

MyConnection SG



Results:

January 2016 – June 2016



MCSG

What Is MyConnection SG?

Profile of Participants

Handsets & Manufacturers

Heat Maps

Throughput

Latency

Wireless@SG

An Initiative in Crowdsourcing

IDA launched the 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 include data relating to broadband speed, latency, coverage on 3G & 4G mobile cellular networks, and usage experiences on WiFi networks.

Be a part of change!
Crowdsourcing works best
when everyone is on board.



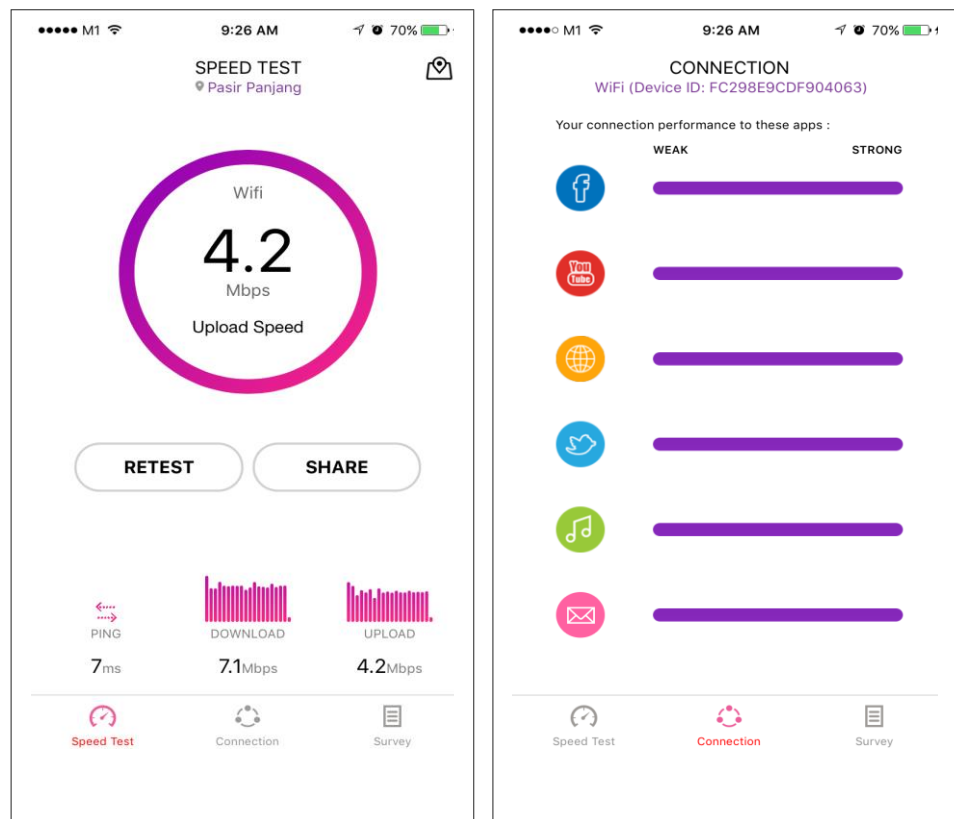
We Want Your Participation

IDA encourages mobile users to download the MyConnection App and share your usage experiences with us. This will help IDA better understand mobile broadband performance and take measures to improve mobile service experience for consumers.

MyConnection SG is available on both the Apple App Store for iPhone users and the Google Play store for Android users.

Figure 1: MyConnection SG App User Interface

An active test is carried out by the user; another screen indicates connection performances to various popular sites



Publishing of Results

IDA 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 IDA to work with mobile operators to enhance the quality of service experience for consumers on the mobile networks.

IDA 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 MCSG

For the period of January 2016 – June 2016, MyConnection SG has garnered more than 4,000 participants, obtaining more than 40 million data points across different parameters that relate to user experience.

