



 **routehappy**
2017 Wi-Fi Report

In-flight Wi-Fi has come a long way since its inception a decade ago. New advances in technology mean more flyers have access to Wi-Fi than ever before. Routehappy, the merchandising content platform for flight shopping, researches, analyzes, and scores data from numerous disparate sources. Our Wi-Fi data tracks which airlines offer in-flight Wi-Fi as well as its availability to consumers by chance, quality, coverage, and cost, tracked by subfleet, cabin, and flight.

Routehappy's 2017 Wi-Fi Report is based on an analysis of all flights worldwide on a typical weekday travel day¹ that have at least a chance of Wi-Fi by scheduled subfleet, providing the most comprehensive look at in-flight Wi-Fi across the 70+ airlines that now offer it. The industry has made great strides since last year's report, with more aircraft connected than ever before, including 11 airlines that now offer in-flight Wi-Fi for the first time. As of January 2017, 39% of available seat miles (ASMs) worldwide have at least a chance of Wi-Fi on board, an 8% increase over last year. The ASMs with at least a chance of Wi-Fi jumps to 83% when looking strictly at U.S.-based airlines, a 6% increase over last year.



Available seat miles (ASM)

A standard industry measure of an airline's passenger carrying capacity; it is the number of seats for sale multiplied by the number of miles flown. Example: A 200-seat aircraft operating a 2,500-mile flight offers 500,000 ASMs.

Best Wi-Fi

Fastest Wi-Fi systems currently available, capable of advanced media streaming (whether allowed by airline or not); comparable to a home connection.

Better Wi-Fi

Wi-Fi systems capable of full web browsing and limited media streaming.

Basic Wi-Fi

Wi-Fi systems providing basic web browsing and no media streaming capabilities.

Subfleet

A grouping of similarly configured aircraft of a certain model operated by a single airline.

Full chance

100% of a scheduled subfleet has Wi-Fi installed.

Very good chance

More than $\frac{2}{3}$ of a scheduled subfleet has Wi-Fi installed.

Good chance

$\frac{1}{3}$ to $\frac{2}{3}$ of a scheduled subfleet has Wi-Fi installed.

Some chance

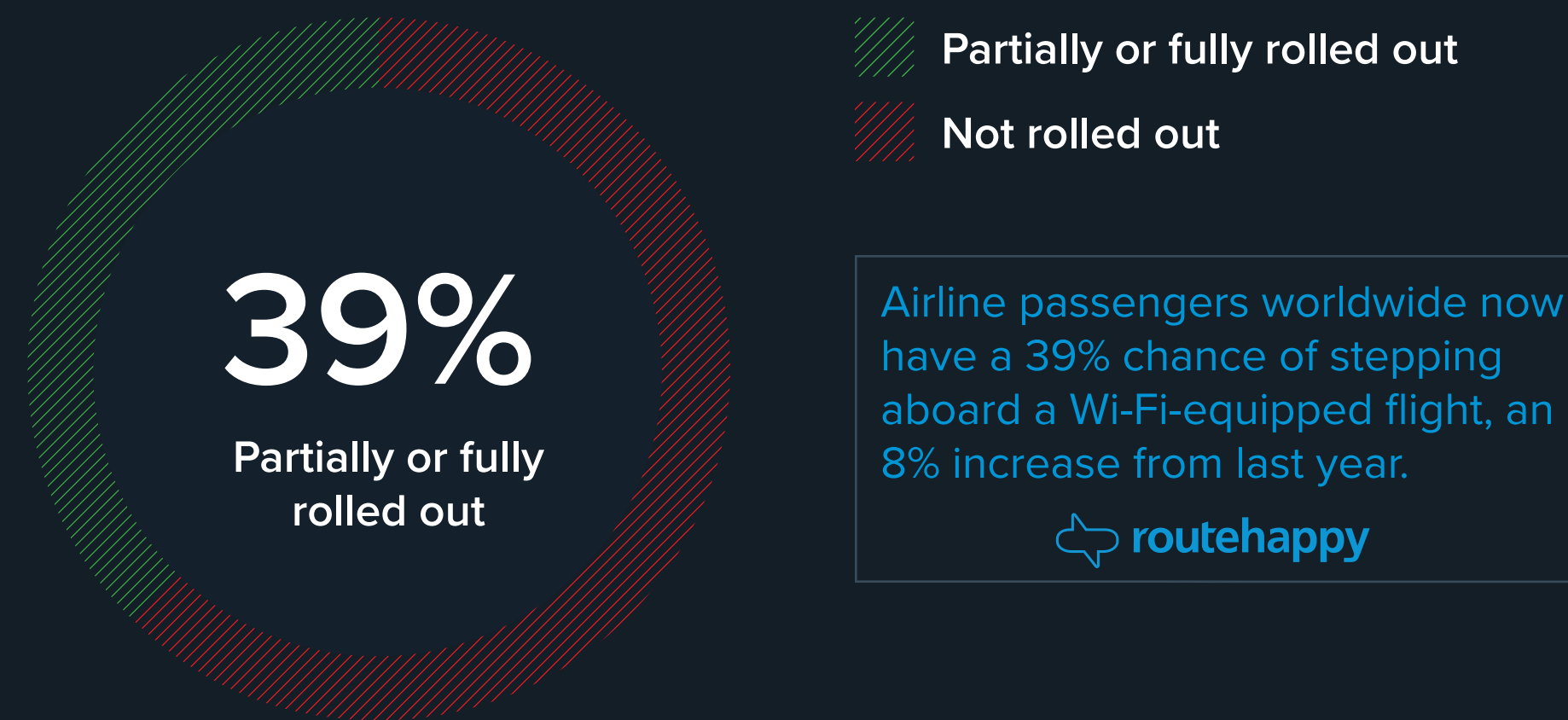
Up to $\frac{1}{3}$ of a scheduled subfleet has Wi-Fi installed.

