Instructions for Completing Technical Portions of the Safety Action Plan Template Document

This document provides instructions for how to complete several of the more technical portions of the Transportation Safety Action Plan document template developed by Central Pines Regional Council. It is organized by document section.

Section 1.2 – Local Context and Plan Goals

To find data on the total number of crashes, number of fatal and serious injury crashes, and total number of fatalities in your community, you can use the North Carolina Vision Zero Crash Query Tool:

- When the Crash Query Tool comes up, make sure the "Crashes" tab is highlighted at the top of the screen.
- For "Crash Year" on the left side of the screen, select a year within the five year timeframe of your analysis.
- For "Geographic Area," select either "City" or "County."
- When the "Geographic Members" list appears, select the name of your community.
- A bar chart/table will appear with information on the number of crashes in the community that year. The bar chart will break the crashes into a number of types based on categories you can select with a drop down menu (the default is typically "Accident Type") – use the drop down menu for "Category" to change the category to "Crash Severity."
- The chart will provide you with information on the number of total crashes in the community that year (line labeled as "Total"), the number of fatal crashes (line labeled as "Fatal (K)"), and the number of serious injury crashes (line labeled as "Disabling Injury (A)"). Write these numbers down.
- At the top of the dashboard, click on the tab for "Persons."
- You may need to reselect the crash year, geographic area, and geographic member options discussed above (the tool often defaults to preset state level numbers when switching tabs, at least the first time you switch).
- In the same general screen location where you found the data on the "Crashes" tab, you should now be able to select "Accident Type" from the category drop down menu on the "Persons" tab. In the resulting bar graph, there will be a line for "Fatal" – this is your total number of fatalities (since there can be multiple fatalities from a single crash).
- Repeat the steps above for each of the remaining four years of your analysis time period, and add the numbers together to get your five year totals.
- *Important note: you may find that the total number of fatal and serious injury crashes you determine through this method does not match exactly with the numbers/maps you will generate later for Section 4. This is ok – it is because the two tools (NC Vision Zero dashboard vs Central Pines Regional Council dashboard) use different methods for*

identifying the jurisdiction – the Vision Zero dashboard uses the jurisdiction data listed by the responding law enforcement officer on the crash report, whereas the CPRC dashboard uses a GIS tool to determine which locations fall within the jurisdictional boundary. Due to the possibility of minor errors in both methods, the results will often be slightly off from each other. If, for the sake of consistency, you wish to ensure that the numbers of fatal and serious injury crashes match between your analyses, then we recommend using the CPRC tool to determine the number (see instructions for "Fatal and Serious Injury Crash Map" under Section 4.1 below).

Section 4.1 – What are the Primary Safety Problems in the Community?

To develop the data for this section of the document, we highly recommend using the North Carolina Vision Zero safety dashboard. One thing to be aware of with this data source is that it reports numbers in terms of the *number of people involved in crashes* rather than the *number of crashes*. However, it is the best source of up-to-date information that is available at the municipal and county jurisdictional levels statewide and has great detailed information about factors that contribute to crashes.

The NCVZ dashboard is located at https://ncvisionzero.org/data-analytics/visualizations/ and then click on the button for "Safety Dashboard."

For the "All People Involved in Crashes in [Town/County] (20XX-20XX)" chart, once in the Safety Dashboard you should:

- Use the "Calendar" drop-down menu to select the five most recent completed years (not the current year since it will not have a full year of data available yet) by checking the boxes for those years.
- Under the "Injury" drop-down menu make sure that "Select All" is the only checked box.
- If your jurisdiction is a county then use the "County" drop-down to check the box for your county. If your jurisdiction is a city/town/village then use the "City" drop-down to check the box for your municipality.
- Make sure ALL the other drop-down menus are marked as "All" so that you do not inadvertently exclude any data.
- In the bottom right corner of the screen you should see a chart that will show you the total number of people involved in crashes each year for your jurisdiction. You can transfer this data to the chart within your plan document. Please note that as a default setting the graph may show additional years other than the five you are interested in – make sure you pull the data for the correct years (which will be labeled on the graph on the screen).

