Local Sense Lab

- Initial report on Data Collection in Downtown Crossing, Boston. August 2016.

Locations of Sensors

4 Sensors in Downtown Crossing Location

Environment 1 & 2 measuring: Carbon Monixide, Carbon Dioxide, Nitrogen Dioxide, Oxygen

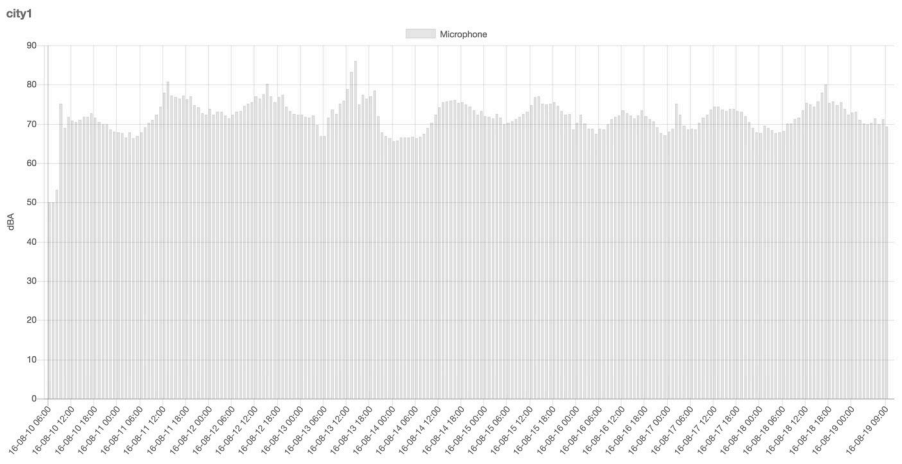
City 1 & 2 measuring: Sound Decibels, Luminosity, Temperature, Humidity

http://localsense.org

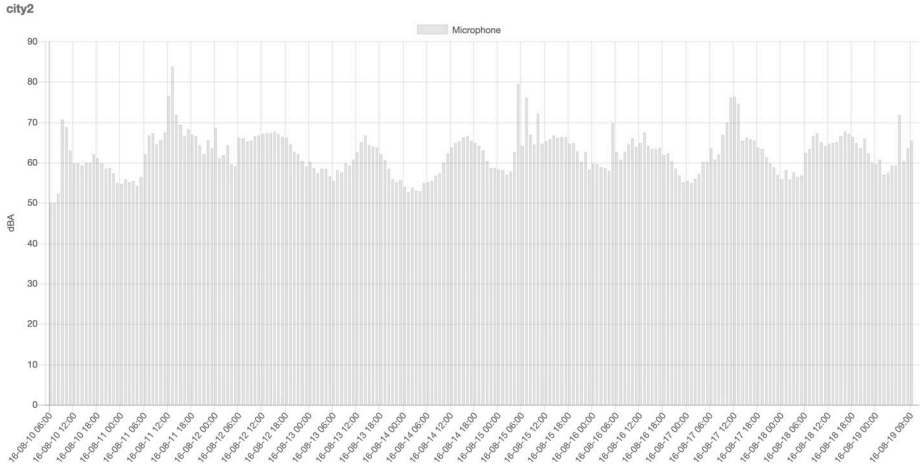
Map source: Open Street Map https://www.openstreetmap.org

Sound Decibels (average by hour over 9+ days)

City 1 (Summer St)



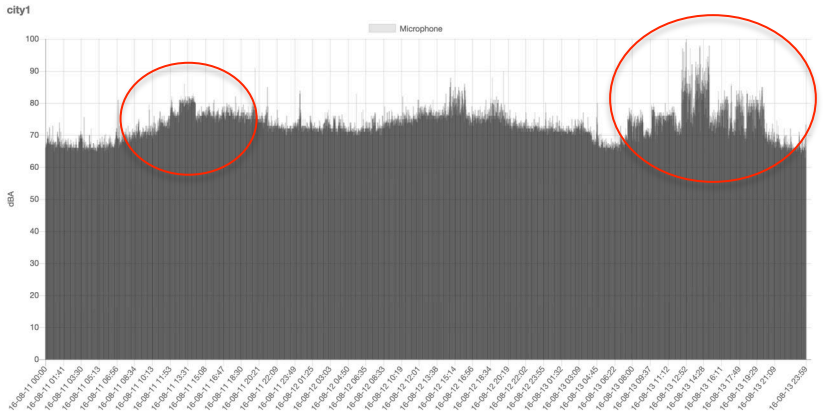
City 2 (Winter St)