No chance

Either a scheduled subfleet has no Wi-Fi installed or operates outside of the installed technology's coverage area. Flights with partial coverage are counted as having Wi-Fi.

Chance of Wi-Fi by Percentage of ASMs

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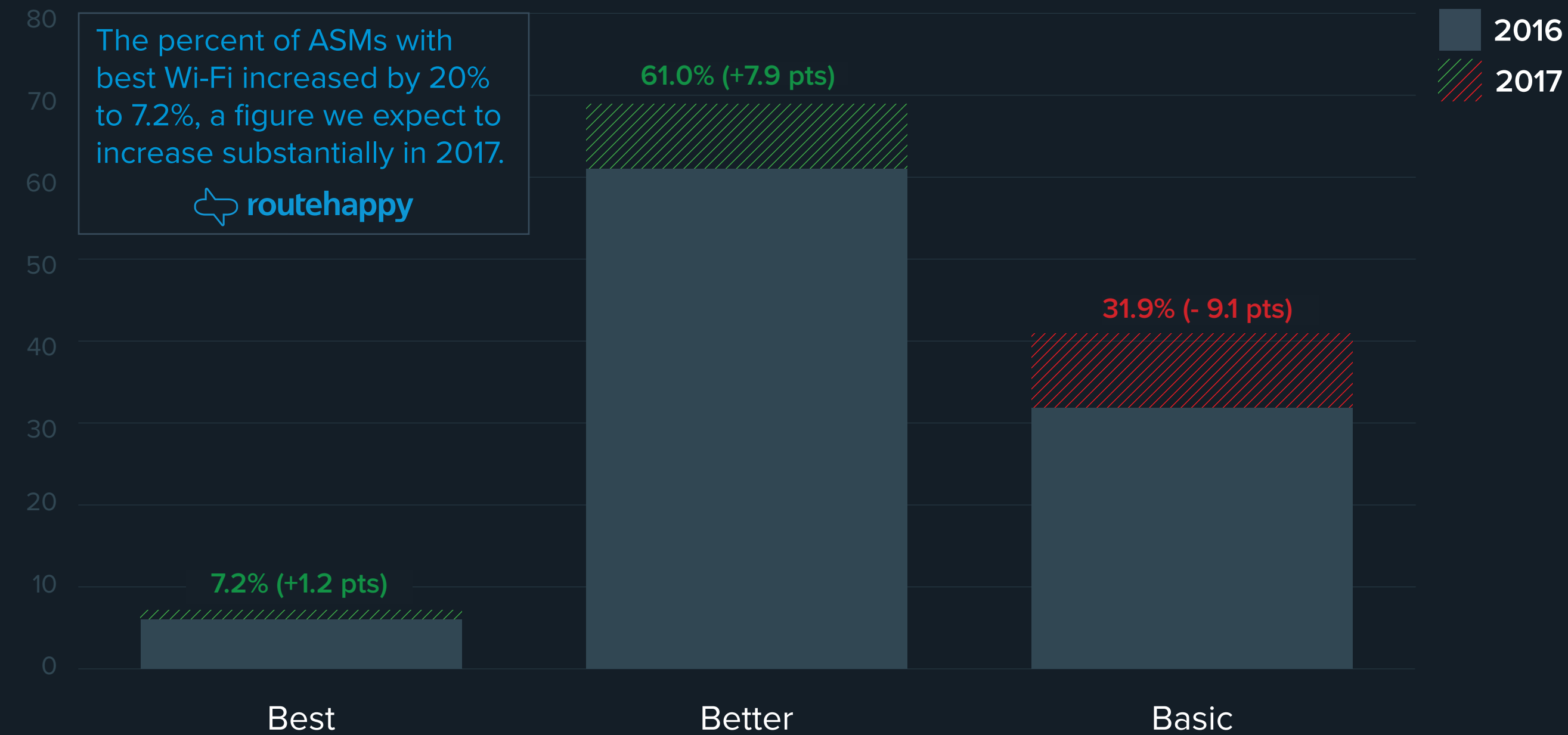
Airline passengers now have a greater chance of stepping on board a Wi-Fi-equipped flight than they did last year, with 39% of available seat miles (ASMs) worldwide having at least a chance of Wi-Fi, up from 36%. Putting it into perspective, that is an increase of more than 1 billion available seat miles per day with at least a chance of Wi-Fi vs. last year. We expect a greater increase in 2017 — several major airlines decided on Wi-Fi systems in 2016 with plans to roll them out in 2017, while others have already begun a rollout.

