Data Variable / Source Outline

- Target Questions (high level):
    - Where are the most dangerous intersections/road locations?
    - Where are most police citations for dangerous driving issued?
    - How are traffic accidents/citations affected by various factors (time/weather/traffic-volume/road safety-features)?

- **Measurable Outcomes – "Effects"** (Dependent Variables)
    - **Traffic Accidents**
        - Location:
            - Coordinates (for mapping)
            - Street / Cross-street info (for referencing)
        - Filterable by accident type (auto/auto, auto/pedestrian, etc)
        - *Sources*
            - 2010-2013: https://data.cambridgema.gov/Public-Safety/ACCIDENT-2010-2013/ybny-g9cv
            - 2014: https://data.cambridgema.gov/Public-Safety/ACCIDENT-2014/7fai-h9wk
        - Visualization ideas:
            - Plot locations of accidents on map.
                - Color code by type?
                - Filterable by type and cross-linked factors?
            -
    - **Police Citations**
        - Location:
            - Coordinates (for mapping)
            - Street / Cross-street info (for referencing)
        - Filterable by citation type (Speeding, run light, drunk driving, etc.) (some non-relevant types (e.g., revoked license, no insurance) can be filtered out of dataset.
        - *Sources: 2010-2014*
            - https://data.cambridgema.gov/Public-Safety/Police-Citations-2010-2014/gmq6-8ver
        - Visualization ideas:
            - Plot locations of citations?
            - Heat-map of citations (Overlaid with accident data as points)?

- **Measurable Factors – "Causes"** (Independent Variables)
    - **Date/Time of Accident/Citation**
        - *Year (2010 – 2014)*
            - Potential factor: Increase in accidents due to population growth, commuter rise.
        - *Time of Year (Date/time string, parseable)*
            - Potential factor: More incidents during school year, etc. More during winter.
        - *Day of Week (Day value present)*
            - Potential factor: More commuter accidents during work week. More nighttime accidents on Friday/Saturday.
        - *Time of Day ((Date/time string, parseable)*
            - Potential factor: More accidents during rushhour.
        - Visualization ideas:
            - Filter mapped data by timeline brushing?
            - Summary charts showing distribution of total accidents/citations by date/time
            -
    - **Weather**
        - *Weather condition*
            - Potential factor: More accidents during adverse weather conditions
        - *Daily Temperature?*
            - Potential factor: More road accidents during freezing temperatures. More pedestrian/bike accidents during warmer temperatures.
        - Visualization ideas:
            - Filter mapped data by selectable weather condition icons / filter options?
            - Filter mapped data by brush-able temperature range?
            -
    - **Traffic Volume**
        - Data for certain intersections in Cambridge showing average & peak daily traffic counts.
        - Potential factor: Higher traffic volume = higher accident rate
        - Mapped by location (Same as above)
        - *Source: 1972-2014 (can be filtered to our applicable range)*
        - https://data.cambridgema.gov/Traffic-Parking-and-Transportation/Average-Daily-Traffic-Counts-1972-to-2014/v43b-kqeq
        - Visualization ideas:
            - Summary chart(s) showing distribution of volume levels by date/time?
            -
    - **Presence/Non-Presence of Traffic Signal**
        - GeoJSON locations of traffic lights.

        - Potential factor: Safer intersections, less accidents.
        - *Source:* https://github.com/codeforboston/open_data_cambridge/blob/master/Traffic/TrafficLights.geojson
        - Visualization ideas:
            - Enable/Disable viewable layer showing locations of traffic signals?
            -

    - **Presence/Non-Presence of Walk Signal**
        - GeoJSON locations of pedestrian crosswalk signals.
        - Potential factor: Safer road crossings for pedestrians, less pedestrian accidents.
        - *Source:* https://github.com/codeforboston/open_data_cambridge/blob/master/Traffic/WalkSignals.geojson
        - Visualization ideas:
            - Enable/Disable viewable layer showing locations of walk signals?
    - **Presence/Non-Presence of Crosswalk**
        - GeoJSON layer of marked crosswalks on roads.
        - Potential factor: Safer intersections for pedestrians
          Source: https://raw.githubusercontent.com/codeforboston/open_data_cambridge/master/Traffic/PavementMarkings.geojson
        - Visualization ideas:
            - Enable/Disable viewable layer showing locations of bike routes on roads?
            -

    - **Presence/Non-Presence of Bike Route**
        - GeoJSON layer of marked bike routes on roads.
        - Potential factor: Safer roads for bike riders
        - *Source:* https://data.cambridgema.gov/Geographic-Information-GIS-/Bike-Facilities/tdg4-6twm
        - *https://github.com/codeforboston/open_data_cambridge/blob/master/Recreation/BikeFacilities.geojson*
        - Visualization ideas:
            - Enable/Disable viewable layer showing locations of bike routes on roads?
            -

- **Supplemental Data**
    - GIS data layers (Basemap, Roads, Sidewalks, Buildings, placenames, locations of interest)