

TSUG

Transport Statistics Users Group

Monthly Review: November 2017

This month's review has shown that in UK, there is a decrease in the road traffic fatalities between 2015 and 2016, whereas in USA, there is a 5% increase in the same period, Passenger numbers on the rail network have fallen in the first quarter of this year. Driverless trains hauling iron ores across Australia's Pilbara region may be moving forward. Obesity rates have been found to be lower in densely built areas. We've got an email to the editors and also got Kit Mitchell's Statistics Digest

Dr Shanta Bir Singh Tuladhar and Andrew Sharp

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Dates of the next TSUG seminars

Wed-15-Nov	TfL	Multi modal freight – the availability of data
Wed-15-Nov	TfL	From All Angles: Perspectives on Bus Statistics
Wed-13-Dec	TfL	Transport Appraisal

The seminars can be booked through the TSUG website at www.tsug.org.uk/seminars.php

Statistics Digest

Statistics Digest November 2017

This digest lists major sets of statistics that have been released recently or which are due to be released. Regular monthly and quarterly releases are not included. The web links given allow free downloads of the documents cited.

Recent releases from Department for Transport

Recent releases from Department for Transport	
12 Oct	Road freight statistics: April 2016 to March 2017 https://www.gov.uk/government/statistics/road-freight-statistics-april-2016-to-march-2017

Forthcoming releases from Department for Transport	
2 Nov	Renewable Transport Fuel Obligation: Year 9 (2016 to 2017) report 5 (15 April 2016 to 14 April 2017 supply) https://www.gov.uk/government/collections/biofuels-statistics
2 Nov	Renewable Transport Fuel Obligation: Year 10 (2017 to 2018) report 1 (15 April 2017 to 14 April 2018 supply) https://www.gov.uk/government/collections/biofuels-statistics
16 Nov	Vehicle excise duty evasion statistics: 2017 https://www.gov.uk/government/collections/vehicles-statistics
22 Nov	Final sea passenger statistics: 2016 https://www.gov.uk/government/collections/maritime-and-shipping-statistics
23 Nov	Transport Statistics Great Britain: 2017 https://www.gov.uk/government/collections/transport-statistics-great-britain
29 Nov	Rail fact sheet https://www.gov.uk/government/collections/rail-statistics
30 Nov	Travel time measures for the strategic road network and local 'A' roads: October 2016 to September 2017 https://www.gov.uk/government/collections/road-congestion-and-reliability-statistics
30 Nov	Provisional road traffic estimates, Great Britain: October 2016 to September 2017 https://www.gov.uk/government/collections/road-traffic-statistics
13 Dec	Domestic waterborne freight: 2016 https://www.gov.uk/government/collections/maritime-and-shipping-statistics
14 Dec	Annual bus statistics: year ending, March 2017 https://www.gov.uk/government/collections/bus-statistics
14 Dec	Concessionary travel statistics: year ending, March 2017 https://www.gov.uk/government/collections/bus-statistics

Forthcoming releases from Department for Transport

December	National Travel Survey factsheet
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<https://www.gov.uk/government/collections/national-travel-survey-statistics>

Releases from Office for National Statistics

26 Oct	National population projections: 2016-based
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<https://www.ons.gov.uk/releases/nationalpopulationprojections2016basedstatisticalbulletin>

26 Oct	Small area population estimates in England and Wales: mid--2016
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<https://www.ons.gov.uk/releases/smallareapopulationestimatesinenglandandwalesmid2016>

12 Oct	The 21st century mortality files: 2001 to 2016
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<https://www.ons.gov.uk/releases/the21stcenturymortalityfiles2001to2016>

11 Oct	Living abroad: dynamics of migration between the UK and the EU2
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<https://www.ons.gov.uk/releases/livingabroaddynamicsofmigrationbetweenbritainandtheeu2>

2 Oct	The UK environment – fighting pollution, improving our health and saving us money
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<https://www.ons.gov.uk/releases/theenvironmentfightingpollutionimprovingourhealthandsavingusmoney>

Releases from Eurostats

Sept 2017	Air traffic in the European Union 2015 (an on-line infographic showing traffic from airports)
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<http://ec.europa.eu/eurostat/cache/infographs/airports/>

14 August	Road freight transport methodology — 2016 edition (Revised edition, August 2017)
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<http://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-GQ-16-105?inheritRedirect=true&redirect=%2Feurostat%2Fweb%2Ftransport%2Fpublications>

26 May	Three quarters of EU freight transport by road
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<http://ec.europa.eu/eurostat/en/web/products-eurostat-news/-/DDN-20170526-1>

Seminar Write-up

TSUG 18 October 2017 – Growth in Rail Traffic

The presentations from the seminar on rail passenger growth are on the TSUG website. It's normal for the newsletter to carry a note of the question and answer session – but at this fascinating seminar, it was very much an ongoing discussion (which continued over coffee) rather than a question and answer. Myself, I think this is as it should be (as long as the presenters are happy with it – and they clearly were): we can all learn from each others' experience. Certainly there was plenty of it in the room.

Fitsum Teklu, of Systra, reported on his work updating the Passenger Demand Forecasting Handbook (PDFH). This was a compilation of research which allowed people to assess the incremental growth which might arise from things like cleaner trains, faster trains and nicer stations.

In discussing drivers of growth in passenger demand, he needed to convert them into attributes like time: he was asked how things like punctuality/reliability and crowding/capacity translated to a time saving value. Historically this had been done through stated preference research, although there had been some revealed preference work too.

The PDFH was not publicly available, probably because of its history – it started as a compilation of research funded and sponsored by BR, who did not want to let paid research out into the public domain. Even some of Fitsum’s slides had data removed, for reasons of confidentiality.

Fitsum commented that there was missing data – information on journeys within London was not available. This was important – there are many London-related journeys. With contactless tickets replacing paper ones, it should be easier to collect those data now.

One slide showed a divergence between reality and both PDFH and WebTAG forecasts (WebTAG draws on PDFH). Real passenger journeys increased faster than PDFH would have forecast – had we therefore been too cautious in rail investment schemes? Clearly, PDFH was missing some variables. It had seemed better at forecasting in the early part of the century than more recently.