Comparing 2016 to 2017 shows that there has been a dramatic shift away from Basic Wi-Fi systems to faster systems, signaling that airlines are listening to customer feedback to improve Wi-Fi connectivity. For instance, Delta is already on its third-generation Wi-Fi system on many of its aircraft, moving from Gogo ATG to ATG-4 and now to 2Ku in just a few years. Singapore Airlines offers Basic L-band Wi-Fi on some aircraft, Better satellite Wi-Fi on others, and will be installing a Best Wi-Fi system shortly.

While the overall percentage of ASMs with Best Wi-Fi is still low in absolute terms, it did increase by 20% in 2016, from 6% to 7.2%, and we expect an even larger increase in 2017. While the overwhelming majority of flights operating with

Wi-Fi Quality by Percentage of ASMs

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Best Wi-Fi today are found on JetBlue and some United flights, next-generation systems are now rapidly coming online, with major airline commitments announced more regularly than in prior years.

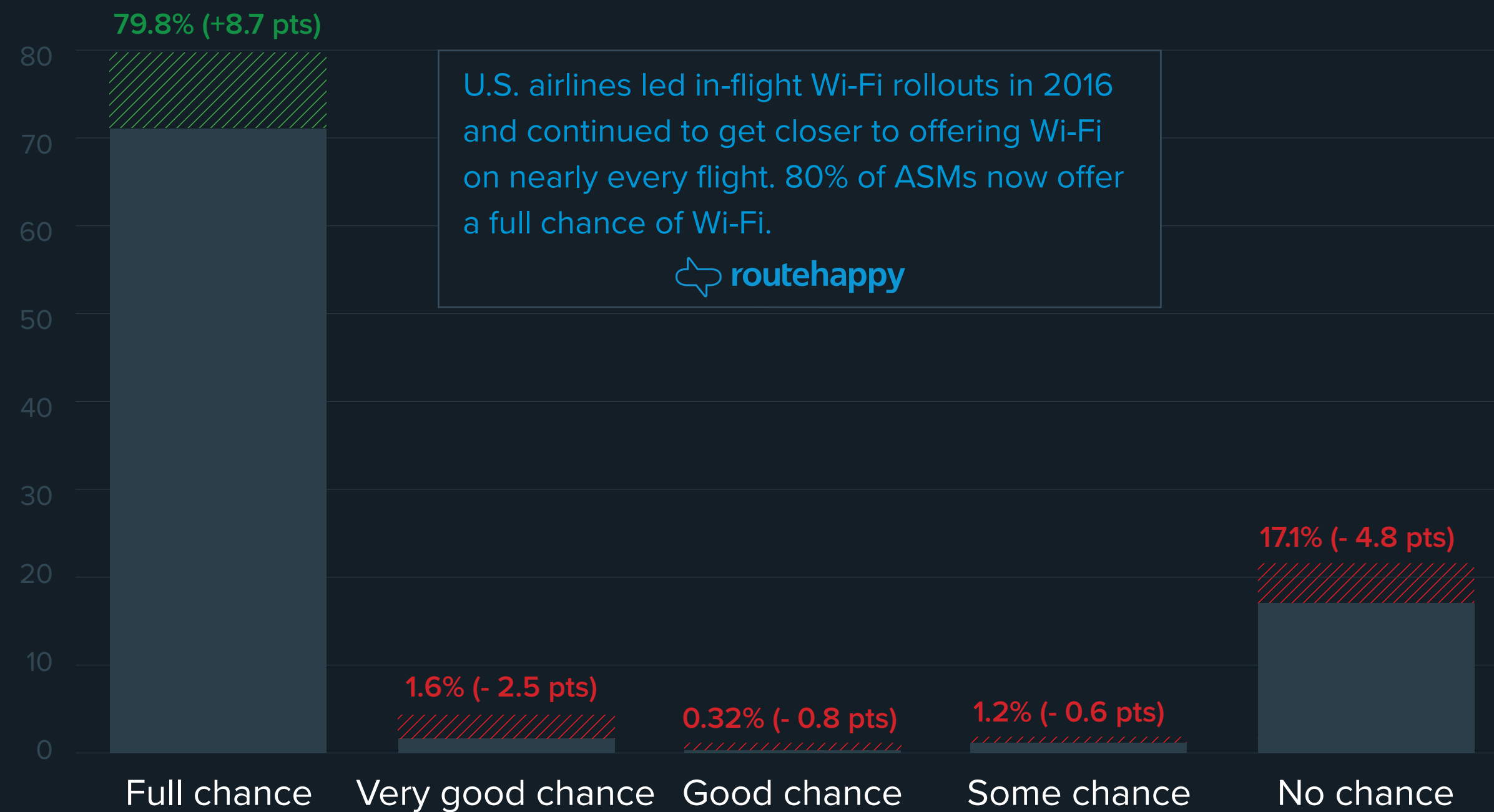
Gogo's 2Ku system has recently launched with multiple major global airlines such as Delta, Aeromexico, and Virgin Atlantic. Inmarsat's GX for Aviation is also in the beginning stages of going live to passengers. Deutsche Telekom's high-speed air-to-ground network is being built throughout the European Union and UK, and British Airways will use this network starting in mid-2017; SAS and Finnair have also tapped Viasat for European Wi-Fi. All these systems are pending installation in thousands of aircraft. While equipment installation will take years to complete, by the end of 2017 flyers will see a big increase of Best Wi-Fi available to them.

