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NATMEC 2016 - Miami

Pedestrian Traffic Monitoring Program Design in Central Business Districts



Content

- Project Background
- Data Collection
- Analysis & Results
- Closing Remarks

Project Background



- 700,000 population
- Low precipitation
- Long cold winters
- Short hot summers

Project Background



- Walking volume identified as a general measure of success.
- Action – Develop a pedestrian monitoring program.

Project Background

High-level goals:

- Lay foundation for a city wide pedestrian traffic monitoring program.
- Develop pedestrian count strategy for CBD.

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- Lay foundation for pedestrian traffic monitoring program.
- Develop pedestrian count strategy for CBD.

Specific objectives:

- Determine where, when, and how long to collect short-duration counts.
- Test the use of pedestrian traffic pattern groups to adjust short-duration counts into estimates of AADT.

Project Background

Project tasks:

- Identify pedestrian traffic patterns in CBD.
- Select continuous count locations.
- Collect continuous count data for 2016.
- Analyse data to meet objectives.

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Data Collection

Data Collection

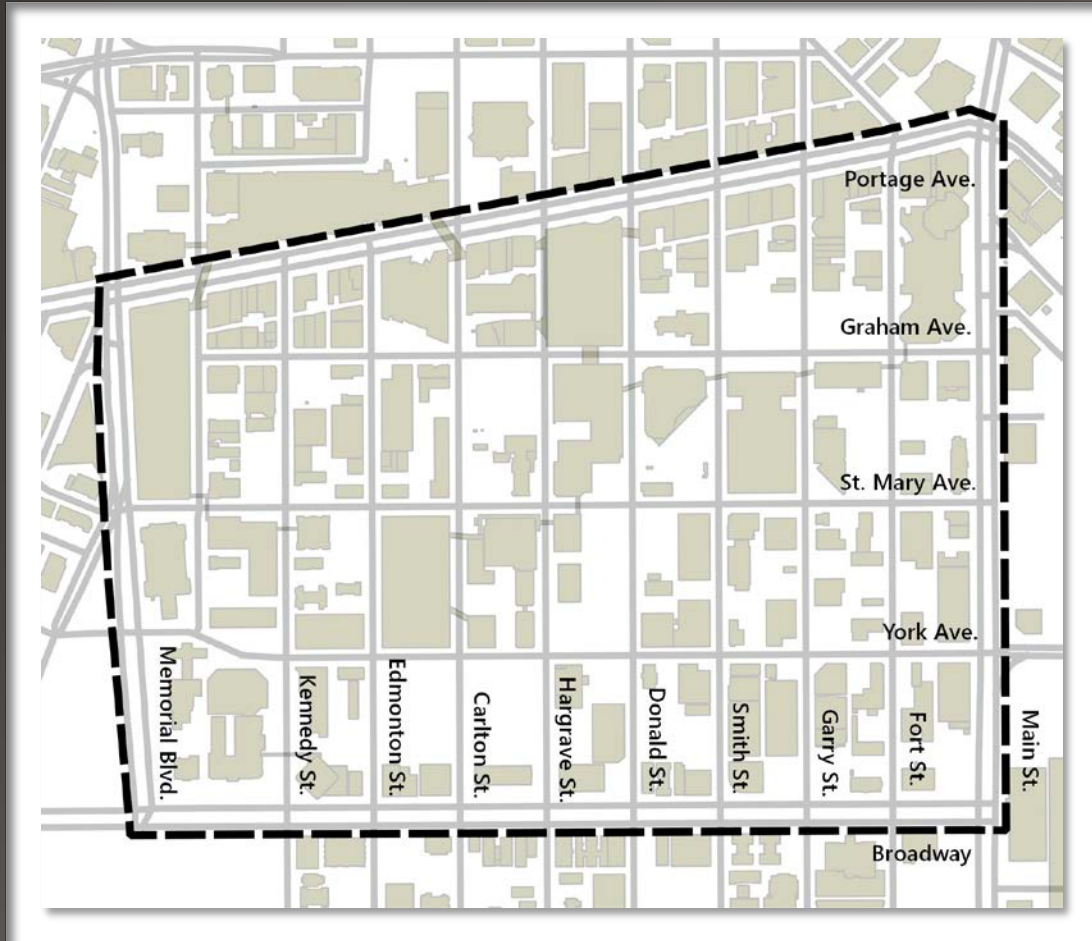
Equipment:

- Automated pedestrian counters (APCs).
- Passive infrared detection.
- Continuous data collection.
- Easy installation.

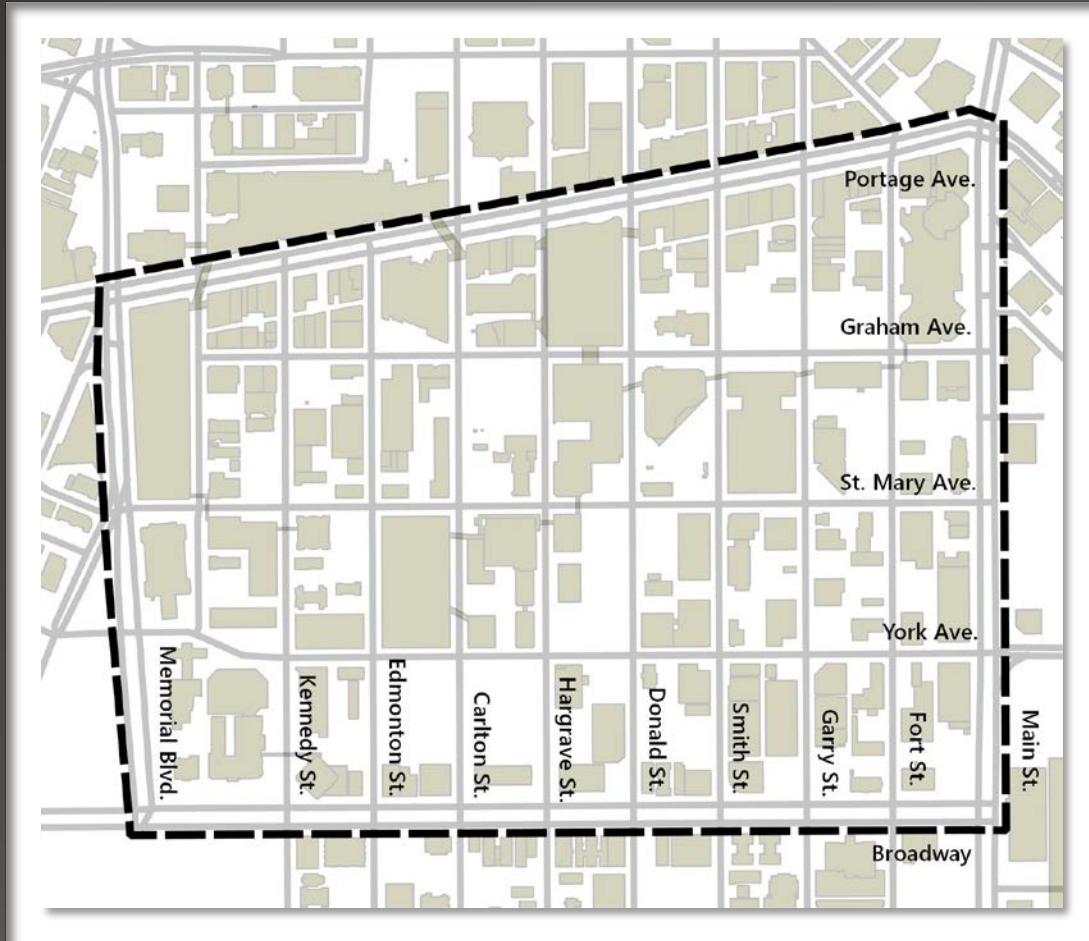
Eco-Counter Pyro-Box.



