IMconnected

Results:

January 2017 – June 2017

IMconnected

Initiative to Improve Mobile Experience

IMDA is always seeking ways to improve consumer mobile experience. IMDA thus launched the IMconnected (previously MyConnection SG) mobile application ("App") in October 2014. The App utilises voluntary crowdsourcing to anonymously gather relevant, non-personal data relating to mobile users' quality of experience. Information collected includes data relating to broadband speed, latency, coverage on 3G and 4G mobile cellular networks and experiences on WiFi networks.

Be a part of the community!

Download the App now!

IMconnected is available on both Apple App Store and Google Play Store.

Share your mobile experience with us and contribute towards a better mobile experience. This will help IMDA better understand mobile broadband performance and take measures to improve mobile service experience for consumers.

Publishing of Results

IMDA will publish indicators relating to users' service experiences on the mobile cellular and Wireless@SG networks every 6 months. These indicators include mobile signal strength (mobile coverage experience), throughput (data transmission speed) and latency (time lag).

The survey results reflect the mobile service experience of users at different locations, at different times of the day, and over a 6-month period. The results will allow IMDA to work with mobile operators to enhance the quality of experience for consumers on the mobile networks. IMDA publishes the survey results to facilitate greater information transparency to allow consumers to make informed choices on their mobile broadband plans and encourage mobile operators to improve mobile usage experience for consumers.
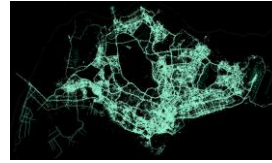
Your Contribution to IMconnected

The IMconnected App has garnered more than 3,000 participants, obtaining more than 13 million data points across various parameters for the period January to June 2017.
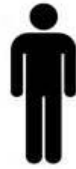
> 3,000 Participants

> 13 Million Data Points

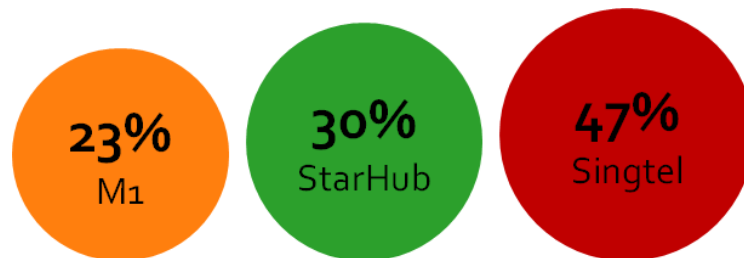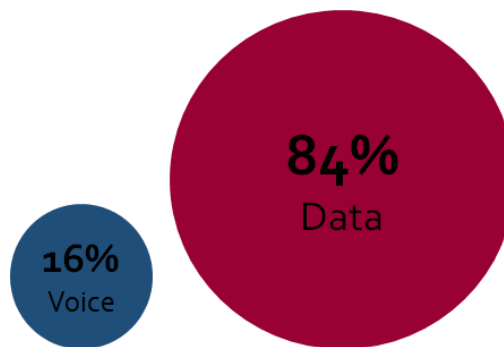Figure 1: Participants Breakdown by Mobile Operators

23% M1

30% StarHub

47% Singtel

Figure 2: Types of Sessions

16% Voice

84% Data

Figure 3: Types of Data Sessions
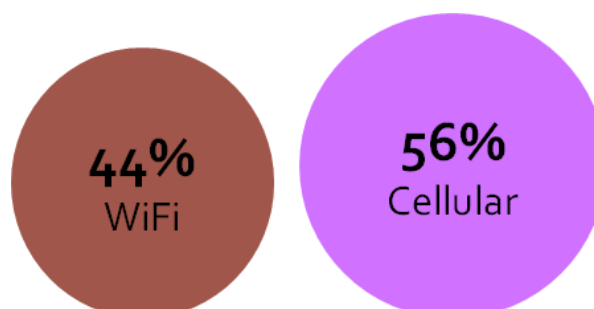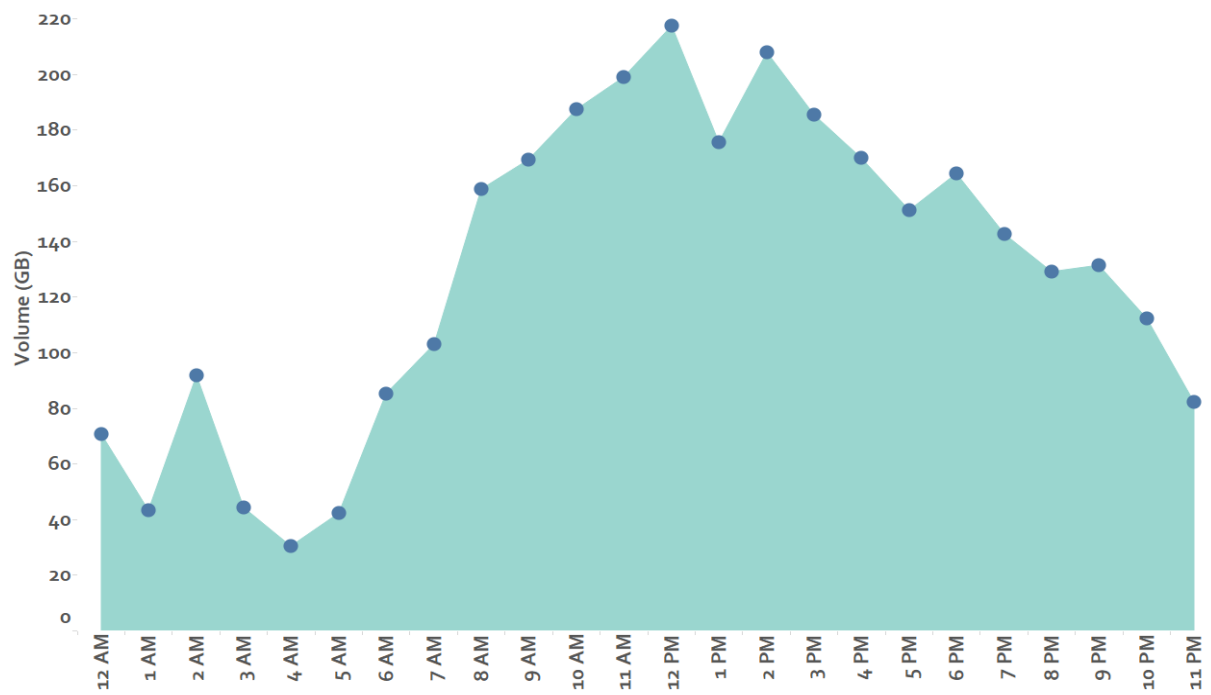

44% WiFi

56% Cellular

Figure 4: Hourly Data Consumption Pattern of Typical Users

Operating Systems and Handset Models

From the data collected during this period, we see a variety of mobile handset models used by participants, with Samsung and Apple handsets being the most popular brands. The Group "Others" consists of mobile phone manufacturers apart from Samsung and Apple.