As these new systems come online, the in-flight Wi-Fi experience will dramatically improve, and prices are likely to drop over the coming years as airlines' operating costs, such as satellite bandwidth, decrease.

Wi-Fi Rollout Status

U.S. Airlines by Percentage of ASMs

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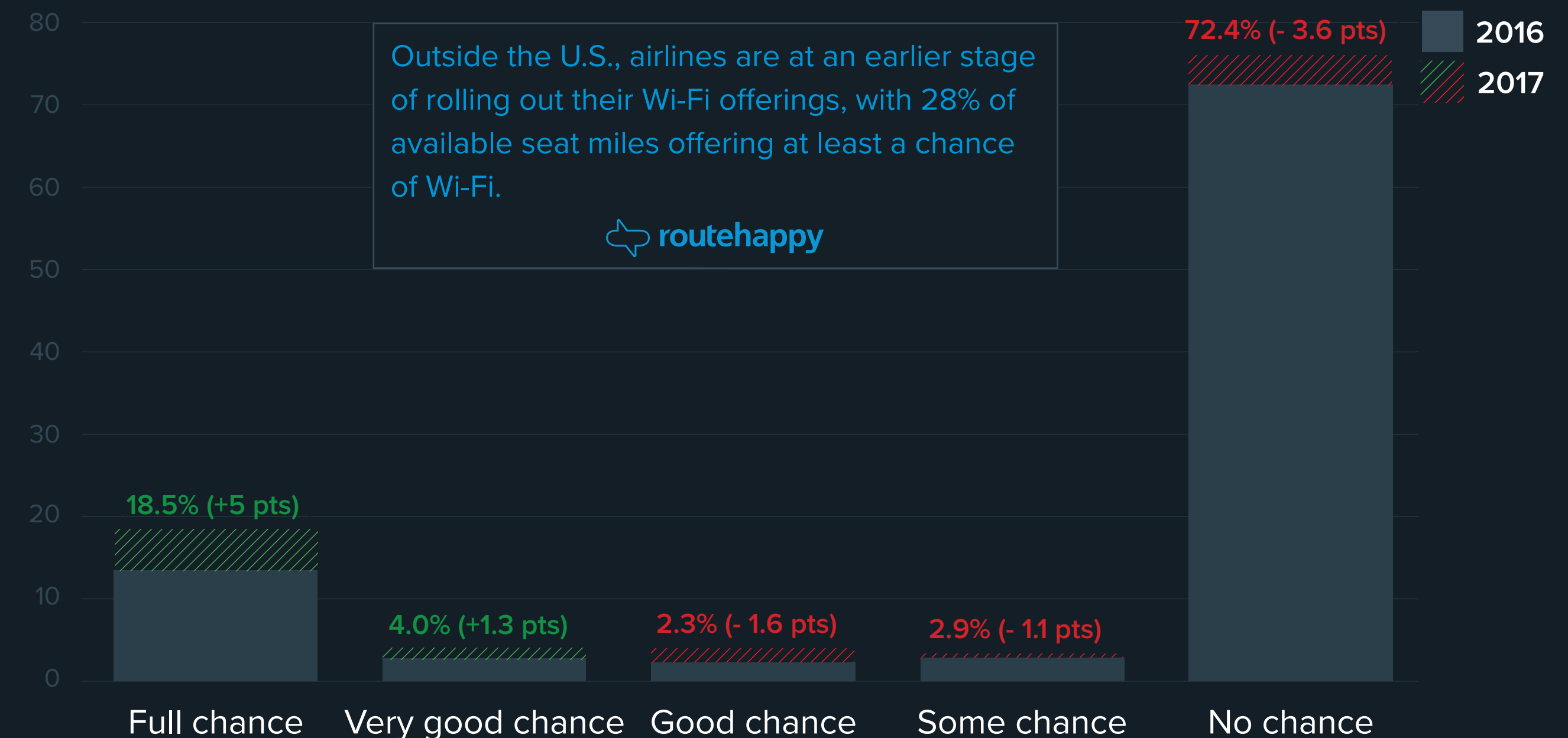


U.S. airlines continue to get closer to offering Wi-Fi on nearly every flight, a benefit of having started Wi-Fi rollouts earlier than airlines in most other regions. Delta and United now have Wi-Fi installed on every single aircraft larger than 50-seat regional jets, while American is also closing in on this milestone. This is the result of multi-year installation programs, which are finally wrapping up.

On 97% of U.S. airline ASMs, passengers will either definitely have Wi-Fi (80%), or have no chance of Wi-Fi (17%), with only 3% of ASMs in the middle ground with a chance of Wi-Fi. There are now very few subfleets left where a Wi-Fi installation is still pending. The bulk of the “no chance” category is made up of ultra-low-cost airlines such as Spirit and Frontier, which have no intention of rolling out Wi-Fi in the near future. Ultra-low-cost carriers believe that installing Wi-Fi will raise their base fares, so we don’t expect they will install Wi-Fi until the systems become less costly to install and operate.