This led to a question about the ‘inflection point’ – rail passenger journeys had steadily declined before privatisation and steadily increased afterwards. Could PDFH explain this? Road congestion and central London employment were clearly major factors.

David Metz noted that we were getting better at backcasting but he had seen few forecasts. The recent National Infrastructure Commission report forecast a slowdown in rail growth – was this supportable? Commuting and long-distance traffic seemed to be growing – why? There was some speculation that the latter might be marketing related. Scepticism was expressed about the theory that travel time was now more valuable because one could work on mobile devices: those with experience of commuting before the advent of such things recalled people reading (real) newspapers and books, and working on papers – travel time had always been valuable.

Carol Smales, TfL’s Rail Development Manager, spoke about the growth of the London Overground network (LO).

Some of the increases in traffic had come from switching – people using LO rather than alternative routes. There was a question about the extent to which her growth data included historic ridership on routes like the East London Line, now in LO. One histogram seemed to show that frequency increases were significantly more important than new trains (a comment was made that changes in satisfaction with the new trains – which had fewer seats and different seating arrangements - were not shown on her charts). There had been little growth recently on the old North London Line (NLL: the Richmond – Stratford) section: there was no obvious explanation.

There was undoubtedly a halo effect – as punctuality improved, people perceived other aspects of the service better too.

She thought that there were some places where longer trains (rather than higher frequencies) could be accommodated – but some stations would need rebuilding. Freight was an issue, especially on the NLL and Gospel Oak – Barking section: she wants to try to get this re-routed or retimed to reduce its impact.

There was some evidence of a switch from bus, and a smaller switch from car especially on the East London Line section. Strong growth had occurred on the West London Line, and (especially in the eastbound morning peak) from Stratford and Barking. Growth on the South London Line had exceeded expectations: predictions

about reductions when trains were diverted away from the original London Bridge – Victoria route had proved unfounded. Growth generally seemed to have been driven by interchange improvements and new travel opportunities – so, for example, there had been little growth on the Euston - Watford service. Fare integration ('connectivity') and frequency had both played a part too.

Crossrail was likely to have a big impact, especially at interchanges like Whitechapel, although LO, unlike DLR, was not expecting traffic losses.

Noise mitigation (necessitated by more frequent trains) was being investigated: lessons had been learnt.

The operating contract had been let on the basis that TfL took the revenue risk: this was so that the operator could concentrate on performance (and there was an incentive regime to push this).

Sophie Bennet (TfL finance) spoke on the last few months compared with the previous year and the budget.

She confirmed that her figures had been for real journeys (touch-in) and not numbers assessed on, for example, an average number /year for annual season tickets.

Members can find past seminar slides here: http://www.tsug.org.uk/past_seminars.php

General News

Letter to the Editor

Dear Editors

An item in TSUG Review for October 2017 asks, in the context of rail punctuality data, "Is right time right?"

This is a question I often had occasion to ask myself professionally, while working for London TravelWatch as (inter alia) the compiler of its quarterly reports on the performance of the National Rail network in the London area.

Until now the standard yardstick of punctuality has been the Public Performance Measure (PPM), which in the case of the London and south east and "regional" rail networks records the percentage of trains reaching their ultimate destination not more than five minutes late. For long distance trains, the margin allowed is ten minutes.

But because trains are advertised as arriving at specific times with no published margin of error, the PPM does not correspond to what the travelling public is led to expect, and there has been pressure to replace PPM with "right time" arrivals, i.e. the percentage of trains reaching their destinations within a minute of the advertised time. The government and rail industry have accepted the logic of this, and will be moving from PPM to "right time" arrivals in 2019 - though these still relate only to arrivals at trains' final destinations.

The main result of this will be to make the railways' punctuality record appear to be worse in the eyes of those beholders who do not understand the difference between these two measures. In itself, it will have no effect on passengers' actual experience. No train company has an internal target of anything less than on-time

running, not least because it will be penalised financially for “delay minutes” attributed to causes within its control – which include the dis/embarking of the physically disabled passengers, with whose needs the Scottish transport minister is (according to your news item) particularly concerned.

For this obvious reason, there is a strong positive correlation between the comparative results for the various operators as recorded by both measures. So in practical terms this is probably about as useful as a debate over whether the railways should switch from imperial to metric measures of distance. The absolute numbers will differ, but in relative terms there will be no change.

The only reason for running trains is to move people (or goods) to their desired destinations on time – and undifferentiated train punctuality statistics (measured only at termini) can at best be only a poor proxy for a statistic designed to record their success in achieving this end.

What the data take no account of (as currently published) is the fact that usage of trains varies enormously by route, direction, and time of day/year. With-flow peak trains will always be more heavily loaded than contra-flow or off-peak trains. Almost any train arriving at Waterloo or Liverpool Street will be carrying more people than any train terminating at Fishguard or Barton upon Humber. But the statistics are blind to this fact.

So my strong preference would be to leave these numbers on the operations managers' desks, and for public purposes to replace them entirely by a new measure derived from sampling a statistically valid cross section of passengers' journeys. The advent of electronic ticketing is gradually making such sampling a simpler and less labour-intensive task.

“Excess journey time”(EJT) is the difference between when people should have arrived (according to the timetable) and when they actually did, irrespective of whether or not they remained on the train to its final destination. It can, of course, be disaggregated by time and geography, but its focus is on the outcomes actually experienced by the passengers whose needs it is the purpose of the industry to meet.

The national rail industry has taken a first tentative step in this direction, by producing "average lateness" data which weight the numbers arriving at "main stations" by the punctuality to the nearest minute (plus a factor to allow for cancellations). But these are only disaggregated by country or by three very broad service sectors - not by the train companies, or specific routes, on which real passengers travel.

London Underground has pioneered EJT as its key measure of performance, and publishes it (4-weekly) for every line. So, DfT and Rail Delivery Group, what's stopping you?

Yours
John Cartledge

British Social Attitudes Survey 2016: Public Attitudes Towards Transport

This was published by DfT in late August, with some interesting headline figures – more people say they are willing to walk short distances (<2 miles), 45% think people should be allowed to fly as much as they like, 56% now think speed cameras save

lives, 50% think using mobile phones while driving is dangerous, and nearly 50% think speed cameras are mainly there to make money.

The percentage who never travel by train has dropped from 46% in 2002 to 33% in 2016: there has been little change in the percentage travelling by train once a week or more.