For the "Fatalities & Serious Injuries from Crashes in [Town/County] (20XX-20XX)" chart, once in the Safety Dashboard you should:

- Use the “Calendar” drop-down menu to select the five most recent completed years (not the current year since it will not have a full year of data available yet) by checking the boxes for those years.
- Under the “Injury” drop-down menu make sure that “K Killed” is the only checked box.
- If your jurisdiction is a county then use the “County” drop-down to check the box for your county. If your jurisdiction is a city/town/village then use the “City” drop-down to check the box for your municipality.
- Make sure ALL the other drop-down menus are marked as “All” so that you do not inadvertently exclude any data.
- In the bottom right corner of the screen you should see a chart that will show you the total number of fatalities each year for your jurisdiction. You can transfer this data to the chart within your plan document. Please note that as a default setting the graph may show additional years other than the five you are interested in – make sure you pull the data for the correct years (which will be labeled on the graph on the screen).
- Once you have copied down the fatality information, repeat this process again, but with “A Type Injury (Suspected Serious)” as the selected Injury instead of “K Killed”. This will show you the number of serious injuries each year for your jurisdiction, which you can then transfer over to the chart in your plan document.

For the “Crash Characteristic” table you will again use the NC Vision Zero Safety Dashboard to find the data, but you will then need to input the data into the “Safety Data Analysis Spreadsheet” found on the CPRC Safe Streets for All in the Triangle project website in order to conduct your analysis.

- Starting from the NCVZ Safety Dashboard, use the “Calendar” drop-down menu to select the five most recent completed years (not the current year since it will not have a full year of data available yet) by checking the boxes for those years.
- Under the “Injury” drop-down menu make sure that the boxes for “K Killed” and “A Type Injury (Suspected Serious)” are both checked. This will give you combined data on fatal and serious injury crashes.
- If your jurisdiction is a county then use the “County” drop-down to check the box for your county. If your jurisdiction is a city/town/village then use the “City” drop-down to check the box for your municipality.
- Make sure ALL the other drop-down menus are marked as “All” so that you do not inadvertently exclude any data.
- Open up the “Safety Data Analysis Spreadsheet” in Excel (ideally, on another screen so that you can see both the spreadsheet and the NCVZ safety dashboard at the same time). At the top of the spreadsheet, enter the information about the name of your jurisdiction and the years for the data you are analyzing in the green cells. *Green cells in the spreadsheet indicate values that YOU WILL NEED TO ENTER, replacing the dummy data that is currently in there. ONLY CHANGE DATA IN THE GREEN CELLS!*

- For the first section of the spreadsheet you will need to copy data over from "Page 1" of the safety data dashboard (which is the page that appears by default). Since you are looking at data for fatal and serious injury crashes only (at this point), you will enter these values in the green cells in COLUMN B of the spreadsheet.
- For the remaining sections of the spreadsheet, the data will come from "Page 5" of the safety data dashboard. You will get to Page 5 by using the arrows at the bottom of the screen (you may need to scroll the page down to see it). Again, you will enter the data from the dashboard into the spreadsheet in COLUMN B since you are looking at the fatal and serious injury crash data only (at this point).
- Once you have finished entering all your data in Column B, you will go back to the NCVZ safety dashboard and under the "Injury" drop-down menu choose "Select All" instead so that you can now get the data for all crashes in your community. Repeat the steps discussed in the two bullets above this one, but you will now enter the data in the green cells of COLUMN D (the column for all crashes).
- After you have entered all of your jurisdiction's data into the green cells in the spreadsheet, you should look at COLUMN F, which will highlight in red the data points where the rate for crashes involving that crash characteristic is HIGHER for fatal and serious injury crashes than it is for total crashes, which can provide an indication of the types of characteristics in your community that are more likely to lead to fatal and serious injury crashes. While the tool will highlight all characteristics where the rate is higher (even by 1%), it is typically best practice to keep your analysis focused on characteristics where the rate is *significantly* higher for fatal and serious injury crashes (for example, looking at lines where the difference is more than 10%) in order to avoid issues with minor fluctuations in data (especially for smaller jurisdictions where there are fewer crashes contributing to the data sample size).
- Using the information in COLUMN F of the spreadsheet, identify the crash characteristics that have the highest degree of difference for your community and transfer this data into the table in your plan document.

