2-Step Tool Demo
Transcript of the 2-Step Tool Demo Video
Speakers: Wei Zhang

Hello, this is Wei Zhang from the Office of Safety R&D at Federal Highway Administration. Today I'm going to show you a tool called 2-Step. This is a portable, lightweight, but a very powerful tool for users to identify high risk traffic crash locations. And, the tool includes the following files: one is the tool full file, and these few library files, plus a resource folder; okay, and this is the data file that includes 4 years statewide crash data from Virginia. And now, I'm going to show you how this tool works.

You click this and this is the screen you're going to see, it shows the opening screen (shows North America map). And now you import the data, in this case the data file is in the same folder; if it's not in the same folder, you can use this window to navigate to another folder together to use data file. So, select this folder open, since this is Virginia crash data it's going after reading the data it's going to zoom in to an area that includes Virginia. If it's crash data from Florida, you're going to see it zoom in to the area including Florida. Okay, now the options…so you are seeing these multiple command buttons, okay, this buttons show crash, basically shows the…you know…the crash data. We have two ways to identify high crash location; one is by crash count, the other is by crash cost. Crash cost is the most effective way to find true high crash risk location, but I am going to show you both.

Let's say if we wanted to find the high risk location purely by crash count, and the way you do it in step one is you click crash count. And what it does, it will divide the entire state into 10 mile by 10 mile grid, count the number of crashes in each grid and display a number in here, and then color code them. When you see it in red, this means the top 5 regions that has the highest number of crash; the yellow color means top 10–6; the rest are colored in green; and both the colors stream a number of crashes, these are all customizable—users can then make a change. Okay, for example, I can…I can say I want the first top 6 to be in red and the top 7–10 to be in yellow, and this will change dynamically.

At this point you can choose any of the grid, either in red, yellow or any other color. Let's choose this, then click "Zoom In", and this will bring you to step one. Again, if you do it by crash count and it will do the same process—divide the 10 mile by 10 mile region into a half mile by half mile region. Now again, you can change this to another size in the second step. Now you just zoom in, you look at the numbers, you pick any of the either highlighted or not highlighted one. Okay, for example, you say I want to see…you know…this region for example, and zoom in. Now you find this location and you look/show the data by severity and this basically shows you this half mile by half mile. Now you see the roadway segment, you see the intersection that has crash problems. Okay, at this point…there…you can view the data. If you click this function, it will show you all the crash data which is within this half mile by half mile region, and you can copy and paste/export the data to your spreadsheet or other program to do in-depth analysis to find out the root cause.

Another function, which is temporary disabled, is "Street View". If you click this button, it will activate Google Map Street View—enable you to analyze the data against the roadway pavement marking/land use that kind of thing. It's very intuitive but this function currently is disabled, because starting in 2008 Google required accounting strain to be attached to use this function, and so then if you have that you can use that function.

So now let me show you how to do it by crash cost. The same step if I do it by crash cost. Look at this, the current color coding, if I do it by crash cost it's going to change but the stream is similar. Now what

you see here is in dollar value, because in in this function we consider that the crash severity, the number of people involved in each severity…okay, and we come up with a dollar amount for each crash, we end up with the crash cost and display the value in each grid and again do a color coding. And that is point, for this two locations all belong to top 5 and if you can look at one of them or both of them. If I want to look at both of them, all you have to do is to use your mouse to hide this area and then click "Zoom in". Now you have this, and again if you do it by/look at it by severity this basically tells you this this half mile by 1mile area…okay…this region shows you the roadway that has crashes and the major intersection that has…crash problems. And when you look at a number approximately in 4 years, you see this there are 2 fatal crashes in the big red at this intersection, 8 serious injury crashes that are the blue symbol, and the 75 injury crash, 77 minor injury crash, 298 property damage only crash. Altogether this is about more than 400 crashes in in this small area in 4 years period. And at this point, you can give this data to a safety specialist or traffic specialist and they can look at the intersection geometry, the traffic control device, and in the crash record documented and they will be able to figure out what may be the root cause of the crashes in this area, and come up with some kind of countermeasures.

Okay…and now you can click here to "Save Map" it will save this (this analysis) and for you to use elsewhere. Okay, you can view the data by year, so this is a 4 year data super imposed together, and if I want to look at year by year I can look at 2011, 2012, 2013 (in 2013 you get fatal and serious injury crash), and 2014. Okay, and just see whether there's any pilot.

Okay, so now let's close this. I'm going to show you a different way of using this tool. Going back to step one; so what we have showed you is this was to…from statewide data to just in two steps, you can drill down into an area, either half mile by half mile or other area, that small area that basically gave you the roadway and intersection that has safety problems. If you want to focus on certain type of crash, let's say I want to find out which area has the most pedestrian vulnerable road user crashes and what you can do there is a there's a data filter function/query builder. You can say I want to add a filter, okay, this gives you access to every data field in the crash record. Okay, and let's say you want to find out crashes involving pedestrians…and you say pedestrian…equal…yes…add, okay and you wanted to find out…query data…and when you apply that filter is will show you the crashes that involving pedestrians. And so this is basically giving you the area where you have the most pedestrian crashes. And you can do it by crash count or you can do it by crash cost. Okay, and now you take any of the area you zoom in and do it by crash cost again, and so whenever you see a number—these are in thousands of dollars, so this means this is more than 10 million—so there must be fatal crashes. Anything greater than these…all this area must have fatal crashes.

Okay, let's see, look at here. So these are the locations where you have pedestrian crashes—not very many. In 4 years you have a total of 8 crashes in this area; these are all pedestrian related crashes. If you view the data and you can see there they all involve pedestrians. See pedestrians, and you can analyze that and do another analysis.

Okay, and so this query view is very powerful, you can basically view any kind of query you want. There's a lot of flexibility, and you can query by location. For example, you want Fairfax county only/Loudoun county only, by city, or by state highway system, by roads/roadway system, whatever data field in the crash database you can combine them in any way you want to build your query. Okay? There are other functions in this application but for the sake of time and we're not going to dive into other applications. So this is basically a short/a quick overview of the function of this 2-Step tool.

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