47% made no flights (compared with 52% in 2011 and 47% in 2007). 46% thought that the price of air tickets should reflect the environmental damage flying causes.

There are data about attitudes to road building which can be interpreted in various ways. Two-thirds of adults are fairly concerned or very concerned about road building in the countryside, but three quarters are either fairly concerned or not very concerned about this.

Obesity and Density

Edited from an article in CityLabs (https://www.citylab.com/life/2017/10/obesity-housing-density-suburbs-research/542433/?utm_source=nl_link1_101117&silverid=MzEwMTkyMzI5MTI4S0)

Living in a more densely built area significantly lowers your risk of obesity. Such is the unavoidable conclusion of a new survey of British cities that compares obesity rates with housing density. The study, carried out by specialists at the universities of Oxford and Hong Kong, found that obesity rates were markedly lower in areas where homes were more tightly clustered.

This might not come as a shock, given the health benefits of walkable neighbourhoods. What makes the study, published in medical journal *The Lancet*, truly groundbreaking is its sheer scale, collating data for over 419,000 respondents in 22 British metropolitan areas over a period of four years. While it would be mistaken to assume that observations made in the UK could apply everywhere, they make one thing clear: residents' health is highly likely to improve when sprawling suburbs are made more dense. As a graph in the study shows, it also breaks ground by matching obesity levels with specific rates of housing density. The graph's three tables cover BMI, waist circumference, and whole body fat mapped against the housing density for a given neighbourhood. It is controlled for age and gender, so, for instance, younger women living in dense and non-dense areas are being compared with each other rather than people from a different group.

The worst obesity rates, the study finds, are among people who live in areas with 1,800 homes/km². That's close to the typical density for London's more sprawling, low-density outer boroughs, whose average density of 1,590 dwellings/km² is brought down by the large areas of parkland and small areas of farmland still within the city limits. Below this density, obesity rates actually start to fall, the study finding that the lack of walkability for British people living in sparsely populated areas was compensated for by a relatively active lifestyle.

If obesity drops as homes cluster more closely together, there is a clear public health argument for densifying the suburbs.

Even people who live in very sparsely populated areas still had considerably higher levels of obesity than people who live in densely built cities. There's a cut-off point around 3,200 dwellings/km²: above that, people have consistently lower levels of obesity than their counterparts in very sparsely populated areas. (The UK currently recommends this level of density for all newly built districts.)

Moving further up the density scale, people living at the higher densities typical for inner London (which has an average of 4,500 dwellings/km²) have a notably lower average BMI, whole body fat, and waist circumferences that gives them a clear healthy edge over people living in areas of Britain where development is more sprawling.

So why is obesity less common in densely built areas? The obvious answer is walkability. When amenities are within easy walking distance there is, quite simply, more incentive to walk to them, while densely built environments can also de-incentivise driving because of their congestion and limited parking. The study's authors also suggest another factor.

"A highly compact dense residential environment might act as a proxy for enhanced community social capital and support," the report says. "The intangible stress-relieving potential of centrality, accessibility, and social capital needs to be further examined in view of their protective effects on obesity."

In other words, being at the heart of things, being able to get around easily, and having more opportunities to build wider social networks might actually boost wellbeing in itself by making life easier, as well as encouraging people to leave their homes more.

Despite its impressive size, the study's findings have some potential limits to their relevance that the authors themselves acknowledge. First, it may be the case that people actively seeking a sedentary lifestyle choose to move to less dense areas. The study counterbalanced this hypothesis by comparing obesity levels among newly arrived suburbanites and long-term residents. They found no difference between the two groups, implying (but, vitally, not proving) that the suburbs were not attracting people more prone to obesity.

The other limit is an interesting question that remains unanswered: is there an upward limit after which home density becomes so great that it actually encourages obesity? The study found no upward limit, but it used data only from the UK, where densities never reach the extremely high levels of some cities in South and East Asia.

What the study does suggest is nonetheless extremely important. If obesity drops as homes cluster more closely together, there is a clear public health argument for densifying the suburbs, providing that densification is mixed-use and thus also comes with a denser cluster of shopping, entertainment, and other amenities that make walking desirable.

The current recommended minimum density for new development of housing in the UK of 3,200 homes/km² might ensure that future neighbourhoods will have a layout somewhat less conducive to high obesity, though we could do better. Most British suburbanites nonetheless live—and will continue to live—in areas whose considerably lower density is often frozen by local planning laws and resistance from residents who fear reductions in property prices or possible congestion. It's possible that as the understanding that these environments are not especially healthy permeates through society, Britain's lower density neighbourhoods might prove more amenable to the home-building the country so desperately needs.

Public Transport Use in Germany

Edited from International Railway Journal



Passenger numbers on Germany's rail network continued to rise in the first half of this year as the growth in ridership on long-distance bus services came to an end, according to figures published by the federal statistics agency Destatis on September 21.

The data show overall public transport usage grew by 1.1% compared with the first six months of

Trams in Berlin

2016, with 5.8 billion passenger journeys between January and June. Total passenger-km travelled increased 1.8% year-on-year to 76.8 billion.

In line with trends in recent years, the regional and suburban (S-Bahn) sector saw the strongest growth, carrying 1.35 billion passengers (+3.4%) travelling 27.5 billion passenger-km (+3%). Urban rail (tram and U-Bahn) networks carried 2.05 billion passengers, a 2% increase compared with the first half of 2016

Urban and regional buses funded by transport authorities and local government saw a small decline in use (-0.3%) but with 2.71 billion passenger journeys remain the biggest single segment measured by passenger numbers.

Inter-city rail journey figures confirm the revival of DB Long Distance passenger numbers with 68 million passengers (+2.4%) travelling 19.4 billion passenger-km. Most of these passengers used DB services as open access operators HKX and Locomore together with international operator Thalys represent a small part of this total.

The development of long-distance bus passenger numbers appears to have flattened after three years of rapid growth following deregulation in 2013. Passenger numbers fell 0.5% in the first half to 11 million, although distance travelled increased by 2.9% to 3.2 billion passenger-km.

Statistical Pocketbook

The EU's statistical pocketbook for 2017 has been published, and can be accessed at <https://ec.europa.eu/transport/sites/transport/files/pocketbook2017.pdf>.

