Spatial Behaviors of Individuals in Cities: Case Studies in Data Tracking Analysis across Scales

Lynnette Widder
Columbia University
Masters of Sustainability
Management
New York, NY 10027 USA
+1 212 854 2983
lw268@columbia.edu

Jessie Braden
Pratt Institute Spatial Analysis/
Visualization Initiative
200 Willoughby Ave
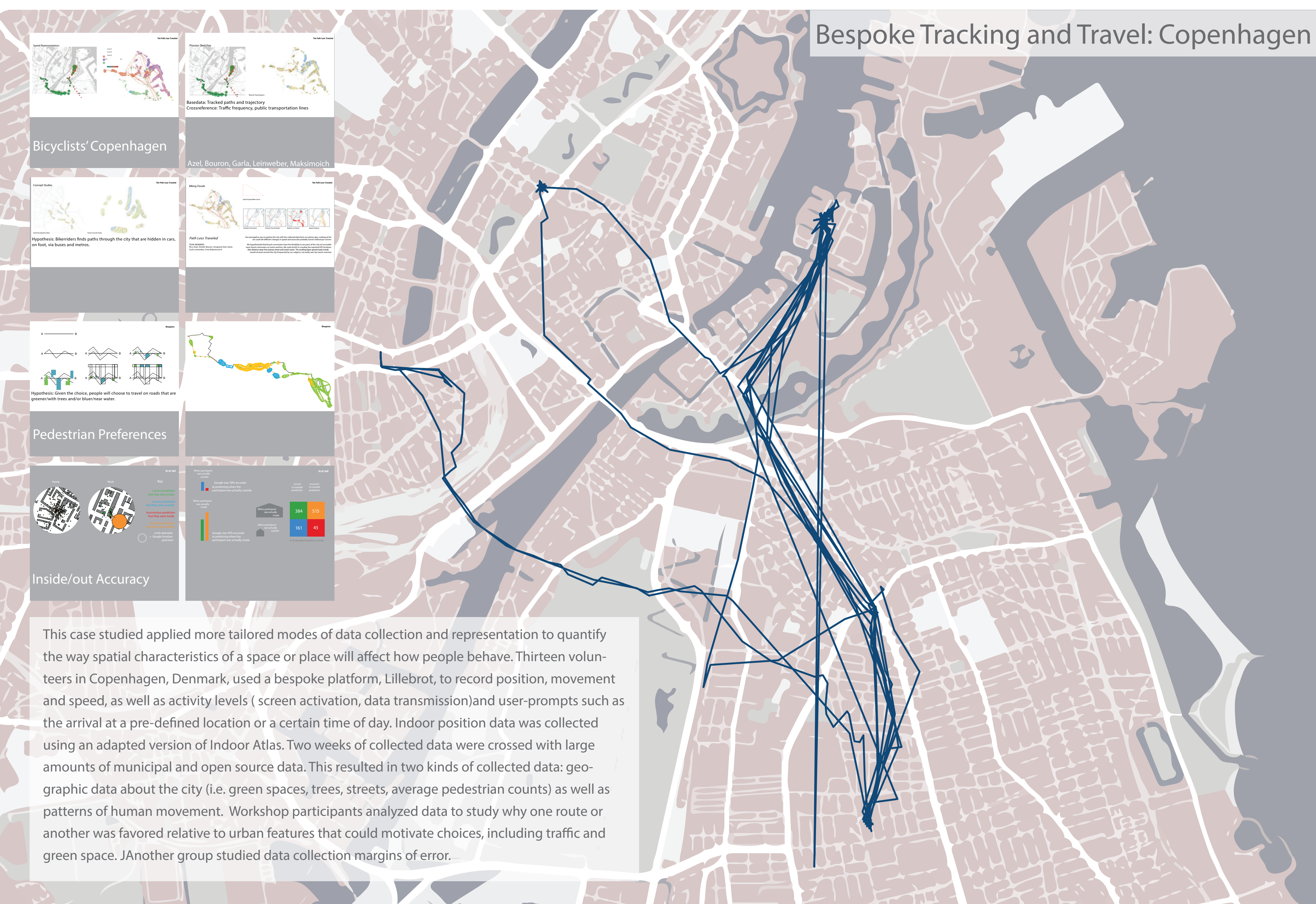Brooklyn, NY 11205 USA
+1 718 399 44144
jbrad344@pratt.edu

Joy Ko
Rhode Island School of Design
Department of Architecture
2 College St., Providence, RI 02903 USA
+1 401 454 6205
jko01@risd.edu

Kyle Steinfeld
University of California, Berkeley
230 Wuster Hall
Berkeley, Ca. 94720
+1 510 643 3256
ksteinfe@berkeley.edu

Food Shopping Patterns and Associated Waste: New York City

Food Stores, Concentration   Food Stores, Size

Food Stores, Scale by Area   Waste Results, retail/product type

This study in New York City is a first step to mapping consumer food shopping practices linked to larger municipal waste and food supply data. Four researchers mapped their weekly food shopping paths by journaling and Instagram . This was cross referenced with food store size, packaging size, household type and waste produced relative to New York City's waste and recycling regime. Each researcher had a unique pattern for navigating the city, buying food by chance ("opportunistic") or as a destination. Correlations among packaging, food type and waste produced were graphed by weight, comparing compostable organic weight to recyclables and waste.

