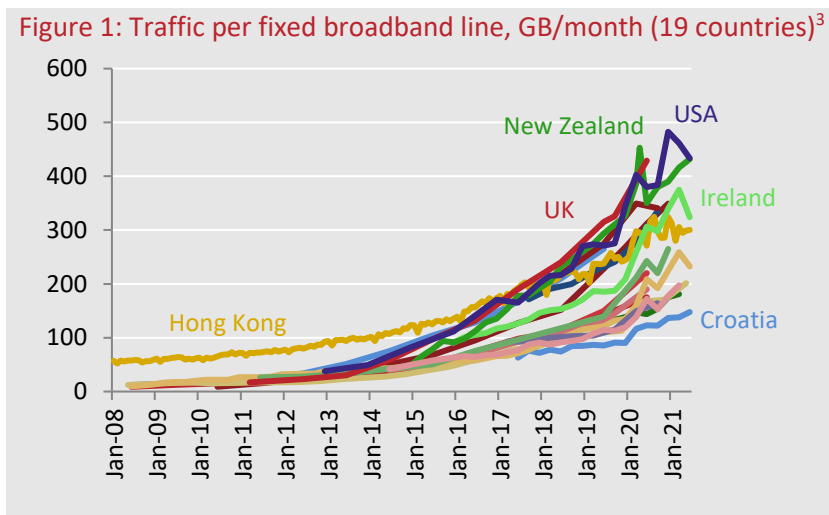


Patterns of fixed traffic growth, 2021

This note¹ considers the growth of broadband traffic per fixed line in various countries² around the world.

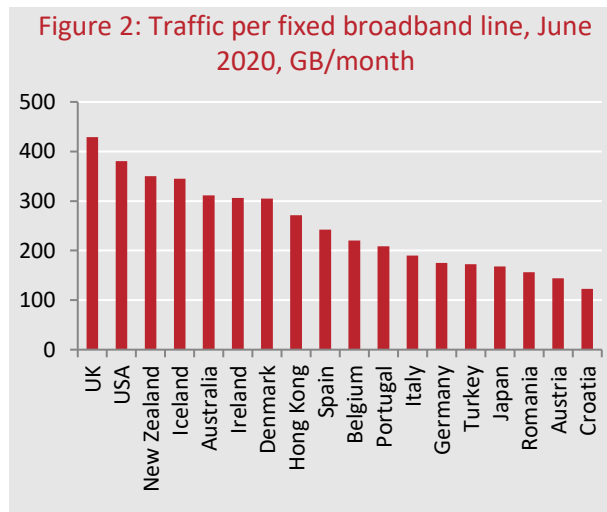
It is no surprise that (broadly) traffic per line is growing:



Traffic levels

However, there are significant differences in traffic levels and rates of growth between countries. Figure 2 shows the traffic per line as of June 2020, the latest date⁴ for which widespread data is available.

It is striking that five of the top six markets measured by usage are English speaking. This may be because the US is a key source of internet innovation, and other English-speaking countries may be quickest to adopt or imitate (alongside their own innovations). English is also the leading language for content, which may increase usage in English-speaking countries. For example, a survey of games on the Steam distribution platform found that 98% had an English-language version. Second was German at just 26%.⁵



¹ A previous analysis is available at Communications Chambers, [Patterns of internet traffic growth](#), April 2018

² Countries are those for which relevant data could be identified, and are primarily more developed countries

³ Sourced from relevant national regulatory authorities or government statistical services, with the exception of New Zealand (sourced from Chorus) and the US (from OpenVault). Figures are average for both business and residential lines, except for the UK which (from 2015) is residential only. Traffic is upload+download, except Australia which is download

⁴ Note that reporting periods vary (eg monthly vs annually). Data for specific months have been interpolated where necessary, to enable comparisons