It has a section dealing with general EU statistics, a section on transport, and a section on the energy impact of transport. I ran out of enthusiasm after reading the first two!

Some of the statistics are from 2014. Employment in transport, for example, is one of these. In that year, 2.8m were employed in road freight transport, with German, Spain, Italy and Poland all employing over 300,000. 448,000 were employed in railways (with Poland, Belgium, Italy and Germany dominating) and 365,000 in air transport (with big numbers in France, the UK and Germany).

The number of enterprises by mode of transport is a table which is now more densely populated than it used to be: I have seen the old figures misused, so it's good to see that they are now more complete.

The UK isn't out of line when it comes to environmental taxes on fuel and transport, according to another table.

The EU had 51 road fatalities/million inhabitants: the US had 109 and Russia 160. The EU had 218,000 km of railway compared with China's 121,000, but 442bn passenger-kilometres by rail compared with 1196bn in China.

Road has consistently carried just under 50% of tonne-km of freight in the EU: rail has consistently carried about 12%. Figures vary a lot by country: in the UK those figures are 84 and 11!

Germany is by far the largest country in terms of rail freight tonne-km (116.6bn, over 25% of the EU total, and over twice its largest competitor – Poland, with 50bn).

Germany, France and the UK dominate with transport by tram and metro. The UK comes third in passenger-kilometres by rail, after Germany and France.

Paris – Toulouse and Madrid - Barcelona are the busiest intra-EU air routes (in terms of passengers carried): the top 4 international routes all touch London (to New York JFK, Dubai, Hong Kong and Los Angeles). The top 2 international routes are busier than the top 2 intra-EU routes.

There is a useful table of electrification types and track gauges.

Transit Growth in Rural Areas

Edited from CityLab (https://www.citylab.com/transportation/2017/10/how-transit-use-could-rise-in-rural-america/542184/?utm_source=nl_link3_101117&silverid=MzEwMTkyMzI5MTI4S0)

For rural Americans who don't have access to cars, basics like grocery shopping and doctor's appointments can turn into an arduous struggle. With few transit options at low densities, the expense and hassle of finding an alternative ride can mean important appointments simply get skipped. Rural communities increasingly reflect a group of people who don't drive—they're older, less mobile, and poorer. That's the gist of a new report by the American Public Transportation Association (APTA). While transit systems in large urban centres rightly draw most attention from advocates, ignoring the growing demand for service in far-flung towns risks shutting out some of the neediest would-be riders.

Ridership in rural areas, the report finds, has grown since 2007, which was the year the Bureau of Transportation Statistics began collecting data. Between that year and 2015, total rural ridership increased by 7.8%, compared to 2.3% in urban areas. In both categories, ridership has fallen off in 2015 and 2016, probably due to the recent drop in gas prices. But according to APTA, small-town passenger bases might be a little more resilient to those in big cities—as workers and families have left rural

America in search of opportunity, ridership rates/head have kept growing. It seems that's largely because as small towns shrink, those left behind are grayer than average—older Americans make up 17% of rural populations, compared to 13% in cities and 14% nationwide. Their share of rural populations is growing steadily, just as it is overall. Whether these individuals can “age in place” successfully depends in part on how well they can get around, especially once the car isn't an option. Numbers of drivers with licenses drop off after age 70, and accumulating health conditions impede a person's ability to control a vehicle.

Although car ownership rates are higher in rural parts of the U.S. than urban, so are poverty rates. Lower median incomes increase the cost of driving as a share of personal income: rural households spend about seven percentage points more of their budgets on transportation than those in cities.

These points underscore the value of transit—whether it's a traditional bus, or an emerging microtransit service—in America's least-connected places. Rather than promise to resurrect dying industries, lawmakers might serve their rural constituents better if they supported investments in mobility as a foundation of economic mobility itself, says Darnell Grisby, APTA's director of policy development and research. Perhaps there's a political calculus to be made, too: low-income older Americans may need transit, but they tend not to vote for candidates that support it. “These are the constituencies of the current president,” says Grisby.

The recent story of transit ridership is all about how you slice and dice the data. Thanks to demographic forces, rural areas are gaining a base of captive riders, for better or for worse. But rural transit use hasn't really been bucking national trends. Across the U.S., transit ridership has grown overall since before the Great Recession, but over the past two years, a drop in gas prices has knocked that trend line south in both rural and urban areas. Over the long run, establishing lasting ridership gains that aren't tied to fuel costs depends on quality of service. That's true for small towns and big cities alike.

Rail

Domestic Intermodal Rail Freight



Intermodal Train North of Oxford

A recent issue of Modern Railways listed domestic intermodal freight flows.

W.H.Malcolm run trains between Daventry and central Scotland, and central Scotland to Aberdeen (for Asda). J.G.Russell also operates between Daventry and central Scotland. DB Cargo have a Teesport - central Scotland flow, while Stobart (for Tesco) run between Daventry and

central Scotland, South Wales and Barking/Purfleet, and between central Scotland and Inverness.

Apparently Tesco's Anglo-Scottish rail traffic operates more reliably than the comparable road flow, and the 150km Daventry – Purfleet flow by rail is competitive with that by road.

Daventry, of course, is home to the Daventry Intermodal Rail Freight Terminal.

Driverless Trains

Edited from WSJ

Driverless trains hauling iron ore across Australia's Pilbara region were meant to transform the mining industry. Mainly because of software issues, the concept proved much trickier than companies expected, but a recent successful test run by Rio Tinto PLC suggests the automation strategy may finally be moving forward.

At the beginning of October, Rio Tinto said it had completed a pilot run of nearly 100km with trains operated from a control room hundreds of kilometres away. The AutoHaul project could now be on track for a late-2018 commissioning. Until now, Rio Tinto's trains have run about half of the distance across its Pilbara network in autonomous mode but with drivers still on board to oversee operations.

Driverless mining vehicles promise greater efficiency for an industry that continues to target costs. Rio Tinto and others have bet hundreds of millions of dollars on being able to control trains, drill rigs and massive trucks remotely. Rio Tinto said it has already seen the benefits from AutoHaul in increased train speeds and fewer stops which have cut more than an hour from average journey times.

