

# Tracking the Evolution and Diversity in Network Usage of Smartphones

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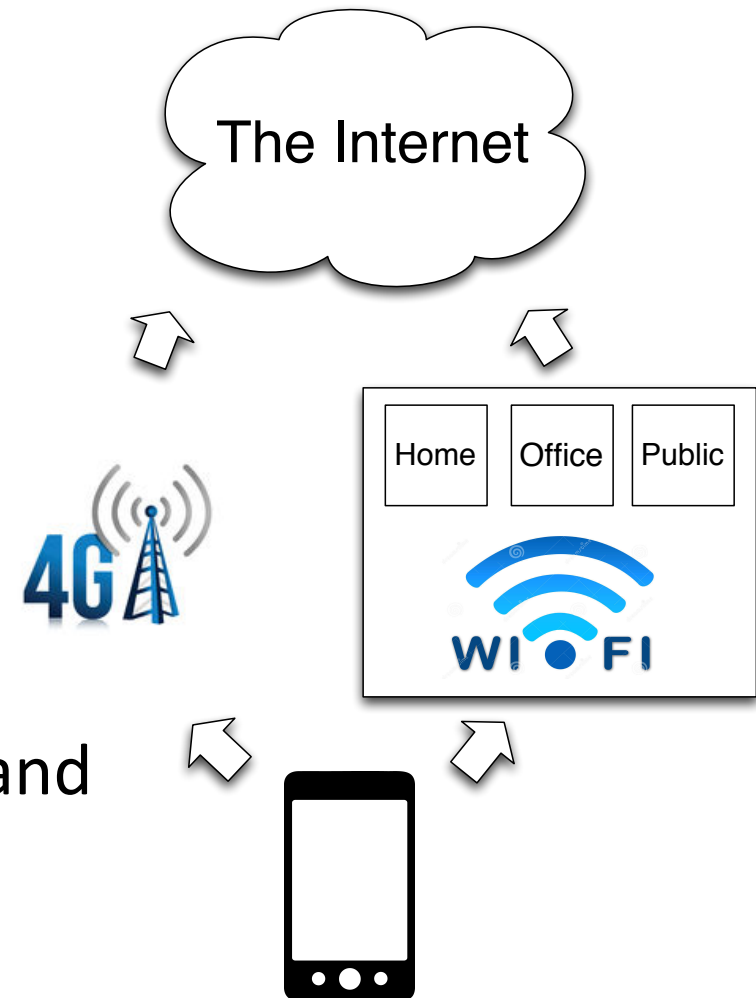
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# Motivation

- Wide deployment of WiFi
  - Home, Office, Public space
- WiFi offloading
  - Where & When?
  - How much traffic volume?
  - Impact on residential broadband traffic?

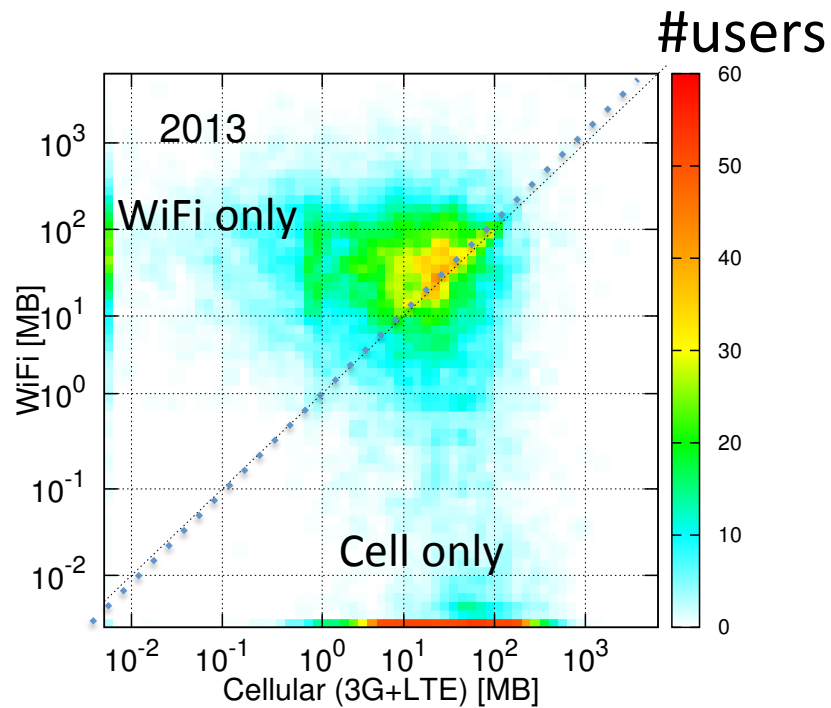


How do smartphone users adopt to WiFi environment?

