ENTERPRISE Transportation Pooled Fund Study TPF-5 (231)

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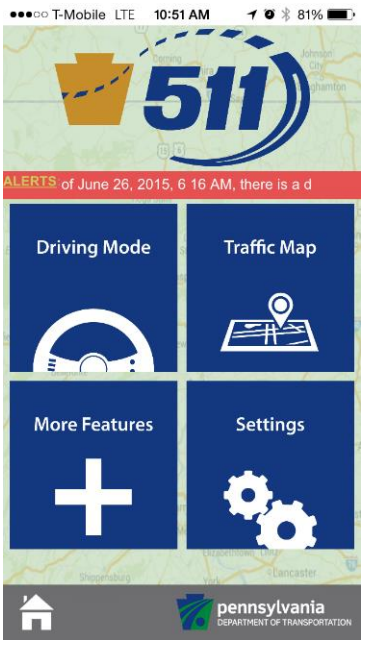

Traffic Safety and Traveler Information Mobile Apps

PROJECT SUMMARY REPORT

Prepared by

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This document was prepared for the ENTERPRISE Transportation Pooled Fund TPF-5(231) program. With agencies from North America and Europe, the main purpose of ENTERPRISE is to use the pooled resources of its members, private sector partners and the United States federal government to develop, evaluate and deploy Intelligent Transportation Systems (ITS).

Project Champion

Sinclair Stolle, Iowa Department of Transportation, was the ENTERPRISE project champion for this effort. The project champion serves as the overall lead for the project.

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1.0 Introduction and Project Purpose

The traveling public now has many options for traveler information, including 511 phone systems, traveler information websites, and applications that can be downloaded for a variety of popular mobile devices (mobile apps). In an effort to understand the role that mobile apps play in the industry, the ENTERPRISE Pooled Fund Study researched traffic safety and traveler information apps published by private and public sector agencies.

This ENTERPRISE project "Traffic Safety and Traveler Information Apps" focused on understanding two specific types of mobile device apps: traveler information apps that disseminate real-time information to help improve the mobility and safety of users; and safety apps that are intended to deter unsafe actions, such as inattentive driving.

This document includes a summary of the features and functions of mobile device apps operated by many state and provincial Departments of Transportation (DOTs), as well as those operated by private companies. It is important to note that the functions and features of mobile apps are constantly changing and even as this report was developed additional features may have been added to the apps. In addition interviews were conducted with personnel from DOTs to help understand the motivation behind the development and operation of the traveler information mobile apps, and to understand the unique role these apps play in each DOT's traveler information system.

This document includes a summary of traffic safety and traveler information apps that were reviewed by downloading links to apps from websites or from various app stores. The apps reviewed are categorized by traveler information apps and traffic safety apps as follows in Section 2.0 and 3.0. App Safety Agreements and Disclaimers were also noted and are included in Section 4.0. Interviews were conducted with selected DOTs that utilize apps and with those that currently do not operate mobile apps. Highlights from the interviews are included in Section 5.0. Finally, Section 6.0 provides an overall summary and conclusions of the information gathered for this project.

2.0 Traveler Information Apps

This section provides a summary of the traveler information apps that were researched. The research included apps operated by state and provincial DOT's, as well as apps operated by private sector information service providers.

2.1 State and Provincial DOTs

This project identified DOT apps by reviewing public agency traveler information websites. Many agencies include a link from their traveler information website that enables website visitors to download their app (as illustrated in Figure 1).

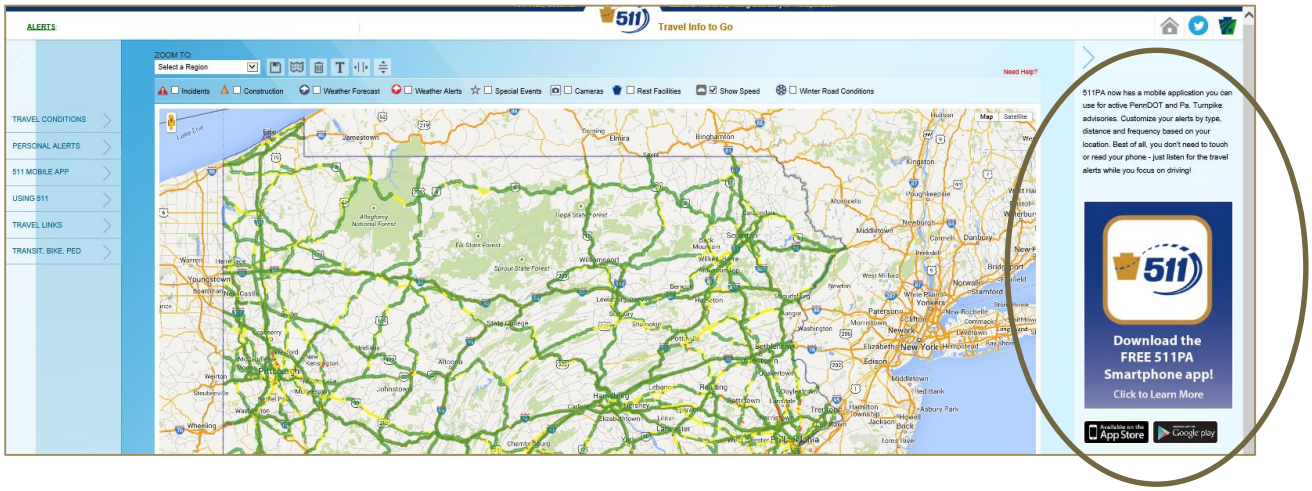


Figure 1: Pennsylvania 511 website with a link to download their app

Additionally, searches for public sector apps were conducted in the various app stores, using a similar approach that end users might use to find a traveler information app. From this review, thirty-four (34) public DOT apps were found in North America (US and Canada). Table 1 includes a list of the apps reviewed, a brief description of the app, the app developer and highlights of features observed from the app. It is important to note that the functions and features of mobile apps are constantly changing and even as this report was developed additional features may have been added to DOTs app.

Table 1: State and Provincial DOT Apps Reviewed

Agency	App	Description and Developer	Highlights of Features Observed
Alaska DOT and Public Facilities (AKDOT&PF)	Alaska-511	AKDOT&PF operates a mobile app in addition to their traveler information website and 511 phone system. The app emphasizes driving condition reports. *Developer: Open Roads Consulting*	• Pin marker describes road and weather conditions at specific points along highways • Verbal feedback function for users to speak feedback about current conditions or observations (e.g. incidents, traffic reports, etc.) that are delivered to AKDOT&PF staff
Arkansas State Highway and Transportation	IDrive Arkansas	AHTD operates a map-based app that focuses on providing users information through its 10	• Map layers include for example traffic, work zone, traveler

Agency	App	Description and Developer	Highlights of Features Observed
Department (AHTD)		layers. The app opens to a scalable Google basemap displaying a work zone layer, and users can zoom to their location, and select satellite or standard views. *Developer: NIC*	information, travel conditions, and winter weather • Links to AHTD Vimeo, Twitter, and Flickr accounts • Examples of user feedback options include Ask a Question, Report a Problem, Report Littering, and Request a Map
California – Sacramento Area Council of Governments (SACOG)	Sacramento 511	SACOG operates a 511 app that reports traffic and travel information for the Sacramento region. The app is map-based, offering fast and easy navigation of the area. *Developer: Castle Rock*	• Features road reports, traffic flows and traffic cameras • App defaults to a high-level view of user location, displaying road reports • Specific roadways can be searched for, and certain roadways can be chosen and zoomed to
California – San Diego Region	511 San Diego	The San Diego traveler information app provides real-time traveler information provided by Caltrans, Metropolitan Transit System (MTS) and North County Transit District (NCTD) in partnership with the San Diego Association of Governments (SANDAG). Current traffic information, incidents and construction information is provided for the San Diego Region. *Developer: Iteris*	• Enhanced information (e.g. real-time dynamic toll rate, predictive travel times, suggested alternate routes) for the I-15 corridor • Camera images • MTS bus route, fares and arrival times • Optional text-to-speech and look-ahead speech commands for hand-free driving
California – Inland Empire	IE511	The Inland Empire app is a joint project of the Riverside County Transportation Commission and San Bernardino Associated Governments. Users are provided with real-time information (incidents, chain control zones, camera images, changeable message signs). *Developer: IE511*	• Up-to-date park and ride information • Bus and train schedules • Carpool map for trip planning • Traffic speeds
Colorado DOT	CDOT Mobile – The Official App	The default screen of the Colorado DOT app is organized around two Interstate highway routes: I-70 and I-25. The app	• I-70 and I-25 corridors ○ Bidirectional traffic flow visualization