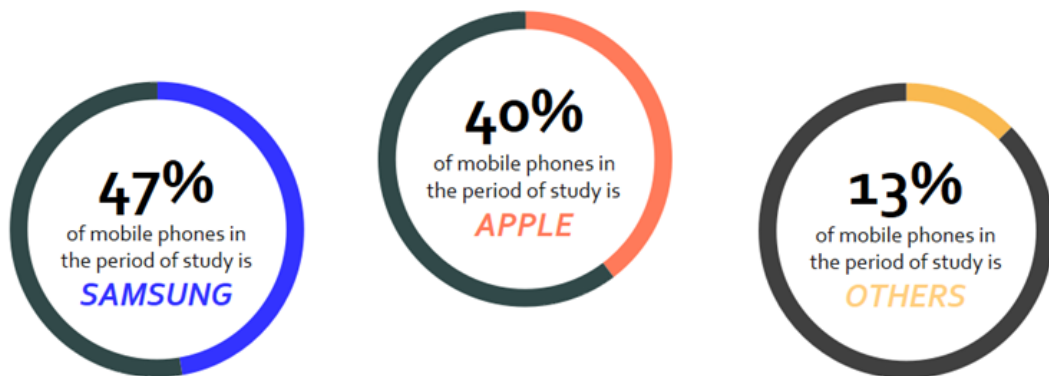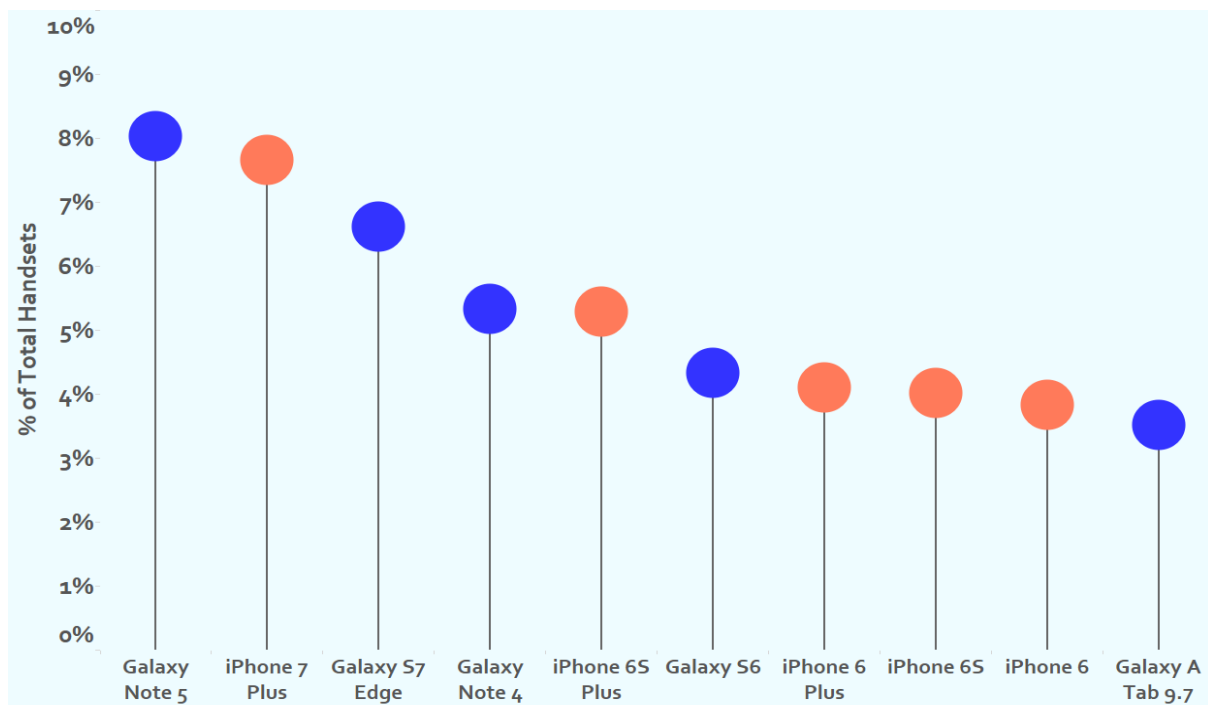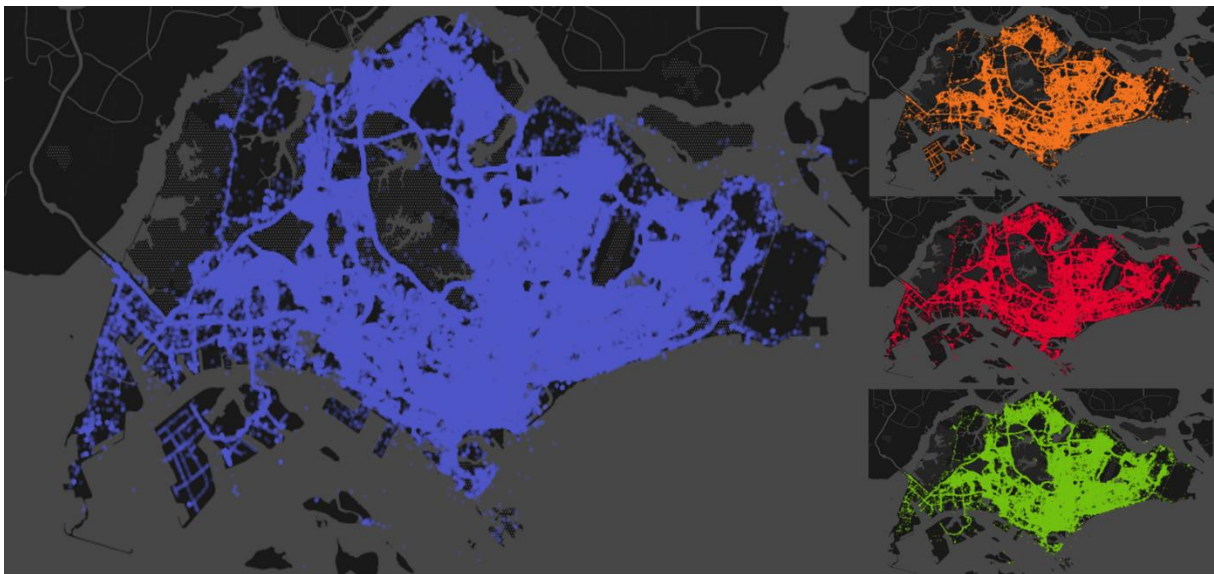Figure 5: Participants Breakdown by Manufacturers