The Anglo-Australian company is one of the world's top exporters of iron ore, and runs about 200 locomotives around some 1600km of track in the Pilbara region: these locos haul ore trains from 16 mines to four port terminals.

In early 2012, shortly after agreeing to buy at least 150 driverless trucks from Komatsu Ltd. over several years, the company said it would spend US\$518 million converting trains to driverless operation, and that this would be rolled out after two years. But testing has been a long drawn-out affair, and software problems early last year set the schedule back.

The recent autonomous test of the train was overseen from Perth, where Rio Tinto opened an operations centre in 2010. The centre is a control hub for a network of mines, and employees monitor events remotely through satellite links. A fully autonomous rail network still needs to meet safety criteria and receive regulatory approval.

Trains with AutoHaul technology will be able to operate continuously without shift changes and the company said they would improve safety, with trains responding automatically to speed limits and alarms. Across the Pilbara region, several drills are already controlled remotely, and about 20% of the fleet of 370 haul trucks is run autonomously.

In the first half of the year, Rio Tinto's Pilbara mines shipped 154.3 million tonnes of iron ore. That was a drop of 3% year-over-year after being affected by storms and rail-track maintenance, but it was more than offset by a surge in prices. It is targeting

about 330 million tonnes for the year, which would be only modestly higher than in 2016 and well short of the company's port capacity of 360 million tonnes.

GB Passenger Train Journeys

ORR recently released Q1, 2017/8 franchised operator passenger journey figures. At 415.3m, these are 20.8m (4.8%) down on the previous quarter's 436.1m.

There are only two big drops among individual operators – South West of 5.9m (to 52.1m) and Southeastern of 5.3m (to 41.6m). GTR dropped by 2.4m to 77.9m. London Midland dropped by 1.7m to 17.6m (so around 9%); Northern dropped 1.7m to 25.7m (around 6%).

Other falls seem to have been relatively small.

Passenger km, at 16.1bn, are little changed on the previous quarter's 16.3bn.

Platform/Vehicle and Platform/Guideway Safety



The Transport Cooperative Research Program recently published TCRP Research Report 189: Manual to improve rail transit safety at platform/vehicle and platform/guideway interfaces. If you are involved with this area of transport safety, it's worth looking at.

While general slips and falls in platforms or within

New Signage at the Heathrow End of Heathrow Express's Platform at Paddington

trains are more common than platform/guideway or platform/vehicle incidents, the latter are more likely to be fatal. The most common injury involved falling when boarding or alighting trains. Passengers getting caught in doors was common and needed more work – this had more potential for more serious injuries.

The analysis noted the need to separate by mode – heavy rail, commuter rail, light rail and streetcar all had different characteristics and needed separate analysis.

Platform height is a significant issue. There is a correlation between platform height and severity of injury. High platform systems (>3 feet from top of rail) have more reported injuries. When looking at platform incidents, there is a need to differentiate between gap-related and non-gap-related incidents. The former includes falling between train and platform or between cars. An increase in either vertical or horizontal gap between train and platform decreases door capacity. The alighting phase has slightly more injuries than the boarding phase. For every 1° of platform curvature, an additional inch of horizontal gap is needed to ensure trains don't hit platforms. There is a range of options for bridging the gap.

Weather is significant, according to RSSB data. When it is wet or icy, there is likely to be a 5% increase in incidents: when it is wet and icy, a 20% increase is likely. RSSB found young riders had a higher accident rate. New Jersey Transit (NJT) found those under 10 at high risk when boarding or alighting. Those over 50 also had a high level of gap incidents.

Three studies found a higher-than expected percentage of female incidents – 69% in NJT, 63% in RSSB and 61% in transit agencies responding to TCRP. This could be because they are more likely to report an incident, or are more likely to have buggies and young children as a distraction. RSSB suggest high heels contribute to instability.

Options for guideway intrusion detection include RF curtain, CCTV, thermal imaging or laser detection.

Commuter rail operations in the US are often on infrastructure shared with freight and need the platform edge set back.

There is an unhelpful difference between Federal Railroad Administration and Federal Transit Administration reporting requirements, especially for trespass and suicide.

US Rail Trespass Casualty Figures Up

Although the number of people injured or killed in vehicle-train collisions is on the decline, the number of pedestrian deaths and injuries in rail-trespass incidents is on the rise, [Operation Lifesaver Inc.](#) (OLI) announced recently.

In 2016, 1,104 people were hurt or killed in vehicle-train collisions, marking a 13.7% decrease compared with 2015, according to preliminary [Federal Railroad Administration](#) data released by OLI.

However, 980 pedestrians were killed or injured walking on or near tracks — a 12.9% increase over 2015.

VIA Rail Canada Ridership Record

Lightly edited from Railway Age

VIA Rail Canada set ridership records over the Canadian Thanksgiving weekend. From October 5th to 10th 2017, 193,900 passengers used VIA's four main services—Cross-Canada, Quebec-Windsor, the Montréal-Halifax *Ocean* and the Toronto-Vancouver *Canadian*. This was an average increase of 20.8% over the same period in 2016, excluding the *Ocean*, which rose 5%.

This gain was also reflected in revenues, which rose an average of 23.8% across all four services, compared to 2016. Passengers covered a total distance of more than 34 million kilometres on the 367 Cross-Canada Services trains that operated in that time period. October 6th was the busiest day, as 20,900 people travelled on the national network, generating C\$1.7 million in revenues, the most in a single day since 2009.

Results by service, compared to the 2016 Canadian Thanksgiving weekend, are:

- **VIA RAIL CROSS-CANADA SERVICES:** 97,300 passengers, a 20.5% increase. More than 34 million kilometres (21 million miles) travelled, a 20% increase, with a 21% increase in passenger revenue.
- **QUEBEC CITY-WINDSOR CORRIDOR:** 92,700 passengers, a 22% increase, with a 20% increase in passenger revenue.
- **TORONTO-VANCOUVER CANADIAN:** 2,600 passengers, a 20% increase, with a 39% increase in passenger revenue.
- **MONTRÉAL-HALIFAX OCEAN:** 1,300 passengers, a 5% increase, with a 15% increase in passenger revenue. Montréal, October.