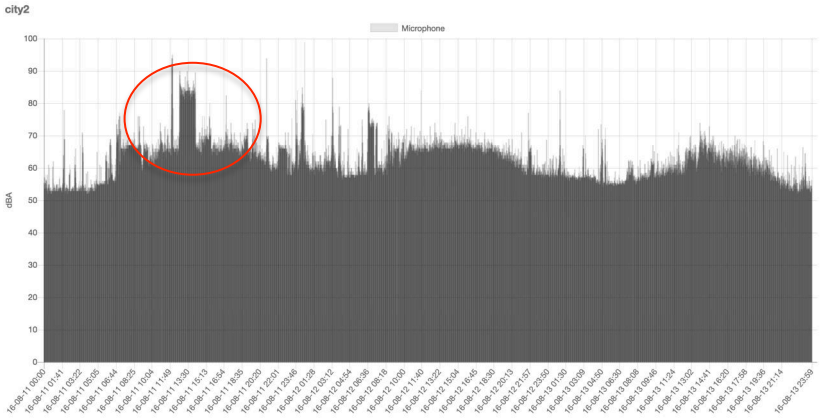
The Summer Street location has higher decibel readings overall compared to the Winter Street location, suggesting more activity.

Sound Decibels (average per minute over sample 3 days)

City 1 (Summer St)



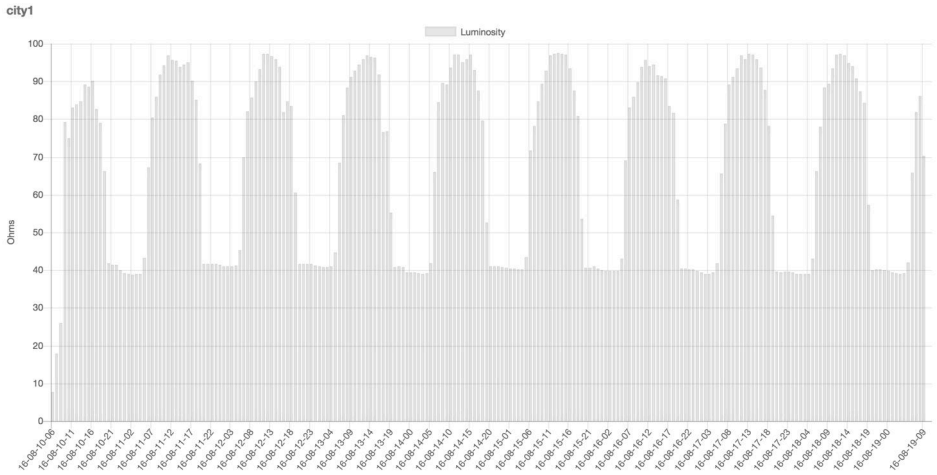
City 2 (Winter St)



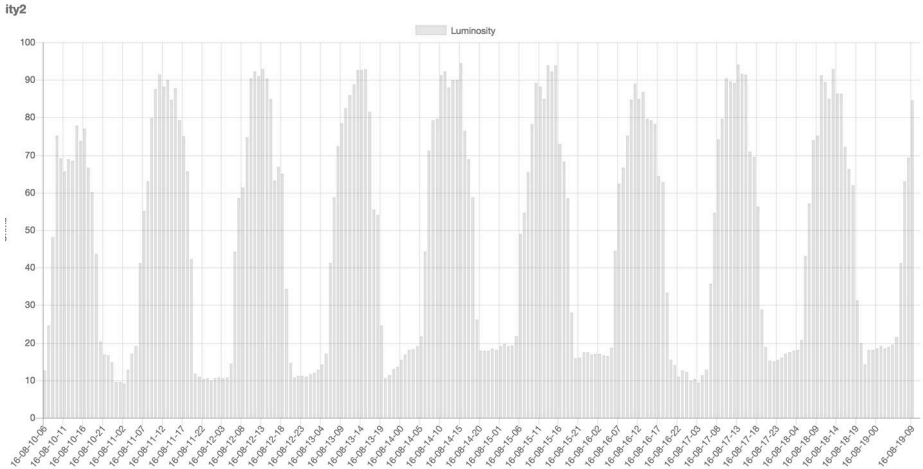
A loud event happened near the Summer St location from about noon to 3PM on Sat August 13th. A shorter loud event was detected around noon on Thursday August 11 especially noticeable at the Winter Street location but also could be heard from the Summer Street location.