Data Collection



Data Collection



Constraints

- 8 APC.
- 8 week counting period.
- 1 week of data at each site.

Data Collection



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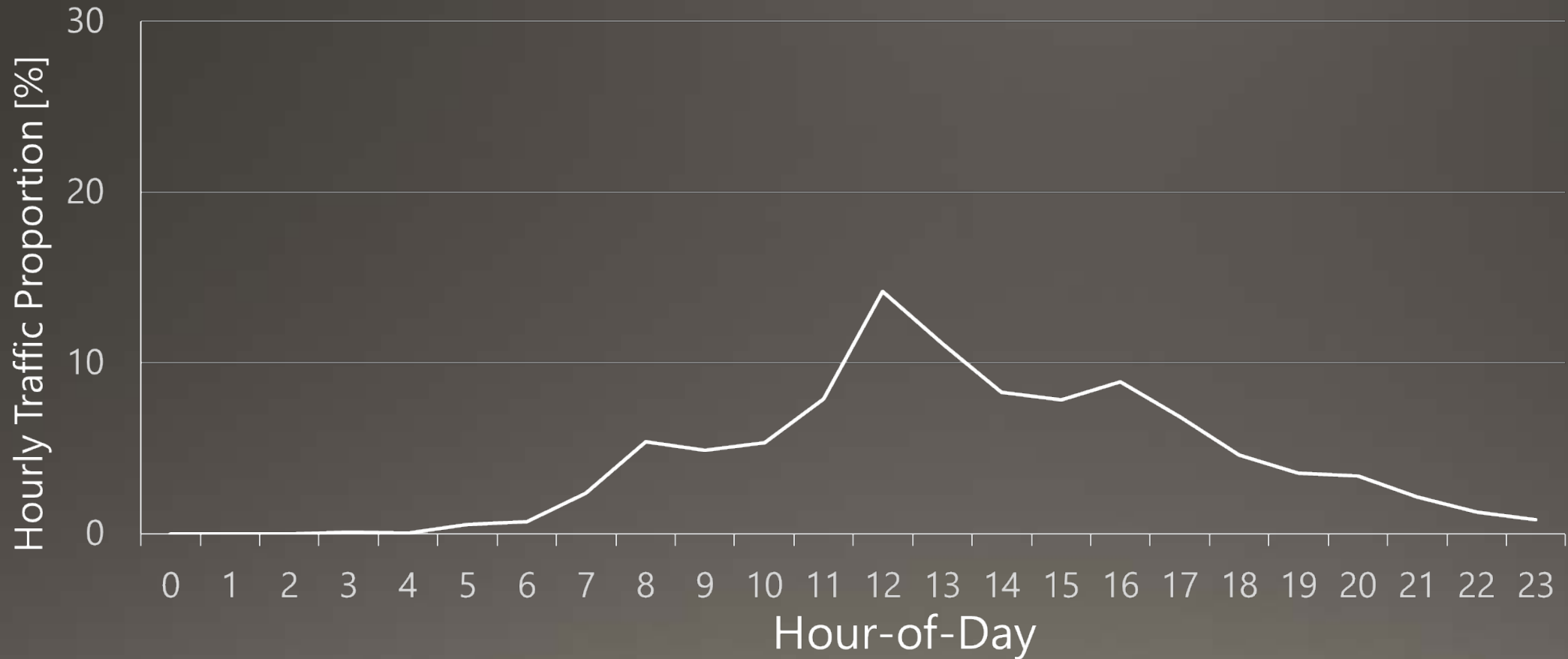
Data collected @ 43 count sites



Analysis & Results

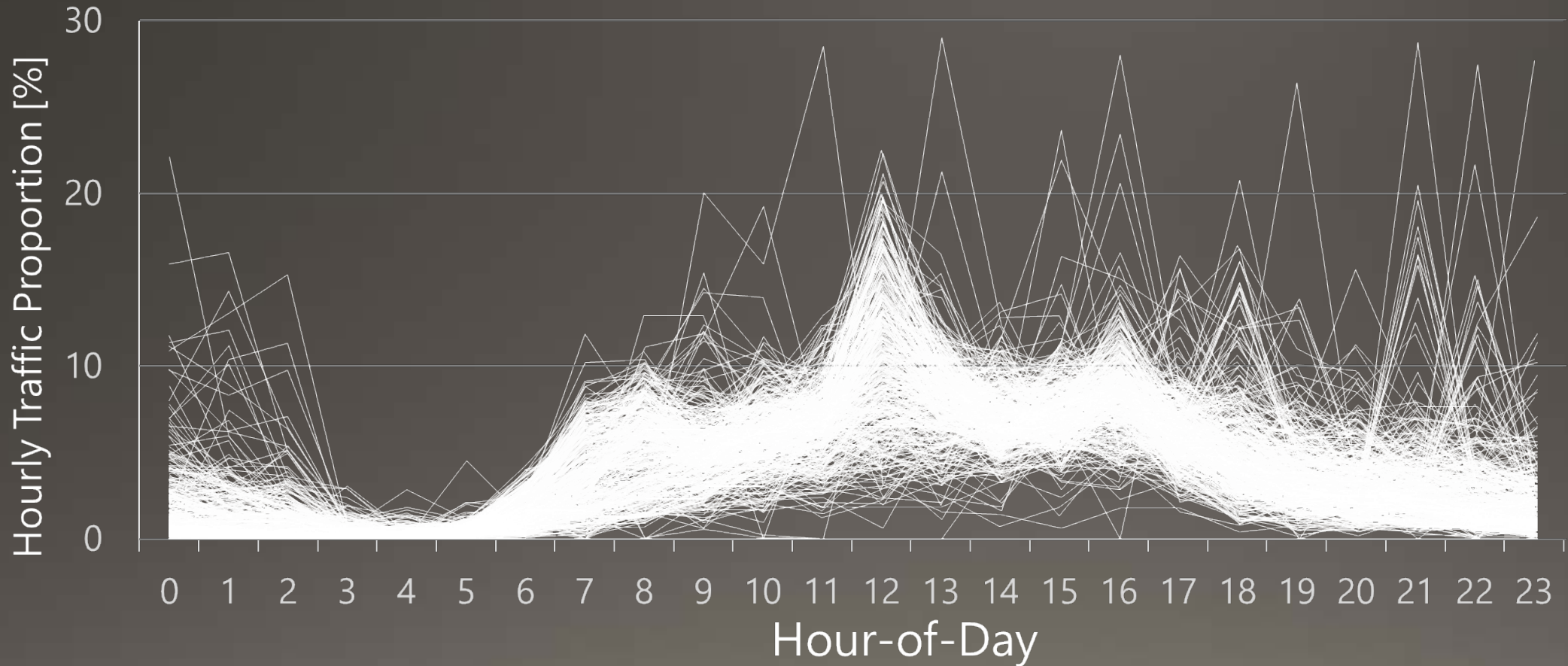
Analysis

Hourly Proportion of Daily Pedestrian Traffic [%]



