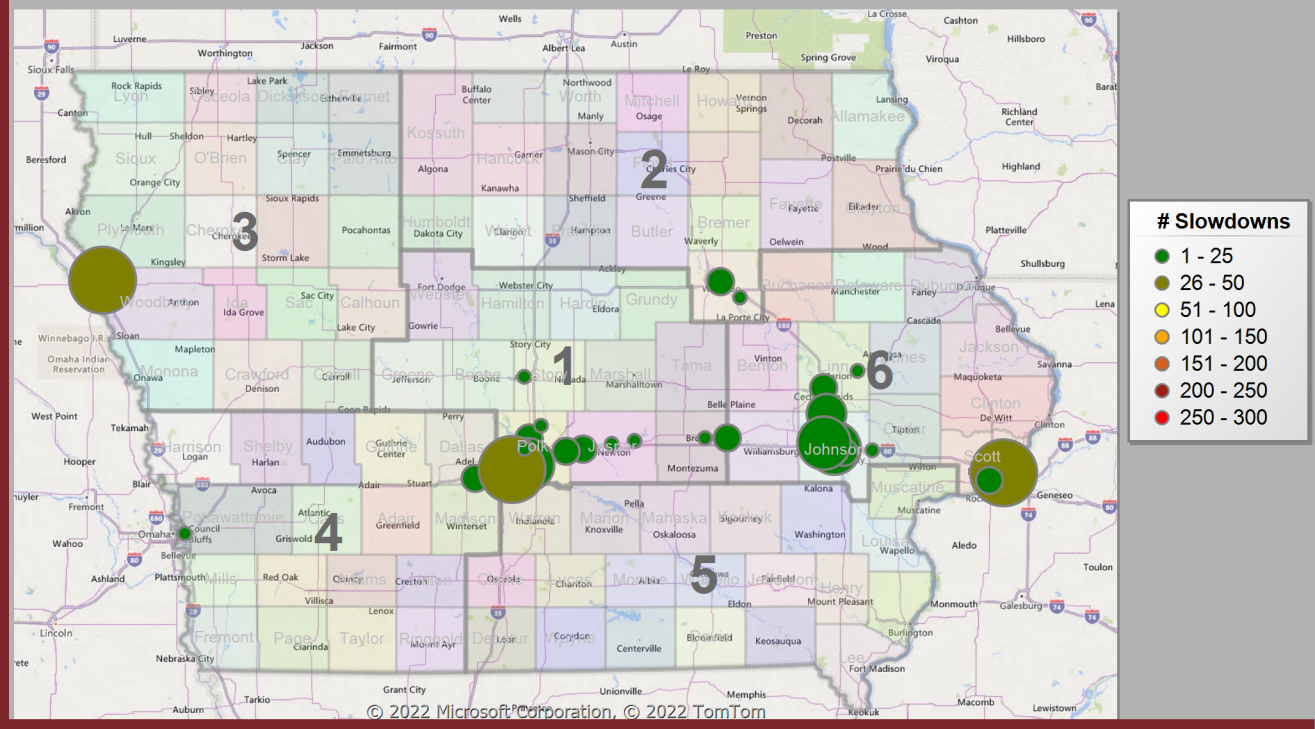
Work zone crashes by district

* As reported to the TMC



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

Construction slowdowns

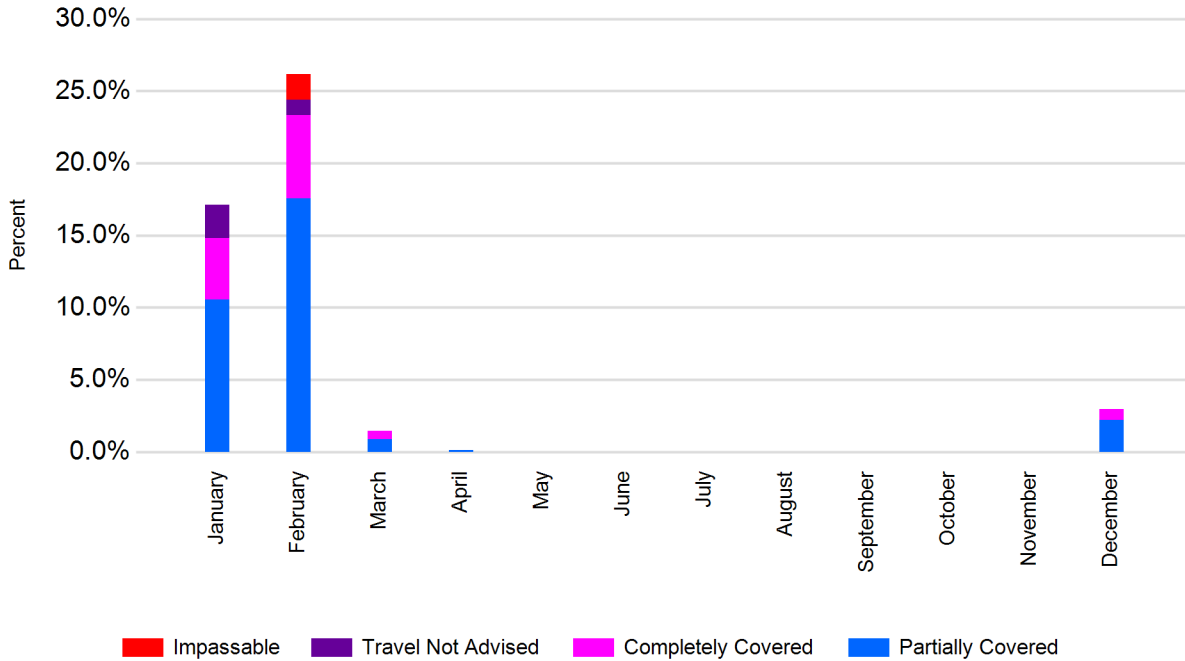




WEATHER

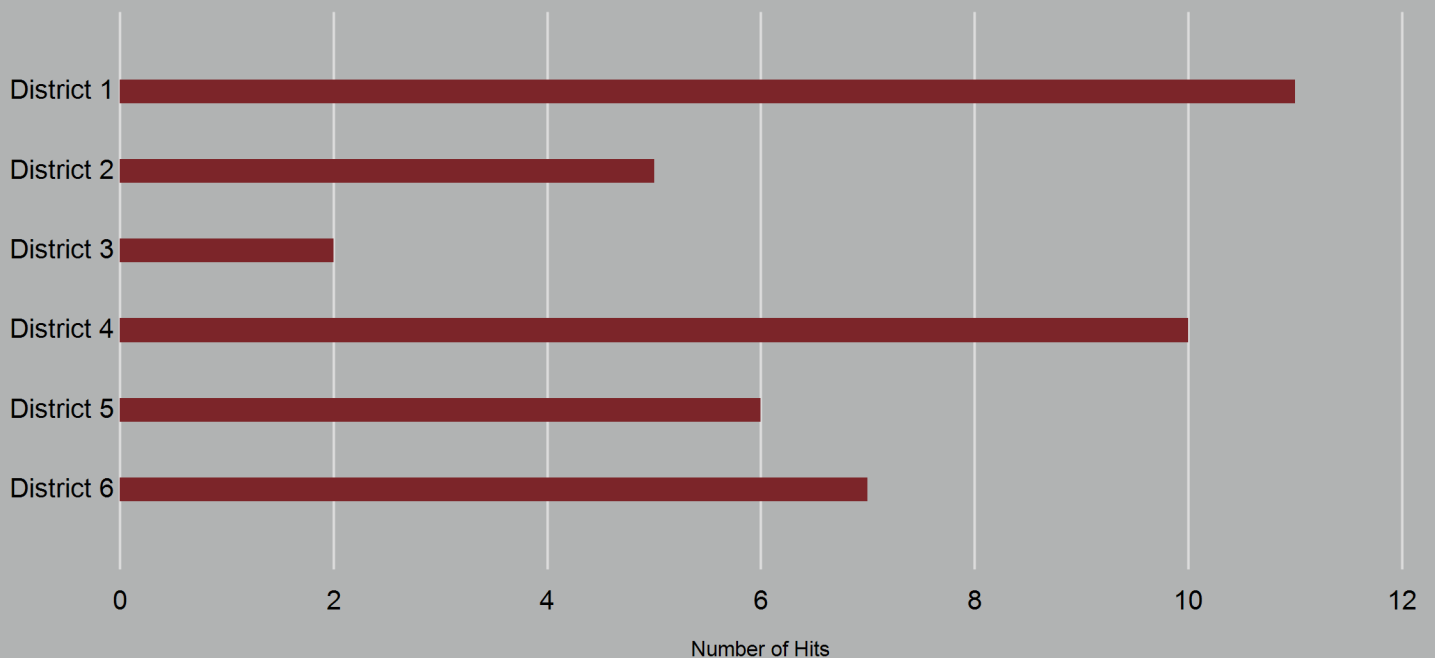
Weather can have a serious impact on the safety and mobility of roadway users. The TMC responds to dynamic conditions by using technology and communication tools to assist partners in restoring the transportation system to normal conditions.