Figure 6: Top 10 Handset Models Used by Participants

Distribution of Data Points

IMconnected is able to locate the position of a device with reasonable accuracy where the measurement is taken.

Figure 7: Distribution of Data Points

Data points collected were well distributed across Singapore.
Results are representative of the wider public experience.

Mobile Data Usage Experience

Results from IMconnected are reflective of actual consumers' experience. Multiple factors such as consumers' data usage pattern, subscription plans, as well as the models of mobile devices do influence the results of consumer experience.

The assessment of the quality of end users' service experience on the 3G and 4G mobile networks was made from data points taken from the Android operating system. Nevertheless, the results are deemed to be representative of user experience in Singapore.

Mobile Signal Strength

The results show the mobile signal strength or service coverage experience reported on both the 3G and 4G networks. The data is represented in a signal strength heat map, aggregated across all mobile operators.

In comparison to the previous reporting periods, the collected measurements suggest that 3G service coverage has been consistent and 4G service coverage has improved since the first reporting period.
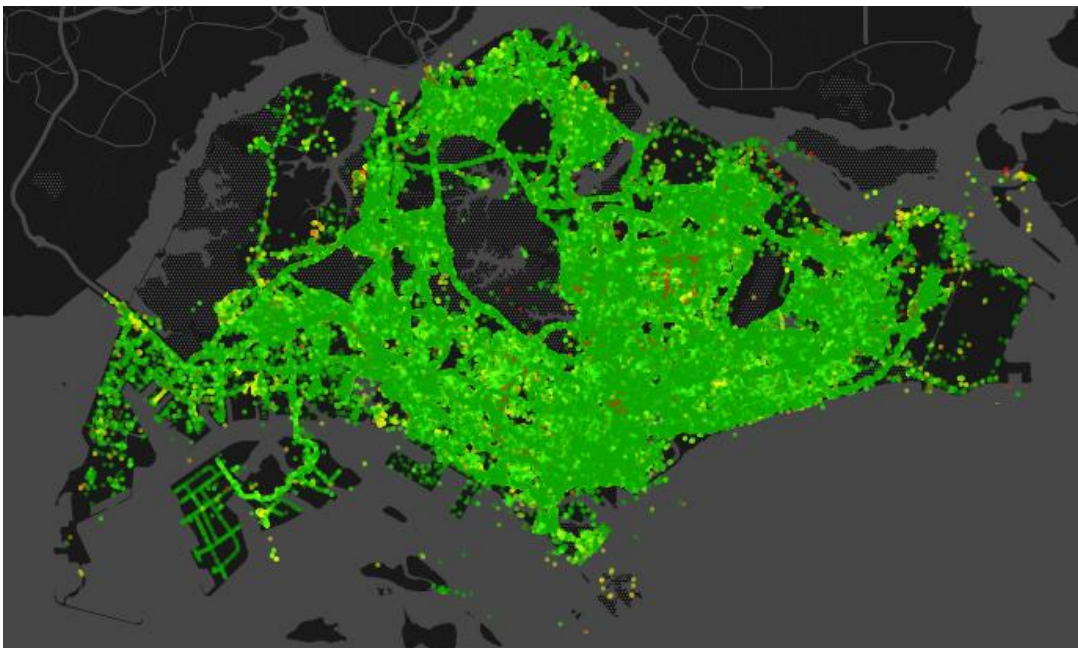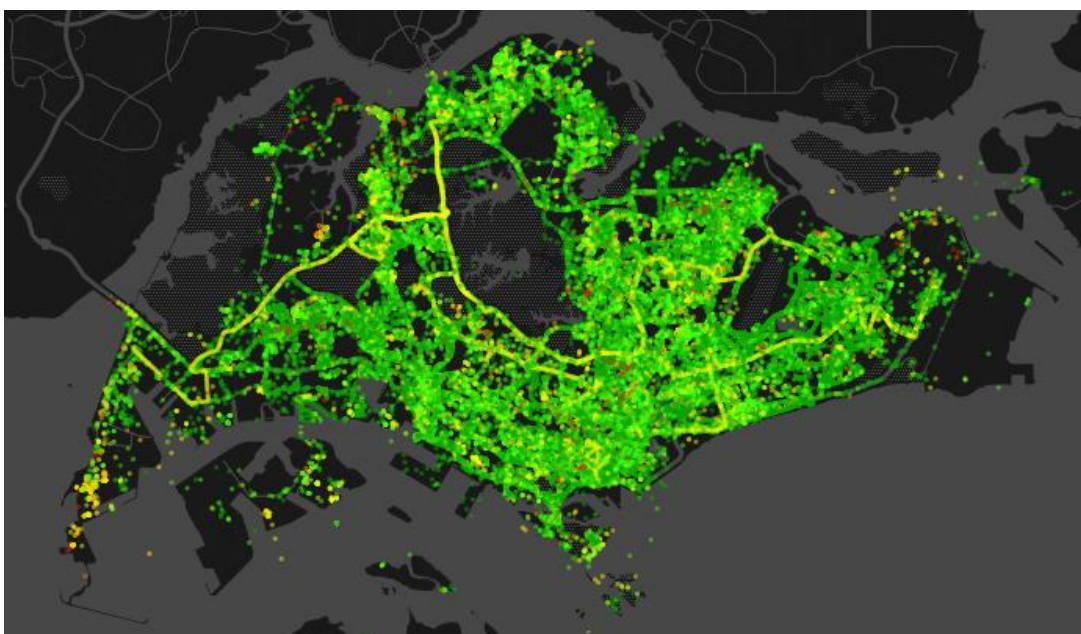
Figure 8: 4G Signal Strength

Figure 9: 3G Signal Strength

Data Download Speed - Throughput

We have provided the data download speed or throughput numbers aggregated across all mobile operators to provide an overall sense of consumers' mobile data usage experience. We have also provided throughput figures for the 10th, 50th, and 90th percentiles as well as the peak attainable speed.

