

# National Coding Week - Python and Urban Analytics Workshop

## Viewing cities through code

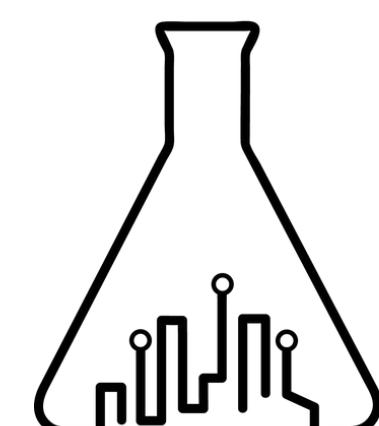
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2024-09-16

**(SEC) SINGAPORE-ETH  
CENTRE**

**(FCL G) FUTURE  
CITIES  
LAB  
GLOBAL**



urban  
analytics  
lab



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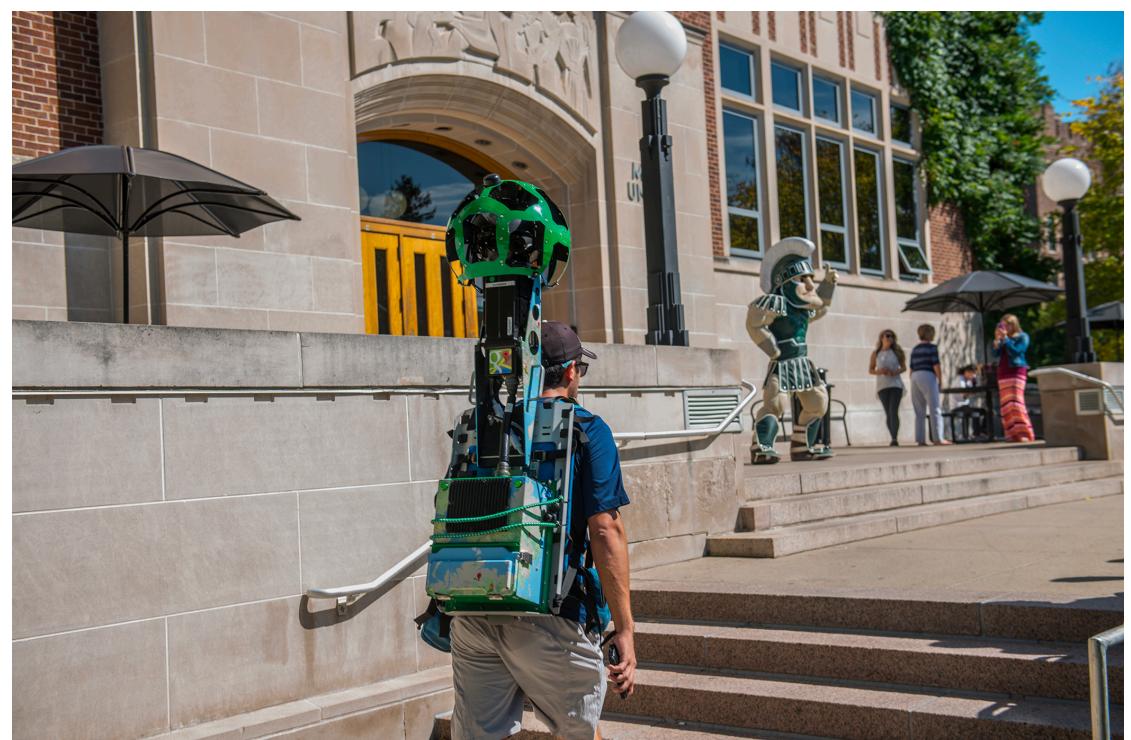
WP1

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# Street-view images (SVIs)

Google Street View  
(commercial)

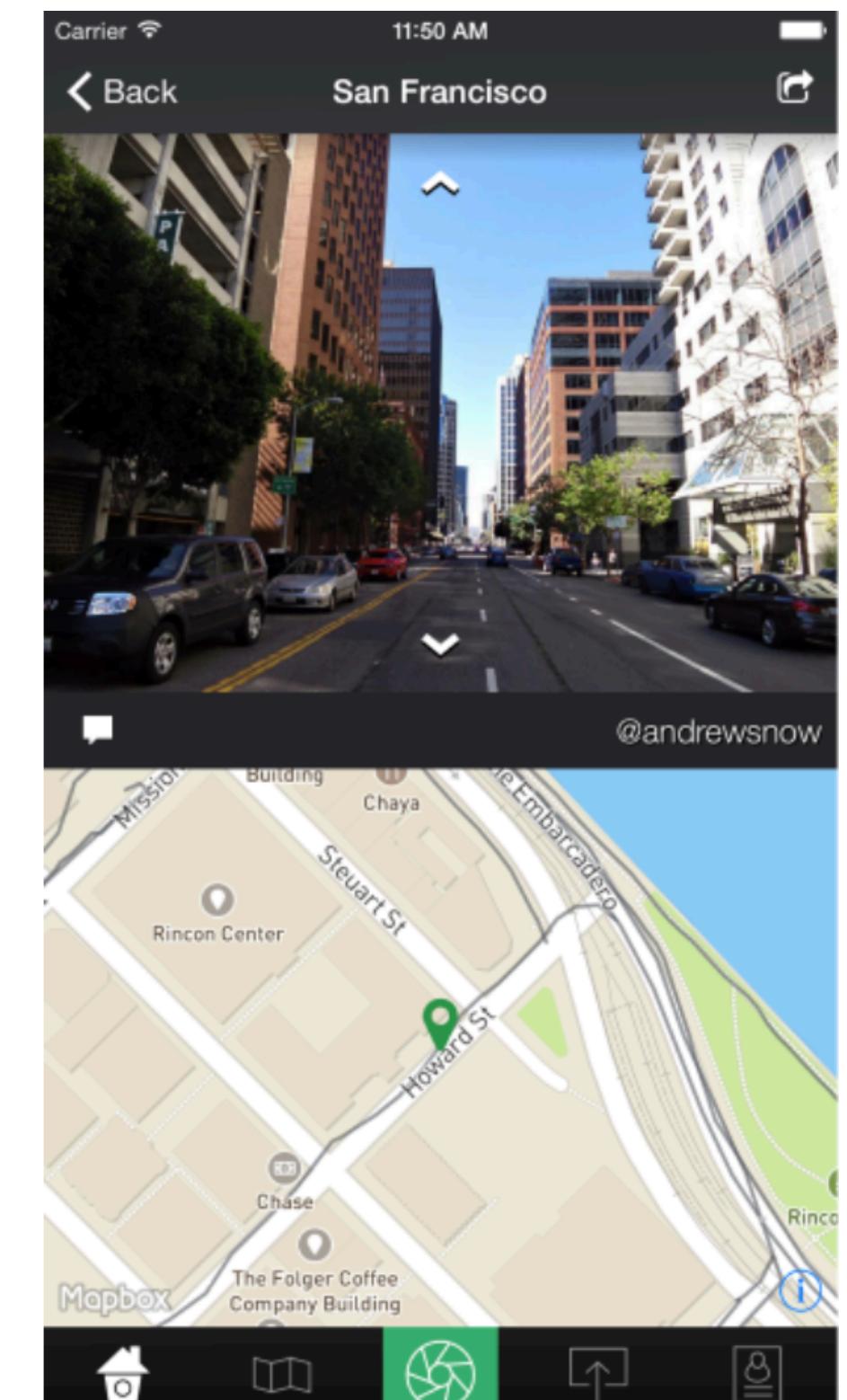


Prominent **data source** in the urban environment



Images alone are **simple and limited** in metadata or additional features

Mapillary and  
Kartaview  
(crowdsourced)



Images:

Left: <https://uk.pcmag.com/android-apps/130320/no-need-for-a-car-add-images-to-google-street-view-using-your-phone>, <https://vaikameopasie.wordpress.com/google-map-street-view-camera/>

Right: <https://www.geospatialworld.net/blogs/mapillarys-photo-sharing-community-makes-mapping-easy-openstreetmap/>

# Human visual perception

What is human visual perception?



- A gathering of insights from humans — how people perceive their living surroundings (i.e. streetscapes)

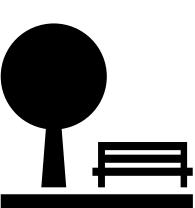
What are the potential applications of human visual perception?

Transport and mobility



- e.g. visual complexity of cities and perceived walking safety

Urban planning and design



- e.g. visual quality and active outdoor activities

# Human visual perception

Perception studies have dominated many studies; they are a key application of SVI