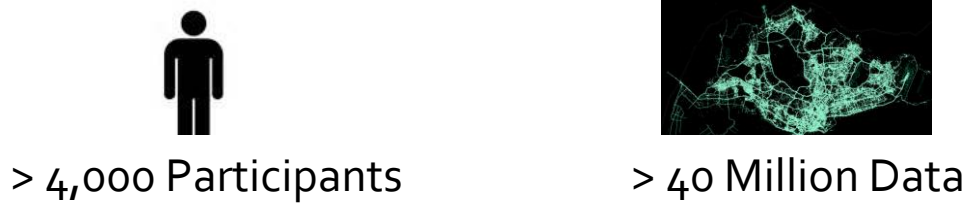


Figure 2: Usage Profile of Participants by Mobile Operator

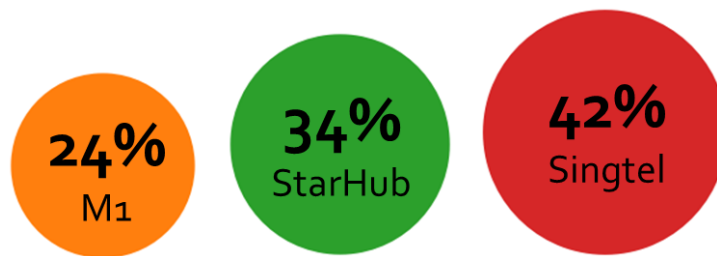


Figure 3: Types of Sessions

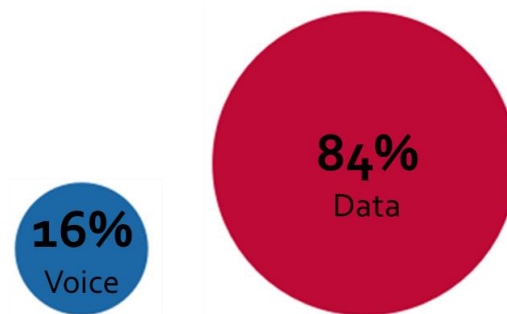


Figure 4: Breakdown of Data Sessions

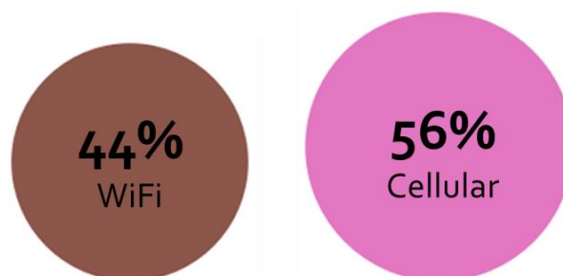
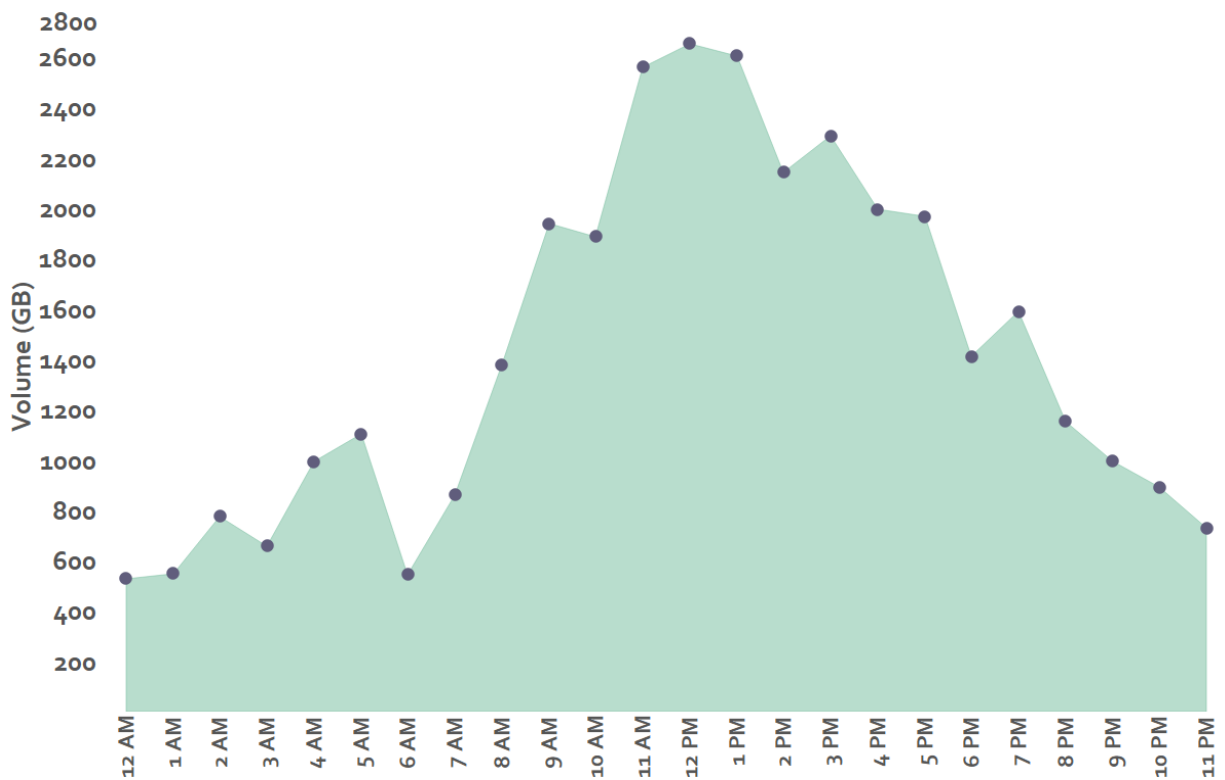


Figure 5: Data Volume (GB) Per Hour



Volume, an indicator of user activity as a whole, increased from 6am to 12noon and decreased over the remainder of the day

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.

