



**The Eastern Transportation
RITIS Workshop: Exploring Probe Data Analytics Suite Tools and the Updated
Volume Estimation Models That Drive Them – March 19, 2024
Question and Answer Summary**

Note: Results from polling questions asked during this web meeting are at the bottom of the document.

Q: Mathilda Rilovich (Louisiana DOTD): Can you explain the difference between PDA and NPMRDS? I thought they were the same.

A: Rick Ayers (University of Maryland CATT Lab): The underlying data is different between the two. PDA Suite also has tools with more capabilities than NPMRDS.

Some states license minute-to-minute probe data from third-party data providers such as INRIX, HERE, or TomTom. That probe data gets archived by the CATT Lab and is updated on a much more frequent basis. Probe data analytics and the tools within the PDA Suite allow you to ask detailed questions and query the third-party probe data. NPMRDS Analytics is a national data set that's hosted by the Federal Highway Administration (FHWA). It has 5-minute increment data and only covers the National Highway System. The underlying data is different as well as the tools that can be used for each.

Q: Mena Lockwood (Virginia DOT): Can you show the hourly breakdown of the User Delay Cost (UDC) comparison? Do the ground truth sites include highly congested locations or times?

A: Mark Franz (University of Maryland CATT Lab): We only looked at the daily UDC at each station for our validation. The sites include both rural and urban locations. The urban locations were located on the Capital and Baltimore beltway which suffer from significant congestion.

Q: Thomas Murtha (Chicago Metropolitan Agency for Planning (CMAP)): On slide 16, the bar chart shows the change in user delay cost, not volumes. Is the change in actual volume estimates proportional?

A: Rick Ayers (University of Maryland CATT Lab): The graph shows the dollar cost analysis using the volumes from each source (volumes directly from the ATR stations, volumes from the volume profiling method, volumes from the car following method, and volumes estimated from our historic volume profiling method). As shown on the graph in slide 16, the ATR station UDC cost was very similar to the car following volume and volume limiting estimations.

Q: Alejandro Ortega (Choice Engineering): Does anyone with the RITIS account have access to this new tool?

A: Rick Ayers (University of Maryland CATT Lab): If you have RITIS credentials, you should be able to log into NPMRDS Analytics or the PDA Suite Analytics. Both have the UDC Tool; it's the icon with the dollar sign.

Q: Nathan Webster (North Carolina DOT): Your new methodology serves to sometimes reduce the volumes assumed to traverse a link. So, with reduced volumes, I would expect the user delay cost to go down. But your bar charts showed the cost increase. Can you please explain?



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A: Rick Ayers (University of Maryland CATT Lab): We saw that the old-school methodology was over-limiting the volumes. It didn't have granularity including the road segment length and the number of lanes. There's a lot more accuracy that's represented in the algorithm to determine volumes. We're not over-limiting the volumes like we used to. The car following methodology volume limiting estimation of volumes only kicks in in super abnormal or severe congestion scenarios. Most of the time you're not hitting the threshold. Once you hit that threshold then the math is going to represent volumes more accurately for the roadway segment or segments that you're analyzing.

Q: Amro Abdulwahid (HNTB): Can you develop a scenario where you can build a roundabout instead of an intersection and see what the UDC will be before implementing that in the field?

A: Mark Franz (University of Maryland CATT Lab): Unfortunately, not. We do not have traffic simulation software at CATT Lab. However, we would consider working with a group to estimate the change in UDC.

Q: Eric Allen (National Weather Service): I'm from the National Weather Service's Eastern Region Headquarters. I like that there are use cases on the cost associated with weather impacts. I would love to know if there is a way to predict weather impacts on the user delays and then see how mitigation efforts (i.e., governments/schools close early, salting/plowing, clearing storm drains, etc.) might reduce the "pre-storm expected costs" when compared to the AAR "actual delay costs".