Overall Median Throughput (Across Operators)

The collected measurements show improving 3G and 4G median throughput over the past 4 reporting periods.

On average, for the period January to June 2017, 50% of our participants experienced a median 4G speed of 45.6 Mbps and 3G speed of 6.8 Mbps.

Figure 10: Overall 3G & 4G Median Throughput Graph (Comparison Across Periods)
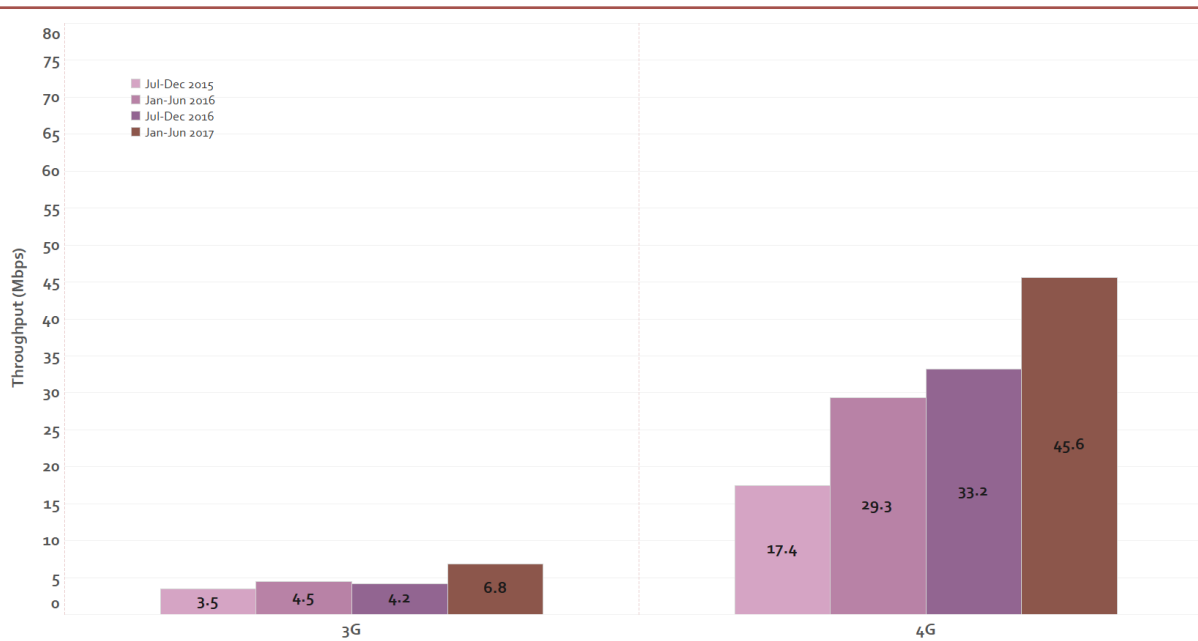
4G Throughput Indicators

The collected 4G median throughput measurement has increased in this report.

Figure 11: 4G Median Throughput by Operators Table (Figures for January 2017 – June 2017)