Luminosity (average by hour over 9+ days)

City 1 (Summer St)



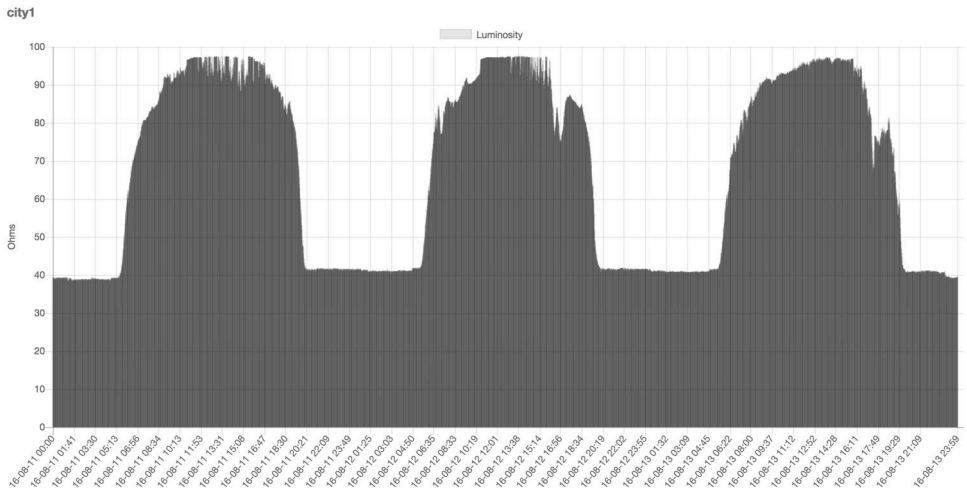
City 2 (Winter St)



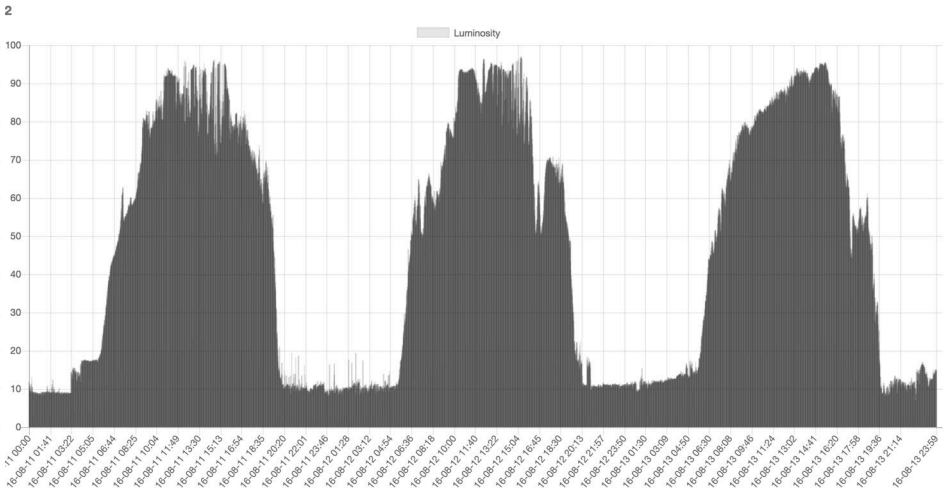
The Summer Street location has both higher peaks of Luminosity from about 9AM to 4PM and also is brighter at night than the location measured on Winter Street during the measured period of August.

Luminosity (average per minute over sample 3 days)

City-1 (Summer St)