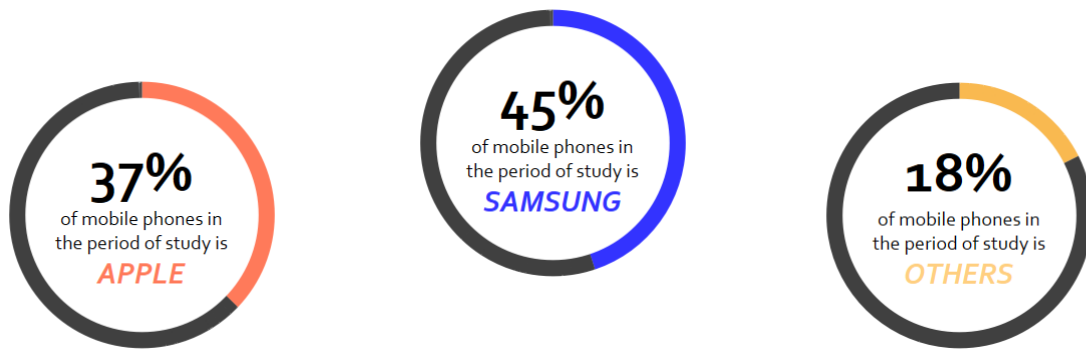
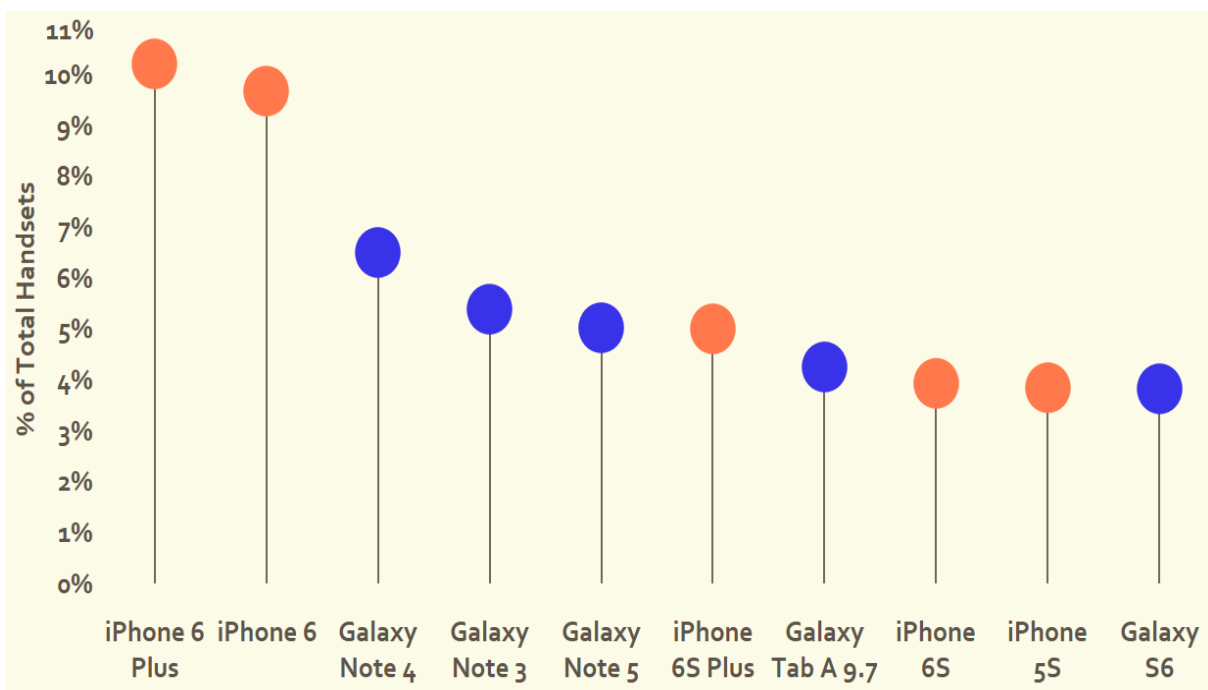