Jan'17-Jun'17: 4G Median Throughput (Mbps)		
M1	Singtel	StarHub
35.4	75.3	20.1

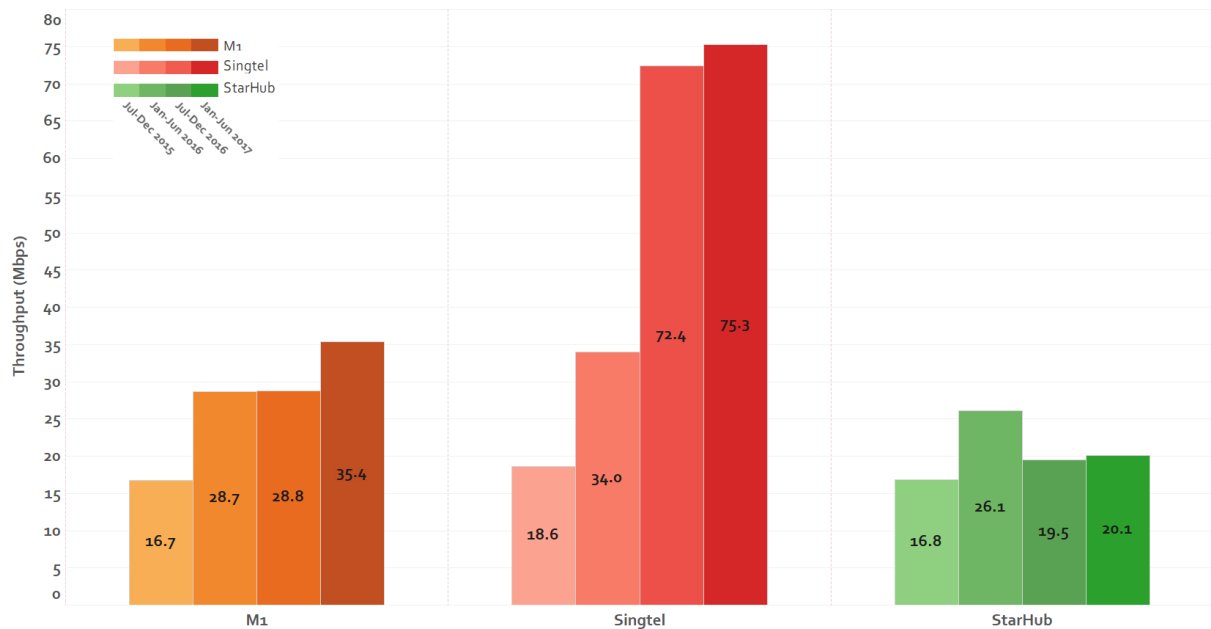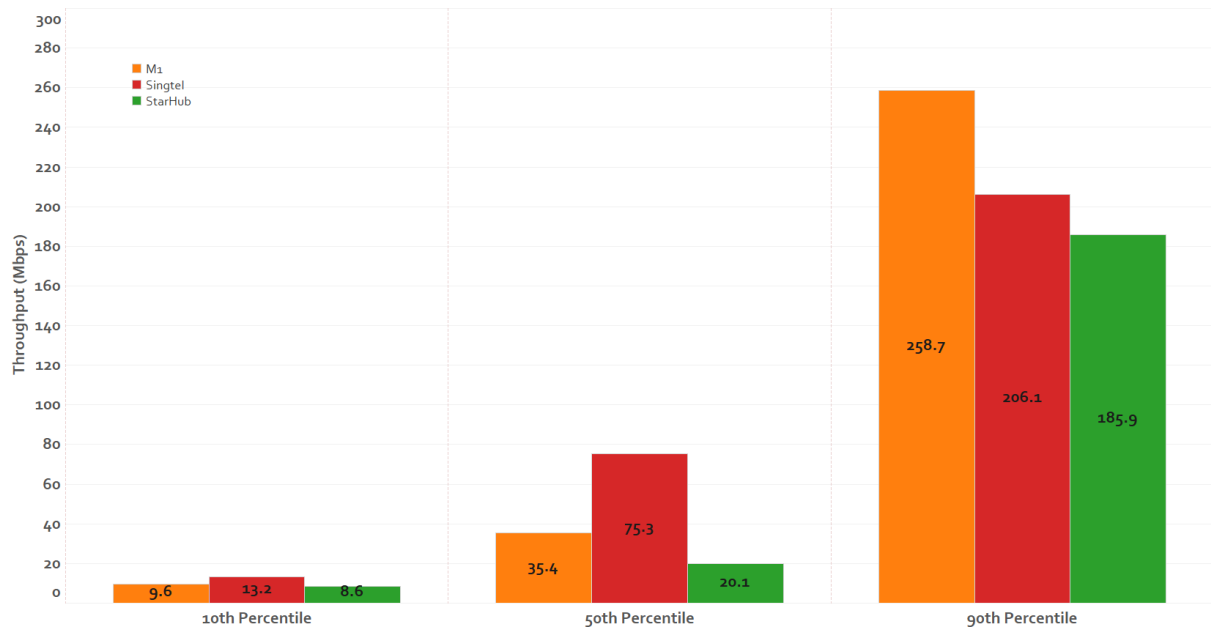Figure 12: 4G Median Throughput by Operators Graph (Comparison Across Periods)

Figure 13: 4G Throughput Percentiles by Operators Table (Figures for January 2017 – June 2017)

Jan'17-Jun'17: 4G Throughput (Mbps)			
	10th Percentile	50th Percentile	90th Percentile
M1	9.6	35.4	258.7
Singtel	13.2	75.3	206.1
StarHub	8.6	20.1	185.9

Figure 14: 4G Throughput Percentiles by Operators Graph (Figures for January 2017 – June 2017)

3G Throughput Indicators

The collected 3G median throughput measurement has increased in this report.

Figure 15: 3G Median Throughput by Operators Table (Figures for January 2017 – June 2017)

Jan'17-Jun'17: 3G Median Throughput (Mbps)		
M1	Singtel	StarHub
7.9	5.7	6.0

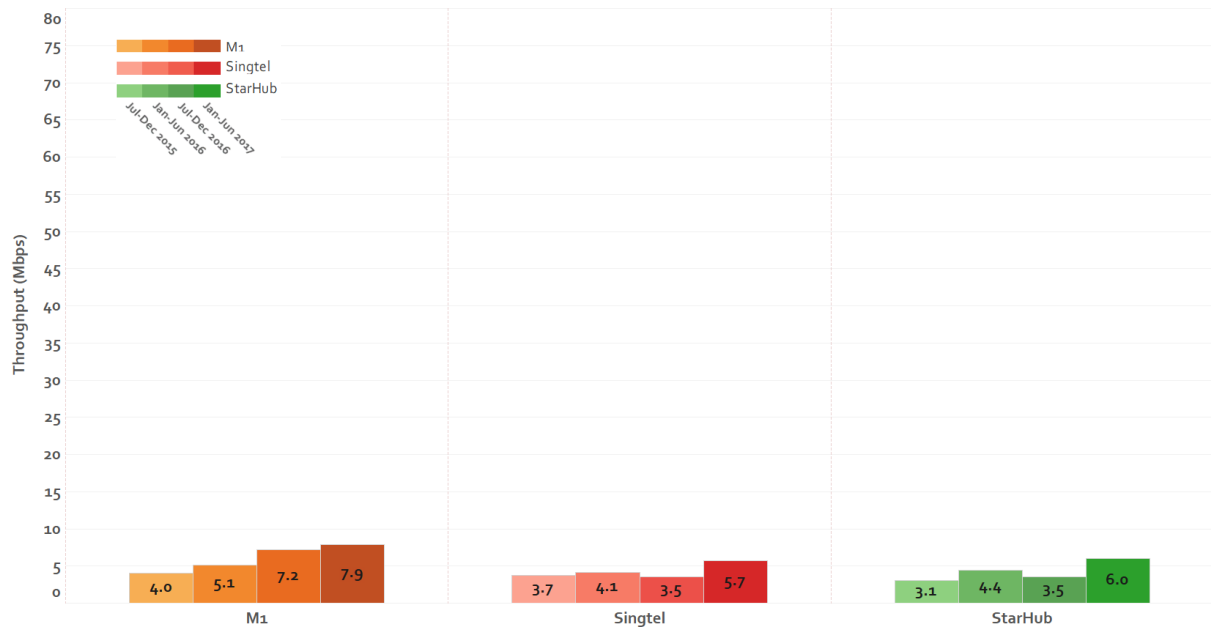Figure 16: 3G Median Throughput by Operators Graph (Comparison Across Periods)