**Simple idea:** show many images to many people and ask them how they feel across multiple dimensions

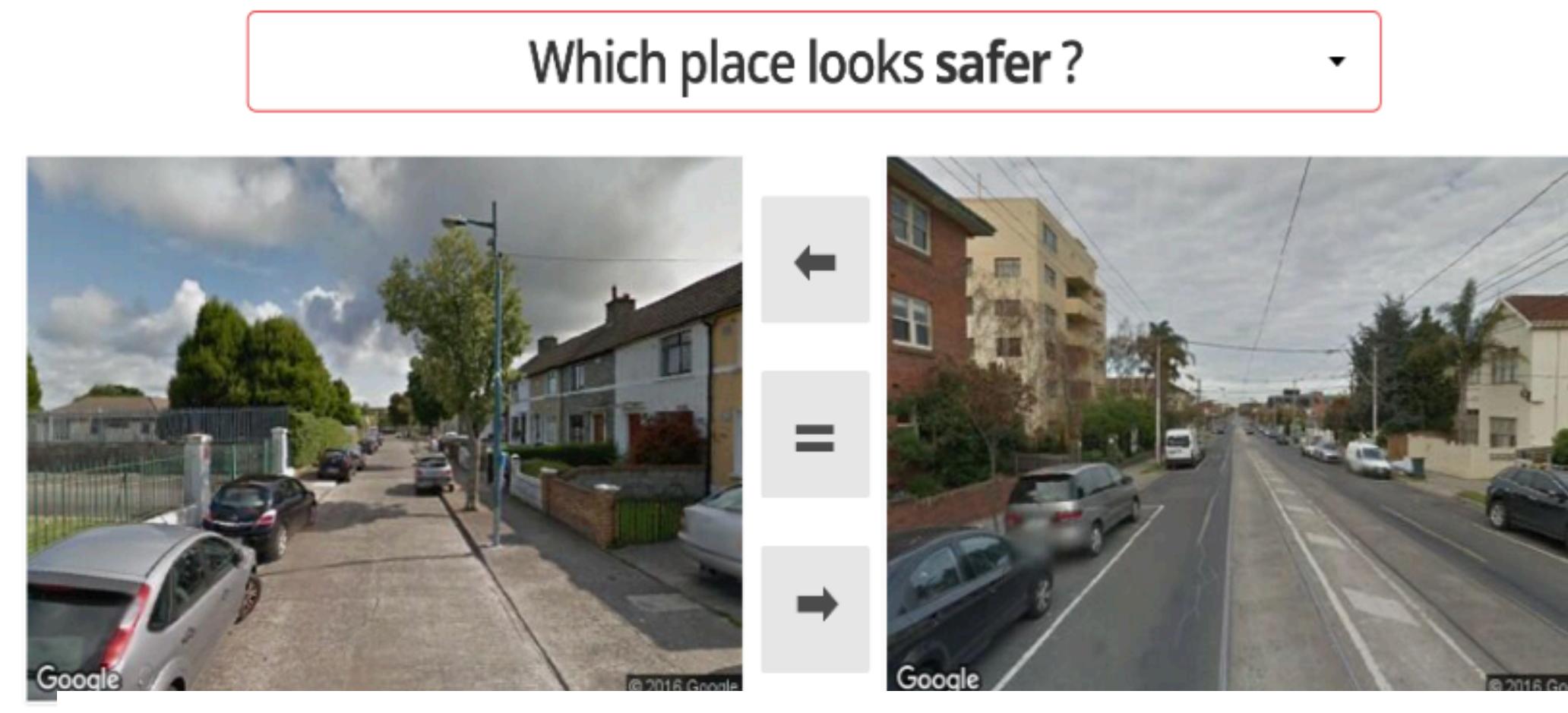


Table 1: The Place Pulse 2.0 Dataset at a Glance

(a) Statistics on Images

Continent	#Cities	#Images
Asia	7	11,342
Africa	3	5,069
Australia	2	6,082
Europe	22	38,636
North America	15	33,691
South America	7	16,168
Total	56	110,988

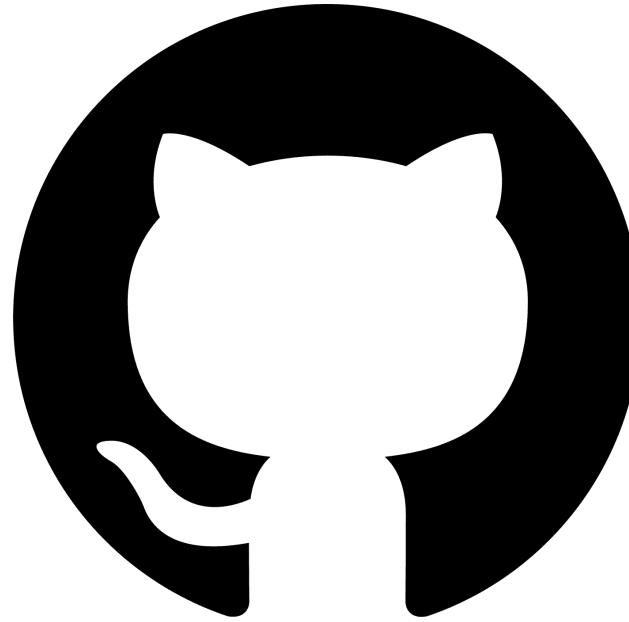
(b) Statistics on Pairwise Comparisons (PC)

Question	#PC	#Per-image PC
Safe	370,134	7.67
Lively	268,494	5.52
Beautiful	166,823	3.46
Wealthy	137,688	2.87
Depressing	114,755	2.47
Boring	111,184	2.40
Total	1,169,078	16.73

Dimensions:

- Safe
- Lively
- Beautiful
- Wealthy
- Depressing
- Boring

# SWITCH TO CODING!



**GitHub**

<https://github.com/matqr/python-urban-analytics-workshop>

or

<https://shorturl.at/wKCe6>

# National Coding Week - Day 1





- Interest in ML applications from the building to the urban scale (i.e., energy, perception, mobility, comfort).
- Open to collaborations! Feel free to reach out about our datasets or other projects.

**Thank you!  
Questions?**

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