

# Mobile Network Performance from User Devices: A Longitudinal, Multidimensional Analysis

Ashkan Nikravesh, David R. Choffnes, Ethan Katz-Bassett  
Z. Morley Mao, Matt Welsh



Northeastern

USC

Google

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  - Continuous
  - Large-scale
- Sampling performance of devices across:
  - Carriers
  - Access Technologies
  - Location
  - Time

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Our work differs from previous related work:

- Longitudinal
- Continuous
- Gathered from mobile devices using controlled experiments.

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- **Routing** and **signal strength** are potential sources of performance variability.
- Performance is **inherently unstable**.

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Speedometer dataset: 4-5 measurements per minute
- Code is open source and data is publicly available



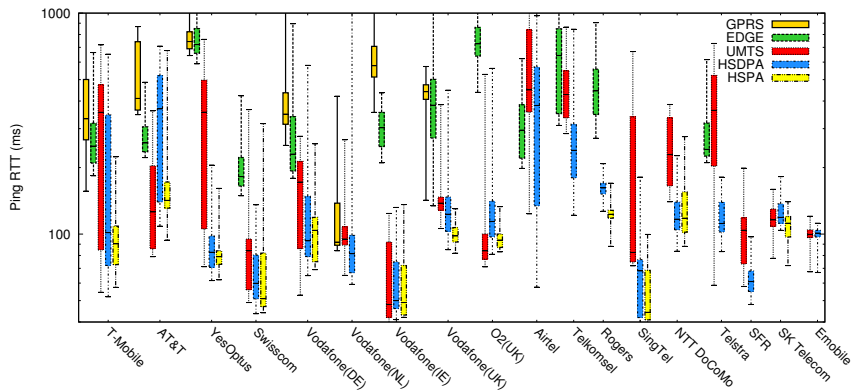
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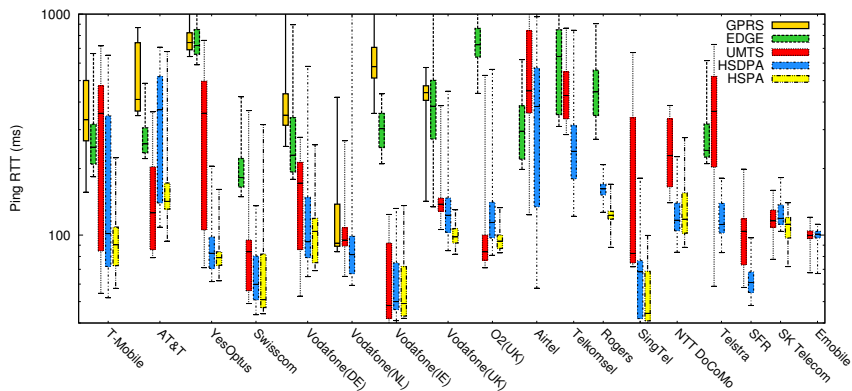


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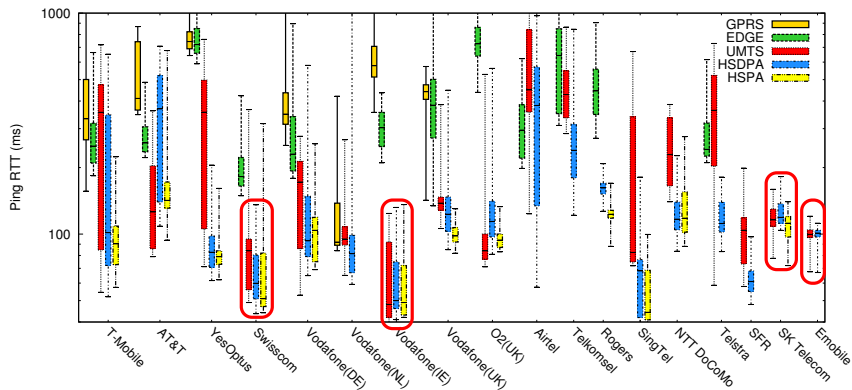


