

New Mobility Heatmap Calculation Methodology

The New Mobility Heatmap's downloadable CSV is generated by aggregating all GPS pings by day type (either weekend or weekday) and H3 hex at [resolution 12](#) (a 19-meter-diameter hexagon). Because we are counting traversals, if there is a series of 2 or more pings in a row from the same hex, only the first ping of the series is counted. As an example, consider the following pings and their corresponding hexes:

```
Pings:    1 2 3 4 5 6 7
Hexes:    A B B C D D A
```

In this example, pings 3 and 6 are both discarded as they occur in the same hex as their preceding ping. Notice, that if a trip revisits a hex (as is the case with ping 7), it *is* included in the aggregation. This is because a bike or scooter may traverse a hex more than once in a given trip. The resulting CSV is filtered using the privacy filter described below.

The Privacy Filter

Some trips will inevitably take place in areas of low trip volume. The riders of these trips are at a higher risk of reidentification from both the aggregated and sampled datasets. For this reason, we filter out GPS pings from these areas. To do this, we derive low-density zones by aggregating the unique users by H3 hex [resolution 12](#) (a 19-meter diameter hexagon). Any hexagon with fewer than 15 unique users is considered a low-density zone, and all GPS pings occurring within the hexagon are removed from the dataset.

The Stationary Vehicle Filter

Occasionally, new mobility vehicles remain stationary for a period of time while still on trip. These points can cause a trip to be especially sensitive to reidentification because they tend to occur at the start or end of a trip. Because of this, we have chosen to filter out pings from stationary vehicles. For the purpose of this filter, we define "stationary" as a series of 5 or more consecutive GPS pings from the same H3 hex at [resolution 12](#) (a 19-meter diameter hexagon).