Figure 17: 3G Throughput Percentiles by Operators Table (Figures for January 2017 – June 2017)

Jan'17-Jun'17: 3G Throughput (Mbps)			
	10th Percentile	50th Percentile	90th Percentile
M1	1.9	7.9	12.0
Singtel	1.1	5.7	22.5
StarHub	1.2	6.0	15.5

Figure 18: 3G Throughput Percentiles by Operators Graph (Figures for January 2017 – June 2017)
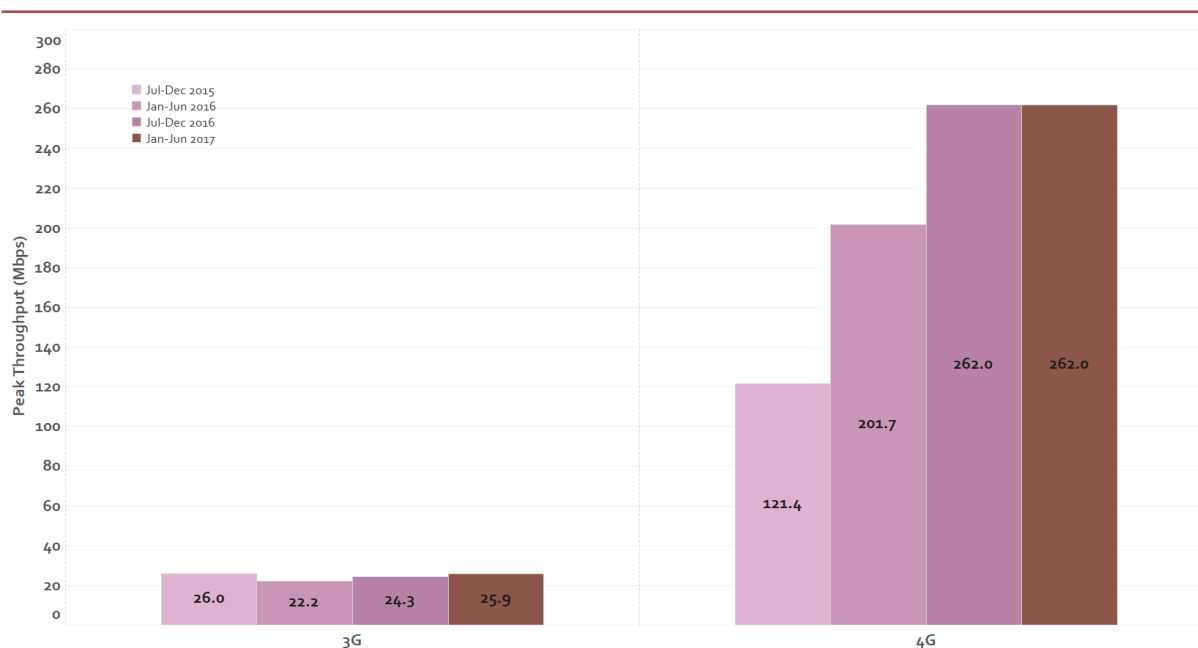
Peak Throughput

Peak speed or throughput is reported as the median of all daily maximum speeds attained over the reporting period of January 2017 – June 2017.

The collected measurements show consistent 3G peak throughput over the past 4 reporting periods. In contrast, 4G peak throughput increased over the past three reporting periods and has maintained in this reporting period.

Overall 4G peak speed is 262.0 Mbps while overall 3G peak speed is 25.9 Mbps.

Figure 19: Overall 3G & 4G Peak Throughput Graph (Comparison Across Periods)
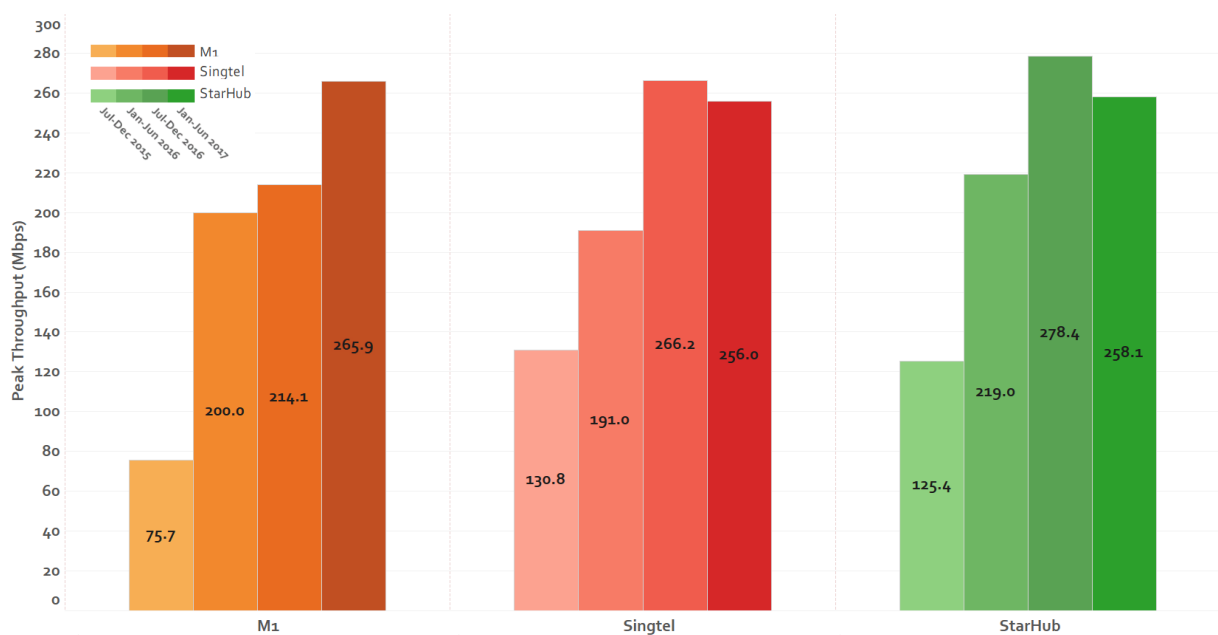
The collected 4G peak throughput measurement has increased significantly over time.