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



28
WINTER
EVENTS

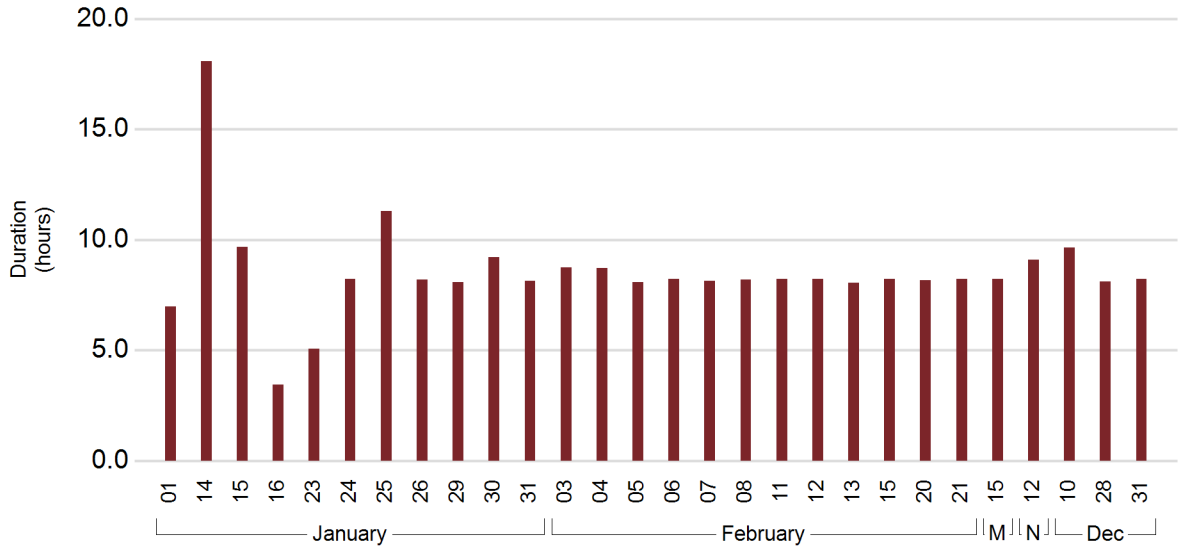
10
FLOODING
EVENTS

6 hr 31 m
AVERAGE DURATION
OF FLOODING CLOSURES

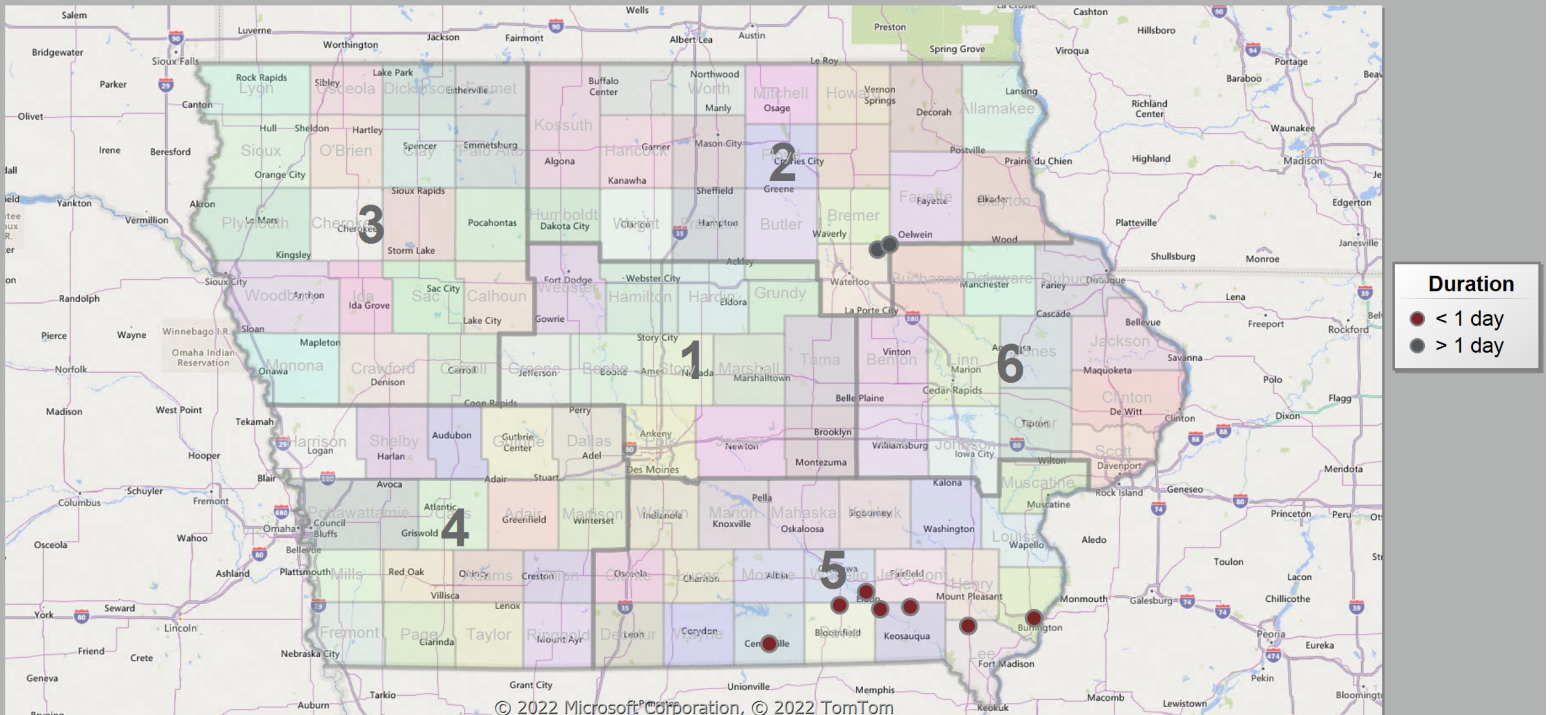
335 INCIDENTS DURING WINTER EVENTS

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.