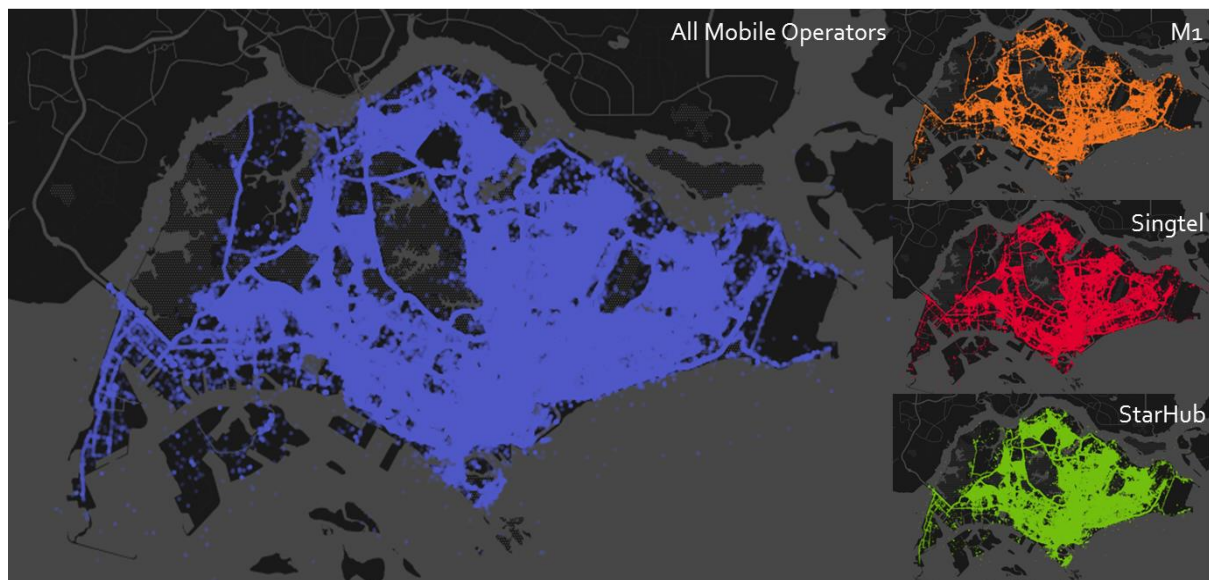
Figure 6: Top 10 Handsets



Distribution of Data Points

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

Figure 7: Heat Map of Singapore showing the Data Points Collected



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

Mobile Data Usage Experience

Results from MyConnection SG 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. Android