

# Use Case: Mobile datasets

Scott Kirkpatrick, HUJI

Danny Bickson, Dato and HUJI

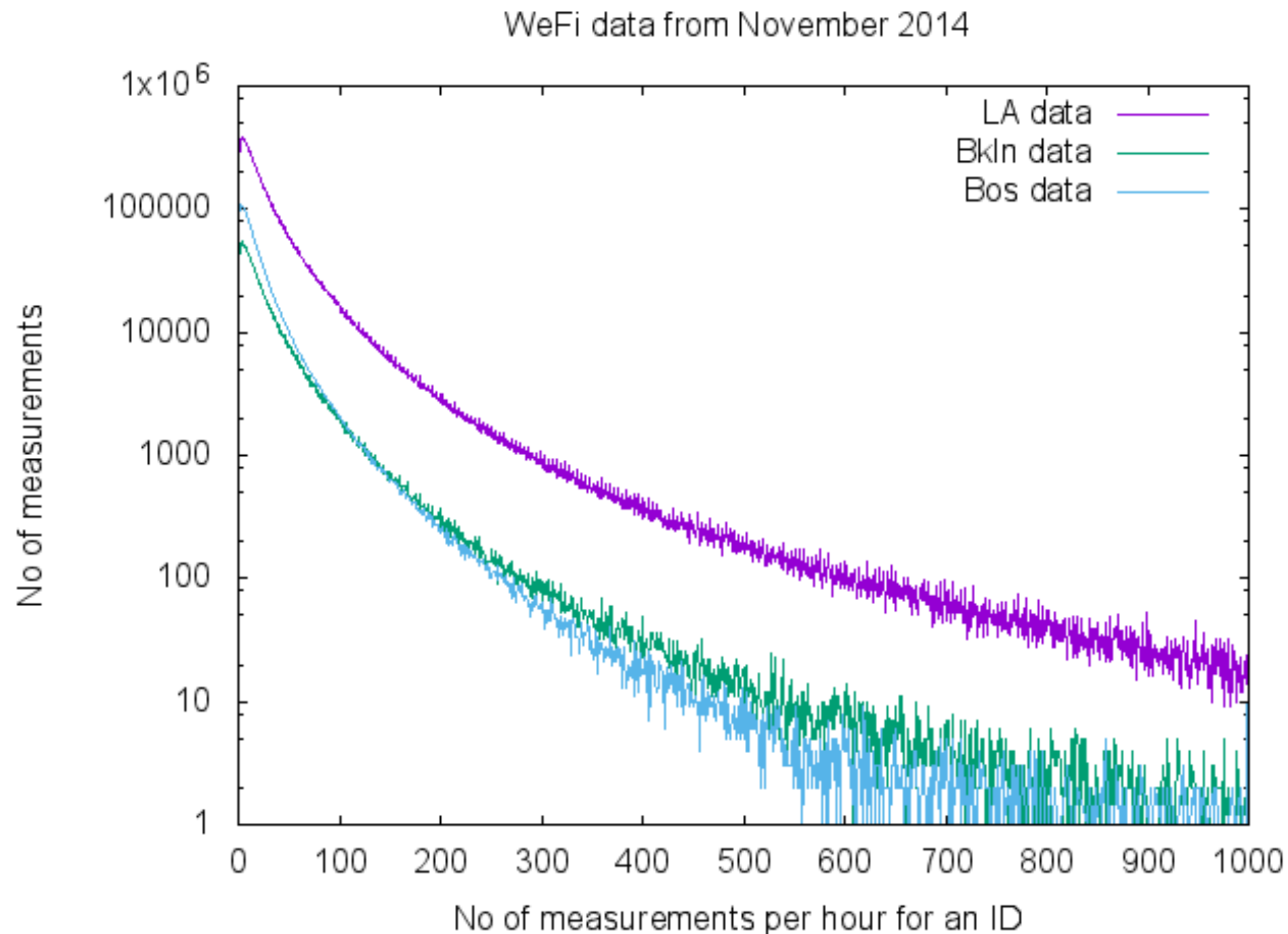
# Phones and tablets dominate the edges of the internet

- 1B+ smart phones sold in 2014, ~100M Tablets
- WAZE: crowdsourced maps from >50M users (2013)
- Mobile carriers have released extensive data sets of call information (MCDRs with cell tower or lat/lon)
  - 50 M users studied in Mexico, 5M in Argentina
  - Measure only when call is made, research use mostly for social and economic studies — aggregate and/or sample to preserve privacy.