Winter events



Flooding events resulting in a lane closure

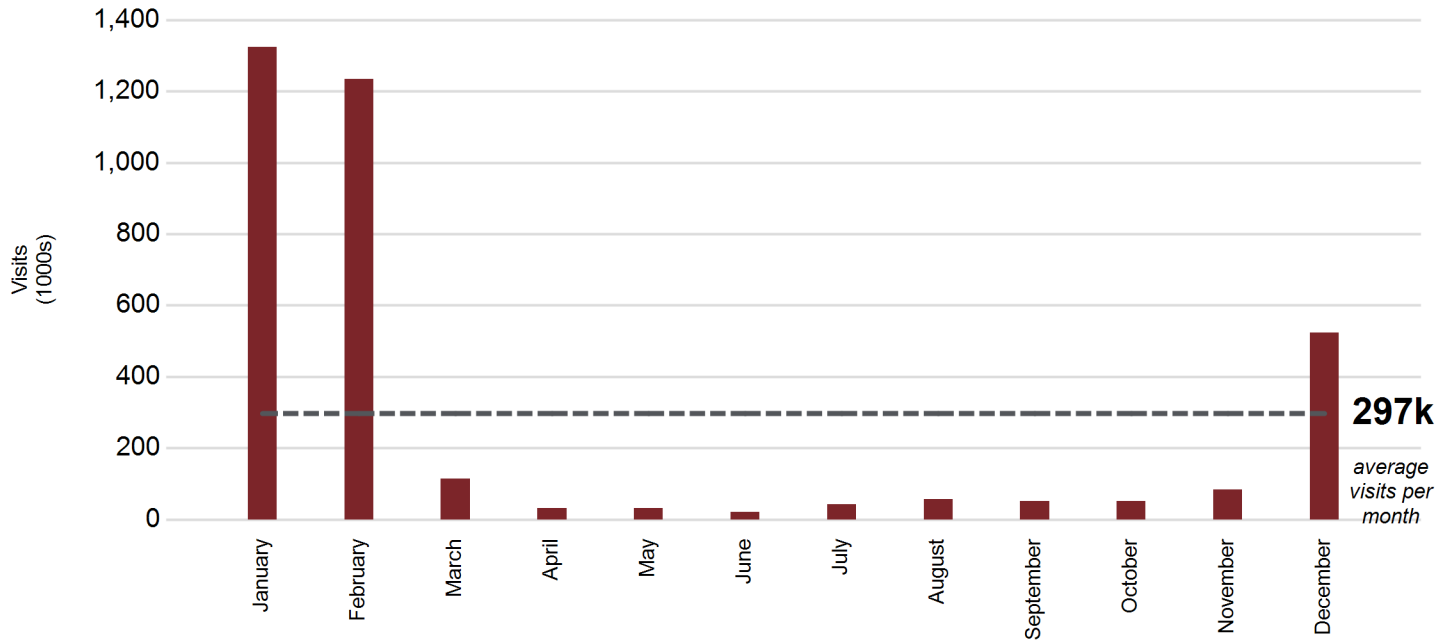




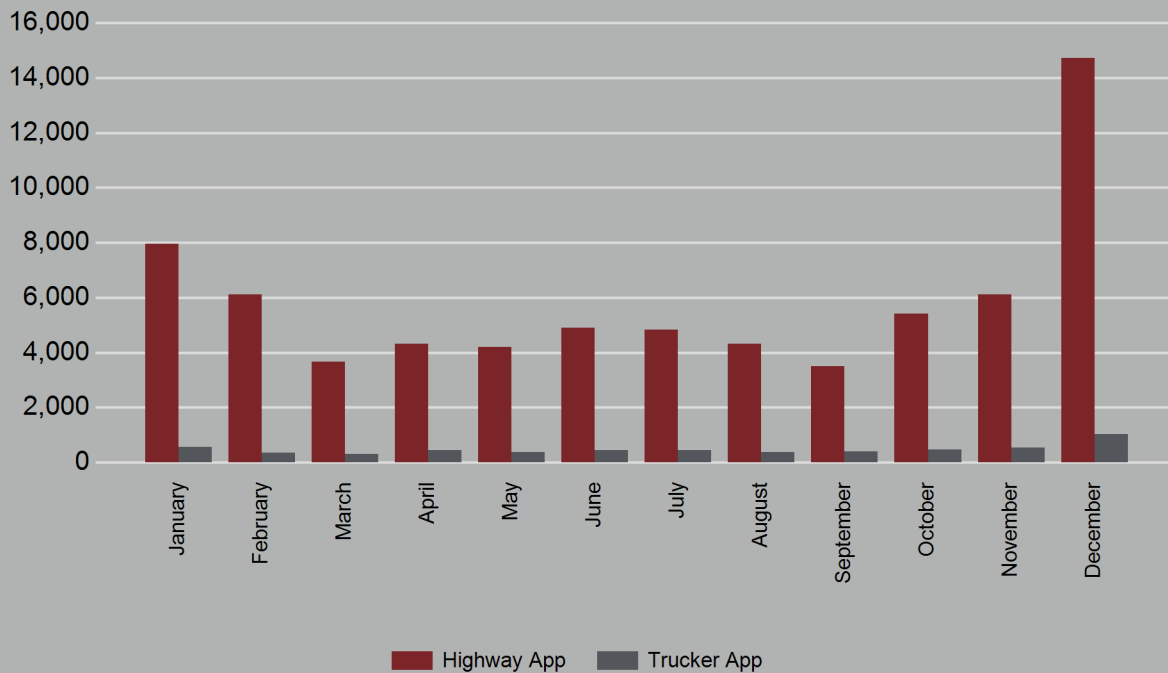
COMMUNICATION

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



511 mobile application downloads



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.