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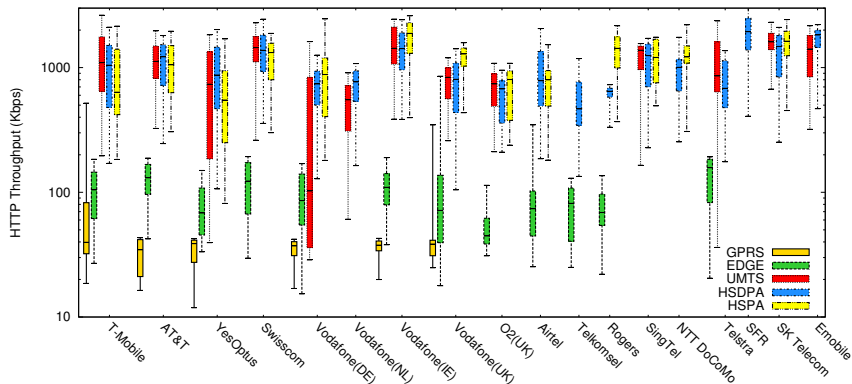
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- ② Same performance for different access technologies



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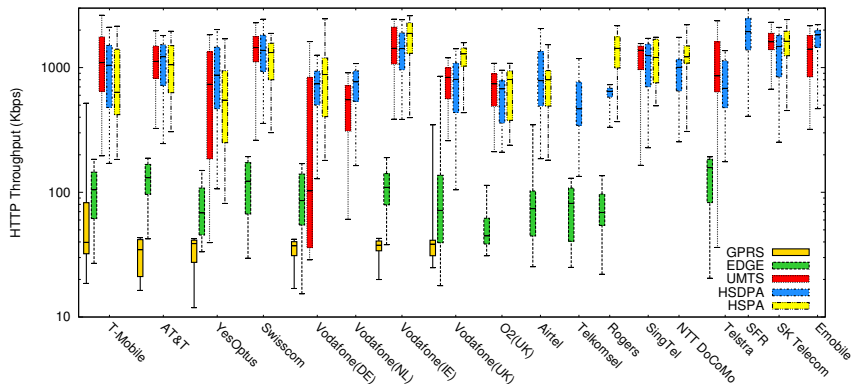
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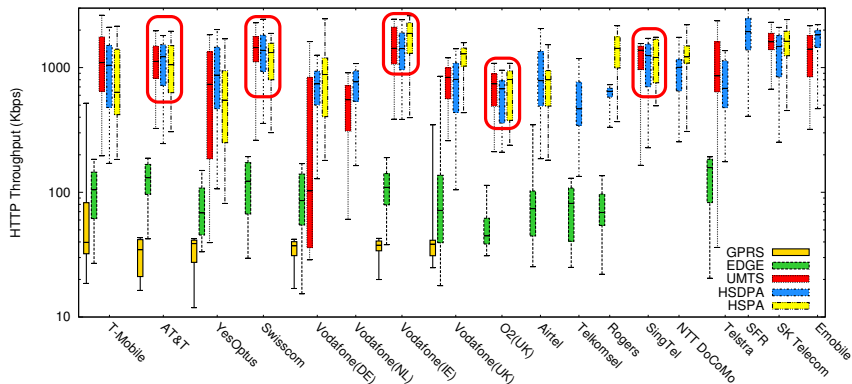
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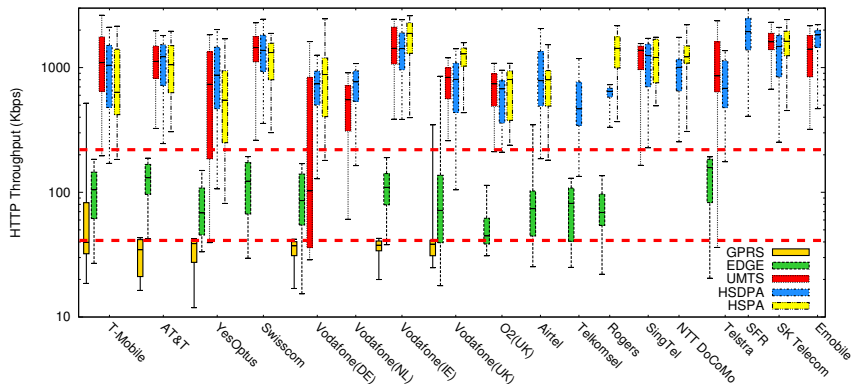
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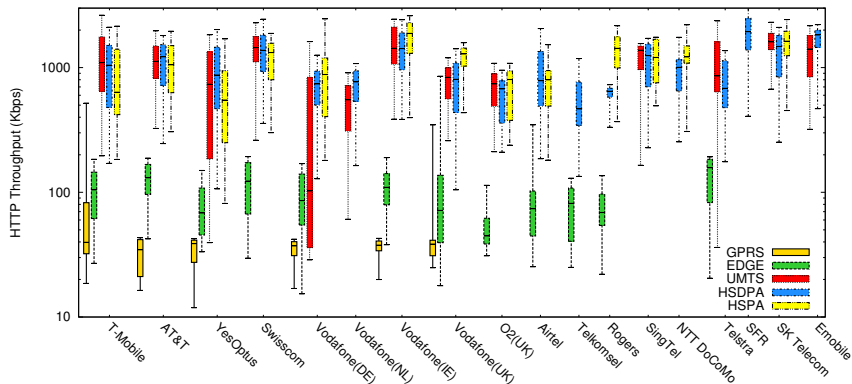