OS allows for differentiation between 3G and 4G networks. Nevertheless, the results are deemed to be representative of user experiences in Singapore.

Coverage Experience – 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 3 mobile operators.

Figure 8: 4G Signal Strength Heat Map

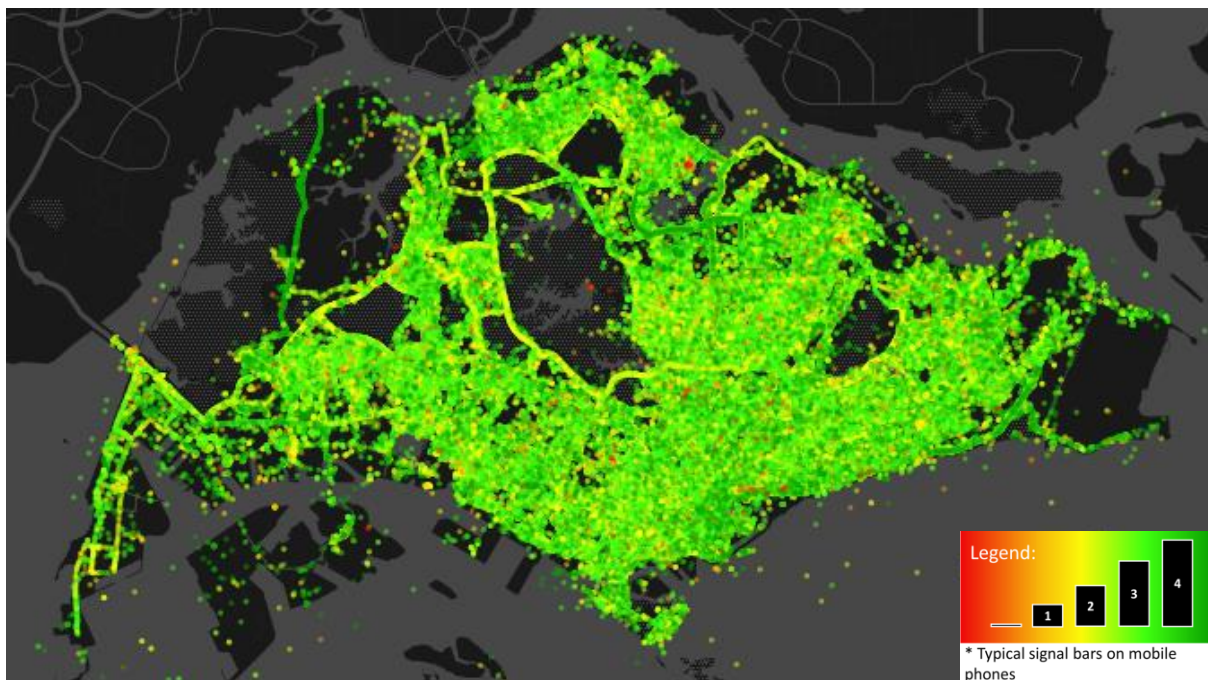
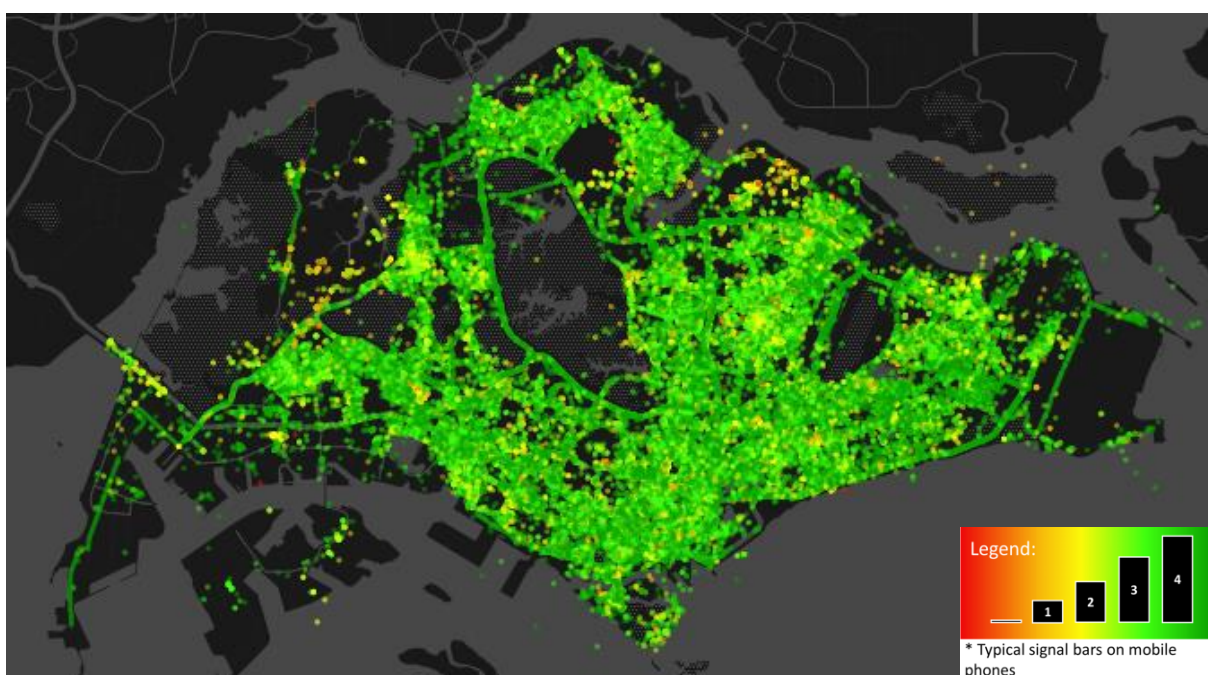