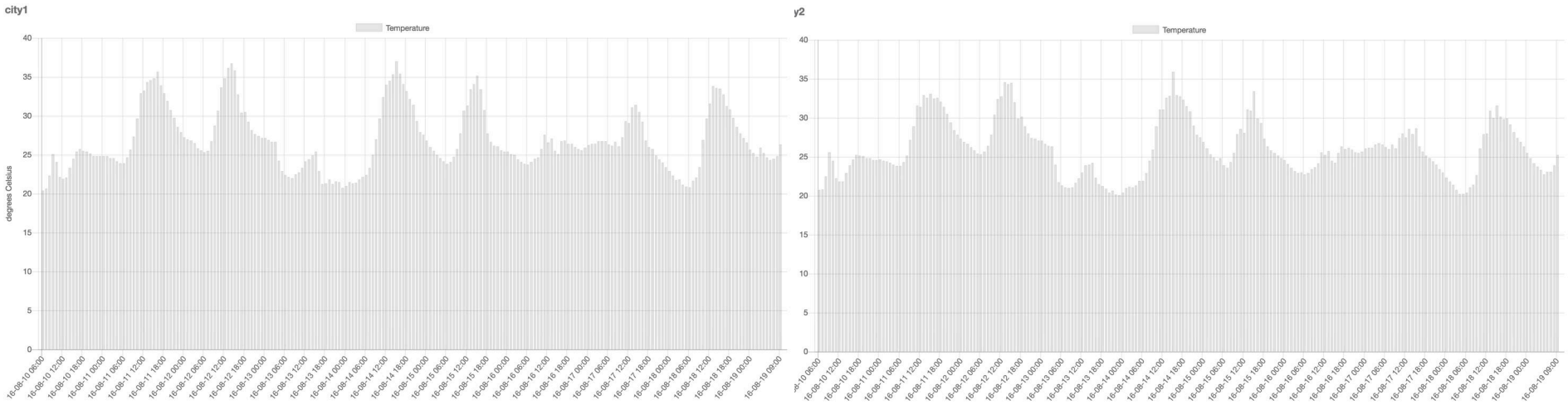


City-2 (Winter St)



When viewed at a finer granularity of time (by minute), at night small spikes of light can be detected. Most likely vehicle lights interrupting the otherwise dark Winter Street. Could we use these patterns to estimate traffic at night?

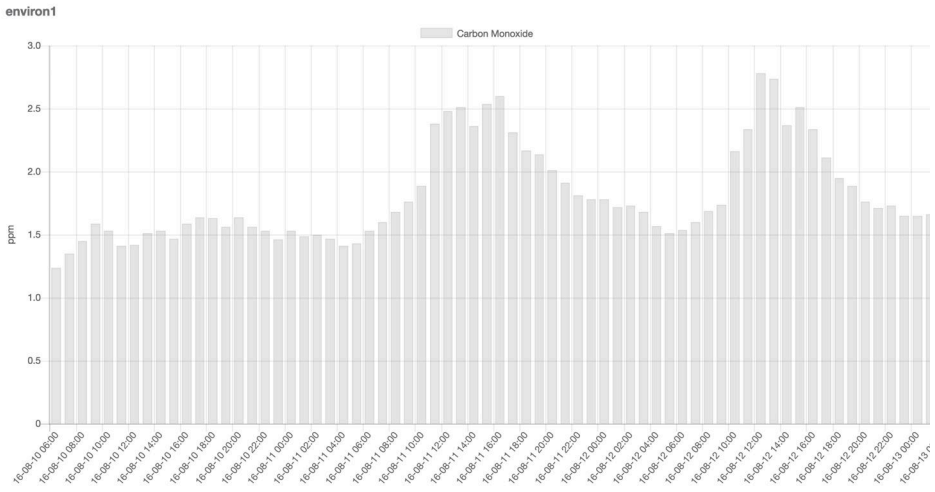
Temperature (average by hour over 9+ days)



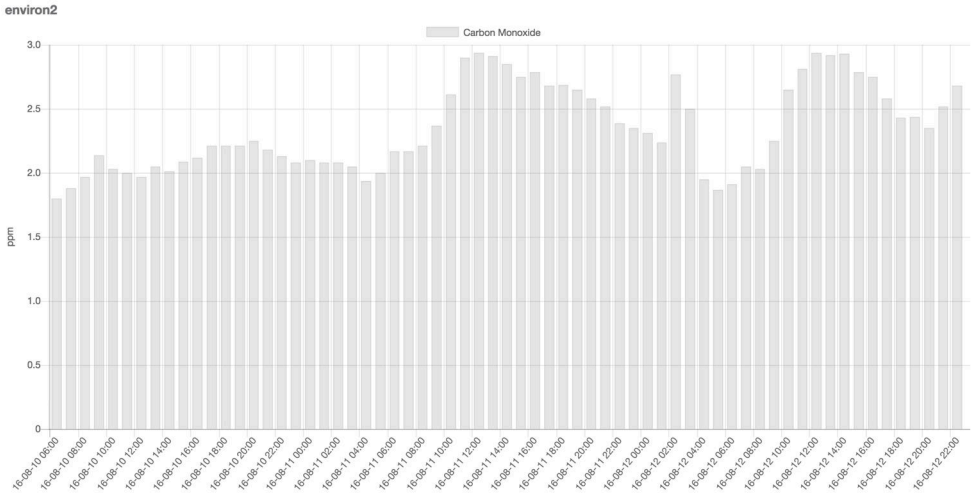
Slightly higher maximum and slightly higher minimum temperatures were measured at at the Summer Street location compared to the Winter Street location during the measured period of August.