Air

Aviation Market Fragmentation

From an article in the Financial Times



Ryanair Boeing 737 at Bergamo

The Europe aviation market is more fragmented than that in the US: in Europe, the top 6 airlines have 43% of the market, compared with 90% in the US. Europe has 217 airlines, North America 100.

The top European airlines (% market share of seats) are Ryanair (12.4), easyJet (9.3), Turkish (6.4), Lufthansa group (6.1) and BA (4.0). In the US, American Airlines has

22.8%, Southwest 21.5%, Delta 21%, United 15.8%, Alaska 4.6% and JetBlue 4%.

The article was responding to the collapse of Monarch: 80% of its business was in Spain and Portugal following a reduction in flights to its classical markets of Egypt, Turkey and Tunisia after terrorist attacks reduced tourism to those places. Spain saw an additional 16m aircraft seats in the last 2 years – including a 14% increase in 2016 alone. Spain is a mature market: it couldn't take the increase.

The fragmented market in Europe is less profitable: North American airlines generate about half of global industry profits.

Electric Aircraft?

easyJet has announced that it could be flying electric passenger jets on short-haul routes within a decade in a push to cut aviation-related pollution.

The airline said in March it would partner with U.S. startup Wright Electric to develop electric passenger jets, and is aiming for planes with a range of up to 335 miles (540 km), which could fly about 20% of easyJet's routes.

EasyJet said its support for electric planes was part of a broader strategy to reduce carbon and nitrous oxide emissions in the aviation sector, following the lead taken by the rail and automotive industries.

London – Edinburgh is 535km, London – Glasgow 555 and London – Düsseldorf 479.

Short-haul 747s

Lufthansa plans to operate Boeing 747-400s between Frankfurt and Berlin Tegel, citing high demand on the domestic route. The distance is 436km. The 747-400s will be configured with 67 business class seats and 304 economy/premium economy seats.

Starting November 1, the carrier will replace its Airbus A320/321s on select Frankfurt-Berlin flights. During November, more than 60 747-400 flights are planned on the route, which has a flight time of 45 minutes. Add ten minutes train journey from downtown Frankfurt, another ten to get from the station to security, an hour for check-in and 20 minutes by bus from Tegel to Berlin centre makes two and a half hours with no margin.

The average journey time by train is 4 hours 20 minutes, and the fastest 3 hours 41 minutes.

A possible reason for the use of intercontinental aircraft on a short route like this could be the lack of slots. Frankfurt is busy, and because of problems completing Berlin's new airport, Tegel is full.

The Passenger IT Trends Survey

This was published by SITA in association with Air Transport World: it uses a survey of air passengers internationally.

Almost 90% use self-service technologies to book their flight. 92% are satisfied with their check-in experience. 18% use a bag-drop. 90% are satisfied with their boarding experience.

98% of air passengers carry at least one mobile device, and the ability to use it increases satisfaction with their journey .

80% booked their flight on the web, 7% through an app and 13% face to face. 28% checked-in on the web, 5% through an app, 15% with a self-service kiosk, 6% using automatic check-in and 46% face-to-face. 47% used self-service baggage tagging.

Bag collection is the phase of the journey with the lowest satisfaction rating. Real-time bag collection information was received by 58% of respondents – by airport screens, announcements or by a message to their mobile phones. The latter option increased satisfaction scores by 10%.

United Continental Results



Boeing 737 at Washington Dulles

United Airlines recently announced its results for Q3, 2017. My spreadsheet produces a 4-quarter moving total for four key statistics: all of these are up on the previous quarter. Note that all figures are for 'mainline' operations: these are longer-distance flights directly operated by United, rather than regional flights operated on its behalf and under its brand by concessionaires.

Revenue, at \$26.265bn, is only just below the total for calendar year 2015 when my records start. All other 4-quarter totals are below this. Revenue passenger miles (192bn), available seat miles (232bn) and passenger numbers (107m) are all at record highs. It is notable that the high revenue in the 4 quarters to Q3, 2017 was earned from 191.9bn passenger-miles, whereas that for 2015 came from 183.6bn. Yield is dropping.

Finally, this is the fourth consecutive quarter when passenger numbers for the previous 4 quarters have exceeded 100m.

Road

Reported Road Casualties in Great Britain 2016 Annual Report

This was issued by DfT at the end of September.

The report (which uses the police STATS-19 reporting system) says that we can conclude that there has been a statistically significant decrease in the number of casualties of all severities in road traffic between 2015 and 2016. Safety on Britain's roads is improving. However, although the number of people killed in road accidents has increased between 2015 and 2016, the change is small enough to be explained by natural variations over time.

The injury figures for 2016 have been affected by reporting changes, so comparisons with 2015 and years before need caution.

1792 people were killed in reported road accidents in Great Britain in 2016. This is 62 up on 2015 – but the 4% increase is not statistically significant. About half of the increase occurred in Scotland. The total is the highest number reported in Great Britain since 2011.

181,384 casualties of all severities were reported in 2016 – this is 3% lower than 2015 and the lowest level on record.

In 2016, 46% of road deaths were car occupants, 25% pedestrians, 18% motorcyclists and 6% pedal cyclists.

Fatality rates/billion passenger-miles were 35.4 for pedestrians, 29.5 for cyclists and 104.5 for motor-cyclists (the 'vulnerable road user groups'); and 2.0 for car occupants, 0.4 for bus users, 0.8 for van users and the same for lorry users

448 pedestrians were killed in 2016, 40 more than in 2015. Of the pedestrian casualties, 36 % were between 15:00 and 19:00 and 26% were aged 15 or less.

319 motorcyclists were killed – down 13% from the 365 in 2015. While this is the lowest number on record, there is no clear trend.

69 children (aged 15 or under) were killed in 2016, up from 54 in 2015. 38% were pedestrians, 22% occurred between 15:00 and 17:00 on weekdays and 14% between 7:00 and 9:00 on weekdays. This is the highest number since 2009, but there is no clear trend.

The over-60 age group had 533 fatalities, up from 492 in 2015. The population in this age group is increasing (2016 numbers were 6% more than the 2010-2014 average).

The report suggests we can blame the weather for some of the increase – warmer and drier weather in 2016 probably led to 20 more fatalities than expected had long-term weather trends continued. This is likely to have affected motorcyclists in particular.

Around 12% of deaths involved at least one driver over the alcohol limit.