Figure 9: 3G Signal Strength Heat Map



Data Download Speed - Throughput

We have provided the data download speed or throughput numbers aggregated across all 3 mobile operators to provide an overall sense of consumers' mobile data usage experience. We have also provided throughput figures for the 10th, 50th, 90th percentile as well as the peak attainable speed.

Overall Median Throughput (Across 3 Operators)

On average, 50% of our participants experienced a median 4G speed of 29.3 Mbps and 3G speed of 4.5 Mbps.

Figure 10: Overall 4G Throughput in Percentiles (Comparison Across Periods)

	Overall 4G Throughput (Mbps)		
	10 th Percentile	50 th Percentile	90 th Percentile
Jan'16 – Jun'16	6.6	29.3	108.8
Jul'15 – Dec'15	5.1	17.4	51.6

Figure 11: Overall 3G Throughput in Percentiles (Comparison Across Periods)

	Overall 3G Throughput (Mbps)		
	10 th Percentile	50 th Percentile	90 th Percentile
Jan'16 – Jun'16	1.1	4.5	12.7
Jul'15 – Dec'15	1.0	3.5	11.4

4G Throughput Indicators

Figure 12: 4G Throughputs Percentiles (Graph)

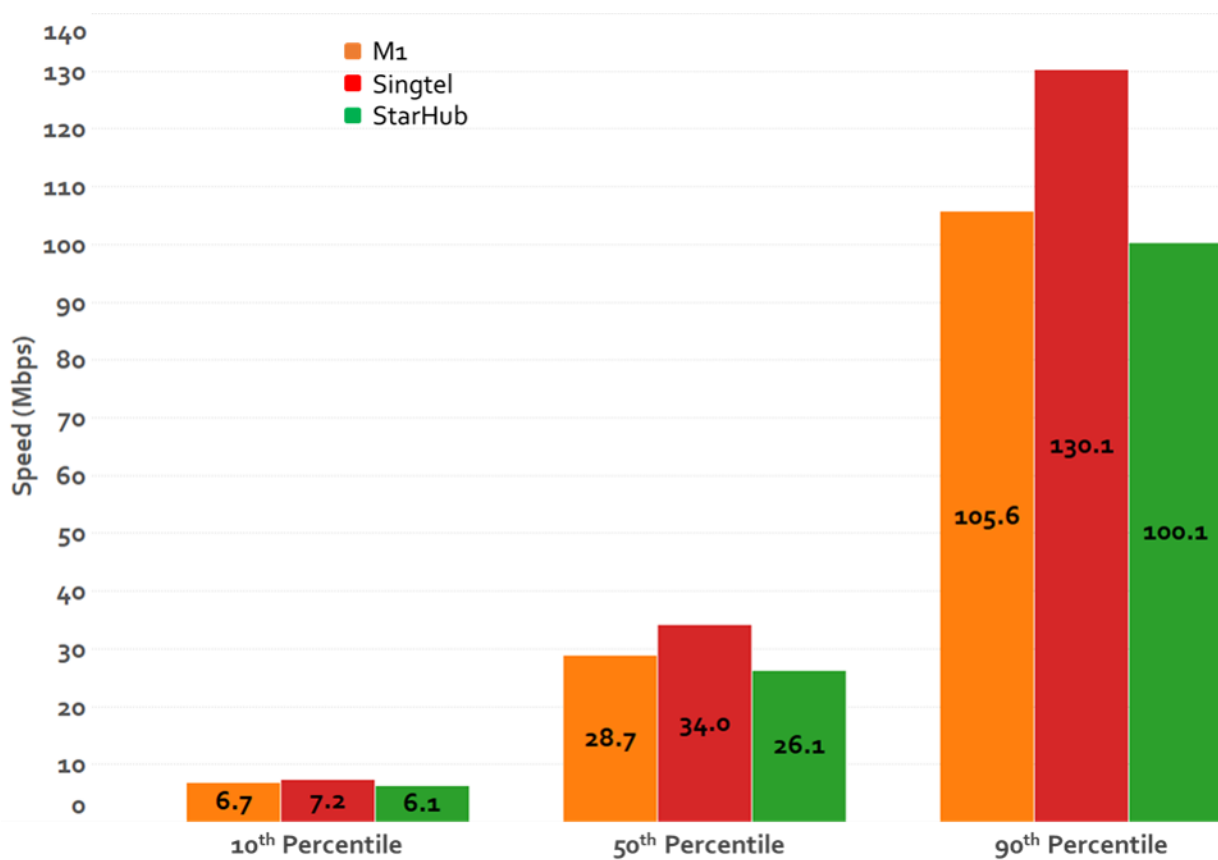


Figure 13: 4G Throughput Percentiles (Figures for January 2016 – June 2016)

Jan'16 – Jun'16: 4G Speed (Mbps)			
	10 th Percentile	50 th Percentile	90 th Percentile
M1	6.7	28.7	105.7
Singtel	7.2	34.0	130.1
StarHub	6.1	26.1	100.1

Figure 14: 4G Throughput Percentiles (Figures for July 2015 – December 2015)

Jul'15 – Dec'15: 4G Speed (Mbps)			
	10 th Percentile	50 th Percentile	90 th Percentile
M1	5.1	16.7	47.3
Singtel	5.5	18.6	52.1
StarHub	4.7	16.8	53.1

3G Throughput Indicators

Figure 15: 3G Throughputs Percentiles (Graph)

