2015 Fare Benchmarking Report

NineSquared

General information only

Introduction

Bus, rail and ferry fares are often the subject of scrutiny and questioning by the customers who are most affected by price and product changes. With few or no alternatives other than private cars and taxis, transit customers are often at the mercy of the governments and operators who make the decisions about the prices to be charged for the services they provide.

The level of discussion and debate increases substantially when, as in recent years in Australia and elsewhere, fares have been increased above the Consumer Price Index (CPI). Higher than CPI fare increases understandably are not popular with transit customers. And with the increase in social media, customers are better able to make their views known to decision makers and the public at large.

This benchmarking survey is intended to contribute to the public debate about fares and fare levels. It uses publicly available data about public transport fares across 24 cities in Australia, North America, Asia and Europe to provide cities with information about where they sit relative to their peers.

Our approach

Comparing public transport fares across cities and countries is a difficult undertaking. Not only is it necessary to take into account different currencies and exchange rates, it is also necessary to compare different fare structures, concession pricing and products that are available in each of the cities and regions.

To address these issues, we decided to normalise the price of fares by comparing it to the minimum wage in each of the countries in the study. Using the minimum wage provides a means of estimating the cost of fares in each country in relation to an income measure in each country. We understand that this does not address many customers' actual incomes. For example, students and pensioners may be on a substantially lower income than someone on the minimum wage who works full time. The minimum wage in each country is also set by administrative or political means rather than the market and it is not necessarily the case that those who are employed at the minimum wage rate are able to enjoy the same standard of living across each of the cities and regions in the study. In this way, however, minimum wage rates are similar to public transport fares which, largely, are also set through administrative and / or political mechanisms.

Every city we included in our dataset had a statutory minimum wage rate. In some instances including Australia and Germany, the minimum wage is based on award rates. For the analysis we used the minimum wages for fast food workers and cleaners in Australia and Germany respectively. We used the minimum wage to determine the number of minutes a person would have to work in order to purchase a public transport ticketing in the city or region in which they live.

To address the number of different products, concessions and discounts available, not to mention the disparity in distances that can be travelled across the systems studied, we reviewed publicly available information on public transport fares and pricing from 24 cities in Australia, Europe, Asia and North America to create a database of fares, fare products and the discounts that are available to customers in each of the cities. We then compared the number of minutes that would need to be worked, at the minimum wage, to purchase travel across as number of pricing scenarios including lowest and highest priced products and a scenario that reflects the average distance travelled in South East Queensland.

Pricings scenarios

1. 'single zone', return fare available in each city or region (low cost scenario)
2. 'highest zone' return fare available in each city or region (high cost scenario)
3. Cost of a 15km fare in each city or region (average trip scenario)

Pricing is not the only comparator, of course. A more complete benchmarking exercise might take into account service frequency and coverage to provide a more complete value for money assessment. This, however, is beyond the scope of this report but may be considered in future benchmarking reports.

Benchmarked cities and regions

Twenty-four cities across North America, Europe, Asia and Australia and New Zealand were included in this benchmarking study. These cities represent a range of medium and large sized public transport systems that provide a mix of transport modes including rail, bus and ferry services.

Fare facts

While there were 24 cities included in the study, a number of cities charged different fares for different modes of transport. These cities included Sydney, Beijing, London, Paris and Chicago. As a result, while there were only 24 cities, 29 fare systems were included in the benchmarking.

Of these systems included in the study, 16 had flat fares. The remaining 13 calculated fares in relation to the distance travelled, either through the explicit zones or with reference to the kilometres of travel.

While each of the cities and regions in the study offered a range of ticket products to their customers, the only fare product that was universally offered was a single fare ticket. Monthly tickets were offered by 12 of the transit systems while 10 offered a weekly product and 1 offered weekly capping.

Four of the systems, Darwin, Los Angeles, Portland and Glasgow offered both weekly periodical tickets and 10 trip tickets. Longer terms period tickets were offered by only a small number of the benchmarked cities.