Several countries are in the European Transport Safety Council's Performance Index. Looking at road deaths/million inhabitants, GB is one of 4 countries with less than 30 (the others are Norway, Switzerland and Sweden).

2016 Fatal Motor Vehicle Crashes in the US

The National Highway Traffic Safety Administration published an overview of 2016 fatalities in October.

37461 people were killed in 2016, a 5.6% increase on 2015: the increase was spread across all segments of the population.

The number of passenger vehicle occupant fatalities is at its highest since 2008: motorcyclist fatalities were 5.1% up and again the highest since 2008. Pedestrian fatalities were up by 9%, and are the highest since 1990: cyclist fatalities (up 1.3%) are the highest since 1991. Vehicle miles travelled (VMT) were up 2.2% on 2015: the fatality rate (fatalities/100m VMT) increased by 2.6% from 2015 to 1.18.

The percentage of drivers involved in fatal crashes aged 65 and over was up 8.2% on 2015 at 372. Looking at a longer-term trend, the percentage was up 19.9% on 2007: there were 30.2% more people aged 65 or over and 33% more with driving licences in that age group.

The percentage of people killed inside the vehicle has decreased from 80% at the end of the last century to 67% now: the percentage killed outside the vehicle (motorcyclists, cyclists and pedestrians) has increased to 33%.

Fatalities in single-vehicle crashes increased by 5.9%, although distraction-affected fatalities decreased 2.2%. One would expect single-vehicle crashes to involve distracted drivers, so there is room for scepticism here (see also the 'Road traffic fatalities' article).

Alcohol-impaired driving fatalities increased by 1.7% from 2015. They account for 28% of total fatalities, the lowest proportion since records began in 1982.

14% of passenger vehicle occupants who survived fatal crashes were unrestrained (not wearing seat belts – not mandatory everywhere in the US): 48% of those who died were unrestrained.

Annual Assessment of Highways England's Performance April 2015 – March 2016

This was published by ORR in mid-July. Highways England has a number of performance indicators: this report considers progress against them.

The number of people killed or seriously injured on the strategic road network was 3.6% lower than in 2014: it is, however, above the trajectory needed to reduce the number by 40% (compared with the 2005-2009 average) by the end of 2020. The long-term downward trend was reversed in 2013 and 2014, and the 2015 total is higher than that in 2012. In 2015, 226 people were killed (7% up on 2014) and 1561 seriously injured (down 4.9%). The report comments that the DfT's analysis suggests the increase in numbers killed may reflect natural variation rather than an underlying trend.

Highways England is planning to identify the causation and contributory factors of all fatal and most serious collisions on the network in 2014.

Road user satisfaction (measured by the National Road Users' Satisfaction Survey NRUSS) is 89.3% - lower than the 90% target but better than the 88.5% in the previous year. There is a breakdown of elements of satisfaction (overall, safety, signage, general upkeep, roadworks management and journey time): while most show an improvement over 2014/5, only one – signage – scores better than 2011. Roadworks management scores low – 65% in 2015/6. Satisfaction by region show low scores in the north east and north west, and above-target scores only in the east and south west regions.

Transport Focus is developing a road user survey to replace the NRUSS – a Strategic Roads User Survey, which was due to launch early this year.

Network availability – the percentage of road lanes available as a percentage of total road lanes – was 98.4%, compared with a target of 97%.

Highways England cleared 86% of motorway incidents within an hour – above the target rate of 85%.

Average delay was 8.9 seconds/vehicle mile – so a 100 mile trip takes about 15 minutes longer than it should if there was no congestion.

Six air quality pilot studies were launched, to inform how to spend a ring-fenced air quality improvement fund.

Vulnerable road user casualties dropped – motorcyclists by 7% (from 917 to 849), pedal cyclists by 15% (179 to 153) and pedestrians 13% (182 to 158). I think this means that 65% of casualties on the strategic road network were vulnerable users. Ouch.

Highways England's funding settlement included an assumption of a 4% input price inflation: it is likely to be 0.5%, which could result in substantial savings in coming years. However since many contracts were already in place, those savings are unlikely to accrue immediately.

Domestic Goods Lifted in Selected Countries

The DfT published RFS0213 in October, showing quarterly trends for domestic goods moved by road in Germany, Spain, France, Italy, the UK and the EU28. This and other road freight statistics can be found at <https://www.gov.uk/government/statistical-data-sets/rfs02-international-road-haulage>.

The quarterly EU28 total for tonnes lifted fluctuates between 2700m and 4200m a quarter, with no very obvious pattern. The high was in Q2, 2007 at 4256m: the low (2742m or 64% of the highest quarter) was in Q1, 2013

In Q2, 2007, Germany saw 741m, Spain 610m, France 576m, Italy 409m and the UK 476m. In the low quarter, these were 508m or 69% of the highest quarter (Germany), 253m (41% - Spain), 436m (76% - France), 218m (53% - Italy) and 387m (81% - the UK). It is probably significant that the two southern European countries dropped by the largest percentages.

How Long?

The DfT has published guidance about the maximum length of vehicles now (October 2017) allowed on roads in the UK.

For a rigid goods vehicle, maximum length is 12 metres: for an articulated bus it is 15. For an articulated lorry, it is 16.5 unless it is carrying containers or semi-trailers as part of an international journey in which case it's 16.65. An articulated lorry with a low-loader can be 18 metres long, and an articulated lorry and trailer can be 18.75. That's 61.5 feet.

International Road Fatality Rates

DfT has recently published Table TSG0809 (RAS52002) which shows road fatalities by country and fatality rates/million population. The spreadsheet is at <https://www.gov.uk/government/organisations/department-for-transport/series/road-accidents-and-safety-statistics>

Great Britain's rate is 28.3 – way better than Northern Ireland at 42.9, and in the same range as Sweden (28.0) and Norway (28.8). Iceland is at 12.3, while at the other end of the scale the US is at 102.5 and Latvia 105.9.

Numbers of countries in each range are given below.

<19	1
<29	4
<39	5
<49	5
<59	7
<69	6
<79	2
<89	1
<99	4
<109	2

Provisional Road Traffic Estimates Great Britain July 2016 – June 2017

DfT published these in mid-September: the provisional figure of 325.1bn vehicle-miles travelled on Great Britain's roads in the year was 1.4% higher than the previous year, and rolling annual figures have increased each quarter for the last 4 years.

