Geocoordinate Data Visualization of Tobacco Litter in Urban Outdoor Environments

A Pilot Study in Guangzhou, China

Emma Walker, Qinghua Nian, Zhehan Wang,
Kevin Welding, Shuai Zhang, Joanna Cohen

JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

Institute for
Global Tobacco Control

Disclosure Slide

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	Tobacco industry	E-cigarette & nicotine product industry	Pharma industry
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Background

Background

- **Tobacco litter** is a public health, environmental, and economic issue
- This pilot study used **data visualization** to:
  - Map litter distribution
  - Identify high-concentration areas of litter
- Observations:
  - Near **schools** and **other outdoor environments** in five districts of Guangzhou, China

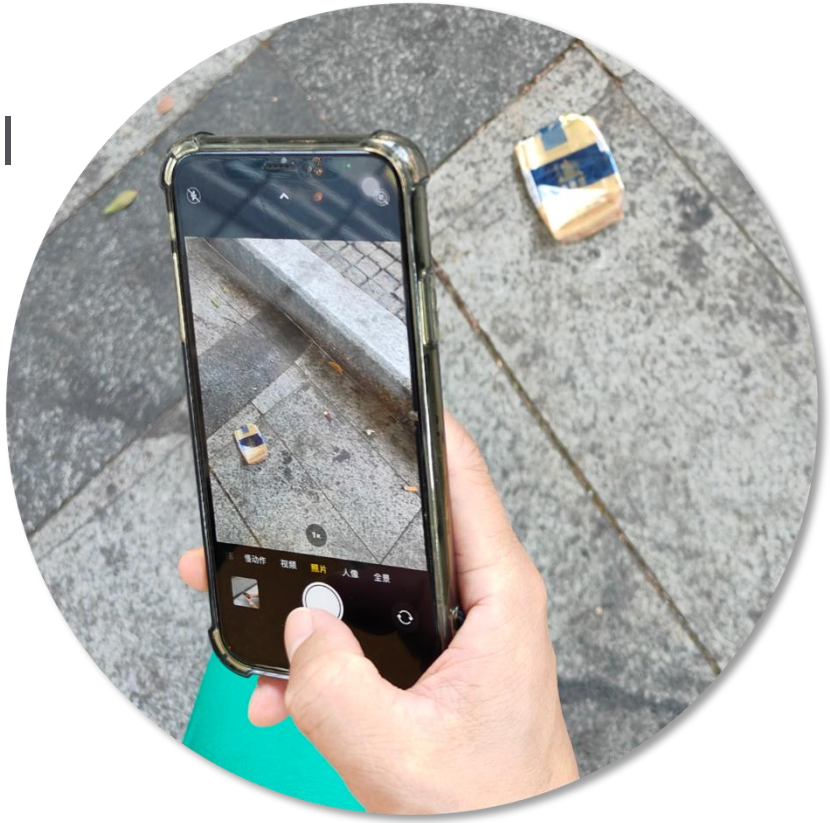
Methods

Data Collection

- **20 schools** observed (random sampling):
  - 10 elementary, 10 middle/high
  - Week 1: 12 p.m. & 5 p.m.
  - Week 2: 8 a.m. & 5 p.m.
- **10 other environments** observed (convenience sampling):
  - Two of each type: offices, government buildings, recreational areas, residential areas, and transportation hubs
  - Morning, afternoon, and evening

Methods

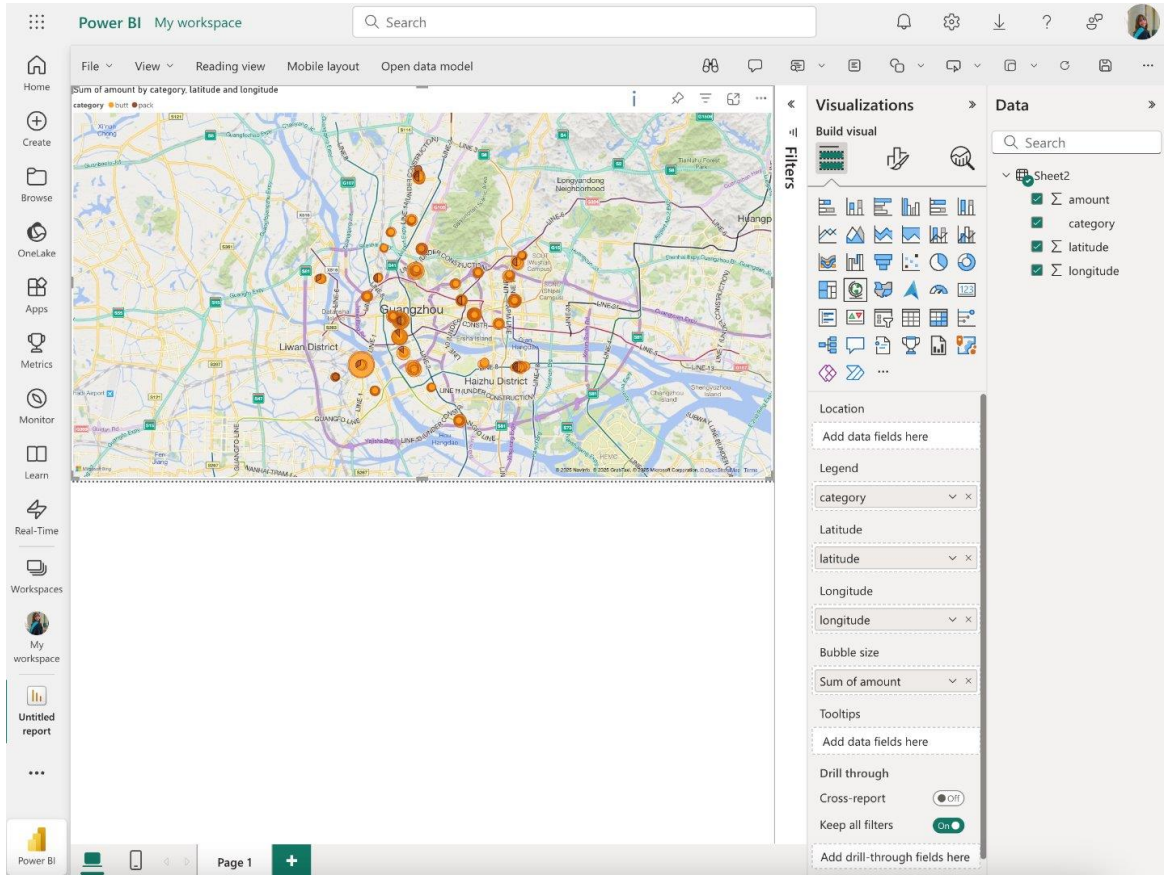
- When: **Oct.–Nov. 2024**
- Data collectors followed **250 m** walking protocol
- Recorded **frequency** and **types of tobacco product litter** via survey platform:
  - Cigarette butts
  - Cigarette packs
  - E-cigarettes
- Tobacco litter prevalence was averaged per visit



Methods

- **Power BI** visualized geocoordinate:
  - Litter distribution frequency by environment
  - Clusters (4+ pieces of butt litter) by timepoint

Power BI Mapping



1. Import data with geocoordinate information (e.g., **Excel**, database, other formats)
2. Create visualizations (e.g., charts, tables, **maps**)
3. Select data fields to add to the visuals
4. Assign variables to appropriate fields

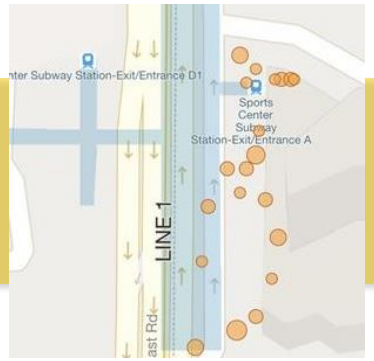
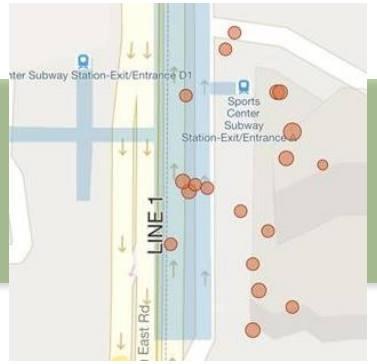
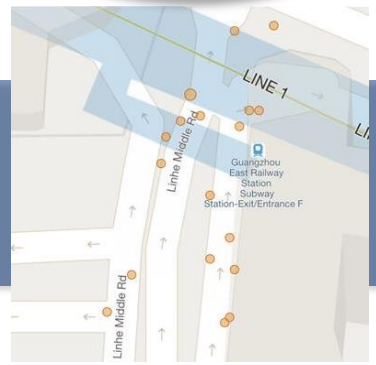
Results

Results: Overall

- Total tobacco product litter found near schools and other environments:
  - **Butts:** 2,069
  - **Packs:** 39
  - **E-cigarette:** 0
- Average number of **butts** observed by environment type, per visit:
  - **Overall:** 20
  - **Schools:** 22
  - **Other environments:** 19

Results: Other Environments

- Average number of butts observed per visit:
  - **Transportation hubs:** 23
  - **Recreation areas:** 20
  - **Residential areas:** 19
  - **Offices:** 17
  - **Government buildings:** 15

	Recreation	Transportation	Residential
Morning			
Afternoon			
Evening			

Results: Schools

- Average number of butts observed per visit:
  - **Middle schools:** 27
  - **High schools:** 22
  - **Elementary schools:** 19

Middle School

Elementary School

Elementary School

Conclusions

Conclusion

- **Power BI strengths and limitations**
  - Reveals spatial and temporal patterns of tobacco litter
  - Creates interactive format to communicate findings to policymakers and the public
- **Policy implications**
  - Potential post-consumer marketing exposure
  - Provides insight for shaping policies on TAPS and smoke-free regulation
  - Smoking should be banned within a specified distance of school entrances

Informing Methods: Multicity Study

- **Primary focus:** cigarette butt and pack litter
- **Excluded** locations: offices/gov. buildings
- **Included** locations:
  - Schools
  - Recreation areas
  - Residential areas
  - Transportation hubs
- Further explore the implications of visible branding and cigarette butt litter found near schools

Questions?

Protecting Health Saving Lives—
Millions at a Time