Non-U.S. Airlines by Percentage of ASMs

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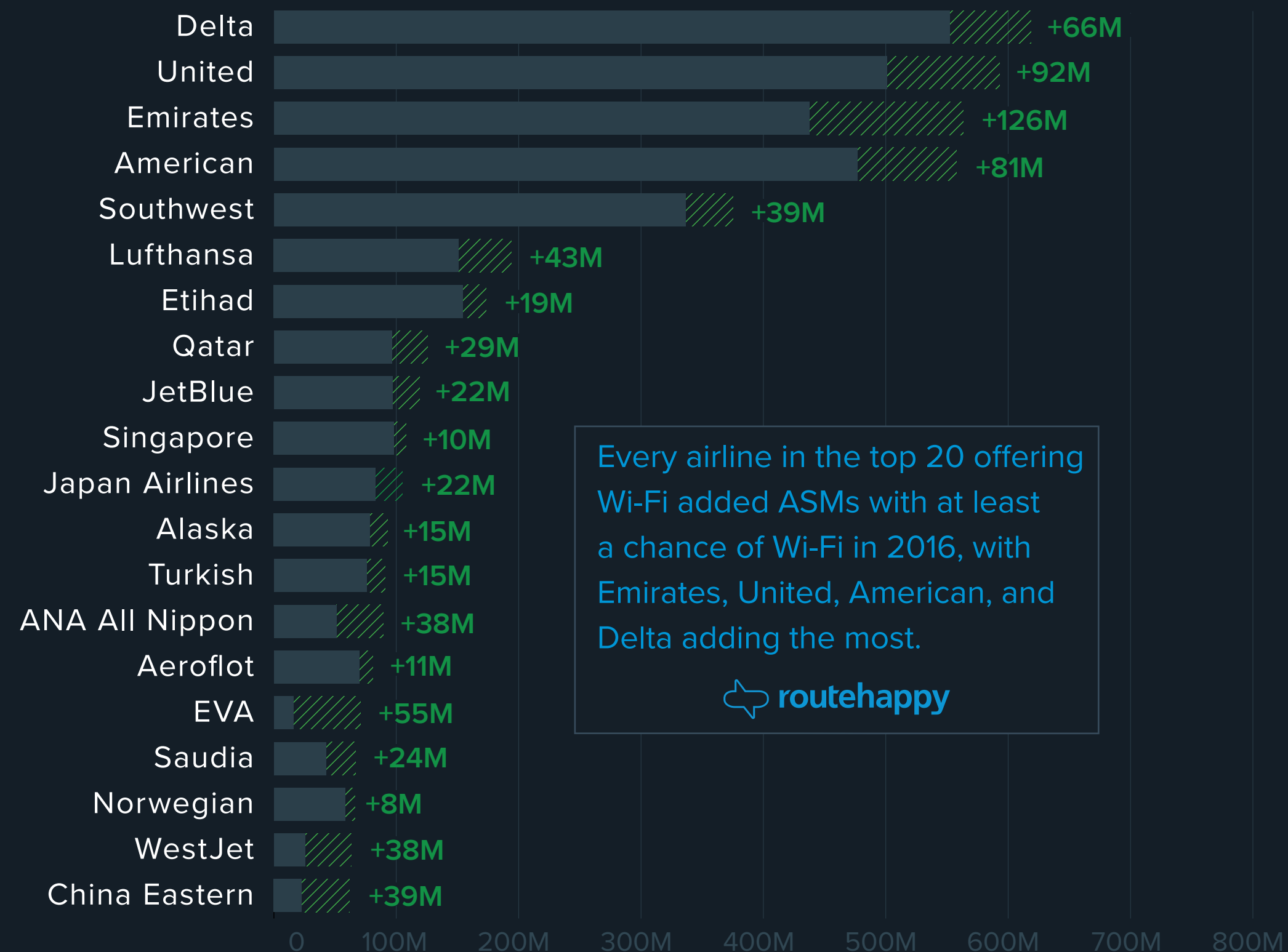
Outside the U.S., airlines still lag far behind their U.S. counterparts in Wi-Fi rollouts, with only 18.5% of ASMs fully rolled out. However, this represents an increase of 37%, up from 13.5% in 2016. The fact that airlines outside the U.S. lag behind when it comes to Wi-Fi rollouts is explained partly by technological obstacles that are just now being overcome — such as a lack of an air-to-ground network, which is much less costly than satellite connectivity.

The percentage of flights by ASM in the U.S. with a full chance of Wi-Fi (80%) is similar to the percentage of ASMs outside the U.S. that do not offer any chance of Wi-Fi (72%). Outside the U.S., 28% of ASMs offer at least a chance of Wi-Fi, with only 18.5% of that offering a full chance. We expect this to change rapidly over the next 12 to 24 months, as multiple major European and Asia-Pacific airlines have made large-scale commitments to install Wi-Fi across their fleets.