A: Mark Franz (University of Maryland CATT Lab): We have a tool in our Probe Data Analytics platform that assigns delay to specific categories, one of which is weather. You can learn more about this tool here: <https://ritis.org/tools#congestiongraphs>

Q: Grant Shirts (Regional Transportation Commission of Southern Nevada): I'm in a state that's not a full RITIS member. Any chance we could get access to the RITIS API to do a batch analysis of several locations using the User Delay Cost Tool?

A: Mark Franz (University of Maryland CATT Lab): Please contact our support team to discuss the details of this request: support@ritis.org

Q: Craig Moore (Parsons): It is important to see that the volumes compare well. If we don't have confidence that the volume estimates compare well, it is hard to have confidence in the UDC. You said the stations were from highly calibrated locations. Were your volume estimates for the second two methods based on the ATR station data or were they estimates from probe data (i.e. can the methodology for volume estimation be trusted in other locations where there are no highly calibrated data sources?)?

A: The ground truth estimates used volumes from the ATR stations. The proposed method used our historical volume profiling method with the car following model (CFM) applied when the delay was detected. Our analysis found that the historical volume profiling method provided similar results to the ATR station volumes input in the UDC calculation.



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Q: Alejandro Ortega (Choice Engineering): When it comes to work zones, what uses you can find?

A: Mark Franz (University of Maryland CATT Lab): We have a tool in our Probe Data Analytics platform that assigns delay to specific categories, one of which is work zones. You can learn more about this tool here: <https://ritis.org/tools#congestiongraphs>

Q: Kate Rattan (SECCOG): As an MPO we don't have a count program; we rely on the DOT. Are you interested in developing permit traffic volumes? They would just be based on 1-3 day counts but would provide data from the NHS.

A: Mark Franz (University of Maryland CATT Lab): A temporary count station could potentially be used to validate our algorithm, but the data would need to be assessed before doing so.

Q: Jonathan West (City of Knoxville, TN): Can PDA back calculate an estimate for AADT?

A: Rick Ayers (University of Maryland CATT Lab): The user delay cost analysis tool is only going to use whatever volume estimate you choose from the volume data provider. It's not modifying those volume estimates that are provided or that you select. It's just using them as the source for volume estimates for your analysis.

Q: Simona Babiceanu (Virginia DOT): Can we have access to the estimated volumes themselves, not just the UDC results?

A: Mark Franz (University of Maryland CATT Lab): Possibly. We can set up a call to discuss this.

Q: Stephanie Marik (Ohio DOT): If the volume data needs to be correlated to TMC segments, does the CATT Lab then convert that to other data sets such as INRIX XD segments?

A: Mark Franz (University of Maryland CATT Lab): The process of mapping volumes to XD segments is called conflation. We have some processes to do this, but we are not experts.

C: Gil Grodzinsky (Georgia Environmental Protection Division): *Regarding Poll 3* (Has your agency submitted network volume data to the CATT Lab), our state (Georgia) submitted but I am GA EPD, not GDOT answered no for my specific agency.

C: Zoe Neaderland (Vermont AOT): An issue with submitting AADTs is the amount of processing that would be required. If it took less processing, then we would do it.

Q: Simona Babiceanu (Virginia DOT): These estimated limited volumes are most useful for congested conditions, as I understand. Do you have a procedure for (hourly) volume profiles?



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A: Rick Ayers (University of Maryland CATT Lab): The output of the user delay cost analysis tool will provide hourly data. The UDC tool is completely configurable as to where you want the delay to be calculated, and the speed conditions for that analysis.

Q: Alejandro Ortega (Choice Engineering): By submitting the volume, if any company sends you volume data for a particular road, is that data we can submit?

A: Mark Franz (University of Maryland CATT Lab): Volume data should be submitted in the CATT Lab preferred format: https://pda.ritis.org/suite/help/#data-types_providing-your-volume-data

Q: Christopher Falcos (Massachusetts DOT): Looking at your list, I see Massachusetts as an option, but I am part of MassDOT, and I do not see that option.

A: Mark Franz (University of Maryland CATT Lab): Please contact our support team for access: support@ritis.org

Q: Robert Pangborn (Maryland Transportation Authority): I think I may be missing something. How are results reported if it appears the last data provided by our state was years ago? It appears the latest source, including NPMRDS is 2020. How does analysis after those dates work?