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- 2 Download size (224KB) is not sufficiently large
- 3 Lower latency is generally correlated with higher throughput



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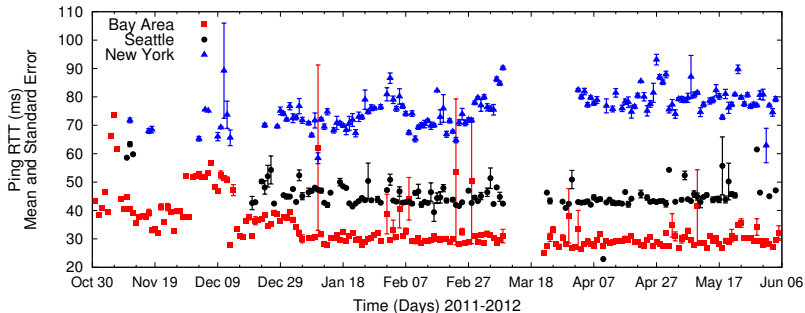
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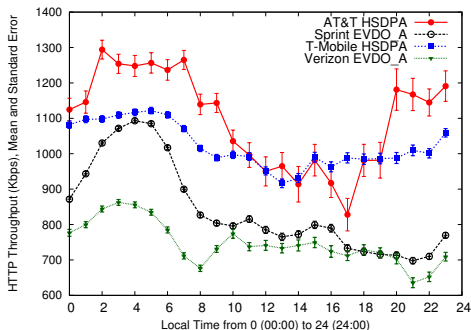
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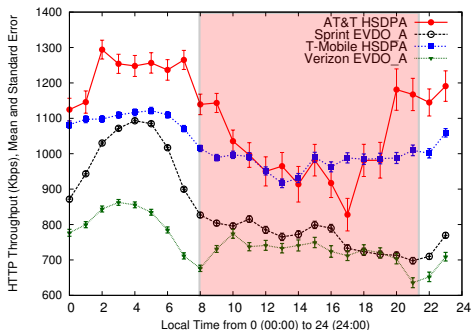
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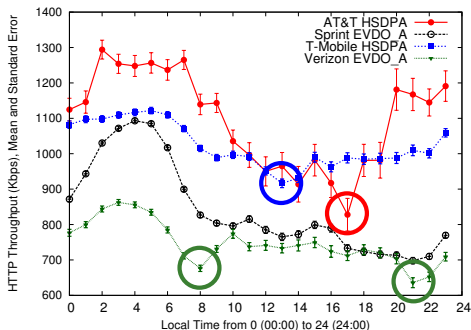
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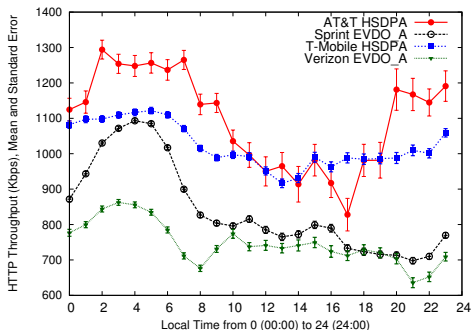