Agency	App	Description and Developer	Highlights of Features Observed
		defaults to a screen of scrolling road alerts and ski resort conditions specific to I-70, with additional functions to view a map, and to select certain cities' traffic and road conditions. Users can also choose to allow severe traffic issue notifications from the app, which is only pushed during peak travel times. *Developer: urHub*	○ I-70 has peak-hour travel radio ○ Travel forecasts ○ Route-specific carpool/transit options ○ Travel time summaries • Statewide features ○ Listings: severe alerts, road work alerts ○ Trucker info: chain laws and FAQs • Colorado DOT twitter feed
Delaware DOT	DelDOT	The Delaware DOT operates the DelDOT app. The app focuses on providing real-time updates in the form of traffic radio, news, social media, and a traffic map. The app also features DOT workshops and events. The news function features construction schedules, DOT events (i.e. public workshops), and important weather events. *Developer: Delaware DOT*	• App opens to a home screen of 6 functions: news, workshops, traffic radio, social media, traffic map and events • The traffic map features an array of layers, with some unique layers including Water Over Roadway, Speed Limits and Airports
Florida DOT	Florida 511	The Florida DOT App focuses on delivering mobile alerts/ advisories to travelers and allowing entry of reports by app users to help Florida DOT better understand the conditions on the road. *Developer: LogicTree*	• Uses location of the mobile device to identify traffic events near you • Selecting an event causes a wave file to play, announcing the report or the user can turn on auto play to announce events automatically • Travel time reports closest to the location of the mobile device • Allows you to speak and record a traffic incident in your area. The App communicates this back to the central server (with a location captured from the device).
Georgia DOT	511 Georgia & Atlanta Traffic	The Georgia DOT traveler information app allows the user to sign up for My511GA alerts, which can be sent through email or text, with the ability to save favorite maps and cameras. The app opens to offer several menu	• Defaults to a 12-option screen, including interactive maps, corridor reports and highway events • Customized alerts available

Agency	App	Description and Developer	Highlights of Features Observed
		choices, beginning with an interactive map, which has a variety of layers that can be toggled. Many of these layers are available on the main screen, but do not load to a map. Instead, these layers are categorized by Metro Atlanta and Other Areas. *Developer: Iteris*	
Hawaii DOT	Go Akamai	The Hawaii DOT app offers traveler information for the island of Oahu. The app is map based, and it displays an overview of the island with seven common layers, which cannot be toggled. Additional functions are drive times of popular routes, and camera and incident listings. The app allows for routes to be saved by users, and incidents to be arranged by type, location or time. *Developer: ICx Transportation Group*	• Map-based app features seven layers • User can save routes from a list of routes to see drive times • Go Akamai Twitter account linked
Idaho Transportation Department (ITD)	Idaho 511	ITD operates a variety of streamlined and full feature travel information services. As part of these services, ITD operates a map-based app that allows for easy navigation of map displays of traffic, road conditions, cameras, DMS, and other events. *Developer: Castle Rock*	• The app centers the map to the location of the mobile device, allowing users to see nearby traffic flows or icons that display events • The hands free/eyes free option called "Tell Me" provides audio alerts of critical events ahead of the driver
Illinois DOT	Travel Midwest	The Travel Midwest app is the mobile version of the travelmidwest.com travel website. The app provides a traffic map with preset view centered on the metropolitan areas of Chicago, IL; Milwaukee, WI; Madison, IL; and Rockford, IL.	• Map layers include travel times, congestion, construction, incidents and weather • Select preset maps, your location, or have the app track your position in real-time • Recent update to the app (4/2015) includes a camera snapshot layer

Agency	App	Description and Developer	Highlights of Features Observed
		Developer: University of Illinois at Chicago	
Iowa DOT	Iowa 511	The app operated by Iowa DOT is map-based, allowing for easy navigation of map displays of traffic, road conditions, cameras, DMS, and other events. IADOT is in the process of adding additional 'app specific' functionality to the app. *Developer: Castle Rock*	• App loads to high-level view of user location, displaying road conditions, incidents, construction, etc. • Faster loading and zooming capabilities than with the Iowa DOT mobile site
Kentucky Transportation Cabinet	Kentucky 511	Kentucky's 511 app is map based and allows for easy and fast navigation of map displays of traffic, road conditions, cameras, dynamic message signs, and other events. The app centers the map to the location of the mobile device, allowing users to view nearby traffic flows or icons that display events. *Developer: Castle Rock*	• App loads to high-level view of user location, displaying road conditions, incidents, construction, etc. • Customized alerts available
Louisiana DOT and Development (LADOTD)	Way to Geaux	LADOTD operates an app that provides mobile alerts to app users and enables users to opt in to act as probes for gathering anonymous speed data. The mobile app also has the capability to ignore advisories that the user is moving away from, and only alert the user to those advisories that are in the direction they are traveling. *Developer: Information Logistics*	• Defaults to "On" to enable audio and new advisories to be played automatically when your mobile device is within vicinity of them • Can select to receive advisories in all directions or those user is approaching • Option to activate anonymous speed reporting, which are used to build information and improve reports
Michigan DOT	Mi Drive	The app developed by Michigan DOT provides real-time information to users before getting behind the wheel. *Developer: Michigan DOT*	• Interactive map (scroll and zoom) • Cameras and changeable message signs • Traffic speeds on major routes • Traffic incident and construction • Planned and active construction • Report potholes

Agency	App	Description and Developer	Highlights of Features Observed
Minnesota DOT	Minnesota 511	Minnesota's 511 app is map based and allows for easy and fast navigation of map displays of traffic, road conditions, cameras, dynamic message signs, and other events. The app centers the map to the location of the mobile device, allowing users to view nearby traffic flow or icons that display events. *Developer: Castle Rock*	• App loads to high-level view of user location, displaying road conditions, incidents, construction, etc. • Customized alerts available
Mississippi DOT	MDOTTraffic	Mississippi DOTs app is map-based and has three functions: traffic alerts, cameras and Dynamic Message Signs (DMS). The three functions can be viewed on the default map, or listed by area. App users can also subscribe to mobile notifications. *Developer: NIC*	• Alerts, cameras and DMS layers available in map view and listed by area • Traffic cameras display live video, rather than still images • Users can subscribe to mobile notifications by creating an account
Missouri DOT	MoDOT Traveler Information	Missouri DOT's app provides users with a fluid map and 6 layers to toggle, including weather, traffic conditions, traffic cameras, message boards and work zones. *Developer: Missouri DOT*	• Map layers paired with statewide map on app start-up • Menu options feature a list of road events classified by highway designation, and a My Routes function. Users can save a route by entering the origin and destination of their trip. Users can then receive text, email, or mobile notifications of real-time traffic alerts on their saved route.
Montana DOT	MDT Travel Info	Montana DOT operates a map-based app focused on providing information about road conditions, weather, incidents and construction. *Developer: Montana DOT*	• Extensive winter road condition classifications give users very descriptive road conditions • The app opens to a map of Montana that is almost entirely overlaid with an accompanying menu that lets the user search for locations, has links to major regional cities, offers text reports, and a camera list.
Nebraska DOT	Nebraska 511	Nebraska DOTs 511 app is map based and allows for easy and fast navigation of map displays	• App loads to high-level view of user location, displaying road