Carbon Monoxide (average per hour over 3 days)

Environment-1 (Summer St)



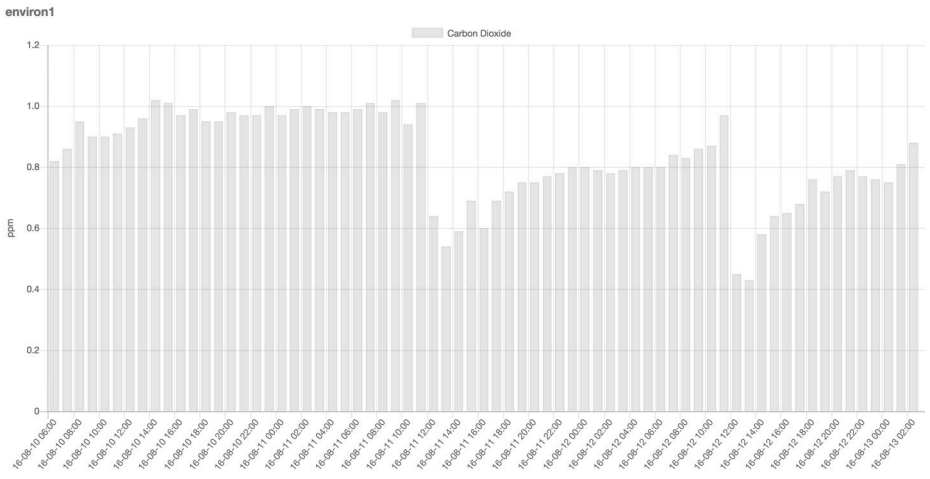
Environment-2 (Washington St)



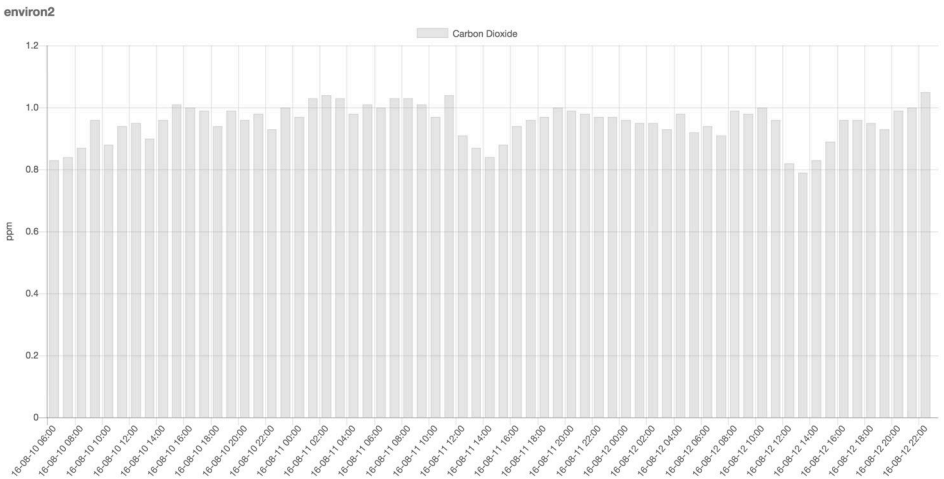
Higher rates of carbon monoxide persisted at the Washington Street location compared to the Summer Street location. On August 12th around 2- 3AM a spike in Carbon Monoxide levels was detected on Washington St but not on Summer Street.

Carbon Dioxide (average per hour over 3 days)

Environment-1 (Summer St)



Environment-2 (Washington St)



At around noon on both August 11th and 12th carbon dioxide readings dropped significantly at the Summer Street location. The Washington Street location only experienced a minor dip at these times.

Data available for download:

- https://github.com/BITScity/2016/tree/master/Downtown%20Crossing%20Sensor%20Data