75,787

511 APP
DOWNLOADS

104,781

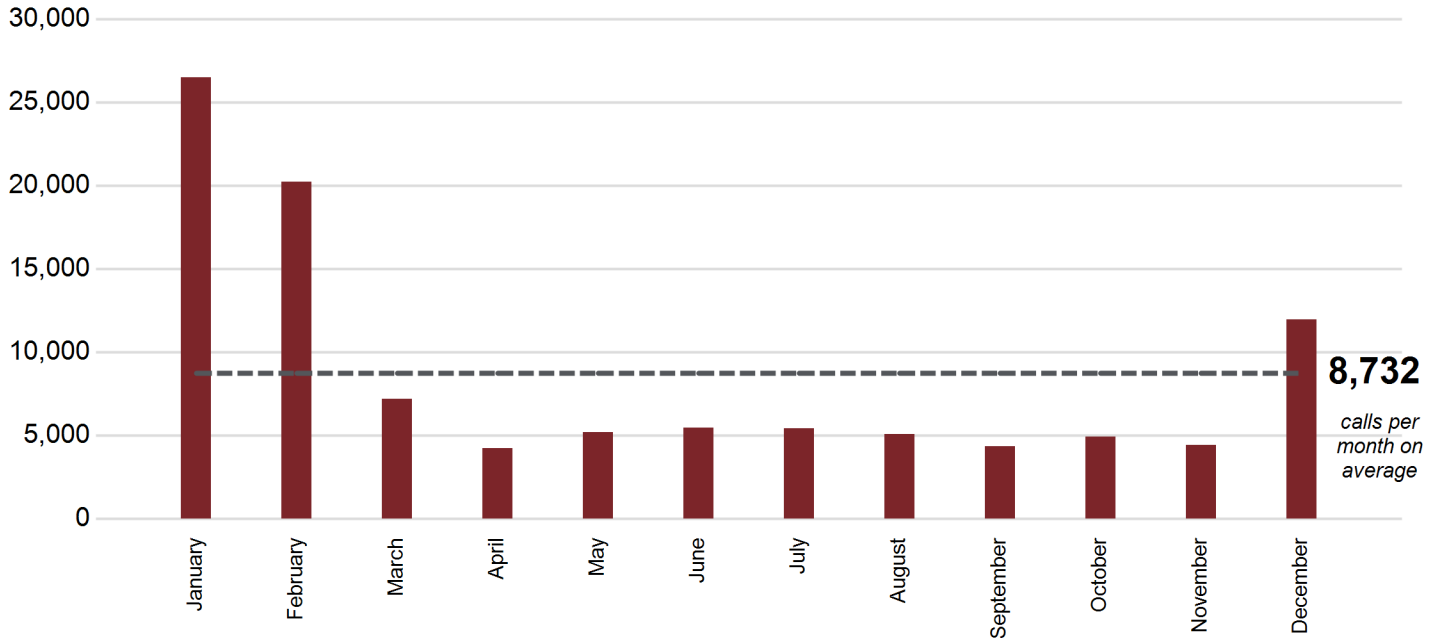
PHONE CALLS
TO 511

3,568,104

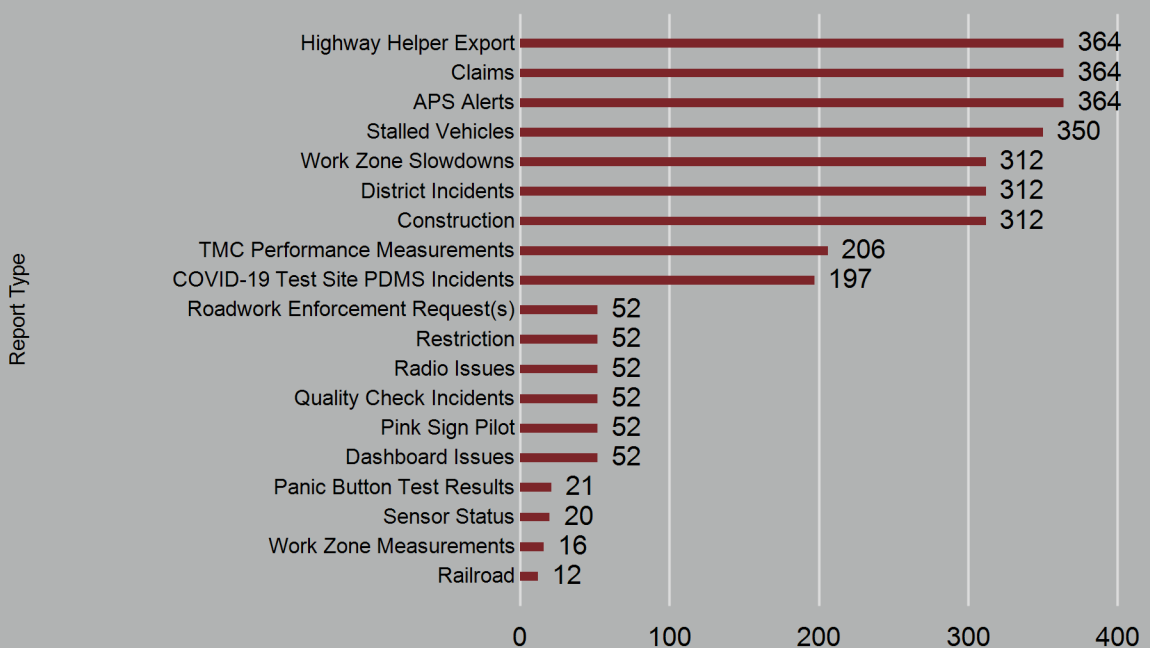
VISITS TO 511 TRAVELER
INFORMATION WEBSITE
(ALL VERSIONS)

3,162 TMC DATA REPORTS GENERATED