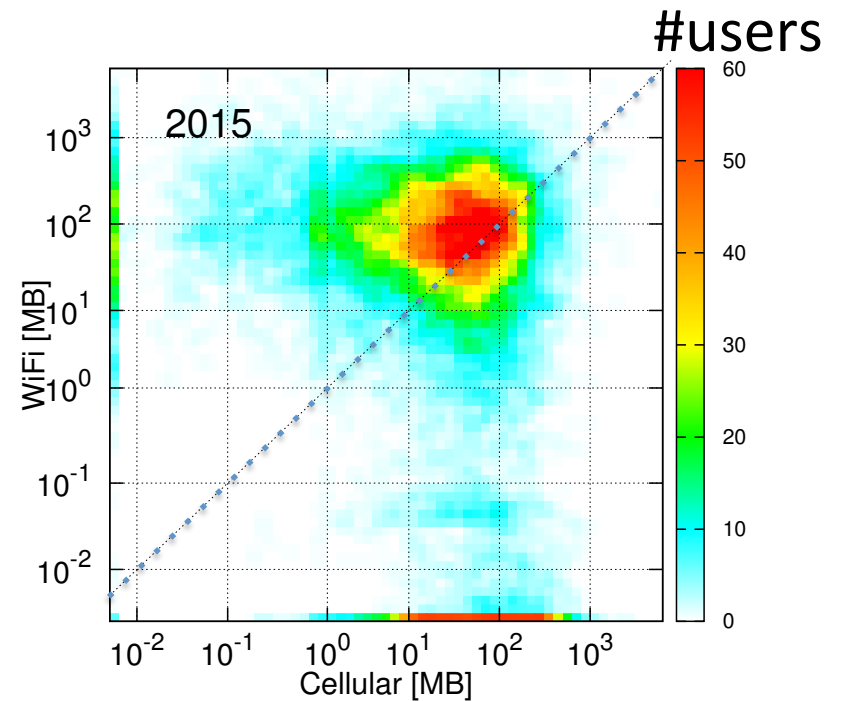
# Our work

- Characterize smartphone usage in Tokyo area
  - Two-weeks campaign in 2013, 2014, 2015
  - Independently recruited more than 1500 users
  - Client software (android&iOS)
    - byte count, cell&wifi info, location, Apps, battery,... (5min)
  - Post questionnaire
- Findings & Implications
  - Big impact of WiFi offloading on RBB traffic
  - Importance of WiFi as alternative infrastructure