Agency	App	Description and Developer	Highlights of Features Observed
		of traffic, road conditions, cameras, DMS, and other events. The app centers the map to the location of the mobile device, allowing users to view nearby traffic flow or icons that display events. *Developer: Castle Rock*	conditions, incidents, construction, etc. • Customized alerts available
Nevada DOT	Your 511	Nevada DOT operates a map-based app that lists for example drive times, traffic camera feeds, and incidents. *Developer: ICx Transportation Group*	• App opens to a map overlaid with eight layers. • Listing of drive times, cameras, and incidents are secondary functions. • Users can save routes from a list of popular routes • Incidents can be arranged by type, nearest, or recent
New Jersey DOT	Safe Trip NJ	The Safe Trip NJ App provides mobile alerts to app users and on enabling users to act as probes to gather anonymous speed data. The mobile app also has the capability to ignore advisories that the user is moving away from, and only alert the user to those advisories that are in the direction they are traveling. *Developer: Information Logistics*	• Defaults to "On" to enable audio and new advisories to be played automatically when the user's mobile device is within vicinity of them • Can set location to PA, WV or NJ • Option to activate anonymous speed reporting, which are used to build information and improve reports
New Mexico DOT	NMRoads	The NMRoads app features a wide variety of functions. An interactive map is available, as are road conditions, cameras, message signs, roadwork sites, weather conditions, and transit and rest areas. *Developer: New Mexico DOT*	• Hands free function announces events that are ahead of the user on the road • App opens to 9 tiled functions
North Dakota DOT	NDRoads	North Dakota DOT's mobile app offers a variety of functions that are featured on the opening screen. Users can select a map that zooms to their location that displays closures/incidents and road conditions. Users can also	• Cameras and routes can be favorited • Message function within the app is used like an inbox

Agency	App	Description and Developer	Highlights of Features Observed
		directly select from the main screen whether they want to see a map or text list of conditions like work zones, cameras/ weather, warnings/events and load restrictions. *Developer: North Dakota DOT*	
Ottawa	Ottawa Nav	Ottawa's app allows real time, zone based communication between the City of Ottawa and its citizens. Zone centric information provides users with instant information such as events nearby. The app platform is managed using an administrative console controlled directly by City of Ottawa employees. *Developer: Flybits*	• Live camera • Road and traffic information • Zone centric navigation to provide information for example on when a building of interest is open around the user
Pennsylvania DOT	511PA	Pennsylvania DOT's app is hands-free that focuses on providing mobile alerts to app users. It has the ability to ignore advisories near the user and only call out advisories that the user is approaching. *Developer: Information Logistics*	• Defaults to "On" to enable audio and new advisories to be played automatically when the mobile device is within vicinity of the advisory. • Can set location to PA, WV or NJ • Option to activate anonymous speed reporting, which are used to build information and improve reports
Quebec	Quebec511	Quebec's app is map-based and has an extensive array of layers (e.g. road network conditions, mitigation measures, points of interest, monitoring); all 18 optional layers are turned on at start-up. *Developer: Transports du Québec*	• Defaults to user's location • Listing of Quebec regions and municipalities • Option to turn on or off a Google Traffic layer • Users can indicate "favorites" for certain features such as traffic cameras • Users can toggle automatic updates, set the data refresh rate, and also choose the map type (map, satellite or hybrid)
South Carolina DOT	511 South Carolina Traffic	South Carolina DOT's 511 app allows users to view various information from a map display,	• Defaults to a nine-option screen: interactive map, CCTV video feeds, message signs,

Agency	App	Description and Developer	Highlights of Features Observed
		including cameras, incident and message signs. *Developer: Iteris*	construction, incidents, alerts, Reach the Beach, DOT twitter accounts and hurricane evacuation routes. • "Reach the Beach" function denotes inland and ocean beaches and, when selected, provides users with possible routes to the selected beach.
South Dakota DOT	SDDOT 511	The South Dakota 511 app allows users to view information such as temperature, wind speed, radar and National Weather Service Alerts. The app also features winter road conditions classifications. *Developer: Iteris*	• Defaults to a 6-option screen, such as an interactive map, road conditions, and truck restrictions • Customized alerts available
Utah DOT	UDOT Traffic	The UDOT Traffic app is a map-based app with features that are presented using layers and unique sub-layers. For instance, when the Road Conditions layer is selected, sub-layer options of cameras, weather stations, mountain passes and travel advisories become available. When Construction is selected, sub-layer options then include Lane Closures and Construction Projects. Besides the map tab, there are three other tabs: Alerts, Weather and Mountain Pass. *Developer: Utah DOT*	• Map layer with unique sub-layer hierarchy • Has traffic, construction, road conditions, weather forecasts and bike paths layers
Virginia DOT	VDOT 511 Virginia Traffic	Virginia DOT's mobile app performs a variety of functions. The app caters to specific requests a user is likely to have, such as information about the state's two largest metropolitan areas; Arlington and Virginia Beach. *Developer: Iteris*	• The app defaults to a list of options such as travel times, road conditions, maps, Arlington-area transit information, trip planner functions and a "Reach the Beach" option.

Agency	App	Description and Developer	Highlights of Features Observed
Washington DOT	WSDOT	The Washington DOT app centers the map to your location and allows you to view events/ conditions. Other functions that the App downloads and allows users to access include static info such as Toll rates, and dynamic info such as Express Lane status and Travel Times. *Developer: WSDOT*	• Toll Rates – static info about toll rates by time of day • Traffic Map – quick loading map with traffic speeds (colors) and camera icons to view images • Traffic Map – centers based on the position of your mobile device • Travel Times – pulls up a list of origins/destinations and current travel times • Express Lanes – displays if express lanes are open and in which direction

West Virginia DOT	WV 511 Drive Safe	The West Virginia DOT app provides mobile alerts to users and enables users to act as probes to gather anonymous speed data. The app also has the capability to ignore advisories that the mobile device is moving away from, and only alerts the user to those advisories that are in the direction that they are traveling.
		
		Developer: Information Logistics
			• Defaults to "On" to enable audio and new advisories to be played automatically when the mobile device is within vicinity of the advisory
			• User can select preferences:
			  ○ WV construction
			  ○ WV Large/Heavy Truck
			  ○ PA Turnpike – Non-construction
			  ○ PA Turnpike Construction
			• User can choose a location: PA, NJ, WV, VA
			• Users can select to activate anonymous speed reporting

2.2 Private Sector

There are a number of apps developed and operated by private sector information service providers that provide traveler information to users. This section highlights the functions and features of a few private sector navigation apps and a few transit apps. These apps were found through an online search and through the various app stores.

2.2.1 Navigation Apps

Table 2 provides a list of the private sector navigation apps reviewed. This is not a comprehensive list of all private sector navigation apps, but rather provides examples of the functions and features offered by a few of the apps.