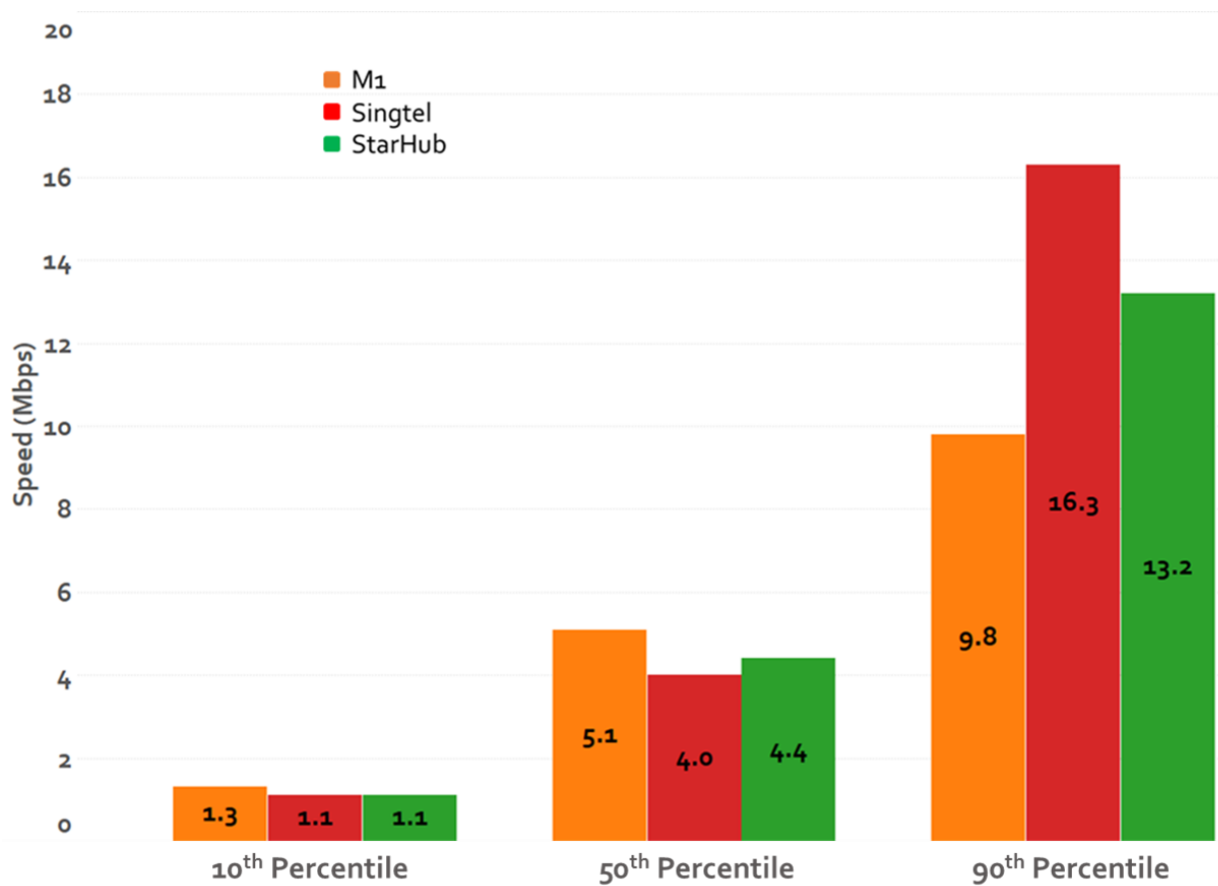


Figure 16: 3G Throughput Percentiles (Figures for January 2016 – June 2016)

Jan'16 – Jun'16: 3G Speed (Mbps)			
	10 th Percentile	50 th Percentile	90 th Percentile
M1	1.3	5.1	9.8
Singtel	1.1	4.1	16.3
StarHub	1.1	4.4	13.2

Figure 17: 3G Throughput Percentiles (Figures for July 2015 – December 2015)

Jul'15 – Dec'15: 3G Speed (Mbps)			
	10 th Percentile	50 th Percentile	90 th Percentile
M1	1.1	4.0	8.9
Singtel	1.1	3.7	13.2
StarHub	0.9	3.1	11.8

Peak Speeds



Peak speed is reported as the median of all daily maximum speeds attained over the reporting period of January 2016 – June 2016.

Overall 4G peak speed is 201.7 Mbps while overall 3G peak speed is 22.2 Mbps.

Figure 18: 3G & 4G Peak Speeds by Telco

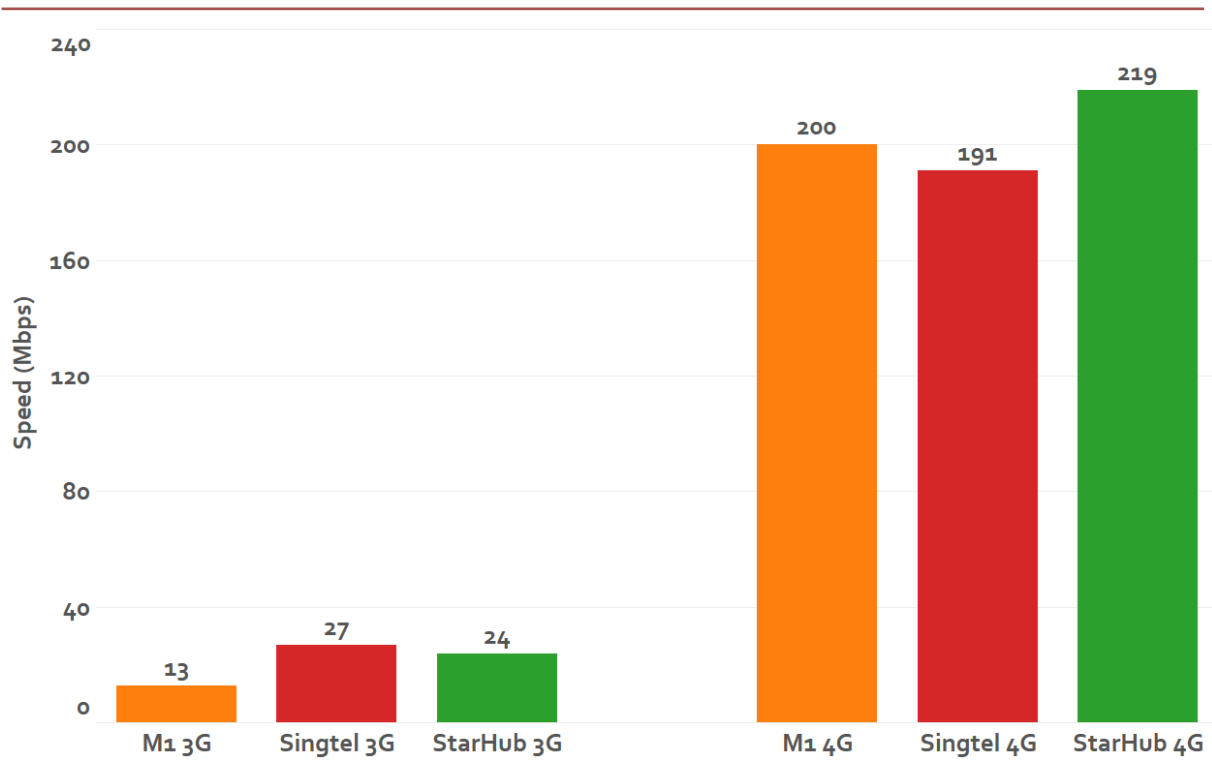


Figure 19: 4G Peak Speeds by Telco (Comparison Across Periods)