Figure 20: 4G Peak Throughput by Operators Table (Figures for January 2017 – June 2017)

Jan'17-Jun'17: 4G Peak Throughput (Mbps)		
M1	Singtel	StarHub
265.9	256.0	258.1

Figure 21: 4G Peak Throughput by Operators Graph (Comparison Across Periods)
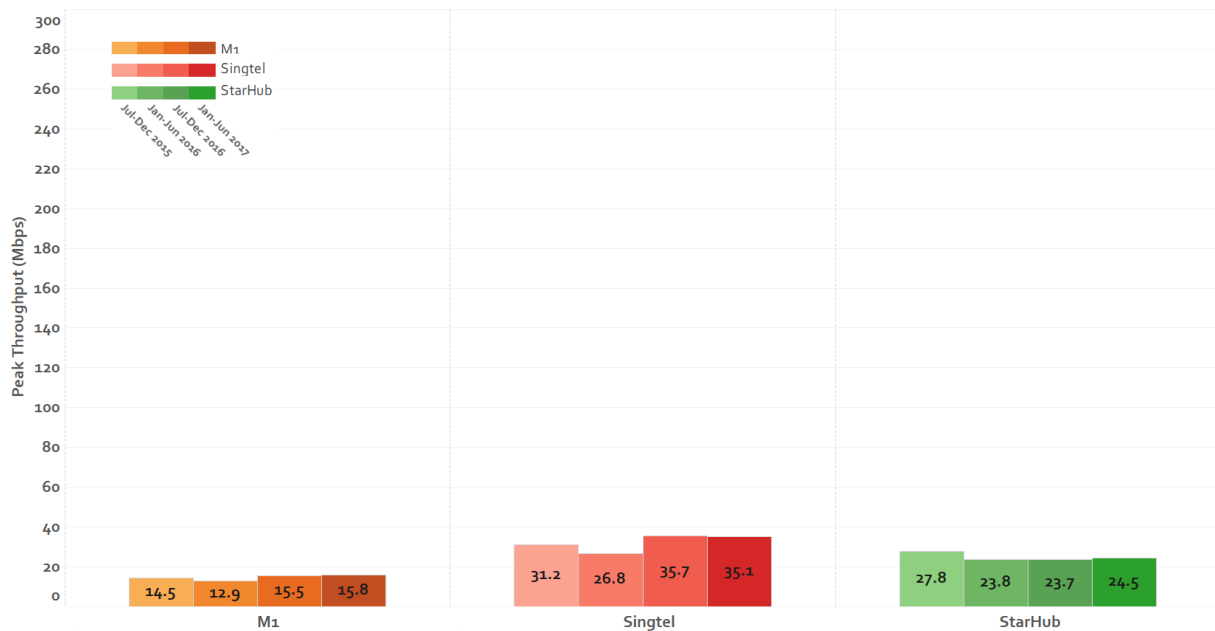
The collected 3G peak throughput measurement remained consistent for the past 4 reporting periods.

Figure 22: 3G Peak Throughput by Operators Table (Figures for January 2017 – June 2017)

Jan'17-Jun'17: 3G Peak Throughput (Mbps)		
M1	Singtel	StarHub
15.8	35.1	24.5

Figure 23: 3G Peak Throughput by Operators Graph (Comparison Across Periods)

Latency

Latency is measured in milliseconds and is defined as the time taken for a data packet to travel from one point to another and back. In IMconnected, this is the duration for the data packet to travel from the end users' mobile device to a local server and back (This is the responsiveness of the network, which could also be referred to as time lag).

Overall Latency

For the period January to June 2017, our participants experienced an average 4G latency of 57.3 milliseconds & average 3G latency of 94.6 milliseconds.

Figure 24: Overall 3G & 4G Average Latency Graph (Comparison Across Periods)
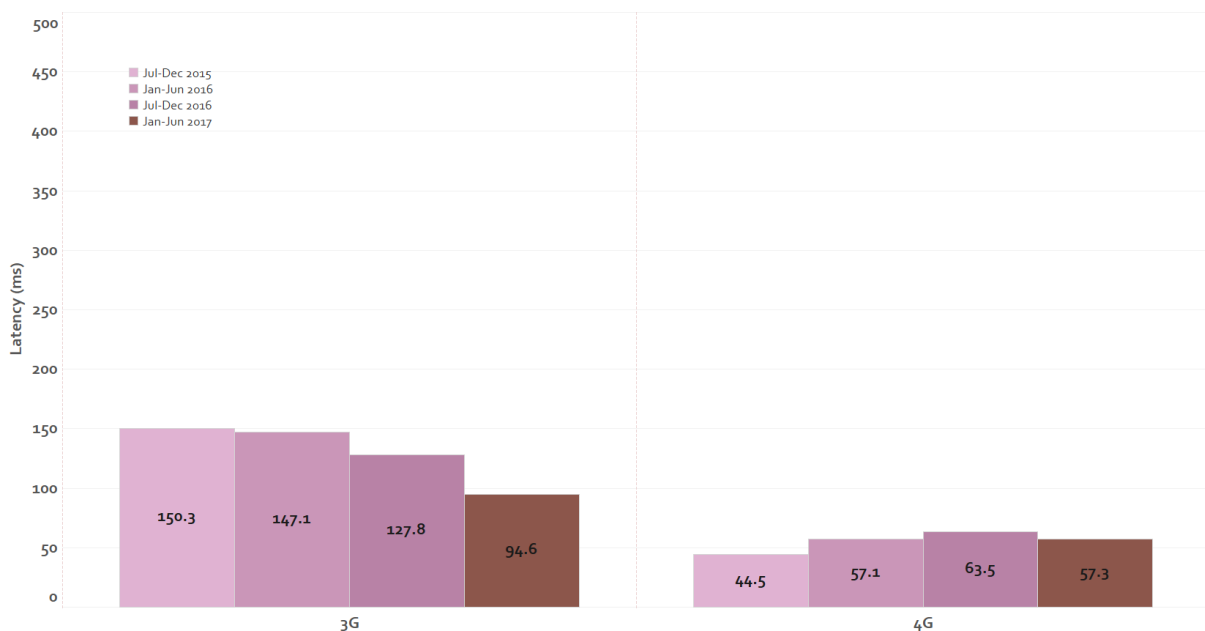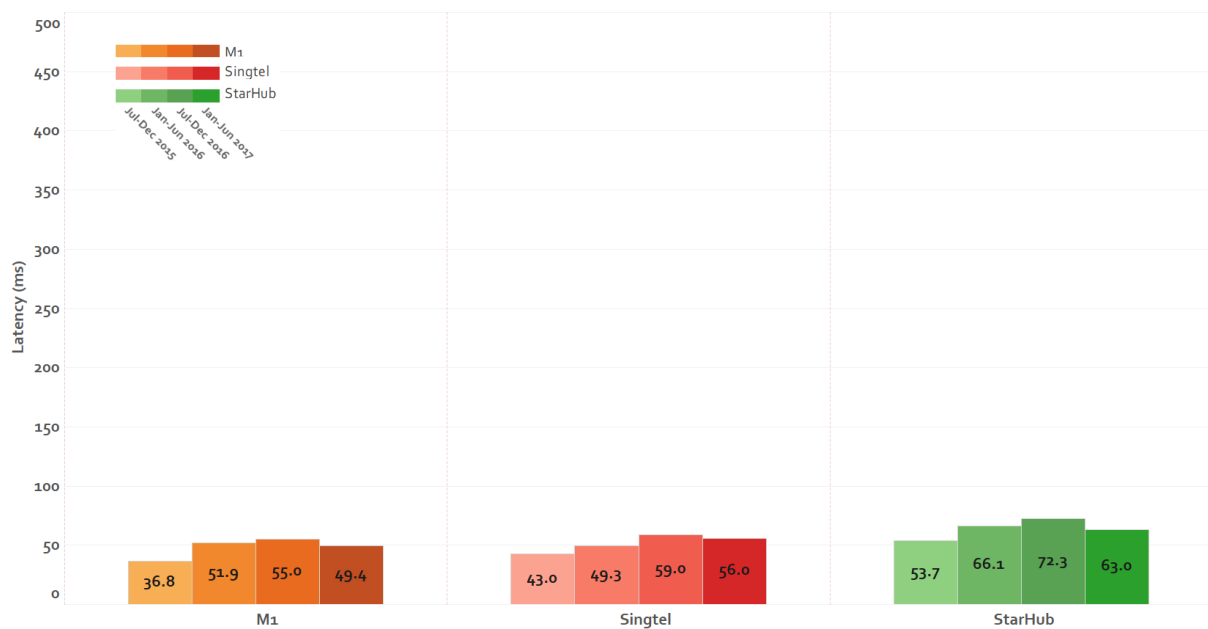
The collected 4G average latency measurement has improved in this report.