A: Mark Franz (University of Maryland CATT Lab): We allow users to select the volume data source they prefer. In our validation, we used data from 2019 (pre-pandemic).

Q: Patrick Mead (Ohio DOT): One thing we would like to report after a retiming project is a "delay savings" metric to help track how successful our corridor retiming is. I'm assuming that there will be some way to calculate something like that using the data generated with this tool. I'm assuming it will take a few extra steps on our end to calculate estimated yearly savings before timing changes vs after, but it would be great to one day be able to generate something like that automatically.

A: Rick Ayers (University of Maryland CATT Lab): If you want to run user delay cost analysis on a corridor, select the corridor that you're running your analysis on, define the entire year before the retiming, and run your UDC analysis then you run the analysis again on the same corridor after the retiming and calculate the difference.

Q: Edgardo Block (Connecticut DOT): If we have access to the NPMRDS analytics and use the UDC tool, is the probe data analytics methodology applied or are we getting the old volume profiling methodology?

A: Rick Ayers (University of Maryland CATT Lab): You are getting both. The old volume profiling methodology is a baseline however when you hit a threshold with severe congestion conditions the new method will apply. We are no longer over-limiting the estimated volumes.

Q: Ken Yang (AECOM): Does RITIS do the calibration process to ensure the agency-submitted volume data are accurate enough?



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A: Rick Ayers (University of Maryland CATT Lab): No. We just take whatever's shared with us.

Q: Alejandro Ortega (Choice Engineering): Aside from the cost, is there any additional tool that can be used for a better volume profile within RITIS?