	4G Peak Speed (Mbps)			
	Overall	M1	Singtel	StarHub
Jan'16 – Jun'16	201.7	199.9	190.8	218.6
Jul'15 – Dec'15	121.4	75.7	130.8	125.4

Figure 20: 3G Peak Speeds by Telco (Comparison Across Periods)

	3G Peak Speed (Mbps)			
	Overall	M1	Singtel	StarHub
Jan'16 – Jun'16	22.2	12.9	26.8	23.8
Jul'15 – Dec'15	26.0	14.5	31.2	27.8

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 MyConnection SG, this is the duration for the data packet 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

Our participants experienced an average 4G latency of 57.1 milliseconds & average 3G latency of 147.1 milliseconds.

Figure 21: 3G & 4G Latency by Telco

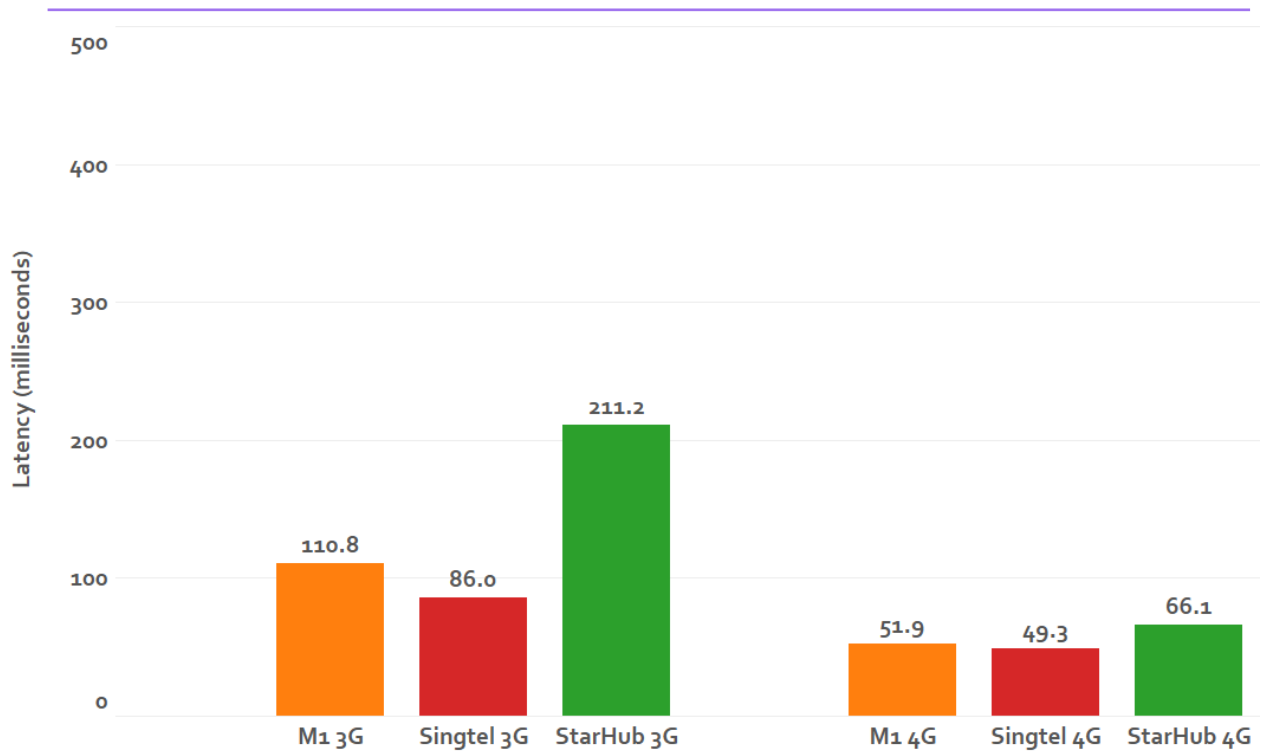


Figure 22: 4G Latency by Telco (Comparison Across Periods)

	4G Latency (ms)			
	Overall	M1	Singtel	StarHub
Jan'16 – Jun'16	57.1	51.9	49.3	66.1
Jul'15 – Dec'15	44.5	36.8	43.0	53.7

Figure 23: 3G Latency by Telco (Comparison Across Periods)

	3G Latency (ms)			
	Overall	M1	Singtel	StarHub
Jan'16 – Jun'16	147.1	110.8	86.0	211.2
Jul'15 – Dec'15	150.3	106.7	87.1	257.1

What is Wireless@SG?

Wireless@SG is part of IDA'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

1.1 – 8.7
Mbps

Latency

80.0
milliseconds