This app underwent extensive pre-development that is not evident in its final incarnation. For completeness, a short description of this work is articulated here. The data was pre-processed in Excel. The final pre-process sheet is also included, though its PowerQuery link is not, meaning it only represents the process from 2. onwards. (large file size and excessive loading time).

1. In its original form, the data file was so large that Excel could not fully open it for pre-processing / mockup and testing. To address this, Microsoft’s “Power Query” utility was used to prune the data to our selected range (State = CO, Year = 2019).
   1. Several proto-mockups, including the one used in the initial proposal went even further with this development, deploying Excel’s powerful VBALOOKUP/MATCH(INDEX()) tools to assign FIPS codes to points for generalization into counties.
2. To produce a meaningful visualization, the data needed to be generalized / binned. This was achieved with Excel.
   1. Visibility was binned into intervals of 5 (rounded) and was capped at 30 mi to mitigate the appearance of outliers on the PCP. This was achieved with a simple IF() and MROUND() command in Excel.
      1. Precipitation was capped at 0.1 in for the same reason, using the same methods.
      2. Wind speed was rounded to the nearest 5 for the same reason, using the same methods
   2. “Weather Condition” was overhauled significantly from its original form. As the data arrived, there were 50+ unique categories, most of which less than 20 members. Using the FHWA guide to the types of weather that cause the most accidents, the group manually re-classified many points into more broad categories. Excel’s Find/Replace function was used for this purpose.
      1. Ex. FHWA does not identify cloud cover as a contributing factor to road hazards. Weather conditions with “Partially Cloudy”, “Overcast”, or the like were re-classified as “Fair”.
      2. Ex. There were a great number of weather categories related to rain, with fine granularity when describing its volume (“Light Shower”, “Heavy Drizzle”, “Torrential”). To minimize the number of categories on the PCP, rain events were reclassified to either “Light” or “Heavy”, with teammates making educated guesses as to relative volume; in general, the category “Rain” and anything more intense was described as Heavy, and all others are Light.
      3. Ex. Many weather conditions have “X / Windy” to describe compound occurrences. Given that there is a “Wind” axis on the PCP, any mention of Wind in the Weather description was eliminated.
      4. Ex. Blank weather categories were labeled as unknown. Interesting to note, there are almost no blanks in the high-density city center of Denver/Boulder; potentially highlighting a problem in road accident reporting in more sparse communities.
   3. The single date-time column was dissected into Month, Day, and Hour for display.