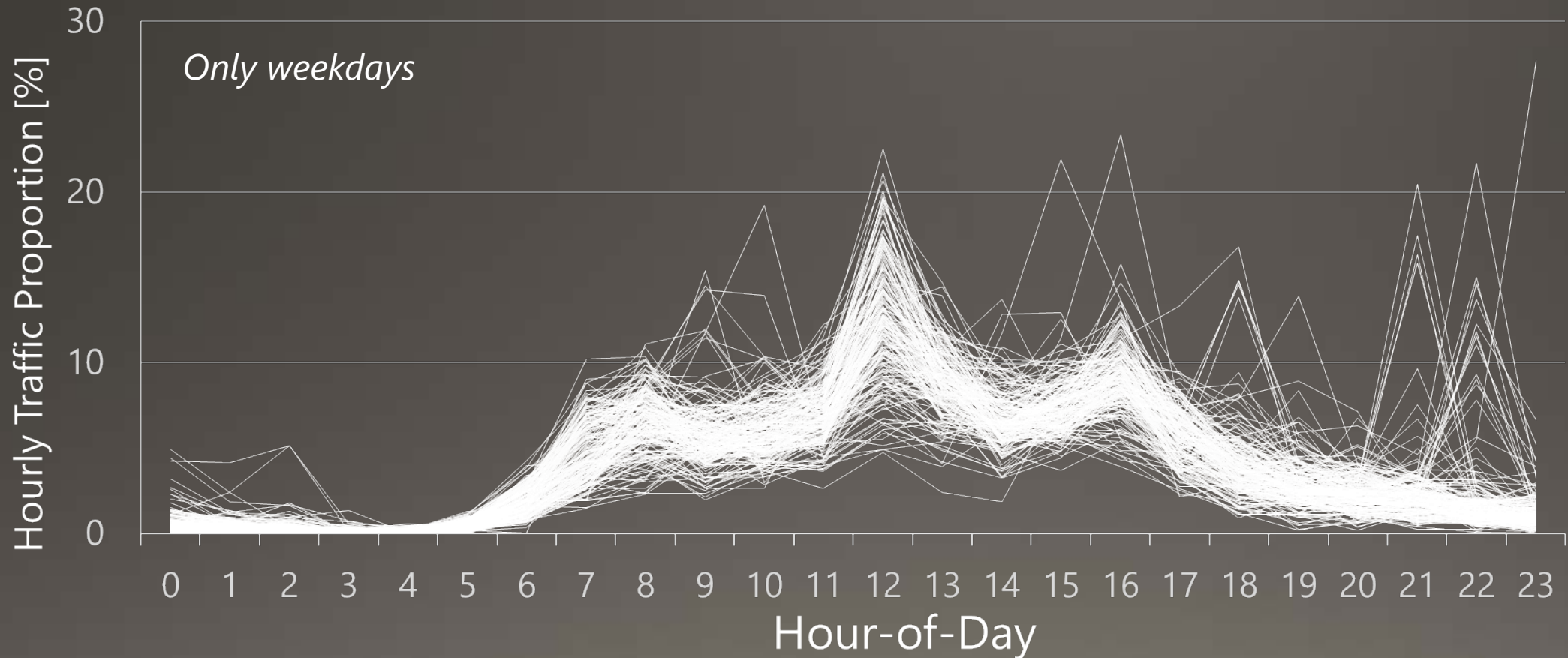
Analysis

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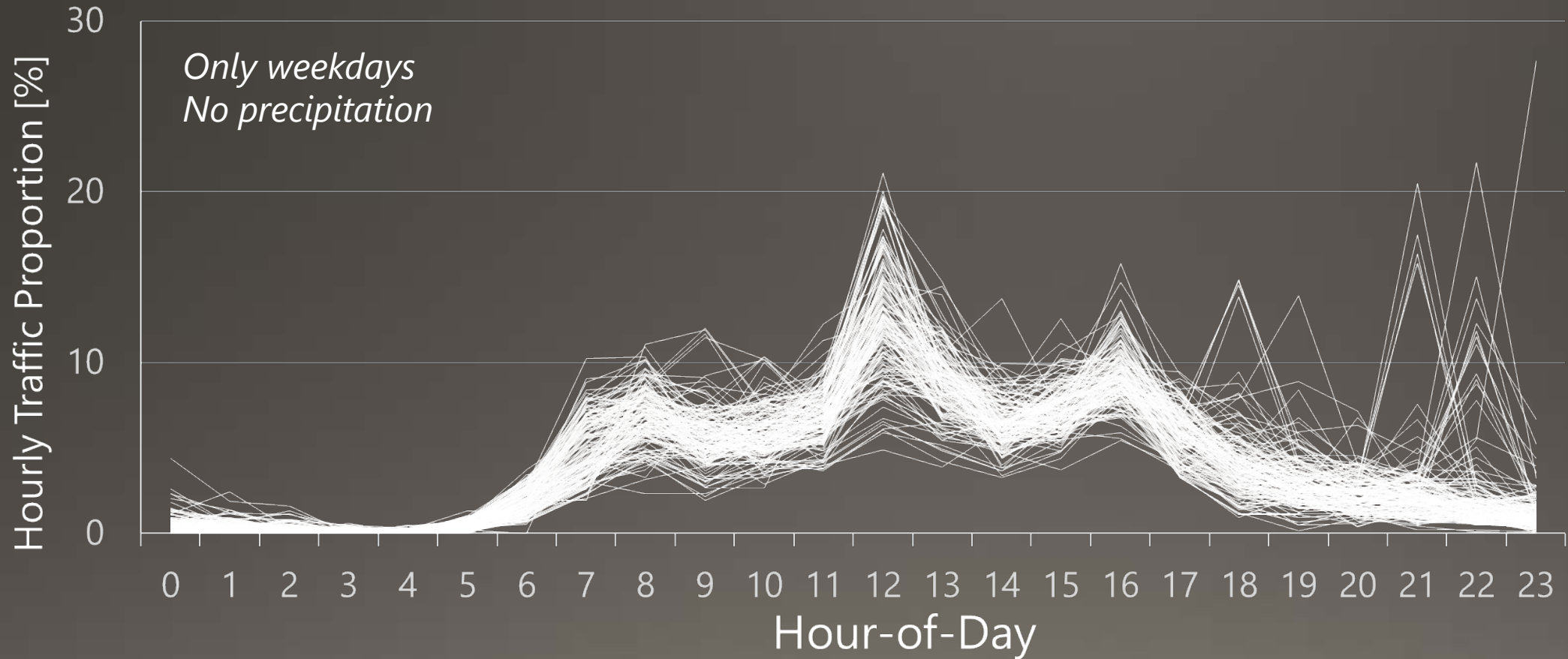
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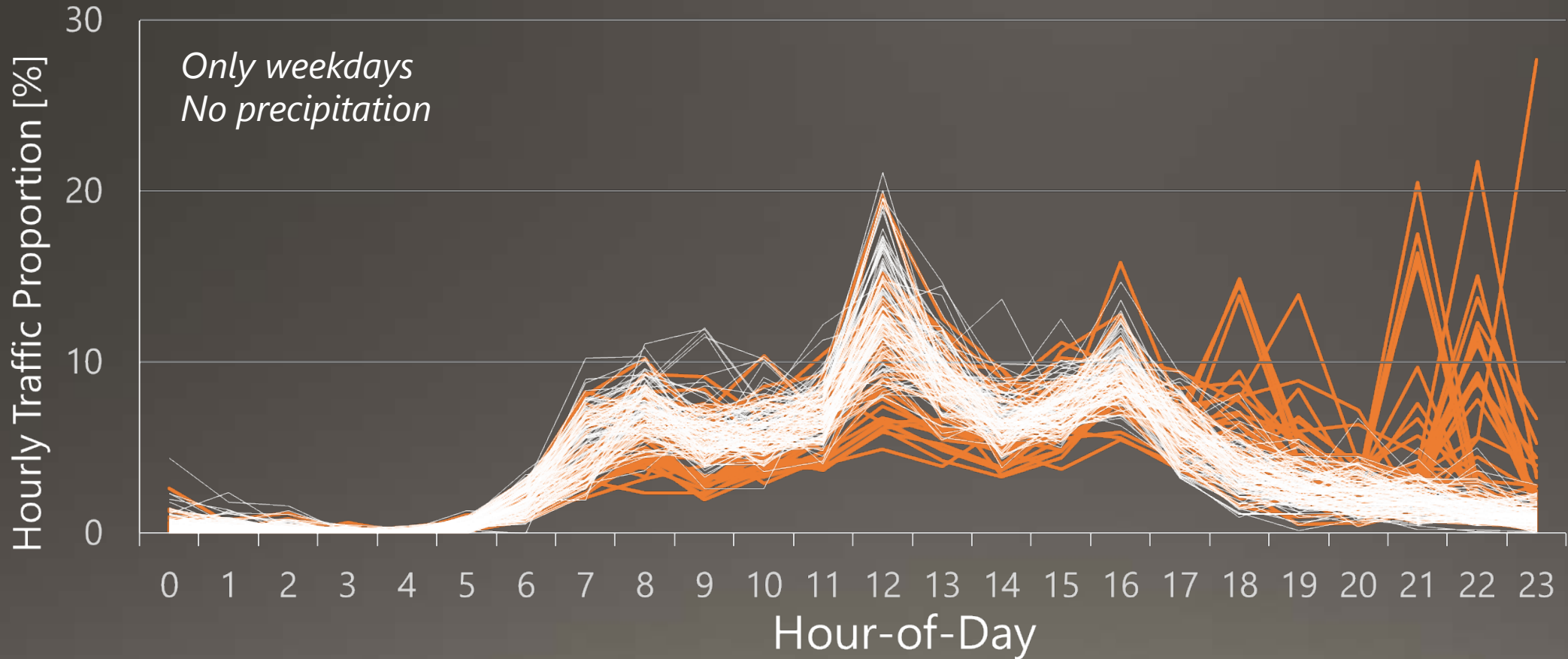
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Hourly Proportion of Daily Pedestrian Traffic [%]