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- 3 Carriers experience different variation in performance during the busy hours

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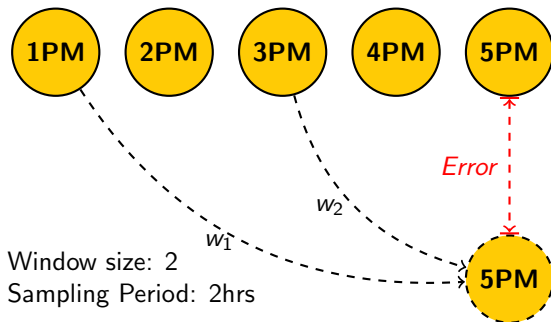
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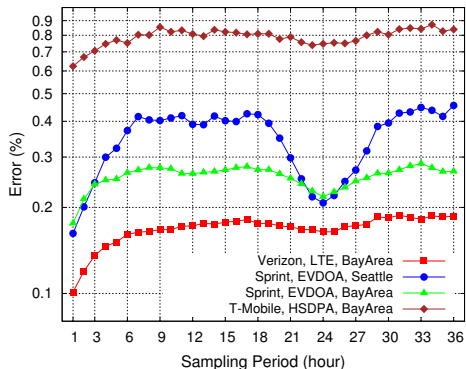
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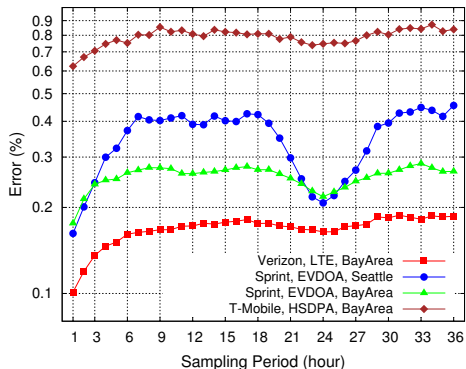
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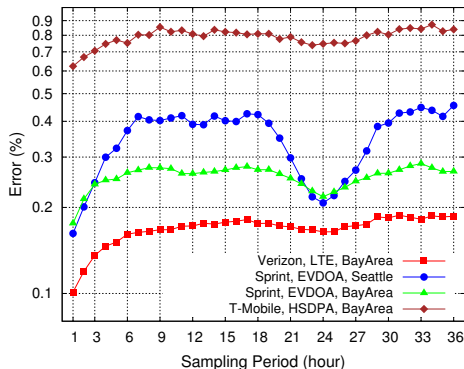