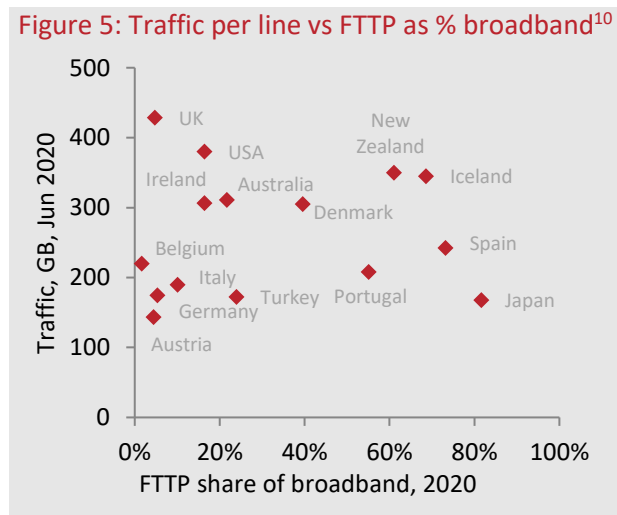
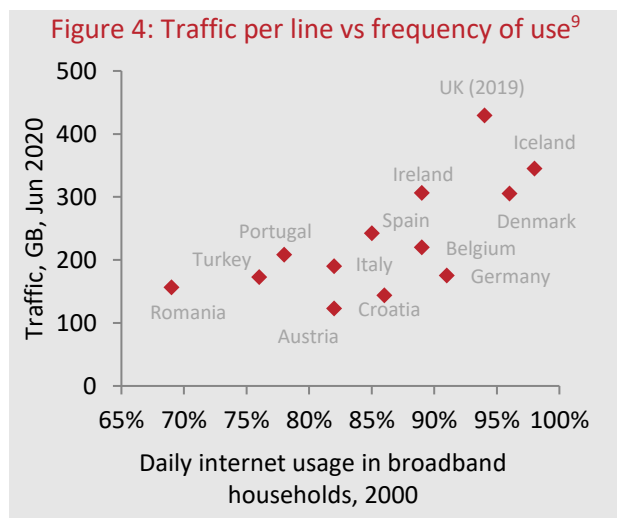
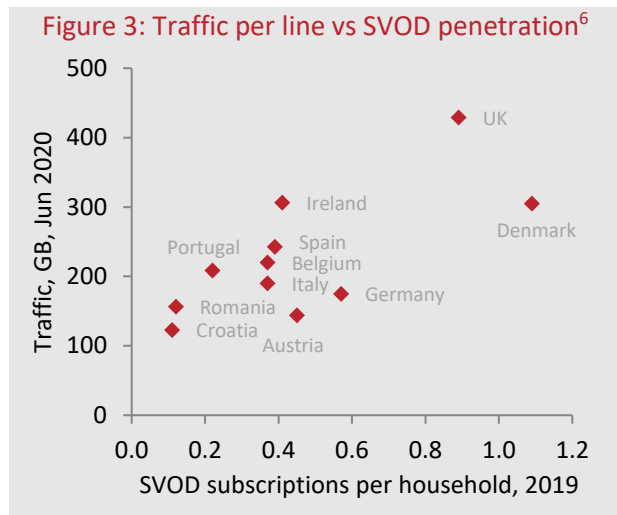
⁵ Nimdzi, [Steam, the dynamics of game launches](#), 29 April 2020

Video is a critical driver of internet traffic, and there does seem to be a linkage between SVOD⁷ penetration and traffic per line (Figure 3). Of course, SVOD is not the only form of video. In the UK, the success of the BBC's (free) iPlayer service is one contributor to high levels of traffic. All countries will also see significant traffic from services such as YouTube, which (on a traffic basis) is the largest application in both EMEA and APAC.⁸

Unsurprisingly, there also appears to be some linkage between traffic and frequency of use (Figure 4). An individual who uses the internet daily is going to generate more traffic than one who uses it weekly, even if they are using exactly the same mix of applications. Frequency of use will of course be interlinked with issues of language and SVOD adoption. More content available in your language means more reasons to go online.

Levels of traffic are not obviously linked to availability of fibre-to-the-premise (Figure 5). Indeed, the UK, which as of 2020 had very little FTTP, leads the traffic rankings. Conversely Japan, which has had widespread FTTP for many years, is a laggard in usage.

In practice, other forms of high speed broadband (notably cable, but also FTTC) are more than sufficient for most forms of internet use, and thus absence of FTTP does not currently act as a meaningful constraint on traffic volumes. (This is not to say there is no impact on the consumer – a console game downloaded in an hour on FTTP or three hours on FTTC is the same total traffic, but a consumer will prefer the former).



⁶ Per FN 3, plus EAO, [Trends in the VOD market in EU28](#), January 2021

⁷ Subscription video on demand

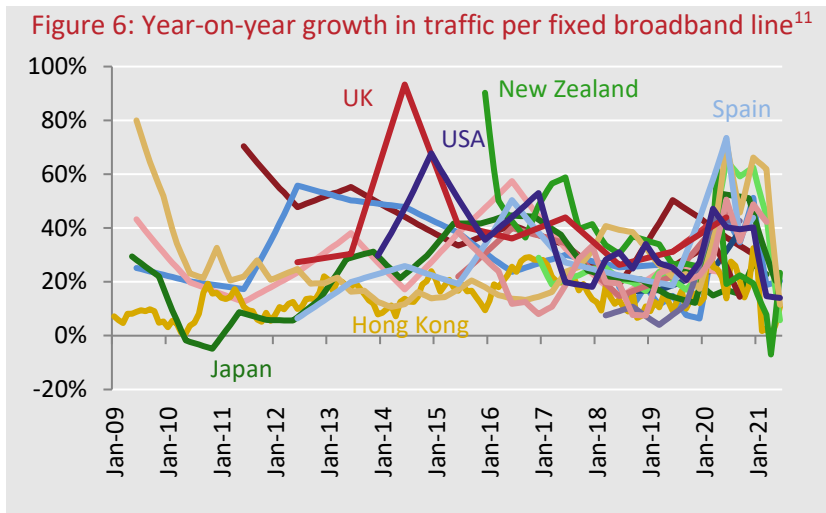
⁸ Sandvine, [The Global Internet Phenomena Report: COVID-19 Spotlight](#), May 2020