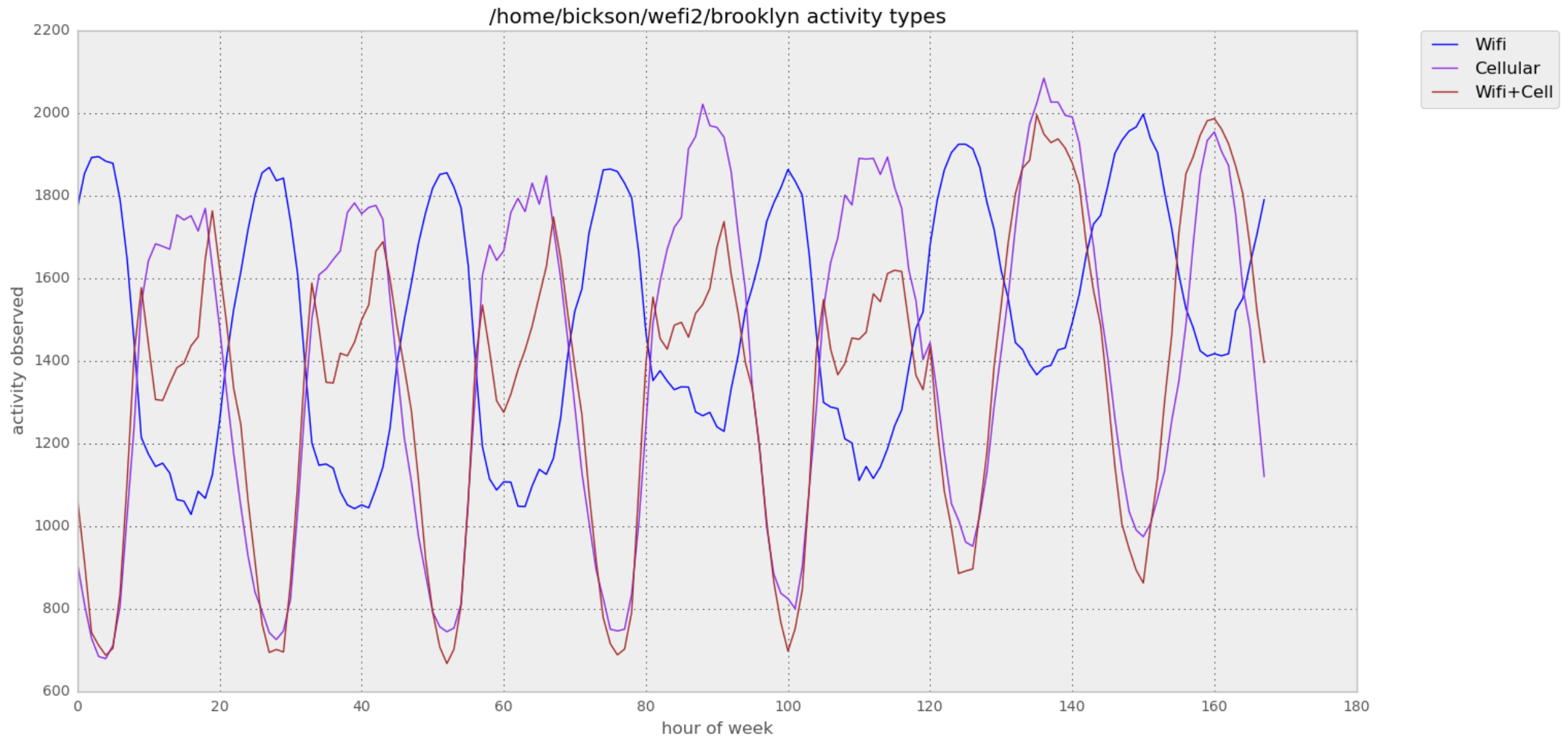
WeFi (Israeli startup) seems to be the first to do extensive realtime internet measurement using Dasu model incentives.