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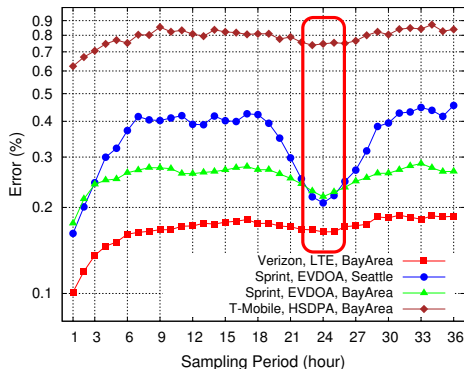
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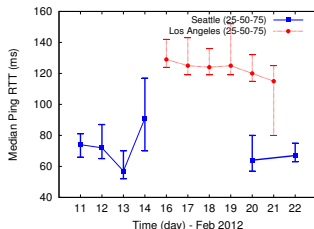
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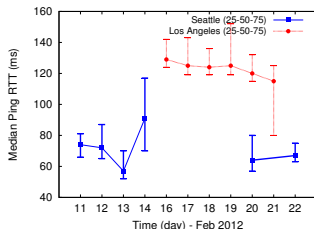
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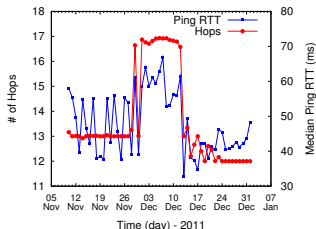
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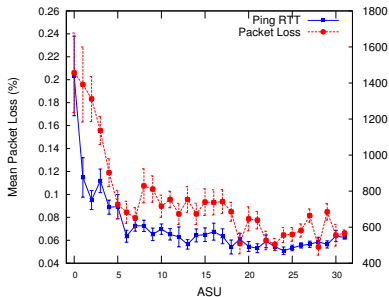
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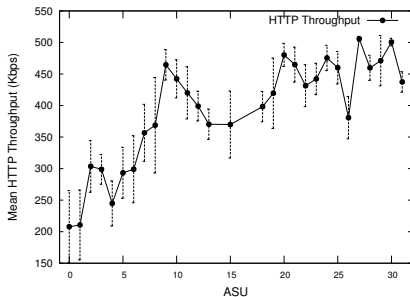
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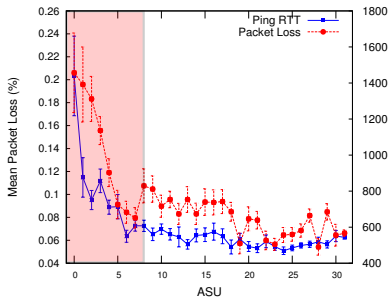
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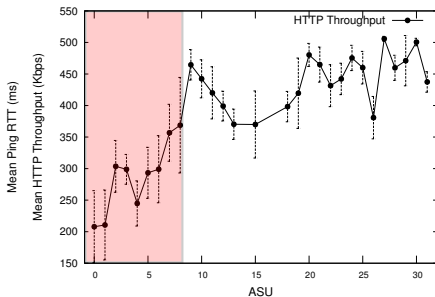
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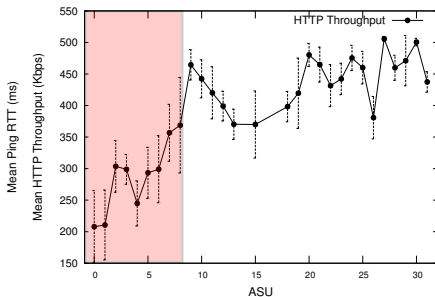
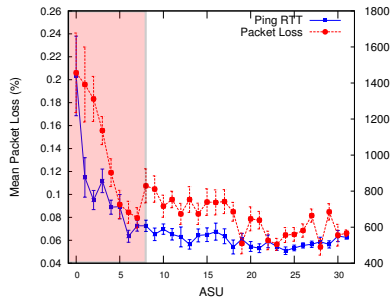
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- ▶ Accounting for signal strength is important for interpreting measurement results.

# Future Work

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# Mobilyzer

An Open Platform for Mobile Network Measurement

A comprehensive codebase for issuing measurements  
for **researchers** and **developers**

# Any Questions?

Thank You!