Figure 1 Fare structure

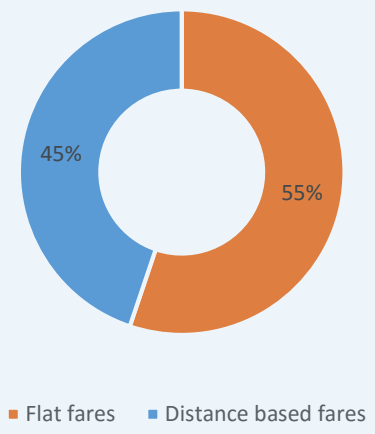
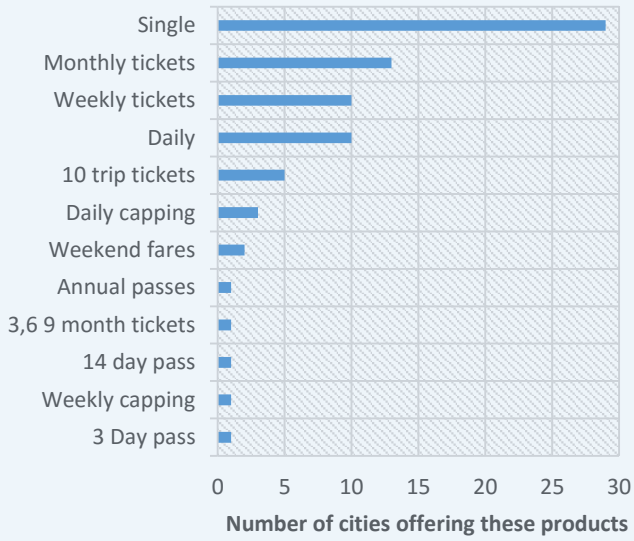


Figure 2 Product structure



City and regional characterisitcs

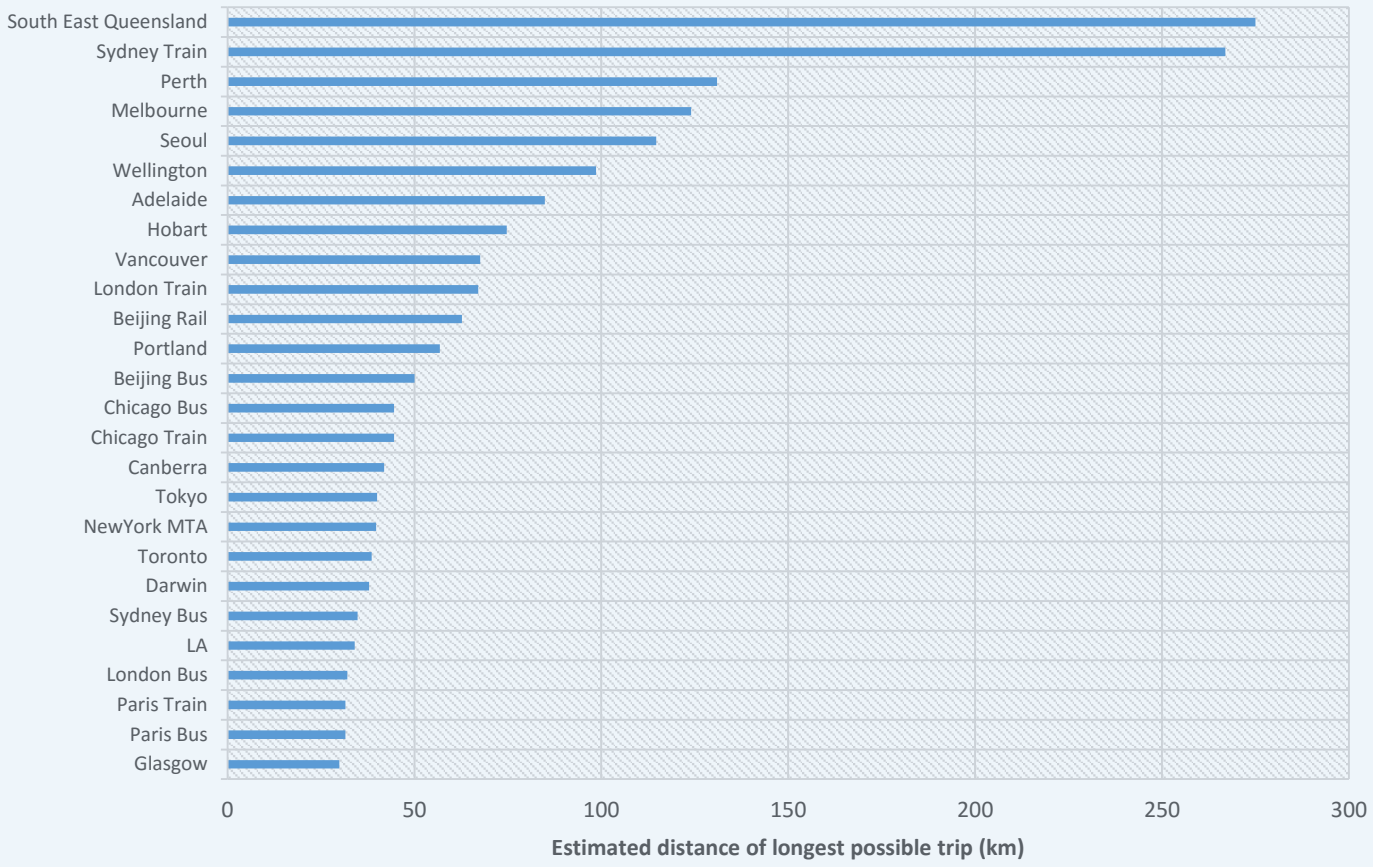
The 24 cities in the study are of a various geographic and economic scales. Differences in population, population density, employment, economic activity and geographic distance can all impact on the financial viability of public passenger transport in a city.