- Dasu improved over DIMES — an app which provides a user service and does measurement
- WeFi provides a wifi sniffer and recommender, and does measurement every 5 min or 10 m movement
  - They claim >2M active downloads, hope to reach 10M in 2016 (~few % penetration).
  - Each measurement logs the app on top and its lag, upload and download rates, plus carrier in use (wifi/mobile)
  - We're working with existing, limited measurements — used to advise carriers and commercial clients

# How frequently does WeFi measure?

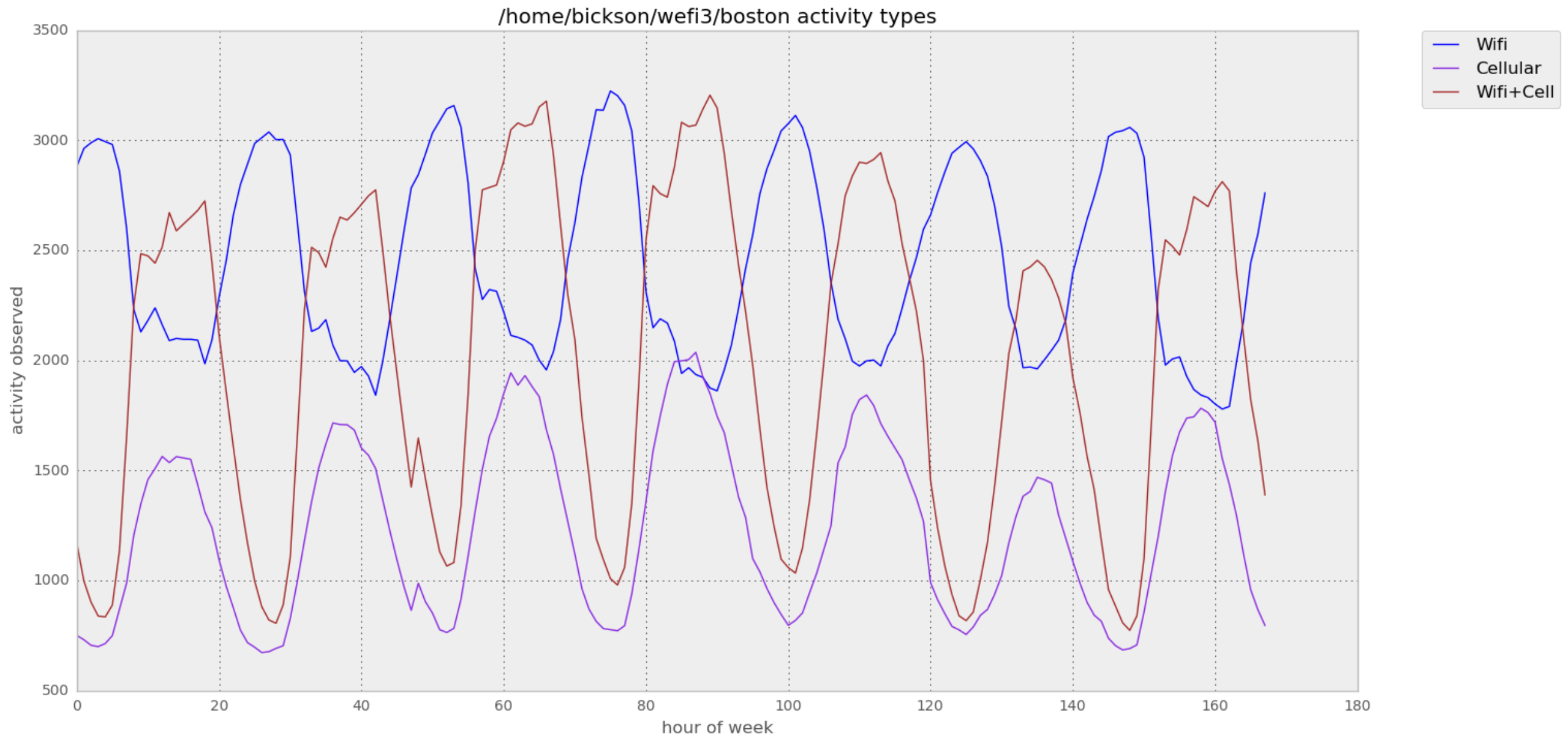


# Where are the WeFi users (In IP-space, that is)?



WiFi dominant in evenings,  
cellular and mixed use seen during days

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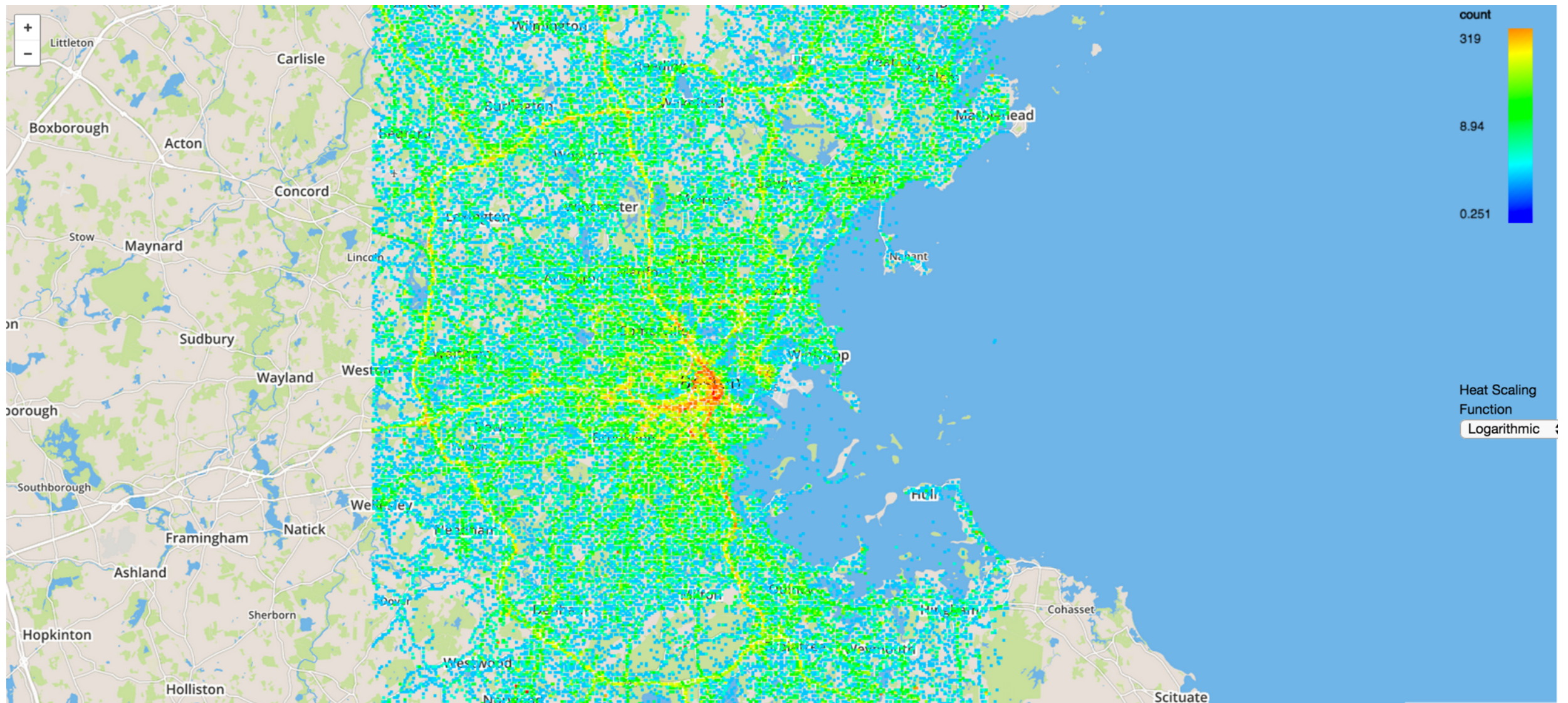