Top Airlines Worldwide

By Total ASMs

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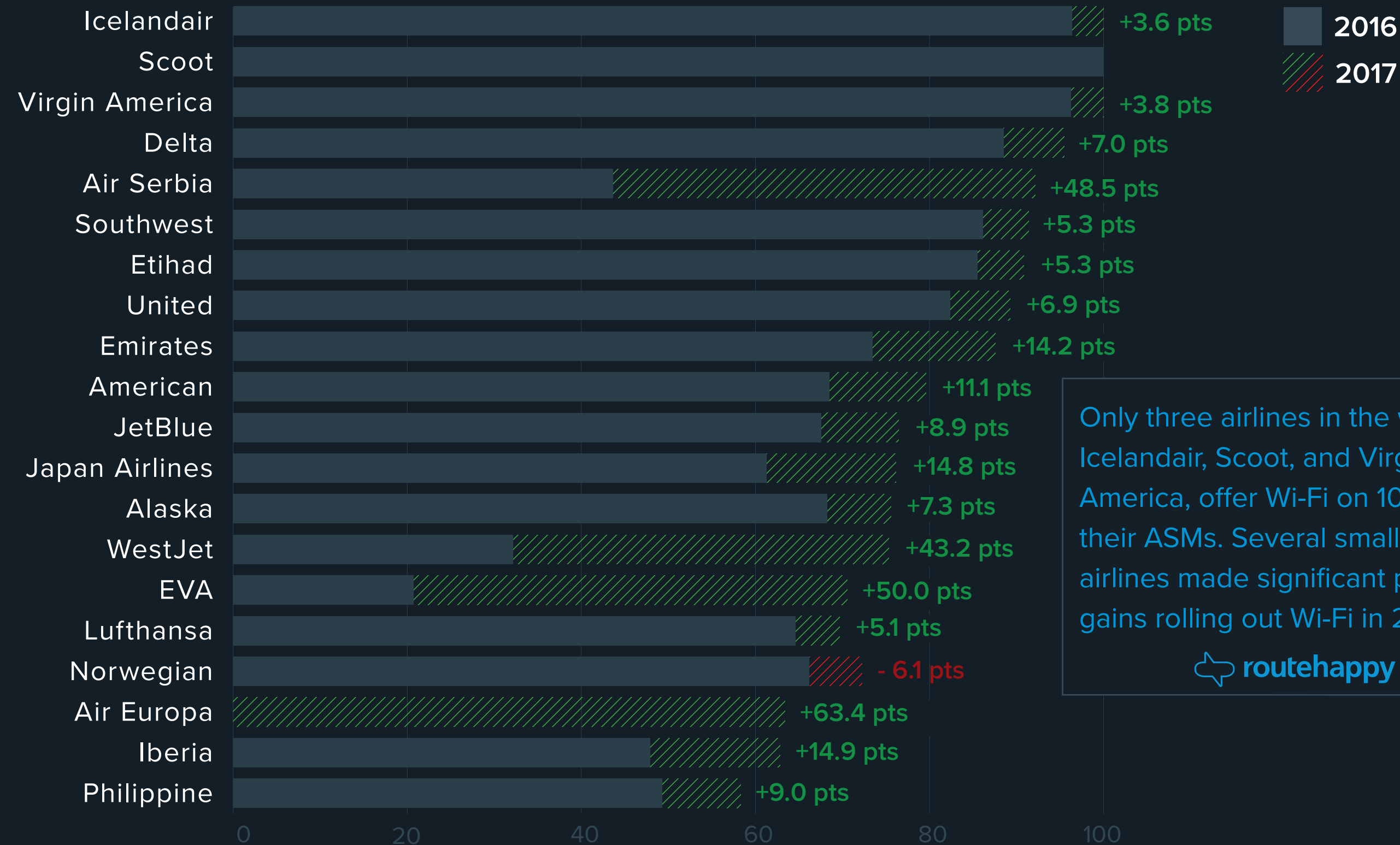


Every airline in the top 20 offering Wi-Fi added ASMs with at least a chance of Wi-Fi in 2016, with Emirates, United, American, and Delta adding the most.

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By Percentage of ASMs

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Only three airlines in the world, Icelandair, Scoot, and Virgin America, offer Wi-Fi on 100% of their ASMs. Several smaller airlines made significant positive gains rolling out Wi-Fi in 2016.

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Every airline in the top 20 offering Wi-Fi added ASMs with at least a chance of Wi-Fi in 2016, though some gains were more modest than others. United and Delta made large gains as they wrapped up widebody aircraft installation programs. Virgin America, an early Wi-Fi adopter, recently launched hybrid Ku/Ka satellite Wi-Fi on flights to Hawaii, bringing the airline back up to offering Wi-Fi on 100% of its flights. Emirates and American already had strong coverage and continued to add ASMs with Wi-Fi.

Comparing the percentage of ASMs with at least a chance of Wi-Fi by airline, 2016 saw several smaller airlines make significant gains. Icelandair has fully completed its Wi-Fi rollout, with 100% of its flights having Wi-Fi, while Wi-Fi newcomers such as Air Serbia and Air Europa (Spain) added 48 and 62 percentage points, respectively, to their

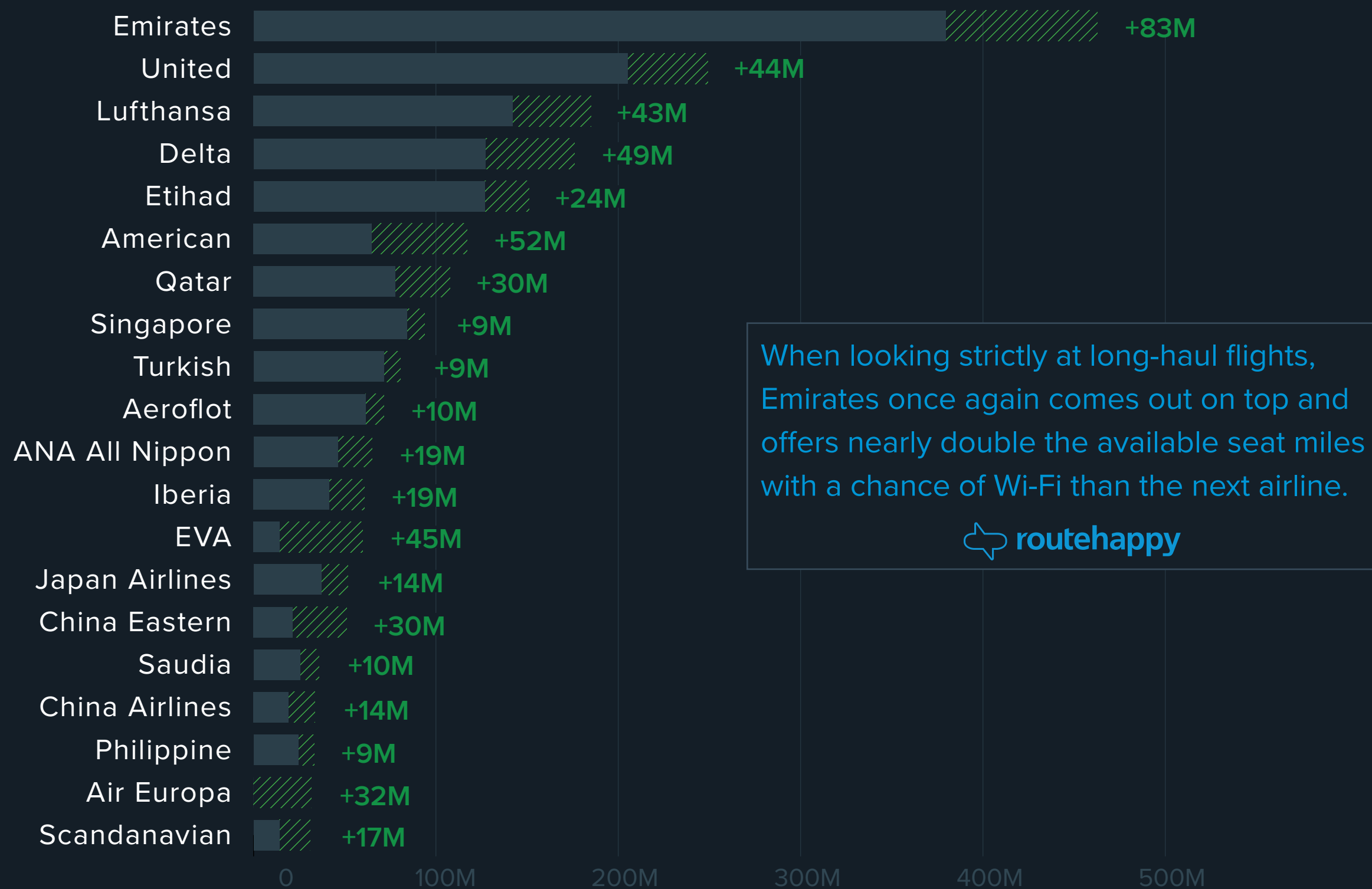
ASMs in the last year. EVA Air (Taiwan) and WestJet (Canada) also added a significant number of ASMs with Wi-Fi in 2016. However, some airlines saw decreased Wi-Fi availability. For example, Norwegian added multiple long-haul routes served by Boeing 787s that currently do not have Wi-Fi installed.

Several major global airlines that did not make the top 20, such as British Airways, Air France, KLM, Finnair, and Qantas, have made nearly fleet-wide Wi-Fi commitments, but have yet to deploy the technology on a wide scale. While these airlines may be later to adopt Wi-Fi, they all chose best-in-class systems that meet their strategic needs.