From the perspective of benchmarking of fares, population density can have a significant impact on the cost of using public transport for customers. Greater density may mean, for example, that a customer does not need to travel as far to access the economic and social opportunities that the travel offers. On the other hand a less dense city or region may require longer (and depending on the fare structure, more expensive) trips to be made by customers. This disparity is reflected in average trip lengths on public transport which, in London, for example, are between 1.3 and 1.6 kilometres[i] while in the less dense South East Queensland region, the average trip on public transport is 15.4 kilometres[ii].

At the same time, a less dense urban structure and a larger land area may mean that public transport operators also have to provide services over longer distances if they are to transport customers to activity centres. Of the cities included in the study, Australian cities generally provide services over longer operating distances than most other cities in the benchmarked group. At the same time, Australian cities account for eight out of the top ten least dense cities.

	City / Region [iii]	Population	Land area (km)	Density (pop per km)
1	Tokyo	37,843,000	8,547	4,400
2	Jakarta	30,539,000	3,225	9,500
3	Seoul	23,480,000	2,266	10,400
4	Beijing	21,009,000	3,820	5,500
5	New York	20,630,000	11,642	1,800
6	LA	15,058,000	6,299	2,400
7	Paris	10,858,000	2,845	3,800
8	London	10,236,000	1,738	5,900
9	Chicago	9,156,000	6,856	1,300
10	Toronto	6,456,000	2,287	2,800
11	Berlin	4,069,000	1,347	3,000
12	Sydney	4,036,000	2,037	2,000
13	Melbourne	3,906,000	2,543	1,500
14	South East Queensland	2,818,000	2,854	987
15	Vancouver	2,273,000	1,150	2,000
16	Portland	1,976,000	1,357	1,500
17	Perth	1,751,000	1,566	1,100
18	Auckland	1,356,000	544	2,500
19	Glasgow	1,220,000	368	3,300
20	Adelaide	1,140,000	852	1,300
21	Canberra	382,000	472	900
22	Wellington	370,000	184	2,000
23	Hobart	171,000	269	600
24	Darwin	73,000	216	300