Table 2: Private Sector Navigation Apps Reviewed

App	Description and Publisher	Highlights of Features Observed
Waze	Waze provides traveler information with an emphasis on travel times, estimated times of arrival, and reporting of conditions and incidents/events along a route. Waze allows users to self-report observed events or conditions. *Publisher: Waze*	• Map centers on user location • Navigation route guidance • Users can share their drive and Estimated Time of Arrival (ETA), as well as send their favorite locations or current location to friends • Report functions: users can actively report events and take pictures of events • Map can be displayed in 2D, Auto, or 3D • Event radius of 5, 25, 50, 100 or 200 miles can be set
Beat the Traffic	Beat the traffic provides users with real-time traffic data. Traffic flows, estimated traffic times and incidents are provided. Ability to opt in for real-time traffic push notifications or email notifications specific to selected routes. *Publisher: Beat the Traffic*	• Public and private data, including crowdsourcing and their own reporters • Offers a "shake to report" feature (see an incident, shake to report it) • Offers a best route option • Personalized, with 'saved' trips • Rebranded under several News Channel traffic Apps
MapQuest GPS Navigation & Maps	The MapQuest app provides live maps, GPS, voice navigation and live traffic updates. Three different driving route options are provided to select the most optimal route. *Publisher: MapQuest*	• Routes users around accidents • Alternate route capabilities • Voice guided turn by turn navigation • Estimated time of arrival and location sharing features • Search nearby points of interest (e.g. coffee shop) • Compare gas prices
Sigalert – Traffic Report	The Sigalert is offered in 75 metropolitan areas and provides personalized routes showing only the conditions on the selected drive. *Publisher: Sigalert*	• Speed information • Traffic cameras • GPS integration for hands-free operation

App	Description and Publisher	Highlights of Features Observed
Scout GPS Maps, Meetup & Chat	The Scout app provides turn-by-turn GPS directions and can provide estimated time of arrival of others on a navigation map. *Publisher: Telenav, Inc.*	• OpenStreeMap (OSM) powers Scout's maps with a community of editors making updates to the map • Routes user around incidents and congestion • User can report traffic incidents, congestion, police and construction hazards.
Google Maps	The main functions of the Google Maps app are turn-by-turn navigation and browsing, as the search function is powered by Google's database. The app's scalable map can be viewed in standard view, satellite, and terrain. The app includes information such as incidents and construction reported from Waze, a vehicle navigation app with a social component, which Google purchased. *Publisher: AOL*	• Turn-by-turn navigation • Street view, photo sphere • Current traffic • Variety of transportation mode choices (walk, bike, transit, drive) • App functions as a spatial browser • Search by voice
INRIX XD™ Traffic Maps&Alerts	INRIX Maps&Alerts provides users with options to choose routes based on travel times and also provides recommended departure times based on traffic. *Publisher: Inrix, Inc*	• Traffic map • Travel times • Personalized traffic alerts • Share arrival times • Traffic cameras • Departure alerts • Community traffic reports from other INRIX app users

2.2.2 Transit Apps

Private sector companies have also developed applications to provide transit information to riders. While there are additional transit apps, Table 3 includes the transit apps reviewed for this project highlighting the features observed and a brief description of the app.

Table 3: Private Sector Transit Apps Reviewed

App	Description and Publisher	Highlights of Features Observed
Moovit	Moovit enables users to passively share data by leaving the app open while making their trip. Users can also actively share data by sending reports about delays, overcrowding etc. The app features a trip planning function, allowing users to receive instructions for riding transit to their destination. *Publisher: Tranzmate*	• Map centered on user location • Trip planning (multiple route options, can select , earlier or later departure times, routes can be mapped) • Turn-by-turn navigation route guidance available • Can subscribe to notifications for chosen routes • Can subscribe to route stops • Max walking distance setting • Transit type setting (bus, light rail, rail, etc.) • Accuracy improved by passive and active data sharing from users • Uses gaming conventions to encourage active user feedback
OMG Transit	OMG Transit's self-described purpose is to help people get from A to B without a car. To do so, the app was developed to become a 'decision engine,' and gives the user information to make their decision. The navigation function of the app enables the user to search for and select the start and end destinations. The app then tells the users the weather conditions, lists options to get to the destination that include: Transit, Car2Go (car-sharing service), Bicycling, Walking and Driving. When clicked on, each travel mode gives the amount of calories burned, the total time outside, the max interval outside, and how much time the user will spend waiting. Route guidance directions are then listed. Notably, the app does not map any of the travel mode routes, and only gives textual directions. *Publisher: OMG Transit*	• Listing of nearby transit stops and their arrival times • Information on a variety of travel modes: transit, car sharing service (Car2Go), bicycling, walking, Uber and driving options • Information to help users make informed decisions: calories burned, total time outside, max interval outside, and waiting time • Users can register a profile and create favorite locations

3.0 Traffic Safety Apps

Traffic safety apps are intended to deter unsafe actions, such as inattentive driving, or to monitor driving habits. This section includes a review of a few driver distraction apps and driver behavior apps, all of which were developed within the private sector.

3.1 Driver Distraction

Driver distraction apps are intended to help reduce distractions while driving (e.g. prevent texting or calling). Table 4 provides highlights five driver distraction apps reviewed.

Table 4: Driver Distraction Apps Reviewed

App	Description and Publisher	Highlights of Features Observed
TextArrest	The TextArrest app uses smartphone features to set parameters and enforce parameters for safe use. *Publisher: TextArrest*	• Locks the phone's screen • Prevents texts or emails from being sent or read while driving • Senses when the speed is greater than 5 mph and then activates the app features
ZoomSafer	The ZoomSafer app uses smartphones to detect driving and reduce distractions while driving. The app works with Audiovox Car Connection. The app is engaged when the vehicle's ignition is turned on. A curtain screen is brought up on the phone and all call and notifications are silenced. *Publisher: AegisMobility*	• Restricts cell phone activity • Allows parents to set a contact list of phone numbers that can be answered while traveling
Drivesafe.ly	The DriveSafe.ly app reads text message and emails out loud to avoid drivers touching their phone. *Publisher: DriveSafe.ly*	• Enables hands-free text and email use • Texts and emails are announced out loud • Allows user to respond by voice
Anti Texting Safe Driving	The Anti-Texting Safe Driving App focuses on limiting use of the cell phone while driving and records its use for later review. The app is primarily designed for parents to use with their children. The app only records/collects information while the user is in motion, which can range from driving to walking, and other travel modes. It can record teen driver's location, driving habits, any phone usage while driving, and other mobile distractions like	• Contacts (e.g. administrator) can be notified when GPS setting/app is activated • Administrator can set a radius from an address, such as a home, or the parent's phone, where the administrator will be notified if the user leaves the set radius from their chosen reference point • Administrator can set the speed at which the mobile device user will

App	Description and Publisher	Highlights of Features Observed
	incoming calls. If the speed threshold is set low enough, the app can also monitor the movement of younger children as they walk or bike, or use other non-motorized modes of travel. *Publisher: Everyonetexts Inc.*	no longer to be able to use the device. • Accelerometer records driver behavior • Sends notification if user overrides and disables the app • App accounts for a user using their phone while they are a vehicle or transit passenger, and allows them to opt out of the app.
AT&T DriveMode	The AT&T DriveMode app helps a user avoid text message alerts and incoming calls while driving by silencing the alerts. *Publisher: AT&T*	• App turns on when you are traveling 20 mph or higher • Parents can be alerted if the app is turned off • Sending text messages are restricted • Incoming calls go directly to voicemail

3.2 Driver Behavior

Driver behavior apps monitor the users' driving habits and practices. An example of this type of app is included in Table 5.

Table 5: Driver Behavior Apps Reviewed

App	Description and Publisher	Highlights of Features Observed
State Farm Driver Feedback	The State Farm Driver Feedback application was developed to help drivers understand the extent to which their driving habits are characterized as safe or risky. Driver scoring is based on acceleration, braking and cornering. Incentives to use the app are offered in the form of in-app achievements, which are unlocked by for example recording trips, earning high driving scores. *Publisher: State Farm*	• Records driving actions (acceleration, braking and cornering) • Unsafe driving actions are marked on map • Distractions like phone calls are marked on map

4.0 App Safety Agreements and Disclaimers

One aspect that is common to many apps is the inclusion of a safety agreement and/or a disclaimer. These agreements and disclaimers vary from app to app. Table 6 provides examples of the safety agreements or disclaimer text observed in the apps. It is important to note that many of the agreements used by the apps appear first when you download a selected app and some ask users if they agree to not use the app while driving.

Table 6: Examples of App Agreements and Disclaimer Text

App	Disclaimer Text
SafeTrip NJ	The application gives you audio player controls for Play, Pause, Stop, Skip, and Replay All. These controls should not be used while operating your vehicle. IMPORTANT – This application is intended to be launched while the user is not operating a motor vehicle. Users should not use their mobile device while driving.
511PA	While the app has additional features in the "More Features" section, PennDOT reminds motorists to not interact with the app while driving.
Travel Midwest	Driving while using this app is illegal and is a violation of the Terms and Conditions of this mobile app. 
Idaho 511	Do you agree to not use this application while driving?
SDDOT 511	Do not use while driving… possible consequences… State not responsible for damages caused by app use
VDOT 511 Virginia Traffic	Do not use this application while driving
AT&T DriveMode	Remember, when it comes to texting and driving… It Can Wait.

5.0 DOT Feedback on the Current Role of Mobile Apps

In addition to the review of current mobile apps described in Section 2.0 of this report, interviews were conducted to gather information from a selection of public sector agencies that both currently operate apps and that currently do not operate apps. The intent of this research was to assist ENTERPRISE members in understanding the various ways that DOTs perceive the role of apps within their overall traveler information program.

A questionnaire was developed to guide discussions for each interview. Interviews that were conducted with DOTs that utilize apps were held to understand:

- The motivation behind operating the app;
- Functions/features of the app;
- Plans for future enhancements to the app;
- Design standards that were used;
- Evaluation or assessment of feedback and impact of the app;
- Lessons learned with regard to a disclaimer; and
- Estimates of cost of deployment and operation.

The primary findings of the interviews with states operating mobile apps are as follows:

- Many apps developed by DOTs include the same information and functions as their desktop website. However, apps operated by DOTs perform additional functions not practical with desktop or mobile websites. The two most common additional functions are:
    - alerting drivers as they approach an incident or event using an audible alert that allows the drivers to remain 'hands-free' with the app, and
    - enabling users to report conditions or events using the mobile app.
- Apps that are maintained in house require a large time commitment from staff and there is urgency when changes are needed. However, there are benefits with a DOT having control over modifications to the app.
- Some DOTs that utilize the same vendor as other state DOTs for their app have benefited from enhancements made by the vendor to other similar apps.
- There has been a decrease with the number of views on desktop websites with states that have launched apps.
- DOTs that have developed apps do not feel competition with apps operated by private sector information service providers. The goals of DOTs are to disseminate information to as many travelers as possible and the private information service providers assist this. Several DOTs commented that their focus is on preparing accurate and timely information that can be shared with the private sector information service providers.

A total of six DOTs were interviewed that operate and maintain a traveler information app or are in the process of developing an app. Tables 7-12 on the following pages provide a summary of additional information gathered from these agencies.

Interviews that were conducted with DOTs that currently do not operate mobile apps were held in order to understand if they have considered mobile apps, what may prevent them from deploying an app and their overall approach to reaching travelers who use mobile devices. The primary reasons why some states do not currently operate a mobile app are as follows:

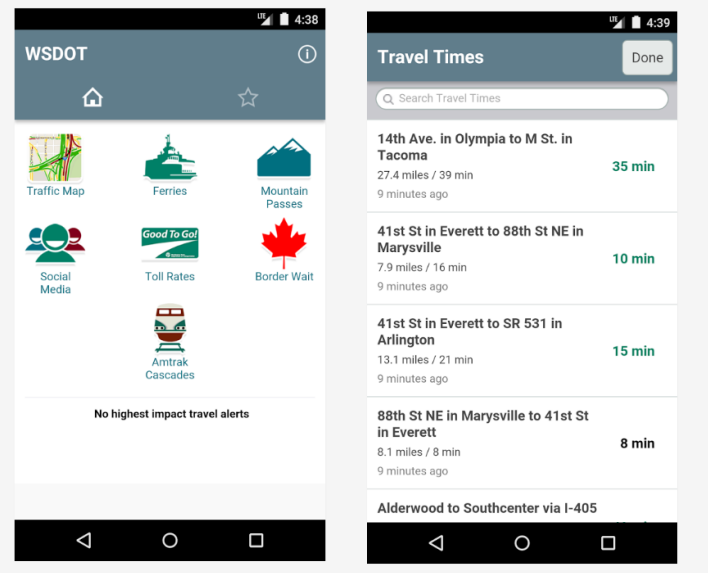
- Creating a DOT traveler information using responsive web design meets the need of an app for some DOTs. Responsive web design automatically resizes the display based on the device used, including mobile platforms.
- There is a high cost associated with developing an app, whether it is in house or through a vendor, compared to the typical number of downloads of the app.
- There are many 3rd party data providers that access and utilize data provided by the DOTs and this mechanism is a cost effective mechanism for enabling travelers to access data and information.

A total of three DOTs were interviewed that do not currently operate a mobile app. Tables 13-15 include a summary of additional information gathered from these agencies.

Table 7: Interview Summary: Louisiana Department of Transportation and Development (LDOTD)

Agency	Louisiana Department of Transportation and Development
Contact	Carryn Sollie
Interview Date	March 19, 2015
App	Way To Geaux   *Source: https://itunes.apple.com/us/app/way-to-geaux/id562322538?mt=8*
Developer	Information Logistics
Features and Functions	• Hands free and eyes free. • Driver starts the application when leaving a location and travel advisories are broadcasted aloud to the driver within a set mile-range with the option to hear alerts either in front of the driver or in all directions. • Uses the phone's built-in GPS to stream nearby alerts. • Feedback feature for users to report any issues.
Reason for App	• App provides an additional method for the public to receive traveler information while driving. • App is an additional tool for travelers to receive information. • DOT does not want to compete with other apps. Instead, it wants to emphasize that the data provided by the DOT is accurate, timely and accessible to 3rd party data providers through the Conditional Acquisition Reporting System (CARS) data hub.
Lessons Learned	It is difficult to change the app now that certain functionality is provided to users.
Other	• The DOT receives a set dollar amount for traveler information and then determines how funds are spent. Currently the trend is for more emphasis on supporting the app than the 511 phone service. • There is also increased emphasis on improving data quality, and sharing data with 3rd party information providers.
Marketing	DOT Press Releases
Cost	Approximately $70,000 annually
Downloads	34,000 downloads as of March 2015

Table 8: Interview Summary: Washington State DOT (WSDOT)

Agency	Washington State Department of Transportation
Contact	Jeremy Bertrand
Interview Date	March 23, 2015
App	WSDOT  *Source:* *https://play.google.com/store/apps/details?id=gov.wa.wsdot.android.wsdot*
Developer	WSDOT
Features and Functions	• Seattle traffic and traveler information • Travel times • Traffic map • Statewide traffic cameras • Ferry schedules and alerts • Ferry vessel watch • Mountain pass reports • Toll rates • Northbound and southbound Canadian border wait times • Feedback from users through email • Tweets are displayed
Reason for App	• WSDOT has a mobile audience • Provides a mobile venue for users instead of searching traveler information on the WSDOT website

Lessons Learned	• If information is delayed or there is a network outage from WSDOT to the app, there is not a way on the app to do a splash page similar to a desktop website indicating the issue. This has a negative reflection on the app. • WSDOT is interested in increasing the functions of the app (e.g. audio alerts), however other issues are prioritized and addressed first. • The WSDOT app was developed in house. It has been challenging keeping up with the framework. For example, if Google changes their API it is difficult to add features to the WSDOT app. However, when a change to the app is needed WSDOT is able to respond quickly because of owning and operating it in house. • There are some issues with users not downloading updates to the app and not having the most recent modifications. The app is usually updated if new features are added or if a fix is made.
Other	The number of views to the WSDOT desktop website has decreased with the launch of the WSDOT app. However, when it snows the number of views to the desktop website increases especially in King County. The desktop portion is averaging nearly 50% usage from mobile devices even with the app being available.
Marketing	Marketing was conducted primarily through the WSDOT website
Sponsorship	Advertising is included within the app. One company currently has an exclusive contract with WSDOT for sponsorship. There have not been many complaints by the users of the app when the advertising was added.
Cost	The WSDOT app was developed in house and staff time is used to update and maintain the app.
Downloads	478,000 downloads since it was launched in 2010
Future of apps	WSDOT is creating a next generation traveler information website (responsive, mobile first design) and it will be interesting to see if mobile desktop use increases and app use decreases.

Table 9: Interview Summary: Wyoming Department of Transportation

Agency	Wyoming Department of Transportation
Contact	Vince Garcia and Ali Ragan
Interview Date	June 15, 2015
App	Scheduled to launch in the winter of 2015-2016.
Developer	Initial development by Timmons Group. To be operated and maintained by the Wyoming DOT after development.
Features and Functions	• Map interface similar to desktop website but with simplified travel impact colors • Hands free feature to speak aloud road conditions • Where's my location – identifies users location to nearest fraction of a mile marker • Photos of conditions – users have the ability to take a geolocated photo of road conditions and send the photo to Wyoming DOT for verification and posting

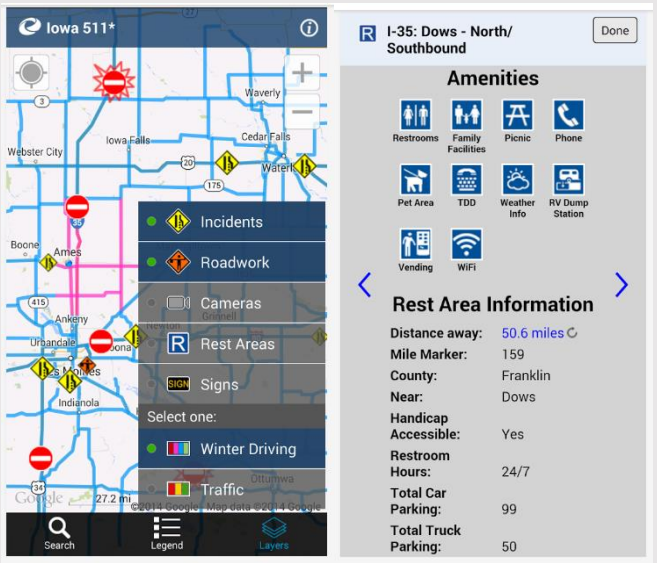
Reason for App	• There was interest in developing an app for quite a while, however funding was not available until recently to support the effort.
Lessons Learned	• The timeline to select a vendor through an RFP process took longer than anticipated. • Identify vendor data needs early in the app development
Other	• It is important to the Wyoming DOT that the information provided by the DOT is disseminated by the DOT. • Wyoming DOT has many rural areas and their goals for providing traveler information in these areas may be different than a 3rd party provider.
Marketing	Press releases
Cost	The initial cost to develop the app was $242,000. In house staff time will be used to update and maintain the app.

Table 10: Interview Summary: Pennsylvania DOT (PennDOT)

Agency	Pennsylvania Department of Transportation
Contact	Doug Tomlinson and Mark Kopko
Interview Date	April 1, 2015
App	511PA  *Source: https://play.google.com/store/apps/details?id=com.infolog.pa511*
Developer	Information Logistics
Features and Functions	• Real-time, hands-free traffic advisories for every PennDOT roadway. • Driver starts the application when leaving a location and travel advisories are broadcasted aloud to the driver within a set mile-range with the option to hear alerts either in front of the driver or in all directions. • Uses the phone's built-in GPS to stream nearby alerts. • Mobile website is embedded into the app and users can view the mobile website features such as camera images.

Reason for App	• Previously, PennDOT operated a dedicated mobile website, and a mobile app was the number one request through feedback received by PennDOT. • The Pennsylvania Turnpike, New Jersey DOT and West Virginia DOT have a hands free app. Upon exploring these, Penn DOT became interested in exploring a similar hands free app.
Lessons Learned	• Benefitted by working with a vendor that has developed and operates apps for multiple DOTs. The vendor maintains the app to function with current mobile devices. • It is important to document and clearly identify what the DOT is accomplishing with an app before it is developed. It is also important to identify the benefits of an app vs. a desktop website. • PennDOT suggested developing apps with features and functions that DOT staff would use.
Other	• The PennDOT app is currently only available for iPhone and Android users. However, with Windows 10 mobile devices gaining the ability to run modified Android & iOS app this summer, the 511PA vendor will be reworking the current apps to ensure they will work on Window devices. As a result, there is no longer a need for a dedicated Windows app. • Currently, the app is very much 'hands free'. PennDOT is currently looking at expanding the interactive portion of the app (recognizing that often the user is a passenger and is able and wants to interact with the app to select content or view specific information.) PennDOT recognizes that some users prefer a more graphical display vs. audio alerts. • Future enhancements to the app may include pre-established routes and parallel routes to estimate arrival time. • PennDOT does not own the app. The current contract will expire with the developer after four years.
Cost	• $10,000/month for developer to host, maintain and update app. • New Jersey DOT, West Virginia DOT and the Pennsylvania Turnpike operate the same app as Pennsylvania DOT. If any of the agencies make a change, other users benefit from the modification.
Downloads	• 50,790 downloads since June 1, 2015
Future of apps	• It is anticipated that the DOT level of effort will be ramped down as private sector information continues to be enhanced. • PennDOT has considered identifying trusted providers. DOT would identify the needs and if a provider met the needs that would be noted as a trusted PennDOT provider. • Flexible in moving forward, PennDOT does not want to compete with private sector apps, but right now PennDOT is filling a gap.

Table 11: Interview Summary: Iowa Department of Transportation (IADOT)

Agency	Iowa Department of Transportation
Contact	Sinclair Stolle
Interview Date	June 22, 2015
App	Iowa 511  *Source:* *https://play.google.com/store/apps/details?id=com.transcore.android.iowadot*
Developer	Castle Rock Associates
Features and Functions	• Zoom-enabled map with traffic event icons • Real-time updates • Traffic speeds • Traffic camera images • Electronic roadway signs messages • Highway rest area locations Iowa also provides a separate 511 Trucker App that includes the information from the Iowa 511 app with the features mentioned above but also provides commercial vehicle restriction information including weigh station locations.
Reason for App	• There was interest to reach out to mobile users as technology uses change
Lessons Learned	• Initially some negative feedback was received by users that felt the app encouraged use while driving. However the Iowa DOT app states that the app should only be used when the motor vehicle is at a complete stop. The app was developed to provide another mechanism to receive real-time information for a user's route. • In 2012 the Iowa 511 app was developed by a different vendor then Iowa's 511 website vendor. There were some challenges with consistency in how information was displayed between the app and the website. In 2014 Iowa changed vendors for their apps to utilize the same vendor for both the 511 website and app which has resolved consistency challenges.

Other	Iowa benefits with enhancements to their app from other states that have used the same vendor to develop their app.
Marketing	Press releases and social media were used to announce the app
Sponsorship	There is no sponsorship for the app.
Cost	$6,500 annually for maintenance and operation.

Table 12: Interview Summary: Montana Department of Transportation

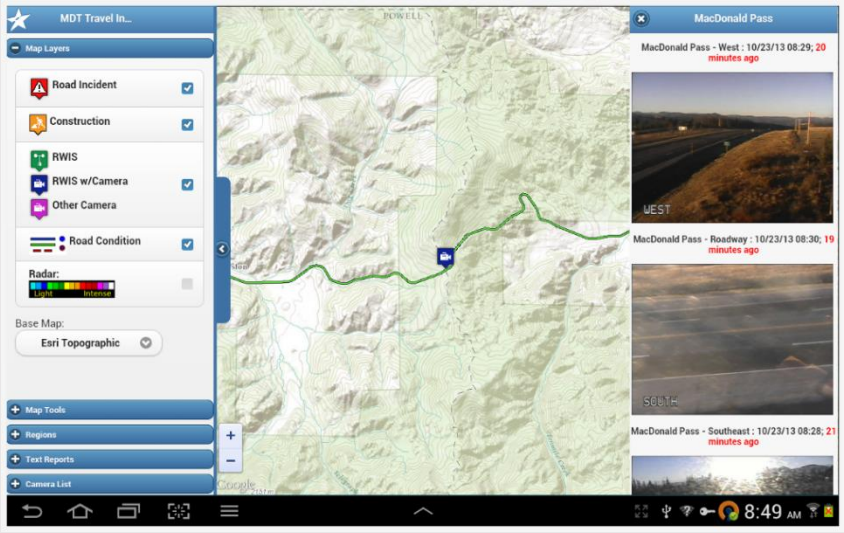
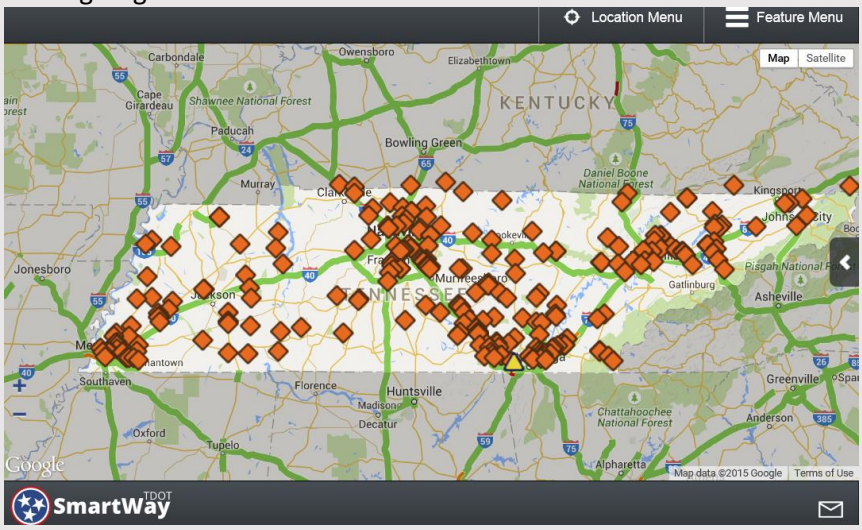
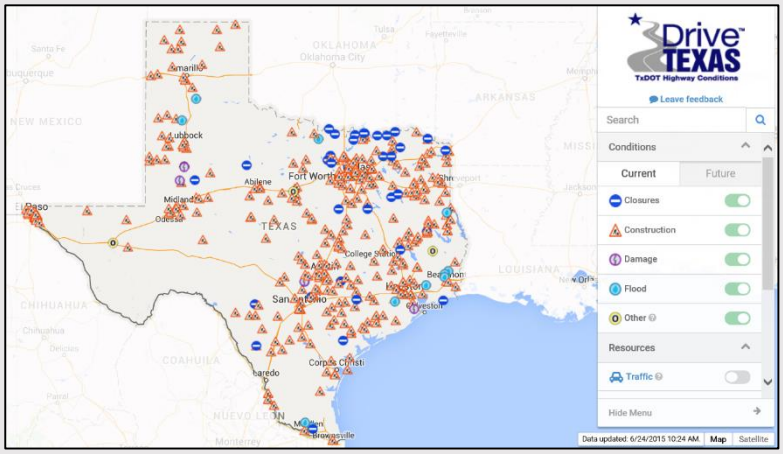
Agency	Montana Department of Transportation
Contact	Brandi Hamilton
Interview Date	June 25, 2015
App	MDT Travel Info  *Source: https://play.google.com/store/apps/details?id=gov.mt.mdt*
Developer	Montana DOT
Features and Functions	• Road conditions, construction projects, road incidents, still camera images, and atmospheric information • User can find their current location and map routes
Reason for App	Montana DOT received feedback that it was difficult to navigate the traveler information website from mobile devices.
Other	• App launched in 2012 • The app was developed in house and is updated and maintained by Montana DOT staff. There are benefits with Montana having control to make modifications to the app as well as the traveler information website that was developed in house, however there is large time commitment and urgency when changes are needed.
Marketing	Initial launch of the app was not marketed separately. Promotion of the app was included in other press releases. However with each mention of the app it has boosted downloads of the app.
Cost	In house staff time.

Table 13: Interview Summary: Tennessee Department of Transportation

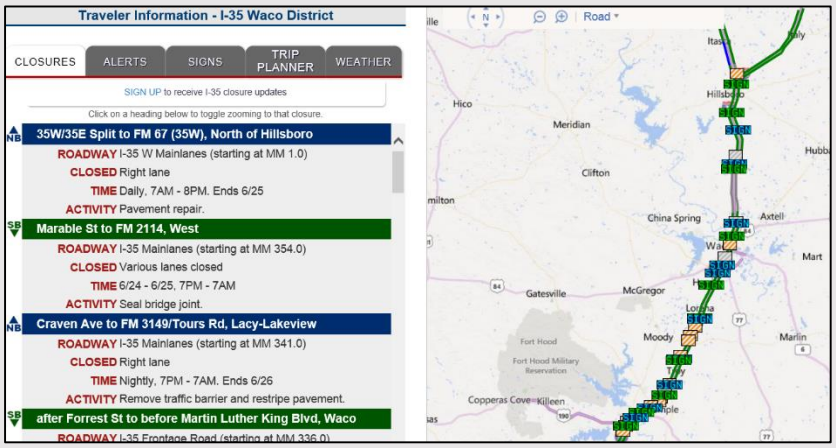
Agency	Tennessee Department of Transportation
Contact	John Hall and Mike Nichols
Interview Date	June 24, 2015
Traveler Information Website	TDOT does not operate an app, they operate a traveler information website (SmartWay Traffic) that was developed in house by TDOT. In January 2015 TDOT launched a new iteration of this website using responsive web design that automatically resizes the display based on the device used, including mobile platforms. The website features include road conditions, traffic cameras, message signs and caution items.  *Source: https://smartway.tn.gov/traffic/*
App	Prior to January 2015 TDOT did operate and maintain an app to provide traveler information. The app was developed and maintained by a vendor. However with the revised website using responsive web design the apps were discontinued and removed from app stores.
Press Releases	Press releases were utilized when the traveler information app was removed from the app store and replaced with the new iteration of the website. Press releases are also continually used as enhancements are made to the website. TDOT has not received any concerns with removal of the app from the public since they actively announced how the information would be provided with discontinuing of the app.
Other	TDOT receives a lot of feedback on their SmartWay Traffic website and is able to make adjustments utilizing in house staff as needed. TDOT released the new version of the website knowing that enhancements and changes would be needed along the way and are actively making these changes as they arise.
Cost	In house staff time. TDOT staff developed the SmartWay Traffic website as well as operates and maintains the website.

Future of Apps	TDOT is currently working to provide the best possible highway event data to the motoring public through the TDOT SmartWay Traffic site. The site will continue to improve with in-house development. TDOT is also working at providing that same level of highway event data to 3rd party sources through open data APIs, for use with more extensive travel and navigation tools for the public, through native apps developed elsewhere.

Table 14: Interview Summary: Texas Department of Transportation

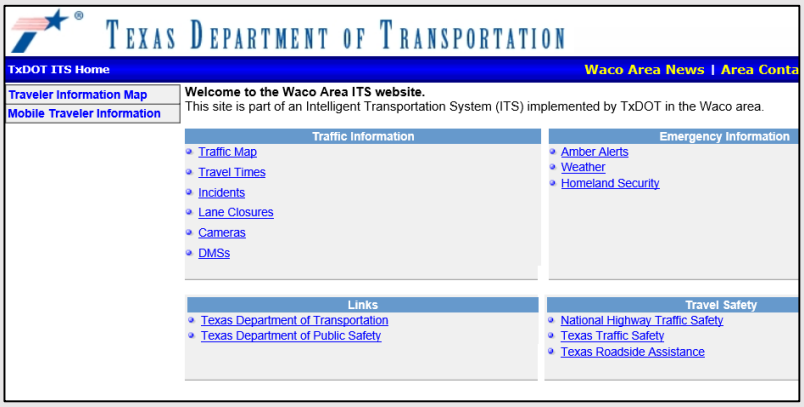
Agency	Texas Department of Transportation
Contact	Charlie Farnham and Ron Fuessel
Interview Date	June 24, 2015
Mobile Websites	TxDOT does not currently operate a traveler information app. They operate a few traveler information websites that provide mobile friendly sites. However, TxDOT is working on a long term project to consolidate all of their traveler information websites into one site. • The Drive Texas website provides statewide traveler information, there is criteria on information that is posted (e.g. duration of a closure) which may not include all real-time information for the state. The website is linked from the TxDOT home page and is also used by Texas in visitor information centers. The website automatically adjusts for mobile users.  *Source: http://www.drivetexas.org/#/7/32.340/-99.500*

- The I-35 Waco website is a project specific website that provides traveler information along the I-35 Corridor. The information from this website is linked from the Drive Texas website, however the data is not ingested into the Drive Texas website.



Source: http://i35-maps.tti.tamu.edu/

- The TxDOT ITS website provides traveler information (traffic map, travel times, incidents, lane closures, cameras, DMS) by regions throughout the state. The information is also available via a mobile traveler information website. There are differences in how the information is displayed on the mobile website. For example static images are displayed of the traffic map, compared to the high-bandwidth website where users can select map layers and zoom. It is important to note that only cameras are linked from the TxDOT home page which has made it is difficult for users to find and use both the ITS website and the mobile website.



Source: http://its.txdot.gov/

Developer	TxDOT is currently working with a vendor to rebrand an app that will in the first phase provide congestion and incident information. The data for the app will be from instrumented TxDOT roads and supplemented with 3rd party data. It is anticipated the sponsorship will be used to fund the app as well as future traveler information enhancements for TxDOT. The reason for developing the app is to provide Texas with a mechanism to meet SAFETEA-LU Section 1201 Real-Time System Management Program (RTSMIP) requirements for monitoring and providing traffic and travel conditions. The second phase for an app will be developed after all of the TxDOT traveler information sites are consolidated to one website. This app will be customized for TxDOT based on the one traveler information website.

Table 15: Interview Summary: Indiana Department of Transportation (INDOT)

Agency	Indiana Department of Transportation
Contact	Ed Cox, Indiana DOT
Interview Date	April 2, 2015
App	• INDOT does not operate a traveler information app. They operate traveler information websites and 511 phone systems. • At this time, they have no plans for deploying an app
Reason for NOT developing an App	• Observation of other state DOT apps that have minimal downloads compared to private app developers and providers • There are multiple apps that access the INDOT traveler information data and disseminate it to travelers. INDOT shares data with multiple information providers and media outlets. They believe this is a cost effective mechanism for enabling travelers to access data and information.
Future of apps	• INDOT will feed data to as many private apps as possible to encourage continued private sector app development • INDOT has not ruled out possibly developing a DOT operated app in the future.

6.0 Findings and Conclusions

The features and functions of the traveler information apps and traffic safety apps reviewed for this project varied in content, functionality, and features provided. However, all apps focused on providing the user with additional information either en-route or prior to a trip. This section provides a summary of the information gathered for this project.

Traveler Information Apps

State and Provincial DOT

The review of state and provincial DOT apps identified three common functions of mobile apps:

- Mobile apps that perform similar functions to the DOT desktop and/or mobile website, often including map displays of driving conditions, incidents, road work, etc. The primary difference between the mobile app and the DOT website is often the ability of the mobile app to locate the mobile device on the map, effectively zooming the map to where the user is located;
- Mobile apps that provide audio alerts to drivers/passengers alerting them to nearby incidents or conditions; and
- Mobile apps that allow users to report conditions (passively or voluntarily) to the DOT.

The following table includes a description of these functions and identifies the state or provincial DOTs that operate apps that perform each of these functions. It is important to note that the functions and features of mobile apps are constantly changing and even as this report was developed additional features may have been added to DOTs app.

Table 16: State and Provincial DOT App Features Observed

App Overview	Agencies Observed	
Similar Functions to Desktop and/or Mobile Website The features offered by these apps are similar to those of the DOT's desktop and/or mobile website. The apps typically offer enhancements to the desktop website, such as zooming the map to the location of the mobile device and quick downloads of data to be displayed on the app interface.	• Alabama • California – Sacramento • California – San Diego • California – Inland Empire • Florida • Hawaii • Idaho • Illinois • Iowa	• Kentucky • Michigan • Minnesota • Mississippi • Missouri • Montana • Nebraska • Nevada • Ottawa • Quebec • Utah • Washington
Automated Alerts These apps offer automated alerts to the users, typically as audio announcements of incidents, road work, or driving conditions that the app user is approaching. This enables drivers with the app open	• California – San Diego • Colorado • Florida • Georgia • Idaho	• Mississippi • New Jersey • New Mexico • North Dakota • Pennsylvania • Utah

to hear the alert without any need to view the app or touch the screen to request information.	• Louisiana • West Virginia
Users Report Conditions/Events These apps include features that enables users to report conditions, incidents, or events (either manually or automatically). The reports are typically sent to the DOT to be considered for inclusion in traveler information reports.	• Alaska • Michigan • Louisiana • New Jersey • Pennsylvania • West Virginia

Private Sector

Some of the private sector navigation apps provide traveler information (e.g. traffic flows, incidents) similar to the information DOTs disseminate through their apps. Many of the private sector apps reviewed for this project encouraged feedback and active reports from their users on congestion and incidents. Transit apps reviewed also focused on the user providing real time information for others to review (e.g. delays, overcrowding). Some of the private sector apps also highlight the capability to provide a friend with your estimated time of arrival. Additional information may also be available on private sector apps including nearby points of interest such as a coffee shop based on the users location.

Traffic Safety Apps

A number of driver distraction apps were reviewed that focus on reducing distractions while driving. Most of these apps prevent texting or calling when the app is used to reduce distraction to the driver. These apps may also have the feature of sending incoming calls to voicemail.

Driver behavior apps were also reviewed that monitor the user's driving habits and practices. These types of apps are used in many situations by parents to monitor their child's driving habits and assess whether the behaviors are safe or risky.

App Safety Agreements and Disclaimers

Most of the DOT ad private sector apps reviewed contained safety agreements and/or disclaimers. The purpose of these disclaimers is to remind users to not control the app while driving. The text in these agreements or disclaimers varies from app to app, but are focused on reminding the user to not interact with app while driving. It is important to note that many of the agreements appear first when you download a selected app and some ask users if they agree to not use the app while driving.

Current Role of Apps within the DOTs

Several DOTs have developed traveler information apps for a variety of reasons. One key reason is to enable travelers to receive information in a safe manner through hands-free access from their mobile device. DOTs also noted that public feedback was indicating a desire to access traveler information through an app, and this was a motivator for multiple agencies to develop mobile apps. It is important to note the some DOTs also felt more comfortable owning the app and knowing how the information

provided by the DOT is being used and presented, while other DOTs rely solely on private sector apps disseminating the DOT data.

DOTs that have developed apps in house have noted challenges with keeping up with the framework to maintain the apps. States that have used private developers for apps noted the benefits of hiring a developer to create the app and to retain the responsibility of maintaining and updating the app.

It is also important to highlight that one DOT did operate and maintain an app to provide traveler information. The app was developed and maintained by a vendor. However with the development of a revised website using responsive web design the apps were discontinued and removed from app stores.

Many of the DOTs noted that they appreciate the fact that private sector information service providers are disseminating information to travelers, and they do not feel they are competing with these providers. They believe the combined public and private information dissemination is beneficial, and for this reason they are happy to share information with private information providers. Several DOTs indicated that it is possible the DOT level of participation with developing and maintaining traveler information apps may decrease as more information is available from private providers.