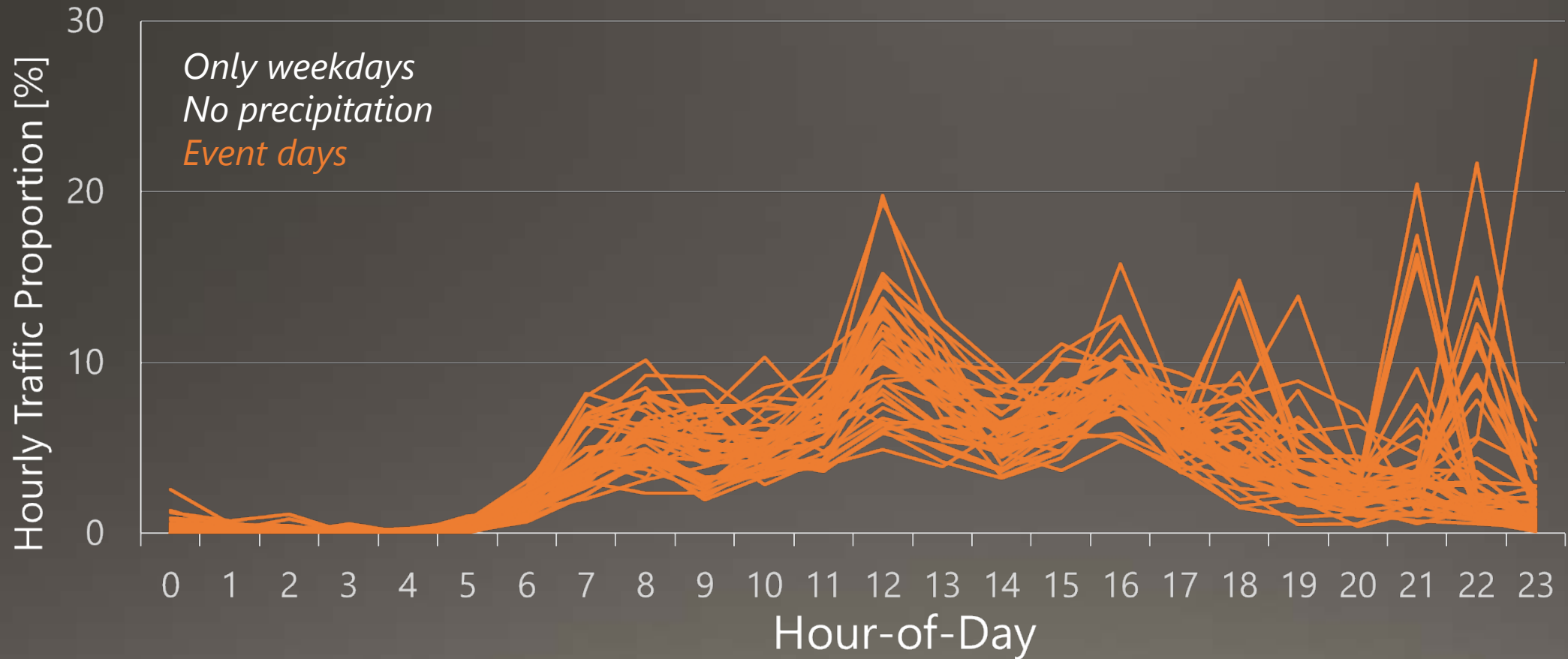
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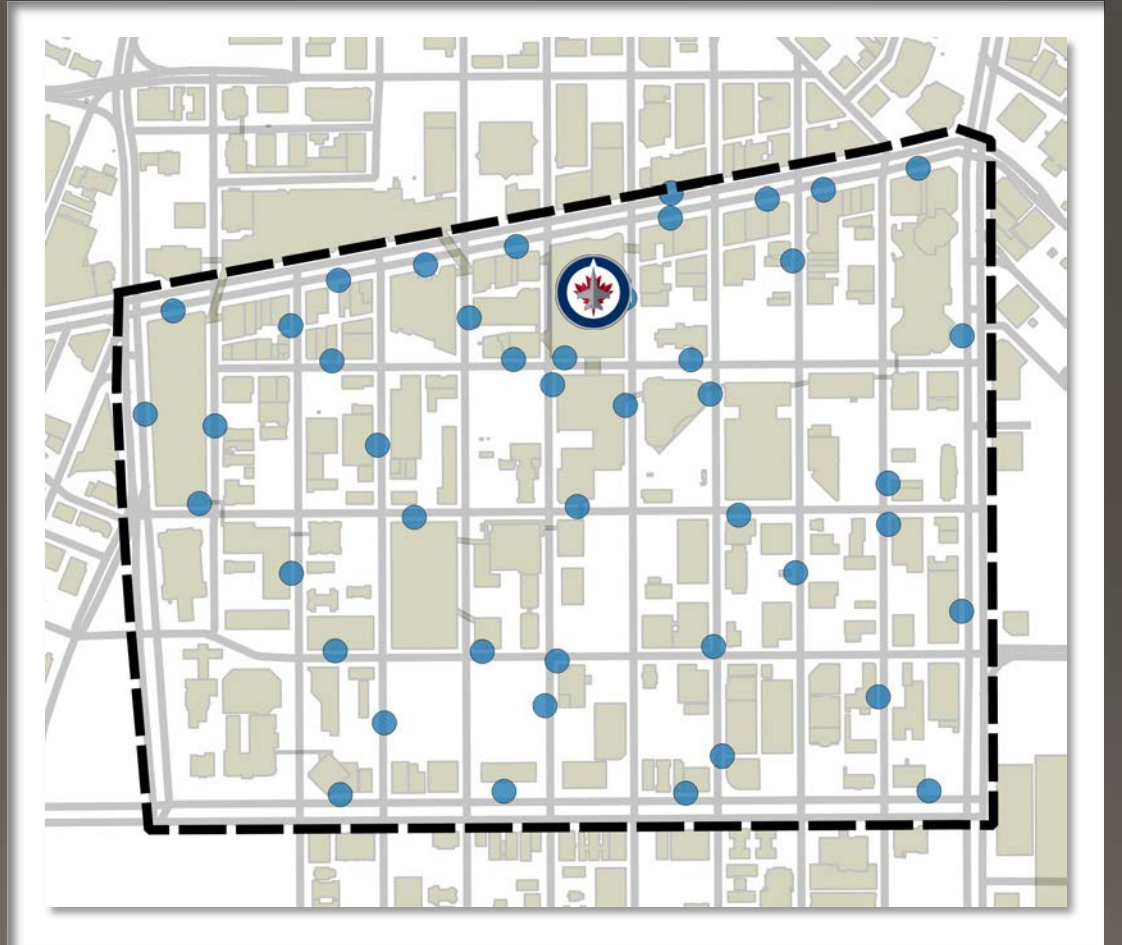


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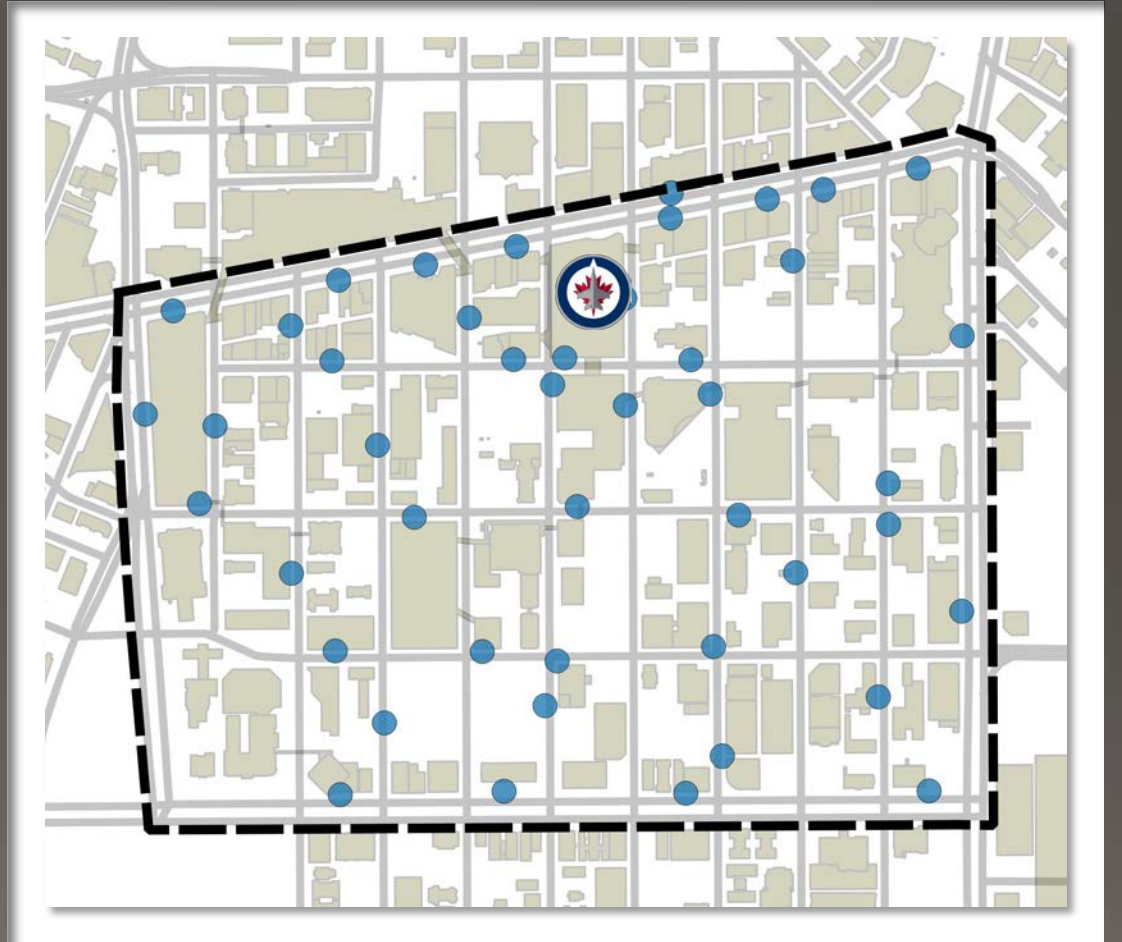


Analysis



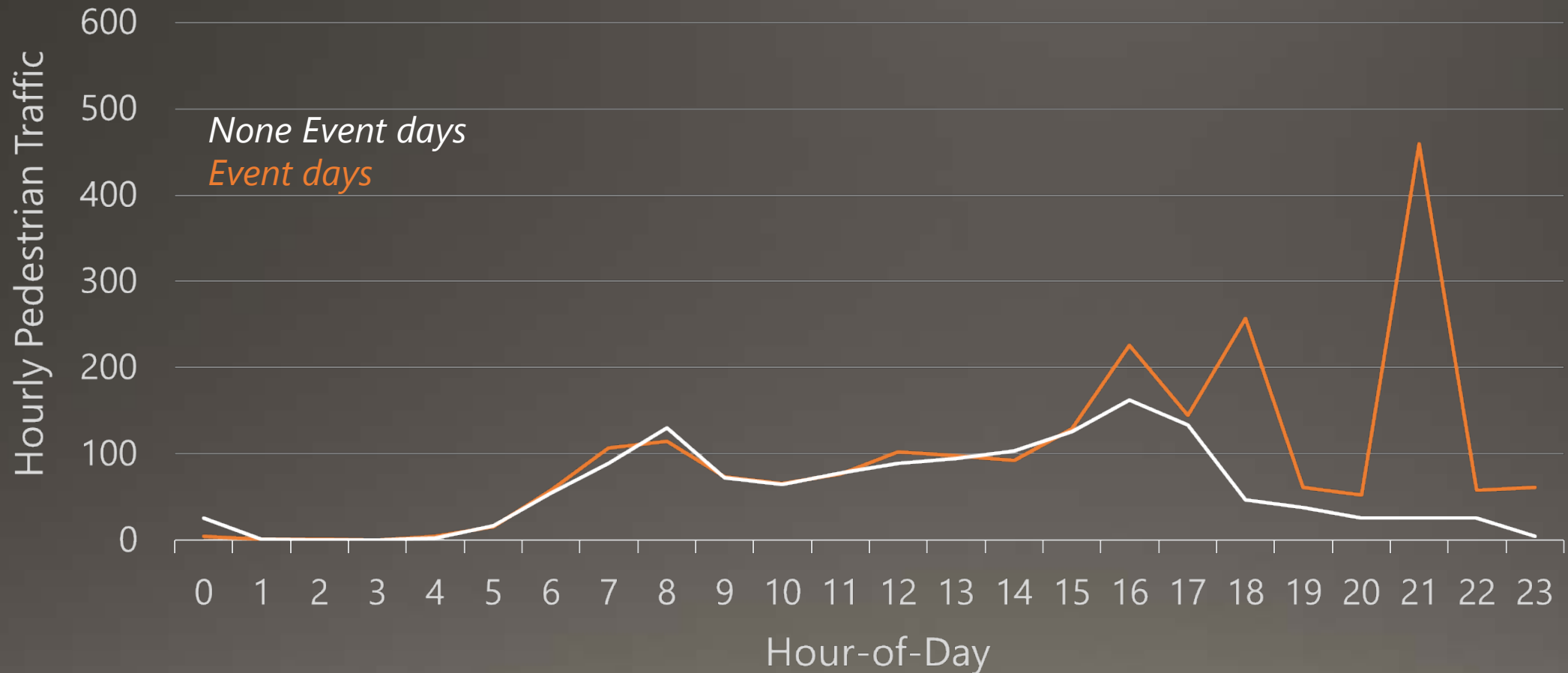
Analysis

*Quantify the influence of MTS
centre events at each site.*



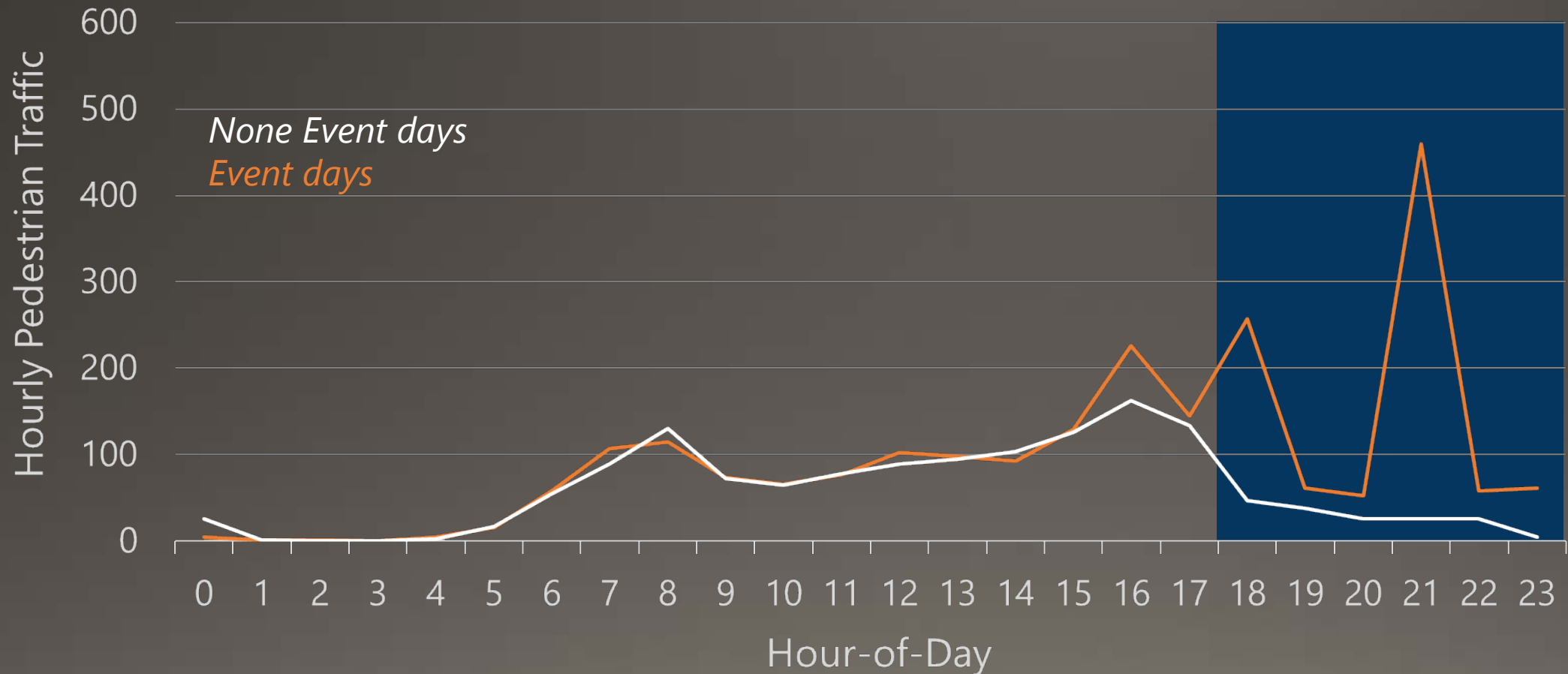
Analysis

Average Hourly Pedestrian Traffic on Weekdays



Analysis

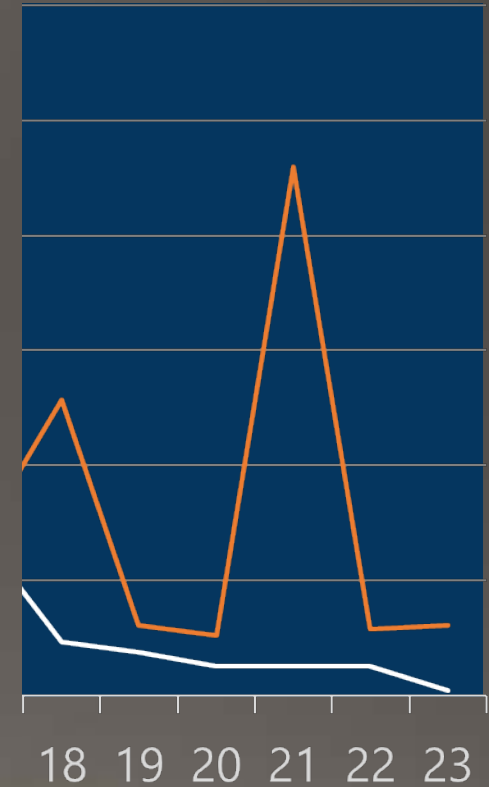
Average Hourly Pedestrian Traffic on Weekdays



Analysis

Evening Proportion Index (EPI)

the proportion of pedestrians travelling in the 6 hour period between 18:00 and 24:00.

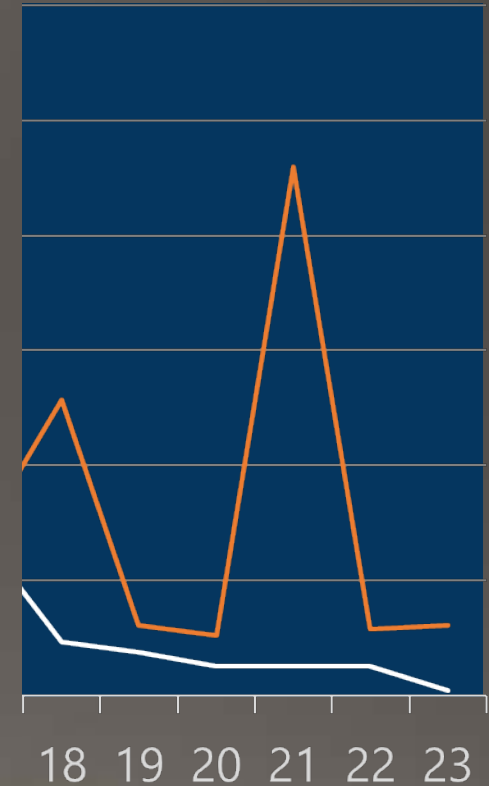


Analysis

Evening Proportion Index (EPI)

the proportion of pedestrians travelling in the 6 hour period between 18:00 and 24:00.

- *EPI (event) = 42 percent*
- *EPI (no event) = 12 percent*



Analysis

Evening Proportion Ratio (EPR)

The ratio of EPI (event) to EPI (no event).

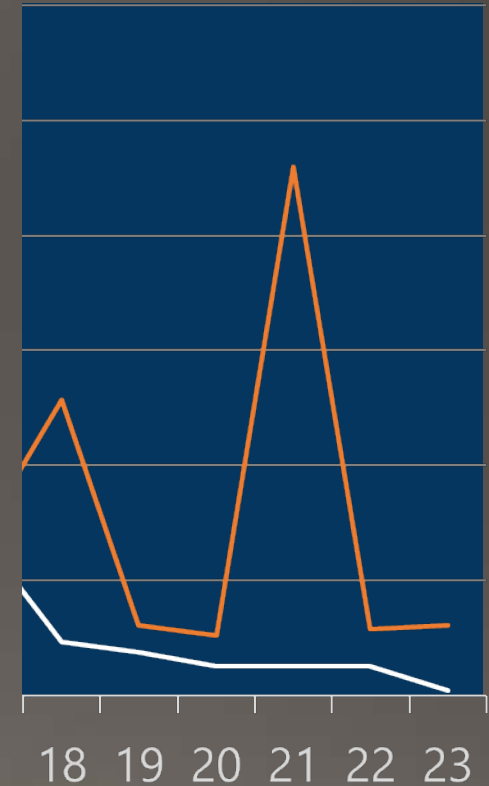


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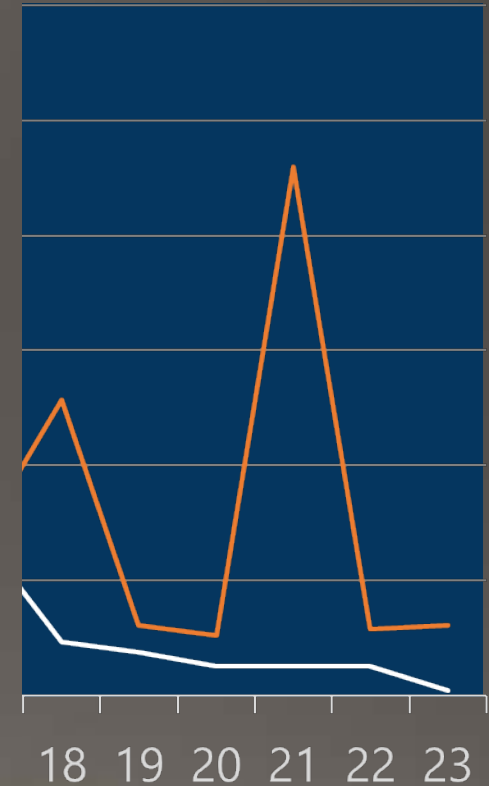
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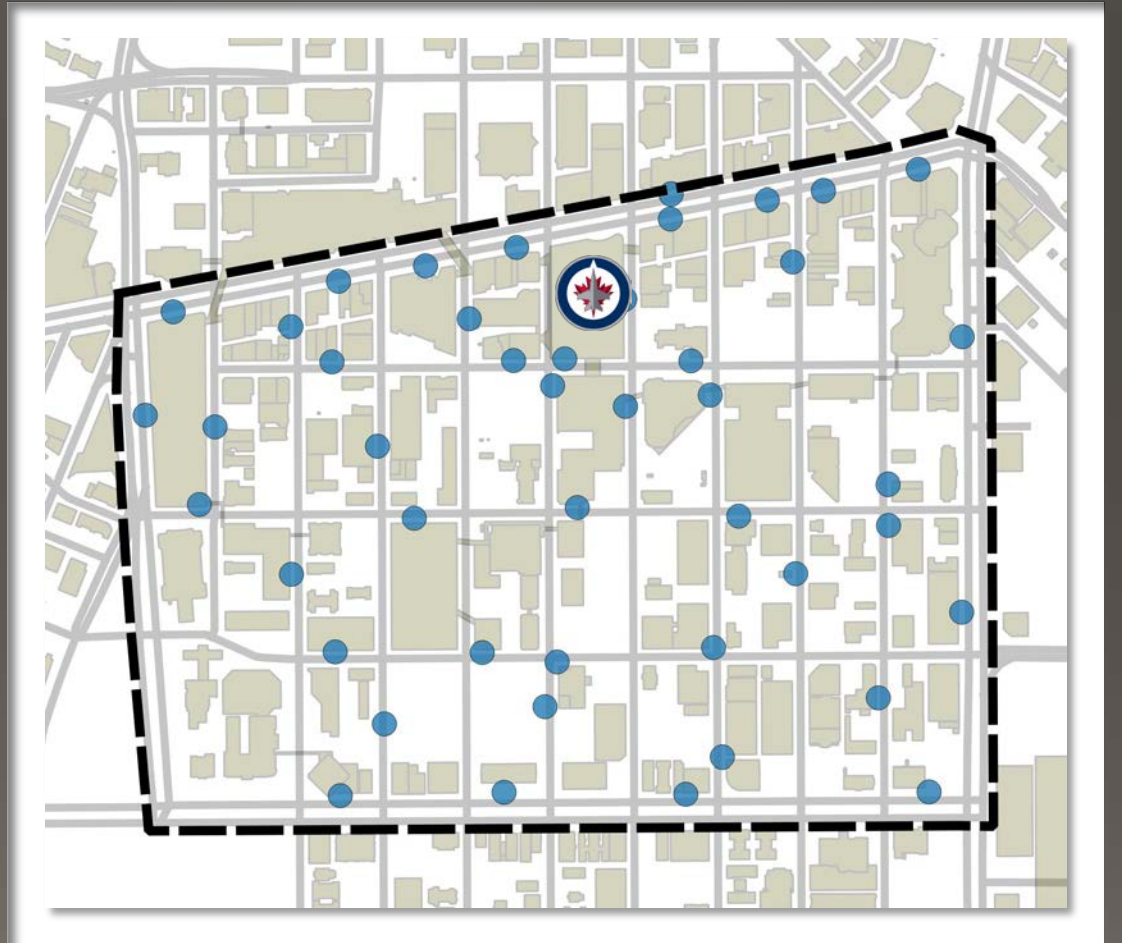
The ratio of EPI (event) to EPI (no event).

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$$EPR = 42 / 12 = 3.5$$



Results

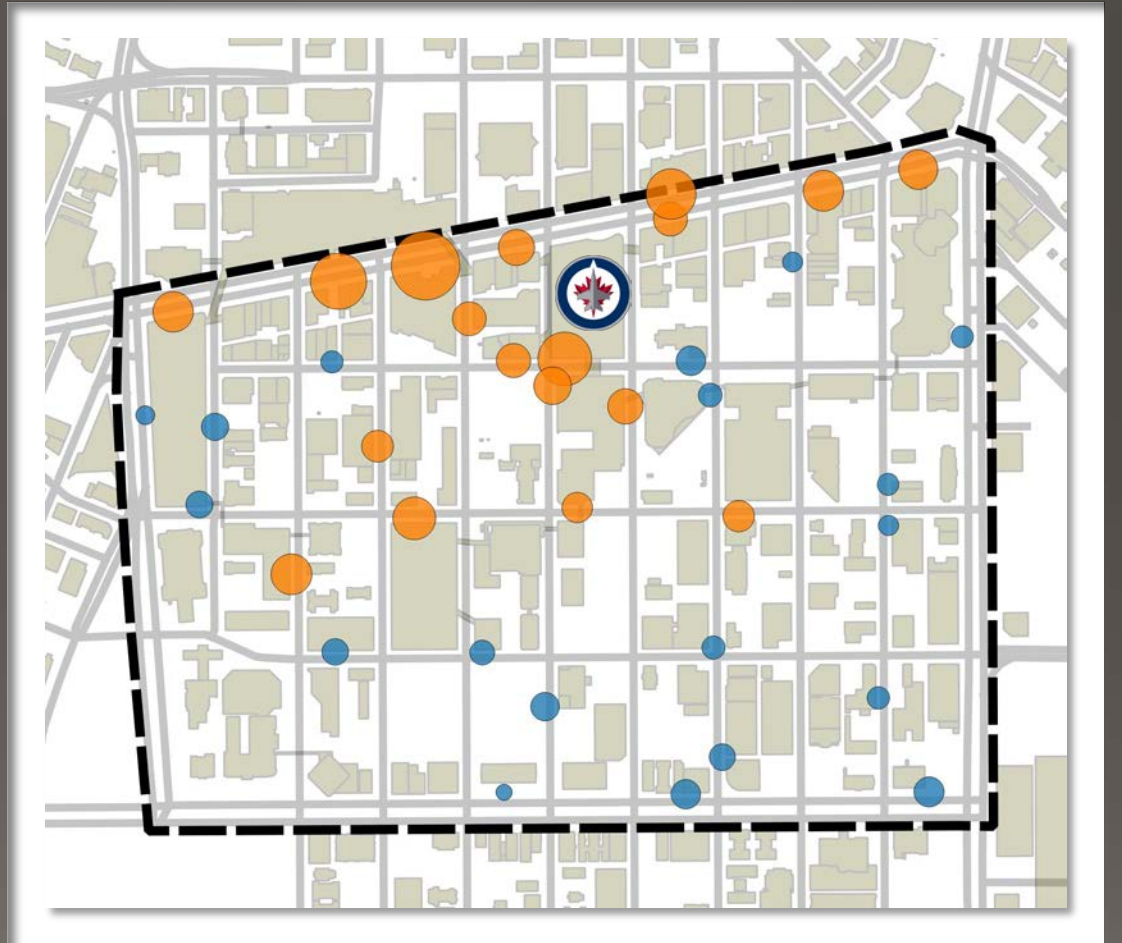


Results

Event influence:

● *High* = $EPR \geq 2$

● *Low* = $EPR < 2$



Results

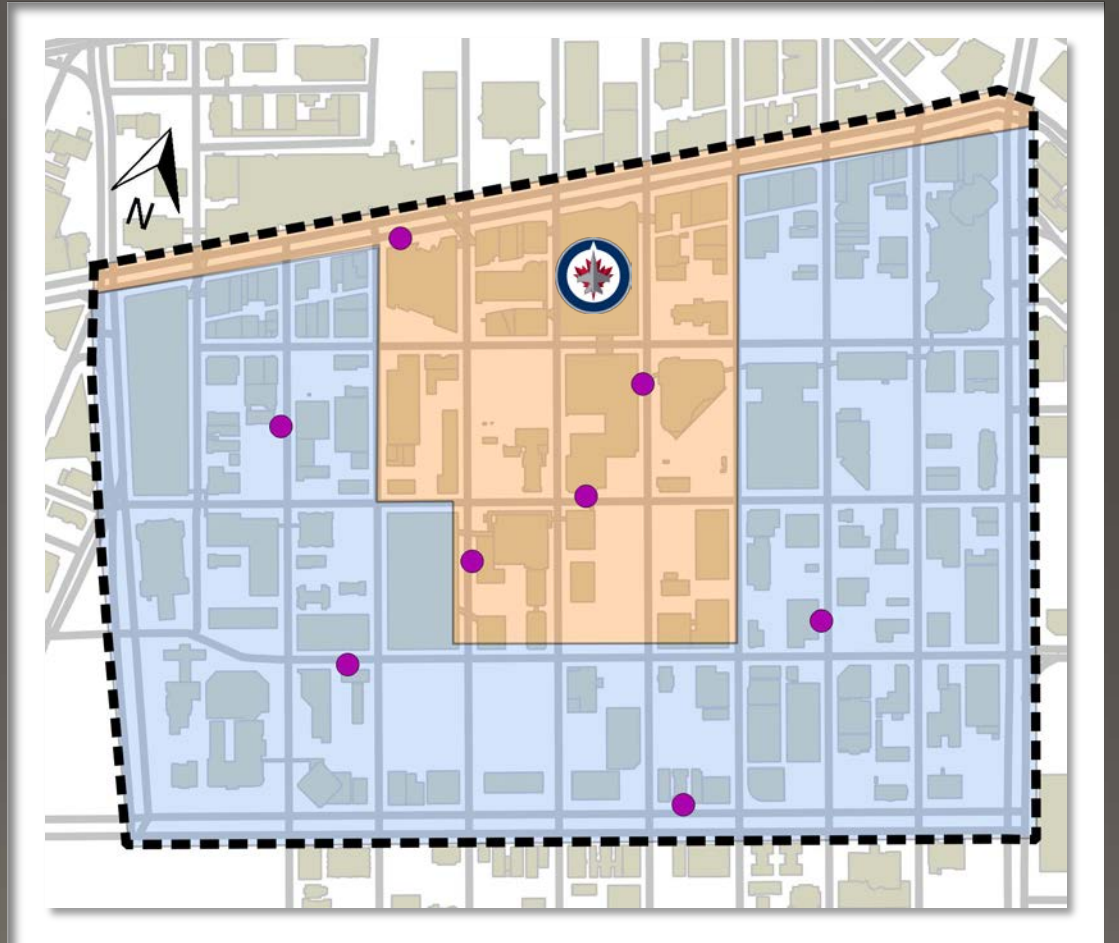
Event influence area



Results

Continuous site selection:

- Four APC per area
- Stratified random selection



Closing Remarks

- Strong commuter pedestrian traffic in CBD.
- It takes major events to influence pedestrian traffic patterns.
- Evening Proportion Ratio quantifies the influence of events.
- Event influence areas may be used to characterize pedestrian traffic patterns.

Thank You

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