⁹ Per FN 3, plus Eurostat, [Individuals – frequency of internet use](#) [accessed 2 October 2021]. UK usage figure is for 2019

¹⁰ Per FN 3, plus OECD, [Fixed and mobile broadband subscriptions per 100 inhabitants](#), July 2021. FTTP includes FTTC

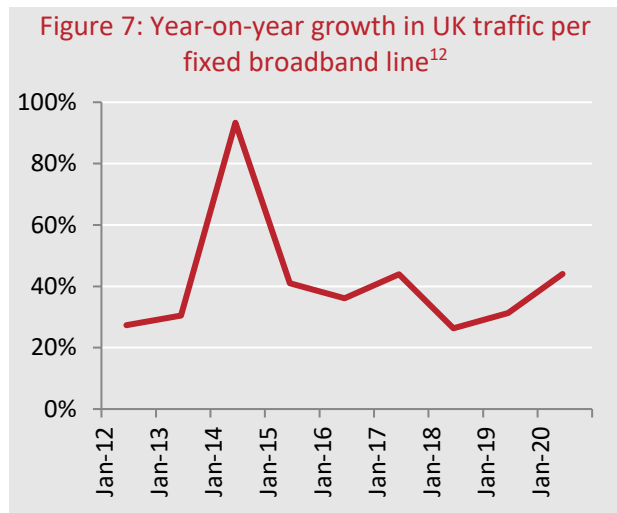
Long term growth rates

We now turn to growth rates, starting with a longer term perspective before looking in more detail at the impact of the pandemic. Figure 6 shows year-on-year growth in traffic. There is significant variation, both between countries and for any given country over time.



It is often claimed that internet traffic is growing exponentially. However, this is not true, at least in the technical sense of a constant annual growth rate. If growth were exponential, Figure 6 would show horizontal lines.

In fact, in many countries, up until the pandemic growth rates were declining. Figure 7 focuses on UK traffic-per line growth. Growth peaked in 2014, but from then until the advent of the pandemic, was in long term decline. Even *with* the dramatic impact of the pandemic, 2020 growth was only the same as that of 2017. (One of the reasons the pandemic did not materially disrupt the smooth operation of broadband networks is that the resulting data traffic growth was not extraordinary by historic standards for most markets).



¹¹ Per FN 3. Communications Chambers analysis. Data interpolated where necessary

¹² Ofcom data. Communications Chambers analysis

To better understand the global trends, we consider averaged growth across our set of countries for which we have data (Figure 7).¹⁴ At this aggregate level, clearer patterns emerge – first a period of accelerating growth, up to 2015; second, slowing growth¹⁵ through 2019 (with a stabilisation at the end of this period), followed by a leap in growth in 2020 caused by the pandemic.

The causes in the acceleration up to 2015 are a matter of speculation, but likely include:

- The increasing availability of unlimited data allowances in fixed broadband tariffs
- The increasing adoption of VOD services. (Netflix launched in Europe in 2012, for example)
- Uptake of smartphones
- The transition of customers off usage-limiting low speed ADSL services

As these various drivers of growth have played out (unlimited data allowances and smartphones are now very widespread, for example), growth has subsequently slowed.

Impact of the pandemic

Figure 9 shows traffic data for countries for which recent and frequent traffic data is available. In several cases clear spikes are evident associated with first and second lockdowns. (Though note that there are also seasonality effects here – internet traffic tends to be higher in winter months). Spikes are less evident in Hong Kong (for example) which did not impose strict stay-at-home requirements.¹⁷

Figure 8: Year-on-year growth in traffic per fixed broadband line, average across countries¹³