511 phone calls by month



TMC data reports generated by type

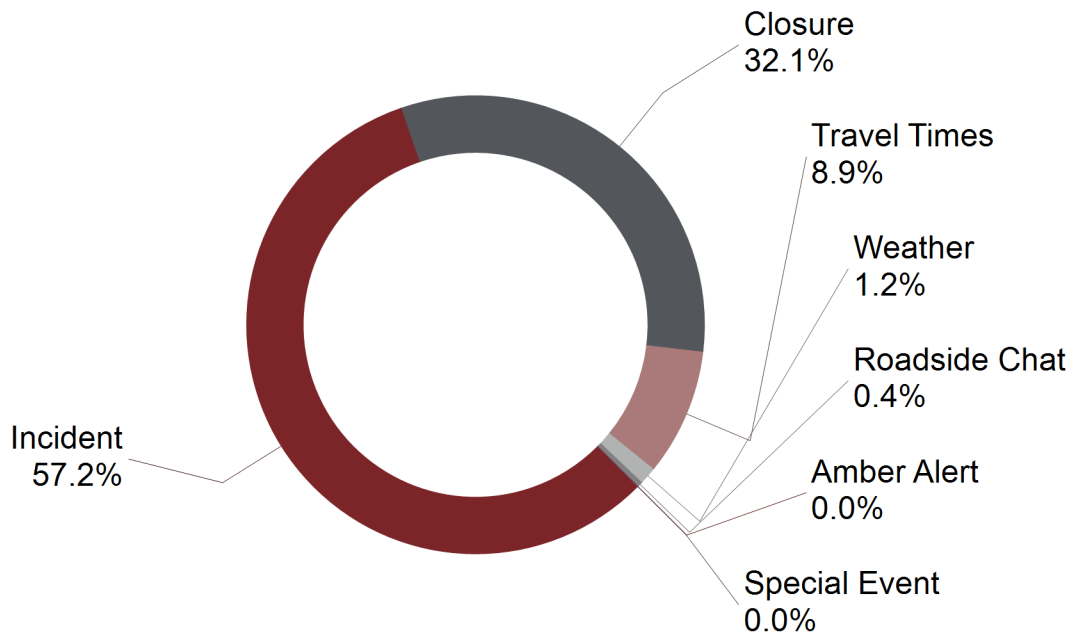


The information tracked by the TMC is shared through multiple reports with internal and external stakeholders.