# Users offloaded more traffic to WiFi

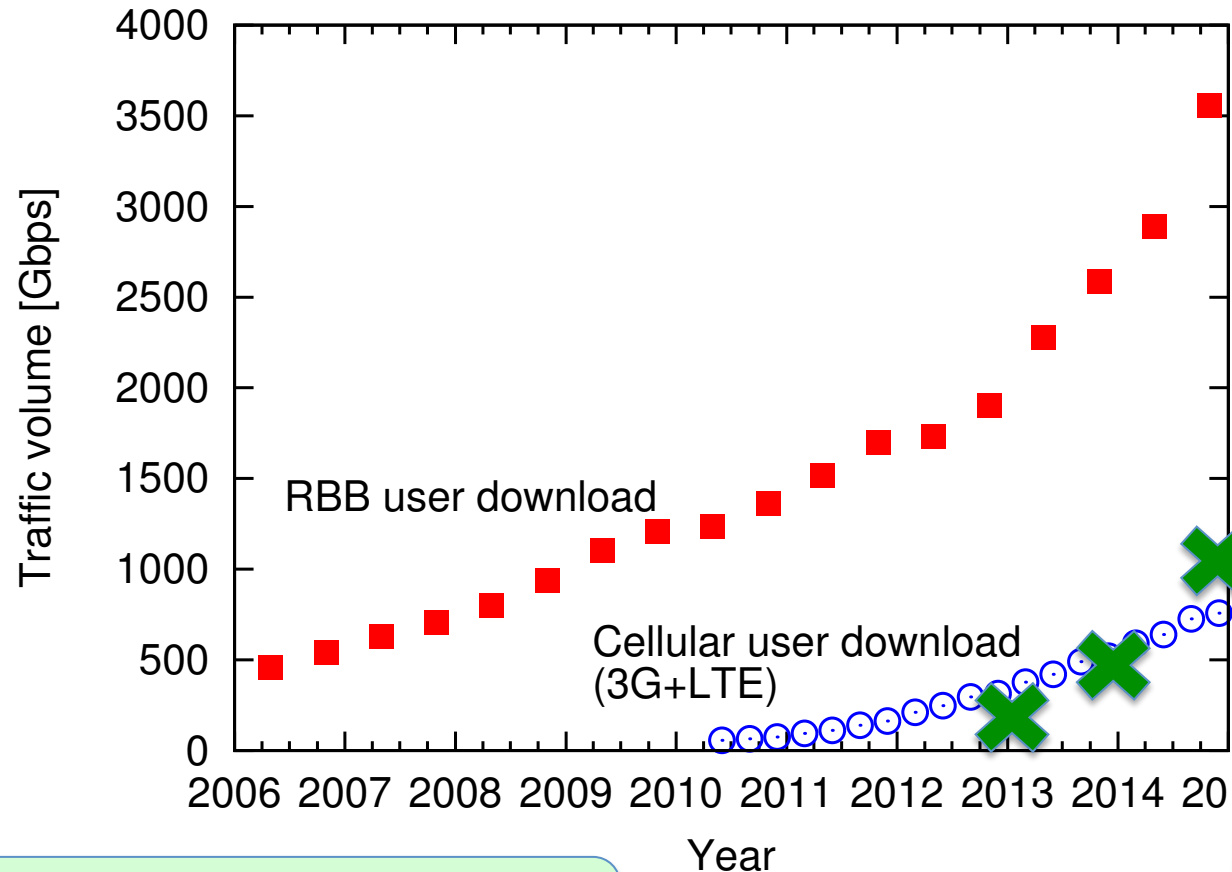


45% of users  
WiFi > Cell



54% of users  
WiFi > Cell

# 36% of total residential traffic in Japan are from smartphone

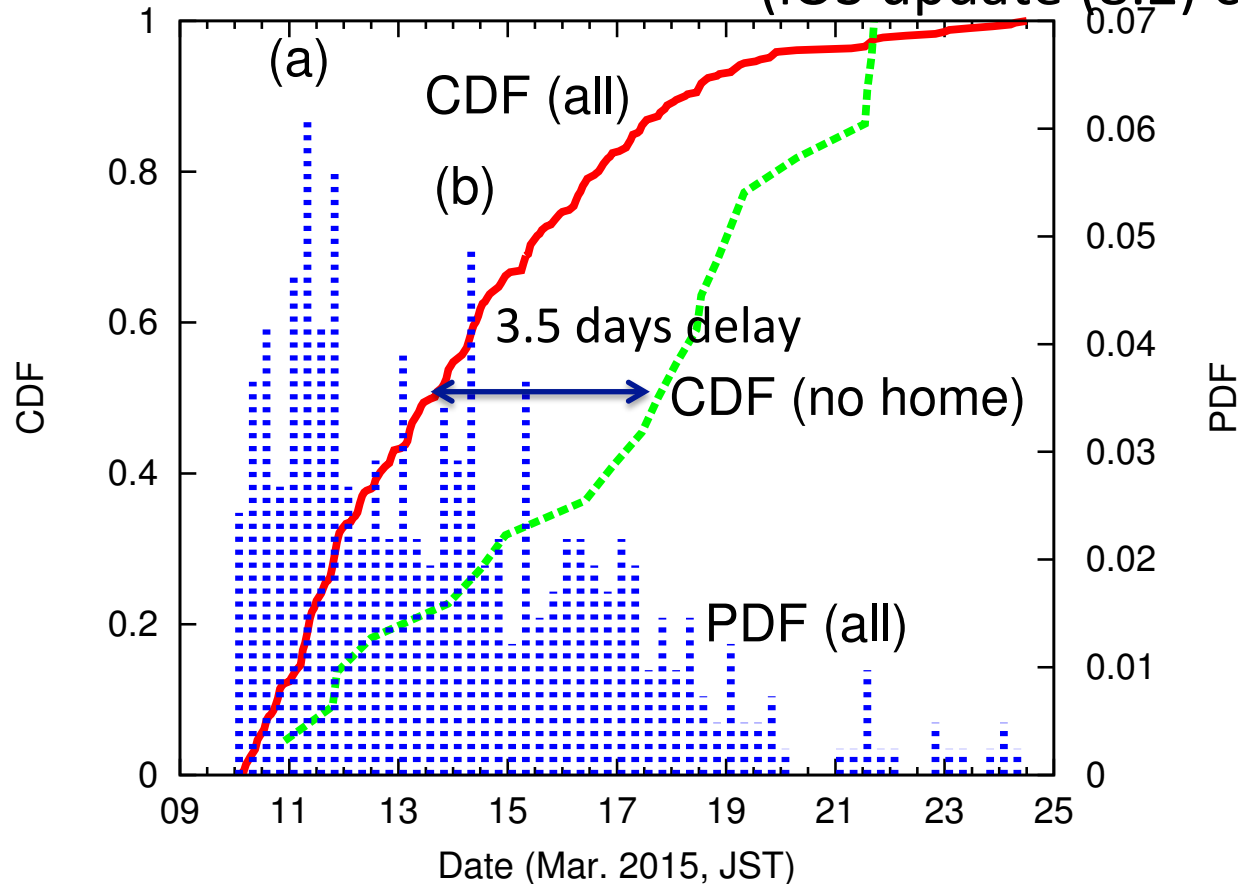


Cellular : WiFi = 1 : 1.4

Estimated offload traffic

# Lack of WiFi delays OS update

(iOS update (8.2) on Mar.2015)



- 14% of users wo/ home WiFi AP updated while 58% of all users did
- More than half of such users updated at **public WiFi**<sup>6</sup>