Figure 25: 4G Average Latency by Operators Table (Figures for January 2017 – June 2017)

Jan'16-Jun'17: 4G Average Latency (ms)		
M1	Singtel	StarHub
49.4	56.0	63.0

Figure 26: 4G Average Latency by Operators Graph (Comparison Across Periods)
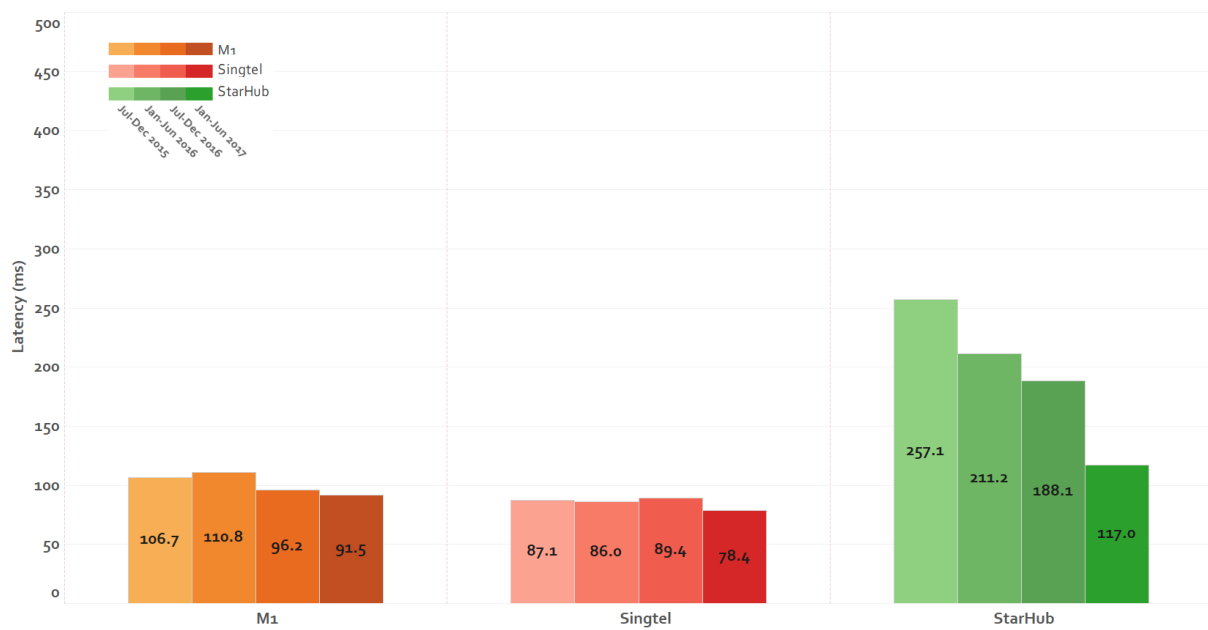
Similarly, the collected 3G average latency measurement has improved in this report.

Figure 27: 3G Average Latency by Operators Table (Figures for January 2017 – June 2017)

Jan'16-Jun'17: 3G Average Latency (ms)		
M1	Singtel	StarHub
91.5	78.4	117.0

Figure 28: 3G Average Latency by Operators Graph (Comparison Across Periods)

What is Wireless@SG?

Wireless@SG is part of IMDA's initiatives to facilitate the provision of free and seamless wireless broadband services in public places.

Wireless@SG Experience

Wireless@SG users may experience faster access speeds due to operators and venue owners providing higher capacity or higher speed fixed-line or backhaul connectivity at each WiFi access point. Users can enjoy a better surfing experience as a result.

Throughput	Latency
1.1-14.8 Mbps	74.55 milliseconds