To create the "Fatal & Serious Injury Crash Map" for Section 4.1 you will need to use the Central Pines Regional Council Safety Data Toolbox:

- Once in the toolbox, click on the card for the "Fatal and Serious Injury Crash Map" dashboard to open the dashboard.
- In the bottom left corner of the screen, select the municipality or county that you are interested in. Please select only one or the other (selecting both a municipality and a county may break the system and corrupt the results). Click on the jurisdiction name to select it. You may click on the name again to deselect it if necessary.
- The map in the middle of the screen will zoom in on your jurisdiction and filter the data to only include crashes that occurred within that jurisdiction. The indicators in the bottom right corner of the screen will show the total number of fatal and serious injury crash

records for that jurisdiction (see note above in Section 1.2 instructions for context on this).
- You can pan and zoom the map as needed if the auto pan/zoom does not work appropriately.
- When ready, you can use your computer's screenshot or snipping function to take a picture of the screen and insert the picture into your plan document.

Section 4.2 – Where are the Primary Safety Problems in the Community?

To create the "High Injury Network Map" for this section you will need to use the Central Pines Regional Council Safety Data Toolbox.

- Once in the toolbox, click on the card for the "High Injury Network Map" dashboard to open the dashboard.
- In the bottom left corner of the screen, select the municipality or county that you are interested in. Please select only one or the other (selecting both a municipality and a county may break the system and corrupt the results). Click on the jurisdiction name to select it. You may click on the name again to deselect it if necessary.
- The map in the middle of the screen will zoom in on your jurisdiction and filter the data to only include crashes that occurred within that jurisdiction.
- You can pan and zoom the map as needed if the auto pan/zoom does not work appropriately.
- You can click on the High Injury Network segments in order to bring up a pop-up box with data on each.
- When ready, you can use your computer's screenshot or snipping function to take a picture of the screen and insert the picture into your plan document.

Following are some important notes to understand about the way this tool calculates the High Injury Network. Because this tool has to work across a large, diverse region, it may not always work well for identifying the high injury corridors in smaller areas with lower numbers of crashes. However, it has been set up in a way that attempts to prioritize corridors where *both* the density of fatal/serious injury crashes (crashes per mile) and the rate of fatal/serious injury crashes (crashes per million vehicle miles traveled) are above average, as well as corridors where one of these factors is significantly above average (in the top 10% of scores).

- Analysis includes all crashes within 100 feet of roadway segments (since geolocation of crash points is not always precise)
- Excludes road segments without fatal/serious injury crashes
- Excludes road segments with volumes under 2,000 vehicles per day
- Excludes non-system routes, other state agency routes, federal routes, ramps, rest areas, non-mainline routes, and projected routes (NCDOT route class codes 5-9)

- After excluding the above, determine the top 10% and top 50% cutoffs based on quartile approach in mapping symbology. For 2020-2024 data, these cutoffs were:
    - Top 10% per million VMT is > 0.451943
    - Top 50% per million VMT is > 0.125387
    - Top 10% per mile is > 6.506181
    - Top 50% per mile is > 1.852195
- HIN includes all segments that:
    - Meet BOTH 50% thresholds, OR
    - Meet ONE 10% threshold.