Figure 3 Estimated distance of longest possible public transport trip



Results

The shortest trip

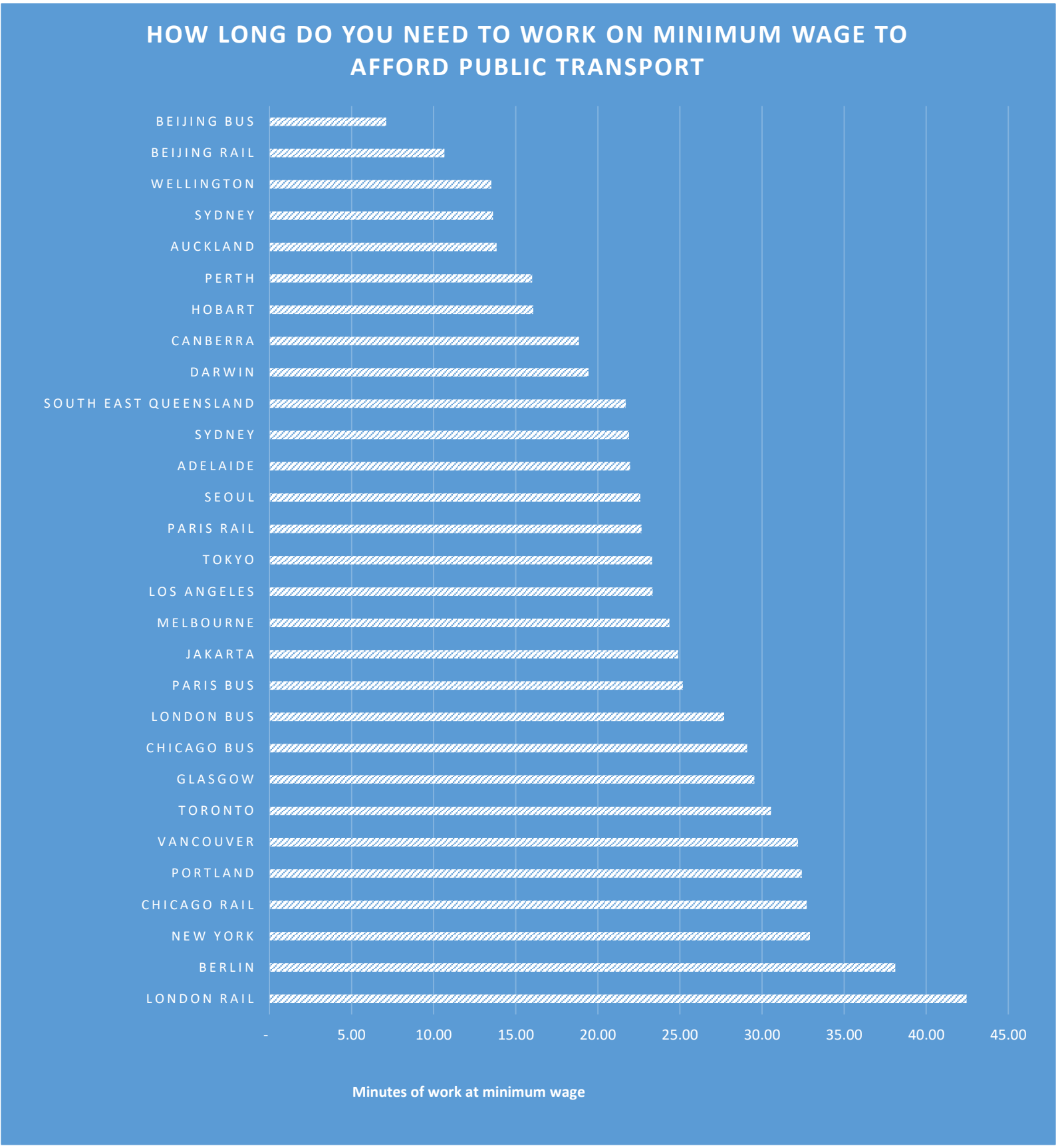
The initial benchmarking is based on the lowest fare. At shorter distances, Australian capital cities appear to represent good value for money compared to the cost of using public transport in other cities, ranking between 13th and 26th most expensive. London is the most expensive city requiring more than 42 minutes of labour at the minimum wage rate to make 1 zone return journey. At the other extreme, Beijing requires its workers to spend just 7.1 minutes to be able to afford a single zone journey.