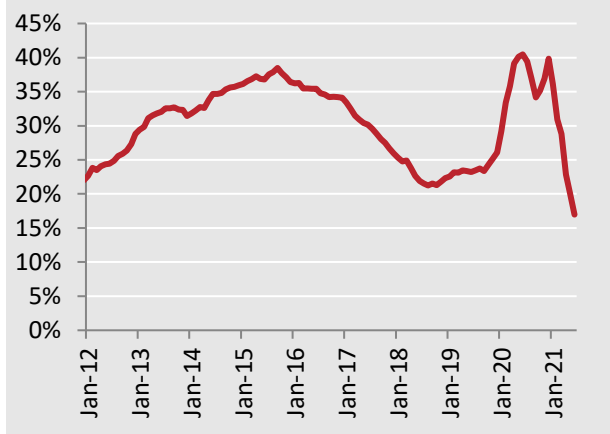
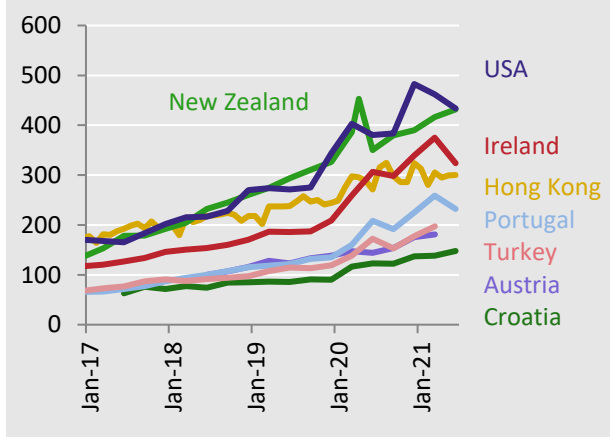


Figure 9: Traffic per fixed broadband line, GB/month (select countries)¹⁶



¹³ Per FN 3. Communications Chambers analysis. Data interpolated where necessary

¹⁴ Note that this set varies somewhat over time, based on when countries started reporting and the latest available data. However, this variation does not appear to have material impacts on the trends shown

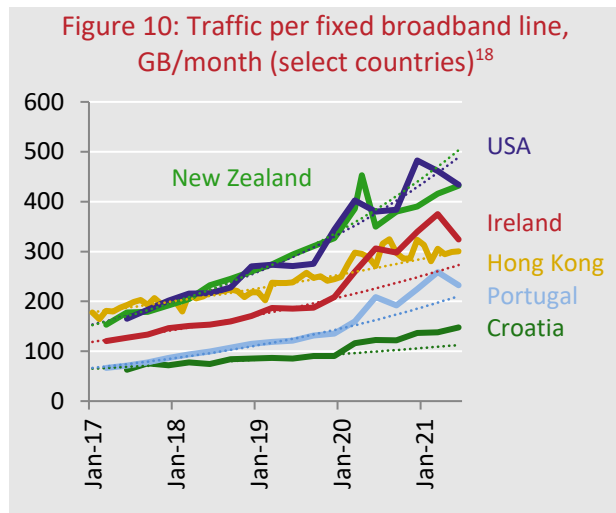
¹⁵ Telegeography has found a similar pattern of slowing growth pre-pandemic for international internet traffic.

Telegeography, [Global Internet Geography](#), September 2021

¹⁶ Per FN 3

¹⁷ Hale, Thomas, Sam Webster, Anna Petherick, Toby Phillips & Beatriz Kira (Blavatnik School of Government), [Oxford COVID-19 Government Response Tracker](#) [accessed 4 October 2021]

To understand whether the changes in online usage prompted by the pandemic are permanent, Figure 10 looks at recent usage compared to what might be expected based on long run trends. The dotted lines represent exponential¹⁹ regressions against usage 2017-2019, projected forward to June 2021. For most of the higher use countries (USA, New Zealand and Hong Kong) the projected usage based on pre-pandemic figures is at or above the most recent actual usage figures. This suggests that while the pandemic may have brought forward some growth, it may not have had lasting impact.



By contrast, in the lower traffic markets of Ireland, Portugal and Croatia, actual traffic is still above projected traffic, suggesting a more enduring impact.

Thus the pandemic may have resulted in a ‘catching up’ effect. Applications and content (and habits) already in place in more developed markets could be readily adopted by these lower traffic markets. The SVOD subscription (say) prompted by the pandemic then became a permanent fixture.

By contrast, while the pandemic may have prompted consumers in higher traffic markets to make even more use of SVOD and other applications while confined to home, it didn’t trigger adoption of new applications to the same extent. Thus when stay-at-home orders eased there was less of a lasting impact on traffic.

Conclusion

Different countries are on very different trajectories of internet traffic growth, and many countries still have substantial growth to come. On the other hand, some of the markets with heaviest traffic may well see slowing percentage growth, continuing a trend that was evident before the pandemic, but temporarily concealed by it.

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October 2021

¹⁸ Per FN 3

¹⁹ As discussed above, historic growth is not strictly exponential. However, a linear regression gives broadly similar conclusions about lasting impacts

Annex – Traffic by country (GB per fixed line per month)