Car traffic was up 1.3% to a record 253.5bn vehicle miles: van traffic too saw a peak, of 49.8bn miles. Lorry traffic was down 1.5% at 16.5bn vehicle miles. Motorways saw new record traffic levels – 68bn vehicle miles – as did rural A roads and rural minor roads.

Road Traffic Fatalities in the US

Edited from an article in Bloomberg

Over the past two years, after decades of declining deaths on the road, U.S. traffic fatalities rose by 14.4%. In 2016, more than 100 people died every day in or near vehicles in America, the first time the country has passed that figure in a decade. No-one knows why crash-related deaths are increasing: people are driving longer distances but not tremendously so; total miles were up just 2.2% last year. People seemed to be speeding and drinking a little more, but not much more than usual. These don't explain the increase in road deaths.

There are however three big clues. One is the substantial increase in smartphone use by U.S. drivers as they drive. From 2014 to 2016, the share of Americans who owned an iPhone, Android phone, or something comparable rose from 75% to 81%. The second is the changing way in which people use their phones while they drive. Texting, Twitter, Facebook, and Instagram are the order of the day—all activities that require far more attention than simply holding a gadget to your ear or responding to a disembodied voice. By 2015, almost 70% of Americans were using their phones to share photos and follow news events via social media. In just two additional years, that figure has jumped to 80%. Finally, the increase in fatalities has been largely among bicyclists, motorcyclists, and pedestrians—all of whom are easy to miss from the driver's seat, especially if you're glancing up from your phone rather than concentrating on the road. Last year, 5,987 pedestrians were killed by cars in the U.S., almost 1,100 more than in 2014. That's a 22% increase in just two years.

Safety regulators and law enforcement officials certainly understand the danger of taking—or making — a phone call while operating a piece of heavy machinery. They still, however, have no idea just how dangerous it is, because the data just isn't easily obtained. And as mobile phone traffic continues to shift away from simple voice calls and texts to encrypted social networks, officials increasingly have less of a clue than

ever before. The National Highway Traffic Safety Administration (NHTSA) full 2015 dataset shows that only 448 deaths were linked to mobile phones—1.4% of all traffic fatalities. By that measure, drunk driving is 23 times more deadly than using a phone while driving, though studies have shown that both activities behind the wheel constitute (on average) a similar level of impairment. NHTSA has yet to fully process its 2016 data, but it said deaths tied to distraction actually declined last year.

There are many reasons to believe mobile phones are far worse than NHTSA suggest. Some of the biggest indicators are within the data itself. In more than half of 2015 fatal crashes, motorists were simply going straight down the road—no crossing traffic, rainstorms, or blowouts. Meanwhile, drivers involved in accidents increasingly mowed down small things, such as pedestrians or cyclists, many of whom occupy the side of the road or the sidewalk next to it. Fatalities increased a lot among motorcyclists (up 6.2% in 2016) and pedestrians (up 9%). In a recent study, the National Safety Council (NSC) found only about half of fatal crashes tied to known mobile phone use were coded as such in NHTSA databases. In other words, according to the NSC, NHTSA's figures for distraction-related death are too low. In another study of 3m people, it found drivers using their mobile phone during 88% of trips (the study excluded hands-free equipment).

NHTSA's data on mobile phone-related deaths is only as good as the data it gets from individual states, each of which has its own methods for diagnosing and detailing the cause of a crash. Each state in turn relies on its various municipalities to compile crash metrics—and they often do things differently, too. The data from each state is compiled from accident reports filed by local police. Most do not prompt officers to consider mobile phone distraction as an underlying cause. Only 11 states use reporting forms that contain a field for police to tick mobile-phone distraction, while 27 have a space to note distraction in general as a potential cause of the accident.

The fine print seems to make a difference. Tennessee, for example, has one of the most thorough accident report forms in the country, a document that asks police to evaluate both distractions in general and mobile phones in particular. Of the 448 accidents involving a phone in 2015 as reported by NHTSA, 84 occurred in Tennessee. That means a state with 2% of the country's population accounted for 19% of its phone-related driving deaths. As in polling, it really depends on how you ask the question.

Christopher Sanchez, a national expert on distracted driving, said many police departments still focus on drinking or drug use when investigating a crash. Also, finding out whether a mobile phone was in use at the time of a crash is getting trickier every day—proving that it precipitated the event can be even harder to do. Prosecutors have a similar bias. Currently, it's illegal for drivers to use a handheld phone at all in 15 states, and texting while driving is specifically barred in 47 states. But getting mobile phone records after a crash typically involves a court order and, and even then, the records may not show much activity beyond a call or text. If police provide solid evidence of speeding, drinking, drugs or some other violation, lawyers won't bother pursuing distraction as a cause.

Lawmakers, investigators and prosecutors won't prioritize the danger of mobile phones in vehicles until they are seen as a sizable problem—as big as drinking, say. Yet, it won't be measured as such until it's a priority for lawmakers, investigators and prosecutors.

The Unintended Consequences of the Jones Act

The 97-year old Jones Act provides that goods being shipped between two ports in the US must travel in ships built and registered in the US and manned by US crews.

Coupled with the recent boom in shale oil production, this has led to an increase in imports and exports of oil in the US. If oil was merely transported between two US ports, shipping would be more three to four times more expensive (because of the Jones Act provisions) – so more is being exported to other countries and imported from other countries, something which can be done in non-US flagged ships.

A trivial complication is that there are no crude oil pipelines between the production areas in the central states and consumption and refining areas on the East Coast.

The US liberalised trade in crude oil at the end of 2015, and gave shippers temporary tax relief to offset the higher costs which the Jones Act would impose. Shipments of crude from the US Gulf Coast to east coast ports were 50,000 barrels a day in 2015: this total nearly halved in 2016 and has halved again this year. Somewhat bizarrely, rail shipments of oil have also decreased.

Crude oil shipments from the US to countries other than Canada have trebled since 2015, to an average of around 325,000 barrels/day. Imports from countries like Nigeria and Angola are about 50% up on 2015.

In early October, the US was exporting a record 2m barrels/day of crude oil. At the same time, 0.9m barrels/day were being imported, mainly from Africa.