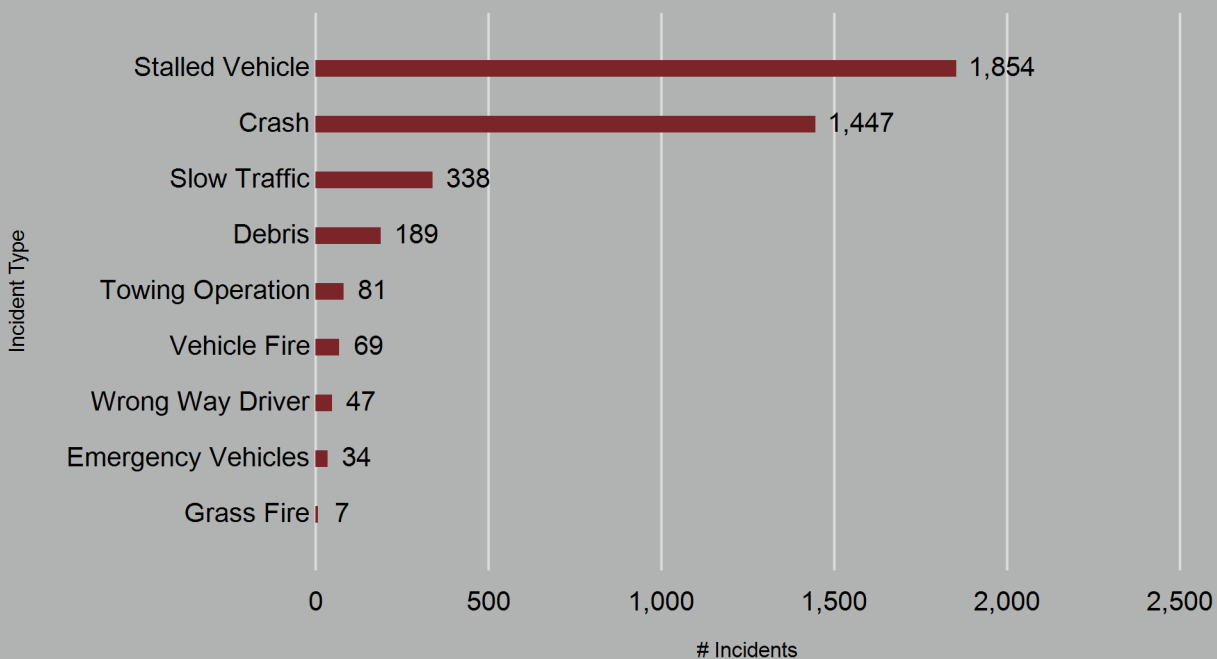
COMMUNICATION

DMS messages by type



Dynamic Message Signs (DMS) are operated by the TMC and the message content, duration and types are tracked.

DMS messages by incident type



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

BY THE NUMBERS

4,066

INCIDENTS
UTILIZING
DMS MESSAGES

18,635

EMAIL
NOTIFICATIONS
SENT

57%

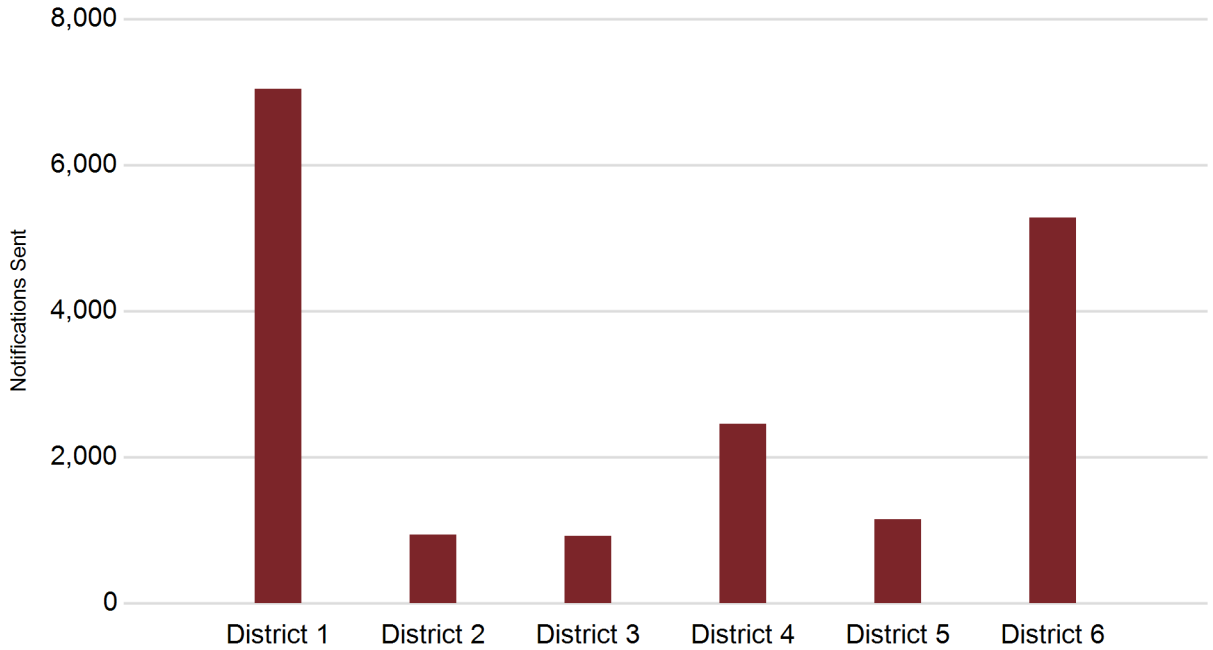
UNIQUE DMS MESSAGES
RELATED TO INCIDENTS