Long-haul Routes

By Total ASMs

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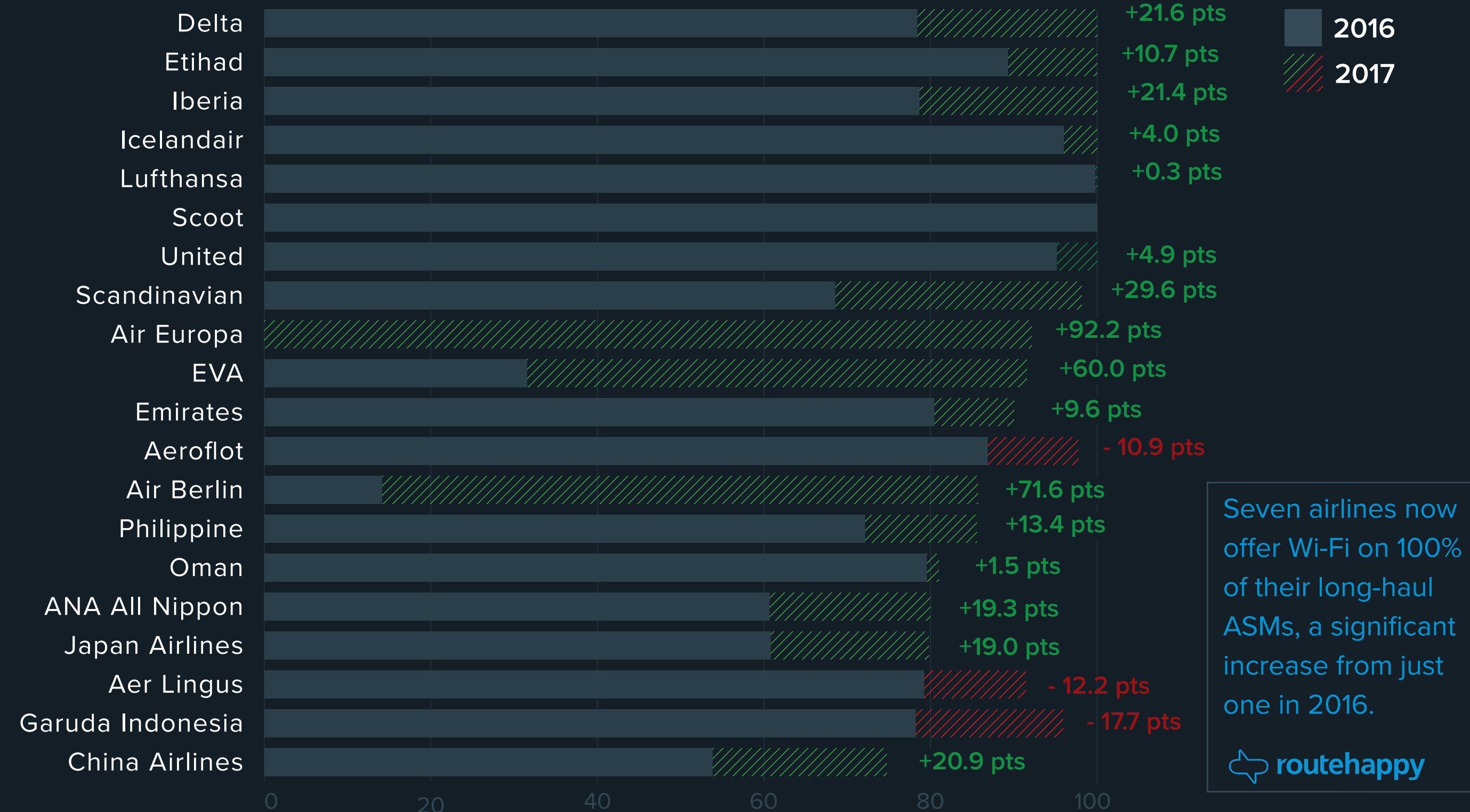


When looking strictly at long-haul flights, Emirates once again comes out on top and offers nearly double the available seat miles with a chance of Wi-Fi than the next airline.

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By Percentage of ASMs

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Seven airlines now offer Wi-Fi on 100% of their long-haul ASMs, a significant increase from just one in 2016.

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When looking strictly at long-haul² flights, Emirates once again comes out on top and offers nearly double the ASMs with at least a chance of Wi-Fi than the next airline. This is due to Emirates operating the largest fleet of Airbus A380s, the highest capacity passenger aircraft in the world.

Following Emirates, United offers the most ASMs with at least a chance of Wi-Fi, and is also one of only seven airlines in the world with a 100% chance of Wi-Fi on long-haul flights.

Delta, Etihad (UAE), Iberia (Spain), Icelandair, Lufthansa, Scoot (Singapore) and United all currently offer Wi-Fi on every long-haul flight, with several airlines following closely behind. Last year, only Lufthansa offered Wi-Fi on every long-haul flight. These airlines benefit from being early adopters of Wi-Fi and are currently enjoying a significant lead over their competitors.

In the past year, smaller but still significant airlines such as EVA Air, Air Europa, and Air Berlin made big leaps in adding Wi-Fi to their long-haul fleets — EVA Air and Air Europa are both up to 92%, and Air Berlin is up to 85%. All three airlines went from either no or very little Wi-Fi to some of the highest percentages of long-haul flights with Wi-Fi in the world.

Several airlines in the top 20 actually reduced the percentage of long-haul flights with Wi-Fi year over year. Aeroflot (Russia) now operates multiple long-haul flights with subsidiary equipment that that does not have Wi-Fi installed. Aer Lingus (Ireland) now operates a larger fleet of long-haul 757s that will have Wi-Fi installed later, temporarily reducing its Wi-Fi coverage. Garuda (Indonesia) saw a drop in its percentage because it operates numerous long-haul flights with medium-haul equipment that does not have Wi-Fi installed.



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1. Routehappy's 2017 Wi-Fi report is based on flight schedule data for flights departing 13 February 2017 using Routehappy data as of 19 December 2016
2. Long-haul is defined as flights longer than 2,800 miles (approximately five hours or longer)