Researcher 1: bicyclist, car owner; destination weekly shopper; lives with friends

Researcher 2: bicyclist, pedestrian; opportunistic daily shopper; family of three

Researcher 3: pedestrian, car owner; destination weekly and opportunistic shopper; couple

Researcher 4: pedestrian; destination weekly and opportunistic shopper; lives with friends

'Eating on the Run' and Non-food Waste: Providence, RI

Participant 1 16.01.14

Analytics by: distance, social interaction, and non-food waste

Participant 2 22.01.14

Participant 3 15.01.14

Participant 4 19.01.14

Typical Days Maps: MyTracks and Rhino platforms Images: Instagram platform

Sited in Providence, RI, this study considered work/life balance while deploying more extensive GIS data tracking tools combined with Instagram . GIS-based platforms used were 'MyTracks' and 'CartoDB'. All subjects were architecture students who worked 10-14 hours a day in their studio. Their choices around the management of time, location and social activity could result in specific food packaging and associated waste. The subjects' images of the food eaten and waste produced suggest eating at work resulted in non-compostable, non-food waste, while allowing greater time, social interaction and mobility for meals produced less non-retrievable waste.

Participant 1: car commuter; some social meals; beverage bottles primary non-food waste

Participant 2: bicyclist, eats at desk; signficant plastic containers and beverage bottles

Participant 3: pedestrian, car owner; mostly social meals; little non-food waste

Participant 4: pedestrian; brings fown food and eats out; limited paper and plastic waste

Bespoke Tracking and Travel: Copenhagen

Bicyclists' Copenhagen

Pedestrian Preferences

Inside/out Accuracy

This case studied applied more tailored modes of data collection and representation to quantify the way spatial characteristics of a space or place will affect how people behave. Thirteen volunteers in Copenhagen, Denmark, used a bespoke platform, Lillebrot, to record position, movement and speed, as well as activity levels (screen activation, data transmission)and user-prompts such as the arrival at a pre-defined location or a certain time of day. Indoor position data was collected using an adapted version of Indoor Atlas. Two weeks of collected data were crossed with large amounts of municipal and open source data. This resulted in two kinds of collected data: geographic data about the city (i.e. green spaces, trees, streets, average pedestrian counts) as well as patterns of human movement. Workshop participants analyzed data to study why one route or another was favored relative to urban features that could motivate choices, including traffic and green space. JAnother group studied data collection margins of error.

The nexus of changes in personal technology and human behavior has created new opportunities to understand cities by mapping the large-scale movements of goods and people through the use of GPS and GIS. Examples now abound making use of these technologies at the large-scale; we have chosen to look more carefully at individuals in cities. Our research has produced intial detail-oriented studies from which more general urban behavioral and space syntactical patterns begin to emerge. We present two case studies that use food as a proxy resource relative to behavior. Our data collection methodology has included both digital and traditional techniques, and our analytical methodology, still in formation, draws upon visualization, interview-based observations and statistical analysis to offer qualitative and quantitative observations.

Cities comprise the designed flows of streets, infrastructure, and buildings overlaid with the incalculable contribution of human spatial behavior. The ubiquity of personal computing devices and GPS-enabled apps offers an expanded opportunity to understand human spatial behavior in an urban context. The outcomes can be applied to a variety of agendas, such as increasing efficiencies by better understanding individual actors. We have developed a series of studies that operate at both urban and human scales to understand the interplay of urban space and individual preference as a mappable phenomenon. We hope ultimately to contribute qualitative and quantitative insights into human choice and its urban spatial and resource impacts.

We have thus far used off-the-shelf apps and softwares intended for diverse purposes: personal fitness tracking, 3-d architectural modeling, social media and GIS. Both case studies discussed in this paper use analogue and digital data collection tool. The first case study, which explored the relationship between habituated movement through the city and food shopping patterns, used the mass-market app Instagram and hand journaling. The second, which considered the link between work focus, movement in a city and the amount of food-related waste produced, used interviews and a modified GPS tracking app, MyTracks. For a more recent mobility-based project, noted here only briefly, we focused more on the technology, developing a bespoke GPS tracking app, and customized a software meant for interior spaces, a context in which GPS is not accurate.