80%

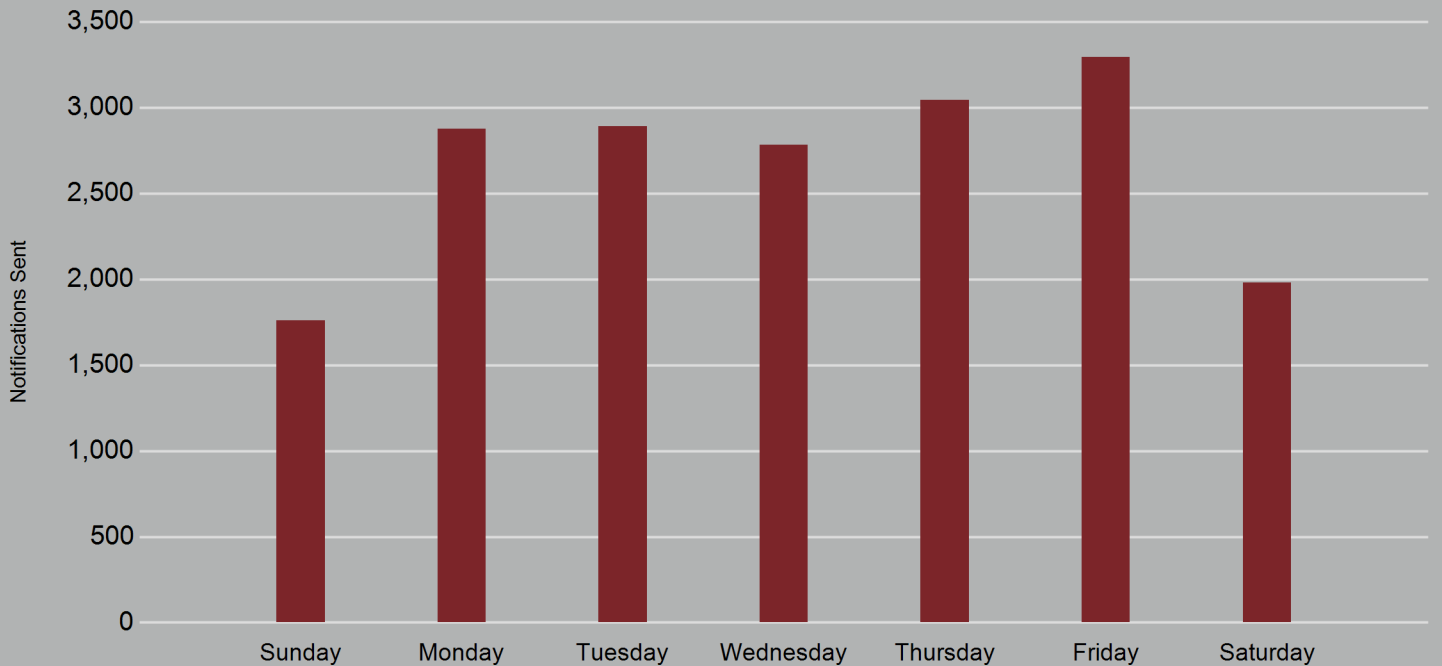
EMAIL NOTIFICATIONS SENT ON
WEEKDAYS

Emergency Incident Notifications (EINS) are e-mail alerts sent by the TMC for more impactful events on the transportation system.

Email notifications sent by district



Email notifications sent by weekday



Developed for the:



800 Lincoln Way
Ames, IA 50010
(515) 239-1101
www.iowadot.gov

By:

