



Crowdsourcing

the practice of obtaining content by soliciting contributions from a large group of people



Crowdsourcing Approaches

Alana Brophy @AlanaBrophyNews · Aug 7
Power out at stop lights in North Salt Lake @abc4utah #utwx



Social media monitoring and mining



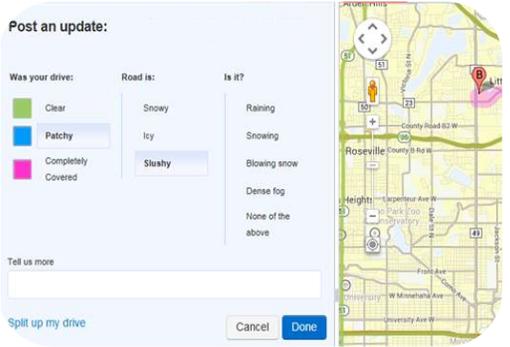
Third-party smartphone traffic apps

Post an update:

Was your drive:	Road is:	Is it?
<input type="checkbox"/> Clear	<input type="checkbox"/> Snowy	<input type="checkbox"/> Raining
<input checked="" type="checkbox"/> Patchy	<input type="checkbox"/> Icy	<input type="checkbox"/> Snowing
<input type="checkbox"/> Completely Covered	<input checked="" type="checkbox"/> Slushy	<input type="checkbox"/> Blowing snow
		<input type="checkbox"/> Dense fog
		<input type="checkbox"/> None of the above

Tell us more

Split up my drive



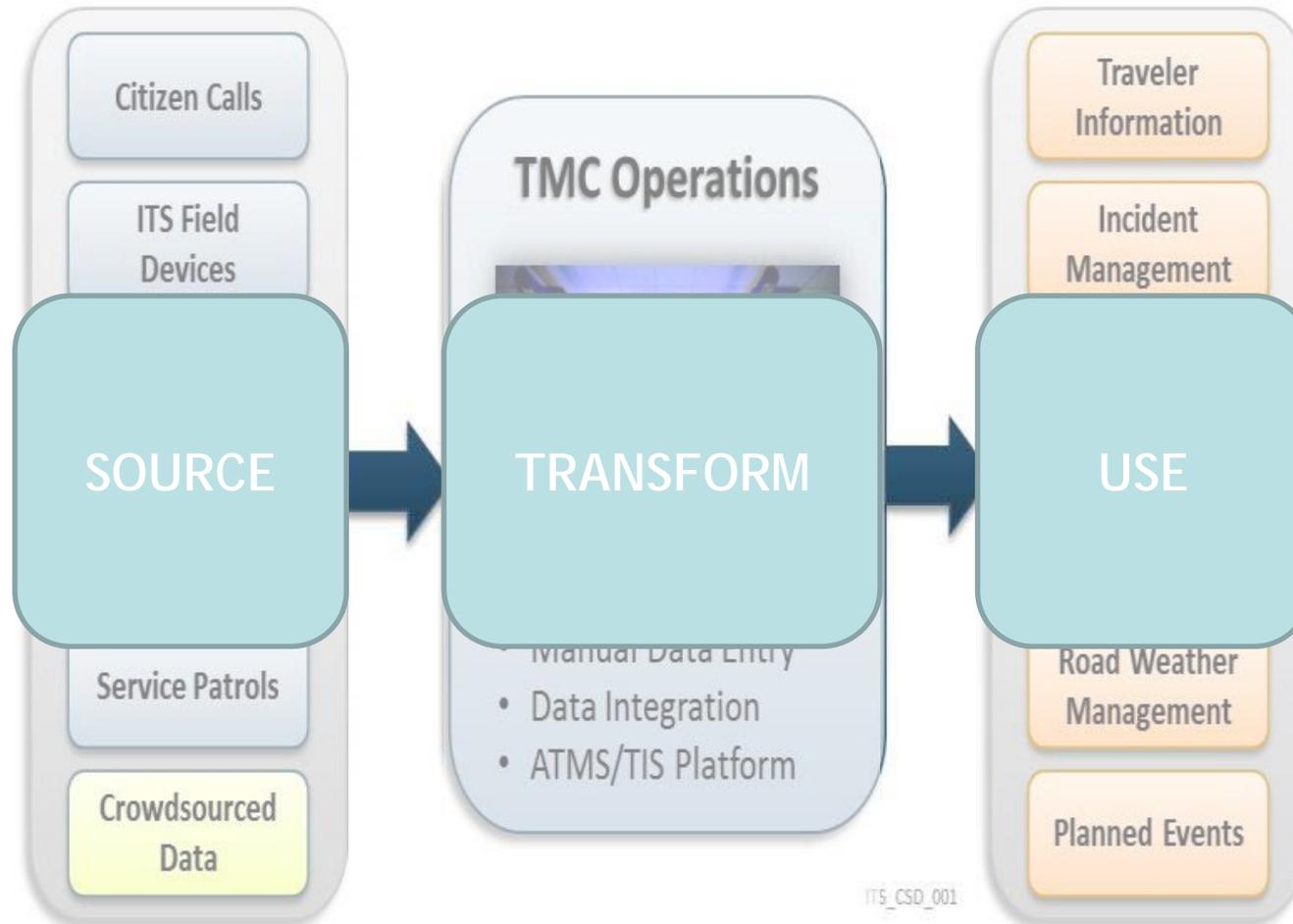
DOT citizen reporting programs



Connected vehicles



Operational Usage



Source: Adler et al, 2015: "Estimate Benefits of Crowdsourced Data from Social Media." Report No. FHWA-JPO-14-165, February 2015.



Considerations for all forms of crowdsourcing

- Subject to distracted driving laws/safety.
- Data latency/quality depends upon reporter and device used.
- Coverage increases with public participation.
- Coverage increases around metro areas, during weather events, during peak travel times.
- Automatic QC may be used; manual QC may be preferred.
- Malicious content filtering a good option.
- DOT can use crowdsourced data internally or externally.
- Consider data ownership, proper attribution, anonymization, etc.



Social Media Monitoring



Scott Carpenter @kwajcarps · Apr 15
4.5 SE SLC Now heavy snow and accumulated on roads. @NWSSaltLakeCity
#utsnow

Scott Carpenter @kwajcarps · Apr 15
4.5SE SLC 4753' 4 in. Snow on grass at 7am. Still snowing mdly. Slush on roads. Road slush worse closer to UofU. @NWSSaltLakeCity #utsnow

Alana Brophy @AlanaBrophyNews · Aug 7
Power out at stop lights in North Salt Lake @abc4utah #utwx

Wendy Garcia @IntoRainbowz · Aug 7
Storm pictures over Brigham City Utah. Yes I'm the passenger. #utwx light rain. Lightning to west

Specific considerations:

- Wealth of data, but small fraction is road weather specific.
- Monitoring may be manually intensive - software is available - #hashtags, also.
- Reports subject to inconsistencies, errors, obscenities, exaggeration, etc.
- Secondary verification may be required.
- Back-and-forth communication allows for gathering more info.
- Certain users more trusted.
- Photographic information is possible and very helpful.



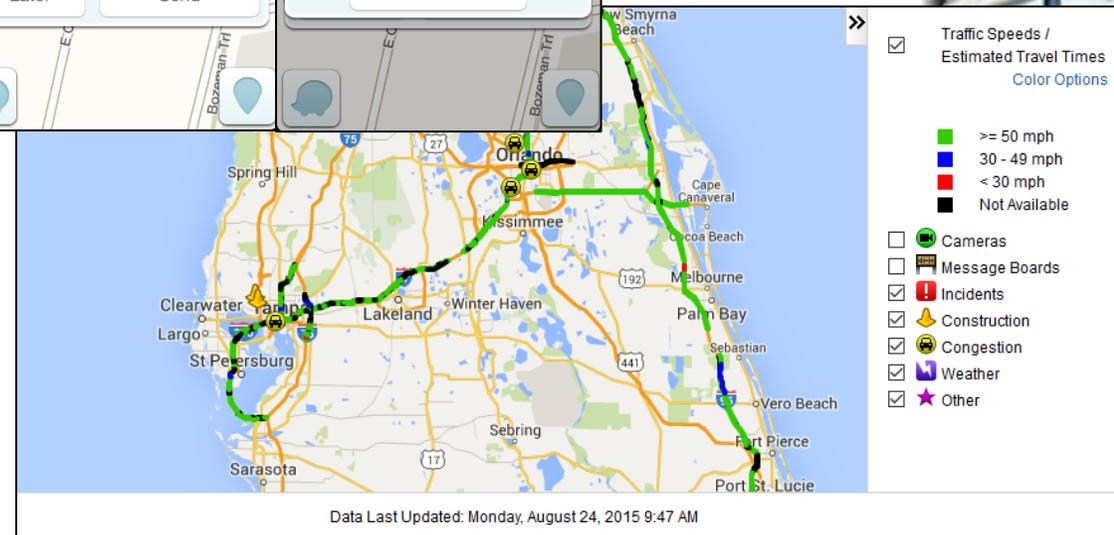
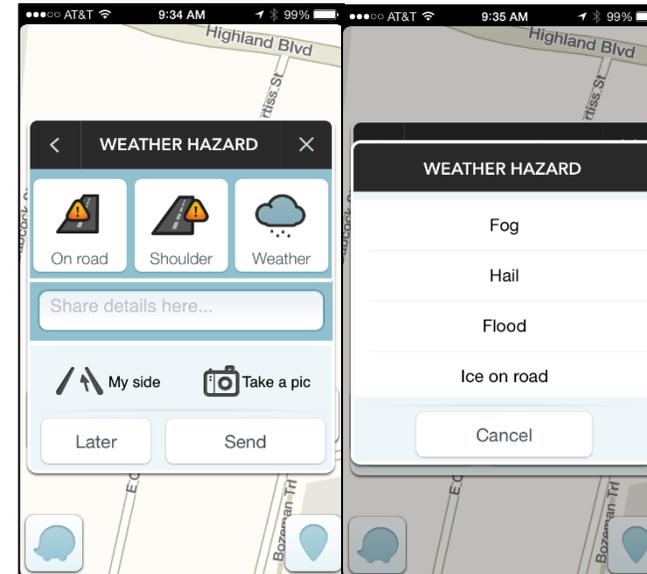
Third-party Apps



Waze Connected Citizens Program
www.waze.com/ccp

Specific considerations:

- DOT has less control of data collection.
- Fewer weather-specific reports.
- Data can be very noisy.
- Regular users gain credibility so data is more trusted.



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Citizen Reporting Programs

Overview of current practices at WY, UT, ID, IA & MN DOTs:
"Citizen Reporting of Current Road Conditions."

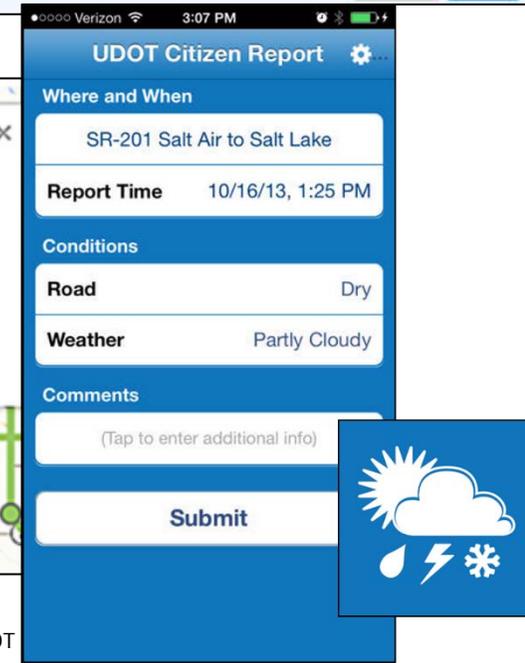
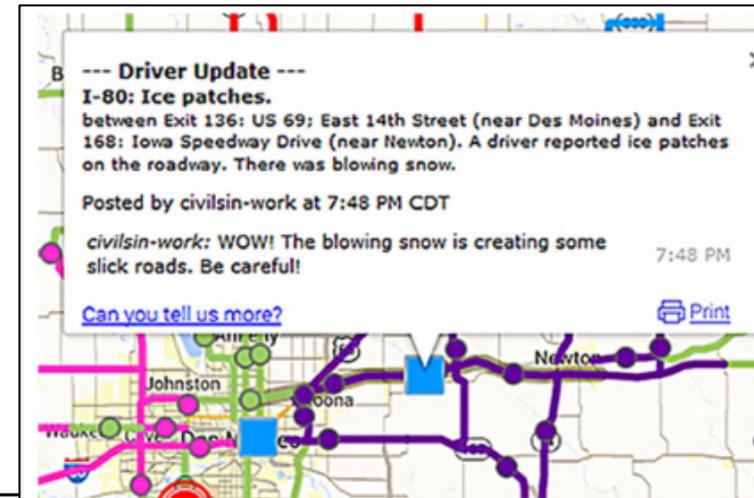
http://ops.fhwa.dot.gov/weather/best_practices/citizenreportingcrc/

Specific considerations:

- Data collection is controlled/managed by DOT.
- App functionality customizable to needs.
- QC through reporter training.
- User base not as wide (as general public).
- Work required to develop program.



The screenshot shows the Minnesota Department of Transportation's website interface for reporting road conditions. At the top, there is a navigation bar with the state logo, the text "Minnesota Department of Transportation", and links for "511 Info" and "Win". Below the navigation bar, there are options for "Text Size A A A", "Text Only", and "Future Info: [calendar icon]". A search bar with a magnifying glass icon and a home button are also present. The main section is titled "Post an update:". It features three columns of radio button options: "Was your drive:" (Clear, Patchy, Completely Covered), "Road is:" (Snowy, Icy, Slushy), and "Is it?" (Raining, Snowing, Blowing snow, Dense fog, None of the above). Below these options is a text input field labeled "Tell us more" and a "Split up my drive" button. At the bottom right, there are "Cancel" and "Done" buttons.



The screenshot shows the UDOT Citizen Report app interface. At the top, it says "UDOT Citizen Report" with a settings gear icon. Below that, there is a "Where and When" section with a text input field containing "SR-201 Salt Air to Salt Lake" and a "Report Time" field showing "10/16/13, 1:25 PM". The "Conditions" section has two rows: "Road" with a dropdown menu set to "Dry" and "Weather" with a dropdown menu set to "Partly Cloudy". Below this is a "Comments" section with a text input field and a placeholder "(Tap to enter additional info)". At the bottom, there is a large blue "Submit" button. In the bottom right corner, there is a blue square icon with a sun, cloud, rain, lightning, and snowflake.



Questions

Please include what organization you're from and what approaches your org uses: social media monitoring, third-party apps, or citizen reporting.

Specific to road weather operations...

1. How has crowdsourced information changed/improved road weather operations at your agency?
2. What concerns do you have about crowdsourcing? What roadblocks have you run into?
3. What questions do you have for others?