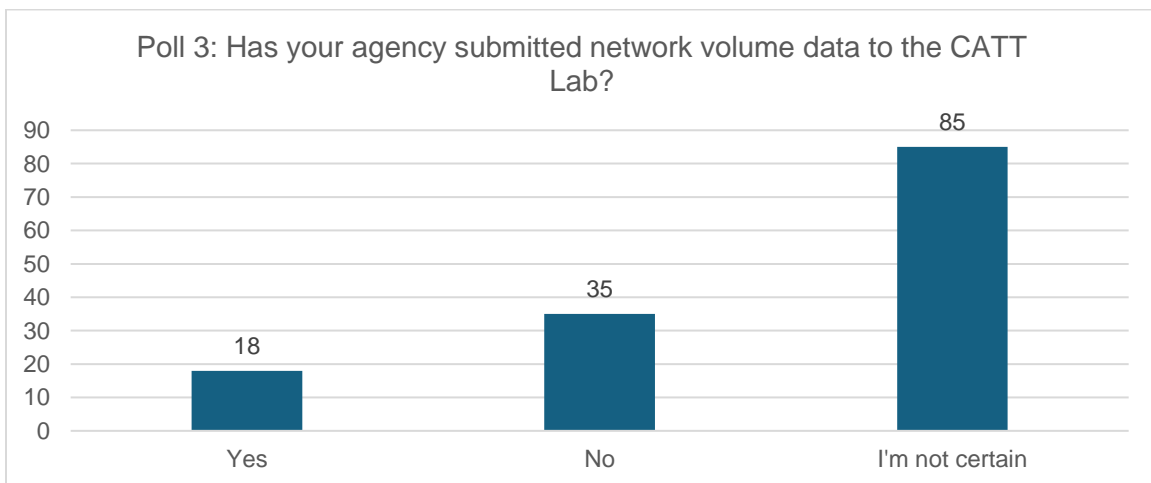
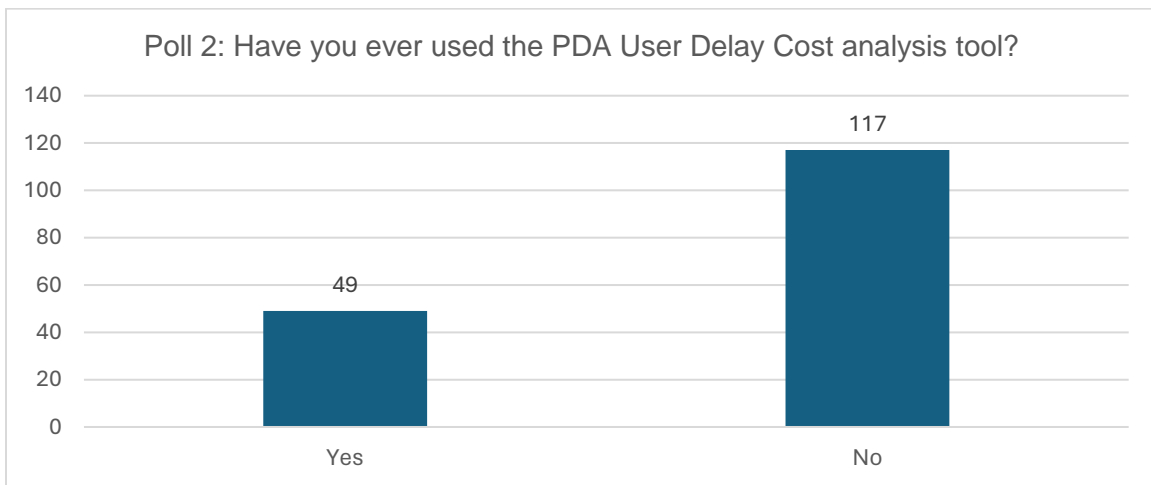
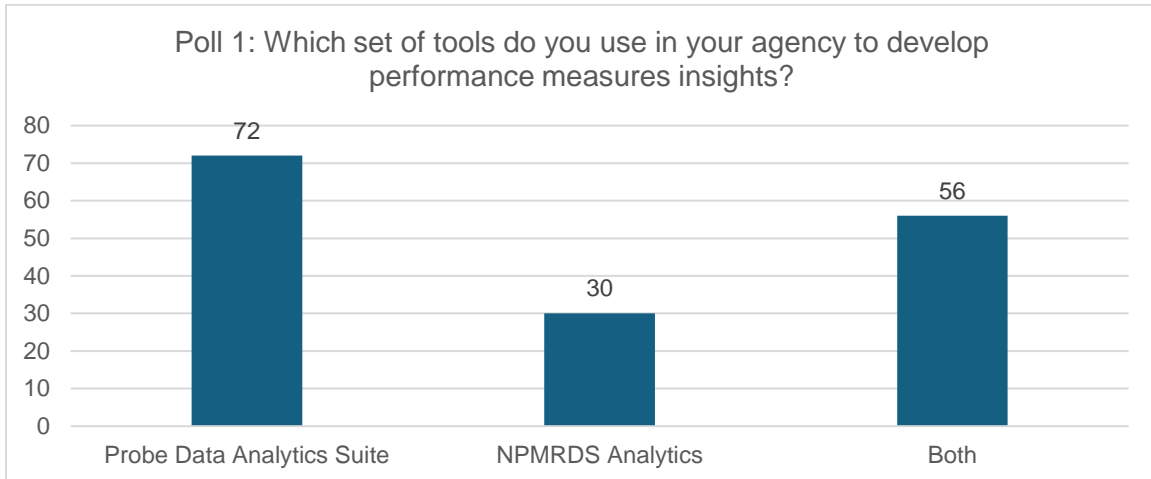
A: Mark Franz (University of Maryland CATT Lab): User Delay Cost, Causes of Congestion Graphs, and the energy use and emissions tools (only available in Columbus and DC) use the profiling method to estimate v

Q: Robert Pangborn (Maryland Transportation Authority): If I want to submit volume data for my agency (MDTA), should I reach out to my state POC first to coordinate?

A: Rick Ayers (University of Maryland CATT Lab): Yes, your technical point of contact within your state agency is going to be the appropriate person to coordinate with. As a heads-up, conflation is complicated and can be a very expensive process. The volume data needs to be aligned to a TMC (or XD) network.



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