Boston: less cellular, more daytime WiFi and mixed use



# Where are they?

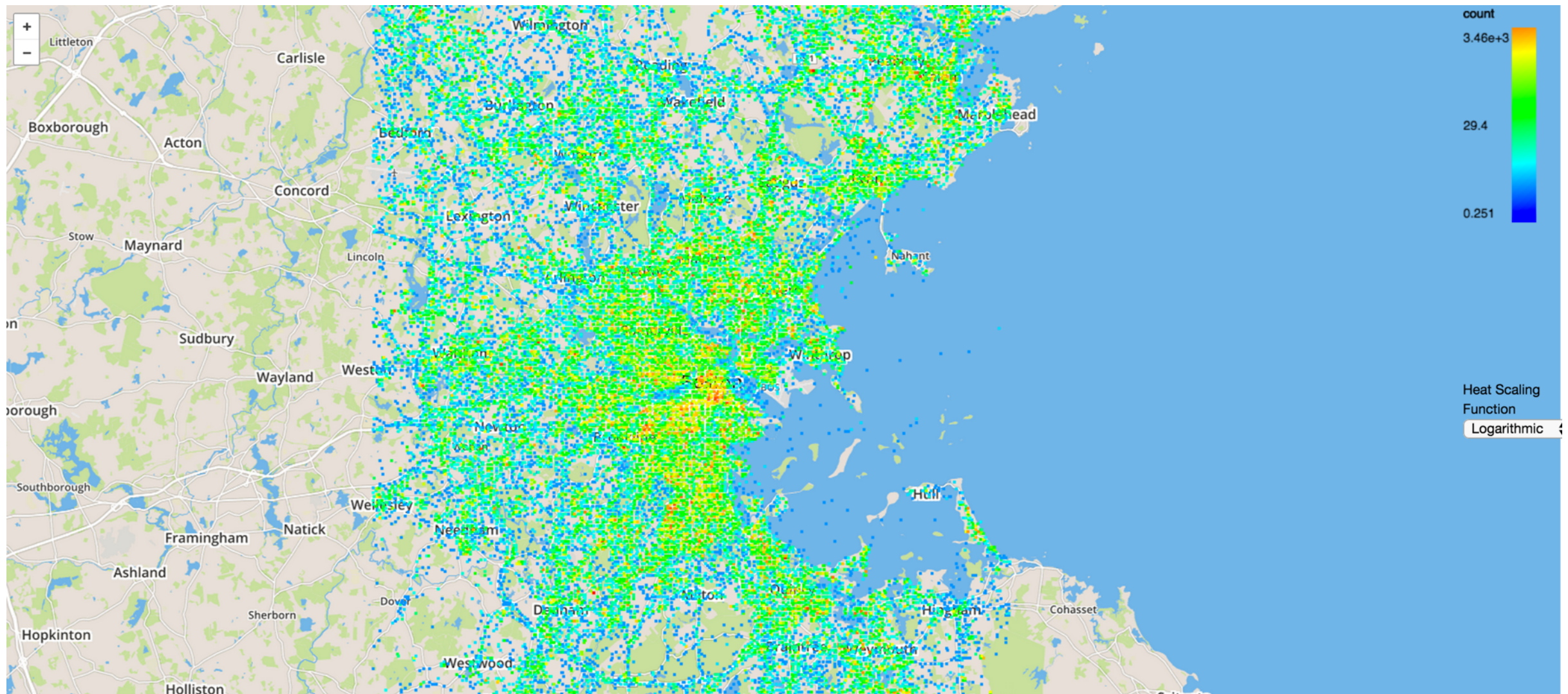
## Drivers and walkers in Boston



Users in Maps app group using cellular carrier



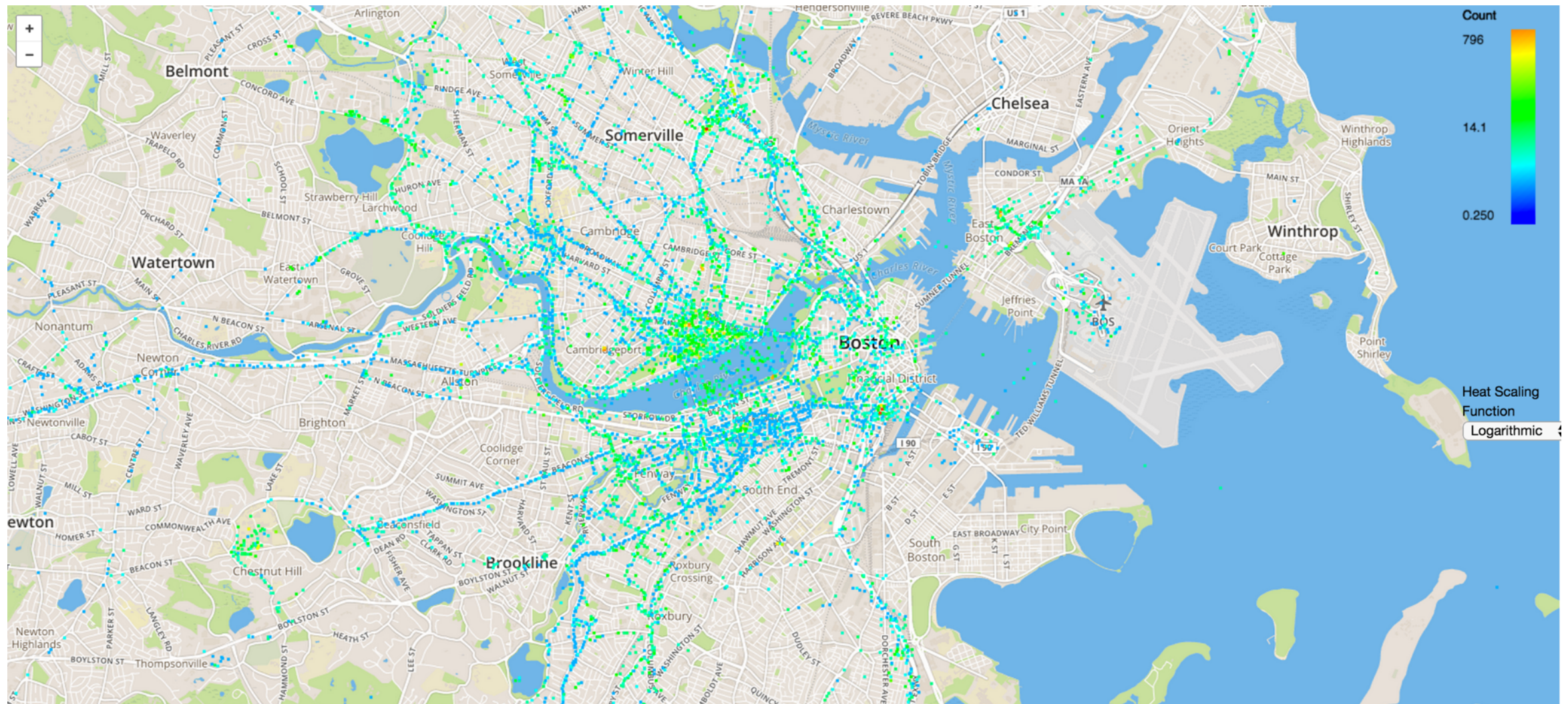
# Or track social networking



Users running a social networking app over WiFi

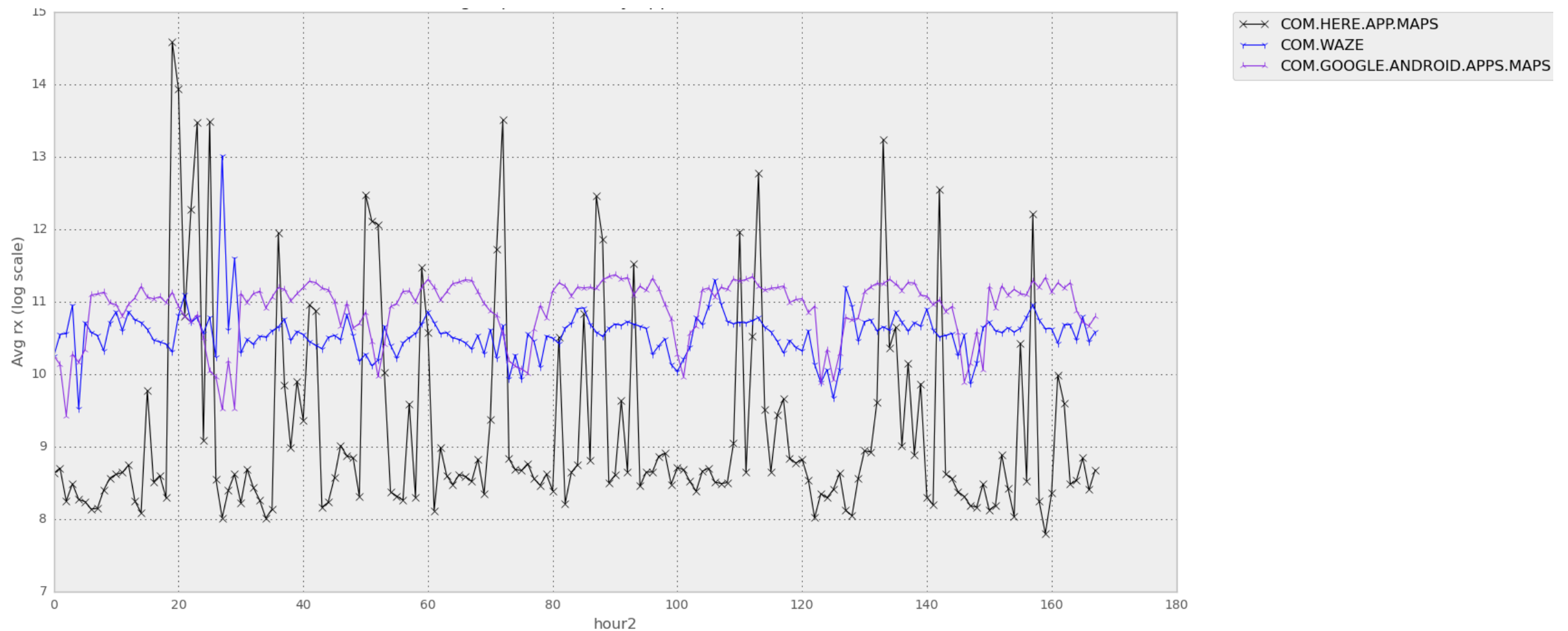


# Or find all the people in the data set that seem to work in Kendall Square



This is all measurements from IDs found at least 10x in the month in a 200M square around 25 Ames St.

# Can we learn from comparing performance of different but similar apps?



Received bandwidth for map apps in Boston Nov 2014

# How does this sort of information interface to more precise link measurement?

- Add and decode routing information
- Supplement “app on top” with (random?) scheduled measurements
- This gives a Dimes/Dasu on steroids, with the ability to identify problems from trends.
- It scales to run from all smartphones, with reduction in overhead per unit
- But more work is needed — this is just a test.