For your community, you may find that the regional High Injury Network we have identified in this manner does not adequately identify priority corridors for your jurisdiction. If this is the case, we recommend using an alternative tool that is also available through the CPRC Safety Data Toolbox called the "Crash Rate Viewer." With this tool, you can use a sliding scale bar to help identify corridors with higher fatal/serious injury crash rates per million vehicle miles traveled. This option should only be used as a backup, if the first option (described above) does not work well for your community.

To create the "Bicycle/Pedestrian Crash Map" for this section you will need to use the Central Pines Regional Council Safety Data Toolbox.

- Once in the toolbox, click on the card for the "Bicycle and Pedestrian Crash Map" dashboard to open the dashboard.
- In the bottom left corner of the screen, select the municipality or county that you are interested in. Please select only one or the other (selecting both a municipality and a county may break the system and corrupt the results). Click on the jurisdiction name to select it. You may click on the name again to deselect it if necessary.
- The map in the middle of the screen will zoom in on your jurisdiction and filter the data to only include crashes that occurred within that jurisdiction. The indicators in the bottom right corner of the screen will show the total number of crashes involving non-motorized persons and the number of fatal/serious injury crashes involving non-motorized persons for that jurisdiction.
- You can pan and zoom the map as needed if the auto pan/zoom does not work appropriately.
- When ready, you can use your computer's screenshot or snipping function to take a picture of the screen and insert the picture into your plan document.

Section 4.3 – What Neighborhoods are Most Impacted by Crashes?

To create the "Transportation Disadvantage Index Map" for this section you will need to use the Central Pines Regional Council Safety Data Toolbox.

- Once in the toolbox, click on the card for the “Transportation Disadvantage Index Map” dashboard to open the dashboard.
- In the bottom left corner of the screen, select the municipality or county that you are interested in. Please select only one or the other (selecting both a municipality and a county may break the system and corrupt the results). Click on the jurisdiction name to select it. You may click on the name again to deselect it if necessary.
- The map in the middle of the screen will zoom in on your jurisdiction and filter the data to only include crashes that occurred within that jurisdiction.
- You can pan and zoom the map as needed if the auto pan/zoom does not work appropriately.
- When ready, you can use your computer’s screenshot or snipping function to take a picture of the screen and insert the picture into your plan document.

Section 6.3 – Priority Safety Project Locations

Once you have identified your priority project locations, you will need to fill out the location information tables for each one.

Some of the data should be easy to gather from field observation, looking at aerial photos (such as Google Maps), or local knowledge, including:

- Number of lanes
- Whether or not the road has median
- Posted speed limit
- Whether or not the road has sidewalks, crosswalks, bike facilities, and transit services/facilities
- Type of land use in the area
- Information about any existing plans/projects in the corridor

Daily traffic volumes for NCDOT roadways (most major roads) can be found on NCDOT’s Interactive Traffic Volume Online Map.

Information on the roadway traffic volume, number of fatal & serious injury crashes, number of fatal/serious injury crashes per mile, and number of fatal/serious injury crashes per million vehicle miles traveled can be found in the same online tool that was used to create the High Injury Network map in Section 4.2. By opening that mapping dashboard and clicking on any segment from the High Injury Network, a pop-up will come up with this information for that road segment.

Information on the number of crashes can also be determined by looking at the Central Pines Regional Council Safety Data Toolbox. You can use the same map tab that was used to create your “Fatal and Serious Injury Crash Map” in Section 4.1 and zoom in on the corridor of interest to count how many fatal and serious injury crashes occurred on the corridor.

To identify appropriate safety countermeasures for the corridor, you should take advantage of the FHWA Proven Safety Countermeasure Search Tool, which will help you narrow down potentially-appropriate countermeasures based on the characteristics of the corridor. You should also refer to the NCDOT Safety Countermeasure Glossary for additional potentially-appropriate ideas. In the end, however, you will need to use some judgment about which countermeasures are actually most appropriate for your situation (for example, if you are looking at a corridor that does not include any signalized intersections then countermeasures related to signals are probably not appropriate). If you think a countermeasure *might* be appropriate but are unsure, you could also recommend that it be studied further as a next step.