Web Map Documentation of Mapping and Analysis of Statewide Integrated Traffic Records System (SWITRS) Data for Monterey County

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Overview
This webmap is a visualization of SWITRS data, which was cleaned using R. The interactive panel is rendered using HTML and CSS. The functionality and map itself are rendered using JavaScript. The map consists of an SVG canvas with a Leaflet tile layer; the data annotations are rendered using D3.

Data and Files
The map uses data from UC Berkeley's Statewide Integrated Traffic Records System (SWITRS), collected by the California Highway Patrol (CHP). It contains all collisions reported to the CHP between 2013 and 2018 in Monterey County. This file is called Collisions.csv and can be updated with new TIMS data easily.

Another file that this map uses is Metadata_TIMS.csv, which contains the columns that are being used by the web map. The column names are in the Raw Field column.

Finally, the Community_Codes folder contains the shapefile data to draw the CDPs and cities in the county. Note that Prunedale was not in this file and should be added in the future.

Data Cleaning
SCS created a specialized R script for this data, which addressed many issues with consistency and accuracy, and prepared it for effective visualization and analysis. The R script is called CleandedMontereyData.R. Specifically, this R script cleaned up NA values in columns regarding pedestrian accidents, bicycle accidents, motorcycle accidents, truck accidents, and whether alcohol was involved. Also, this script makes the primary road column match the state route column as needed. To support the date slider for the web map, this script also organizes the time of each collision into an appropriate format. Finally, this script cleans up the cities such that they fall under the appropriate jurisdiction as defined by the community codes shape files.

Filters
The map uses JavaScript to interface between the HTML-based input fields (checkboxes, etc) and D3 functions for rendering and updating of the data.
Users can filter on several attributes of the data:

- Date of collision (continuous range from Jan. 2013 to Dec. 2018) - a range slider allows you to show collisions within a specified date range.
- Collision severity (discrete range from 1 to 4: 1 - fatal injury, 2 - severe injury, 3 - other visible injury, 4 - complaint of pain) - collisions involving multiple injuries are categorized by the most severe injury which occurred in that collision. The user can also color collisions by severity, using a D3 color scale from purple to yellow where purple

represents the most severe collisions. The collision counts by severity, as well as the total count, by default count all collisions visible on the map at the current zoom/position; If the user has drawn a polygon on the map, they count all data within the polygon.

- Collision type (binary filters for bicycle collisions, pedestrian collisions, motorcycle collisions, truck collisions, alcohol-related collisions, all other collisions) - the user can also toggle all of these filters at once.
- Road type (binary filters for non-highway collisions, Hwy 1, Hwy 25, Hwy 68, Hwy 101, Hwy 156, Hwy 183, Hwy 198) - the user can also toggle all road type filters.
- City/CDP (binary filters for all cities and CDPS in the county, as well as Other Unincorporated) – the user can also toggle all cities/CDPs. Currently, there is no
- The discrete filters (all but the collision date slider) are implemented using global boolean variables representing the value of each filter. Instead of a boolean variable, the collision date filter stores its current start and end values. Every time the user applies a filter using the HTML interface, the points are selected and re-rendered using D3 based on the value of the filters at that point.