City ranking – lowest fare

Rank	City	Mode	Single Fare	Wage rate	Minutes needed to be worked for a return ticket
1	London	Tube	£2.30	£6.50	42.46
2	Berlin	All modes	€2.70	€8.50	38.12
3	New York	All modes	$2.75	$8.75	37.71
4	Chicago	Rail	$2.25	$8.25	32.73
5	Portland	All modes	$2.50	$9.25	32.43
6	Vancouver	All modes	$2.75	$10.25	32.20
7	Toronto	All modes	$2.80	$11.00	30.55
8	Glasgow[1]	Bus	£2.00	£6.50	29.54
9	Chicago	Bus	$2.00	$8.25	29.09
10	London	Bus	£1.50	£6.50	27.69
11	Paris	Bus	€2.00	€9.53	25.18
12	Jakarta	BRT	Rp3500	Rp16875	24.88
13	Melbourne	All modes	$3.76	$18.52	24.36
14	Los Angeles	All modes	$1.75	$9.00	23.33
15	Tokyo	Rail	¥170	¥850	23.29
16	Paris	Rail	€1.80	€9.53	22.67
17	Seoul	Rail	1050 won	5580 won	22.58
18	Adelaide	All modes	$3.39	$18.52	21.96
19	Sydney	Rail	$3.38	$18.52	21.90
20	South East Queensland	All modes	$3.35	$18.52	21.71
21	Darwin	Bus	$3.00	$18.52	19.44
22	Canberra	Bus	$2.91	$18.52	18.86
23	Hobart	Bus	$2.48	$18.52	16.07
24	Perth	All modes	$2.47	$18.52	16.00
25	Auckland	All modes	$1.70	$14.75	13.83
26	Sydney	Bus	$2.10	$18.52	13.61
27	Wellington	Bus	$1.66	$14.75	13.51
28	Beijing	Rail	¥1.5	¥16.9	10.65
29	Beijing	Bus	¥1	¥16.9	7.10

Notes:

1. Glasgow price is for a single ticket but the return ticket costs £3.2 and this is the amount that is used in the calculation. Glasgow was the only city in the study that offered a return or daily product that is less than the price of two single tickets.


HOW LONG DO YOU NEED TO WORK ON MINIMUM WAGE TO AFFORD PUBLIC TRANSPORT
BEIJING BUS
BEIJING RAIL
WELLINGTON
SYDNEY
AUCKLAND
PERTH
HOBART
CANBERRA
DARWIN
SOUTH EAST QUEENSLAND
SYDNEY
ADELAIDE
SEOUL
PARIS RAIL
TOKYO
LOS ANGELES
MELBOURNE
JAKARTA
PARIS BUS
LONDON BUS
CHICAGO BUS
GLASGOW
TORONTO
VANCOUVER
PORTLAND
CHICAGO RAIL
NEW YORK
BERLIN
LONDON RAIL
-
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
Minutes of work at minimum wage

Making multiple trips

The analysis on the previous page does not include consideration of additional discounts that many transit providers offer customers when purchasing multiple tickets. Of the cities included in the analysis, 12 offered ten trip tickets, weekly tickets or weekly capping. Four cities, Darwin, Glasgow Los Angeles and Portland offered both 10 trips products and weekly products.

In general, weekly tickets are priced above simply purchasing 10 trips which are often sold at a discount to the single ticket price. Alternatively some product offerings include caps on the cost of daily or weekly travel, as is the case with TransLink in South East Queensland which caps the cost of travel across the week once nine trips have been taken in the period between Monday and Sunday.

Number of minutes at minimum wage that would need to be worked to pay for multiple tickets, weekly and monthly passes

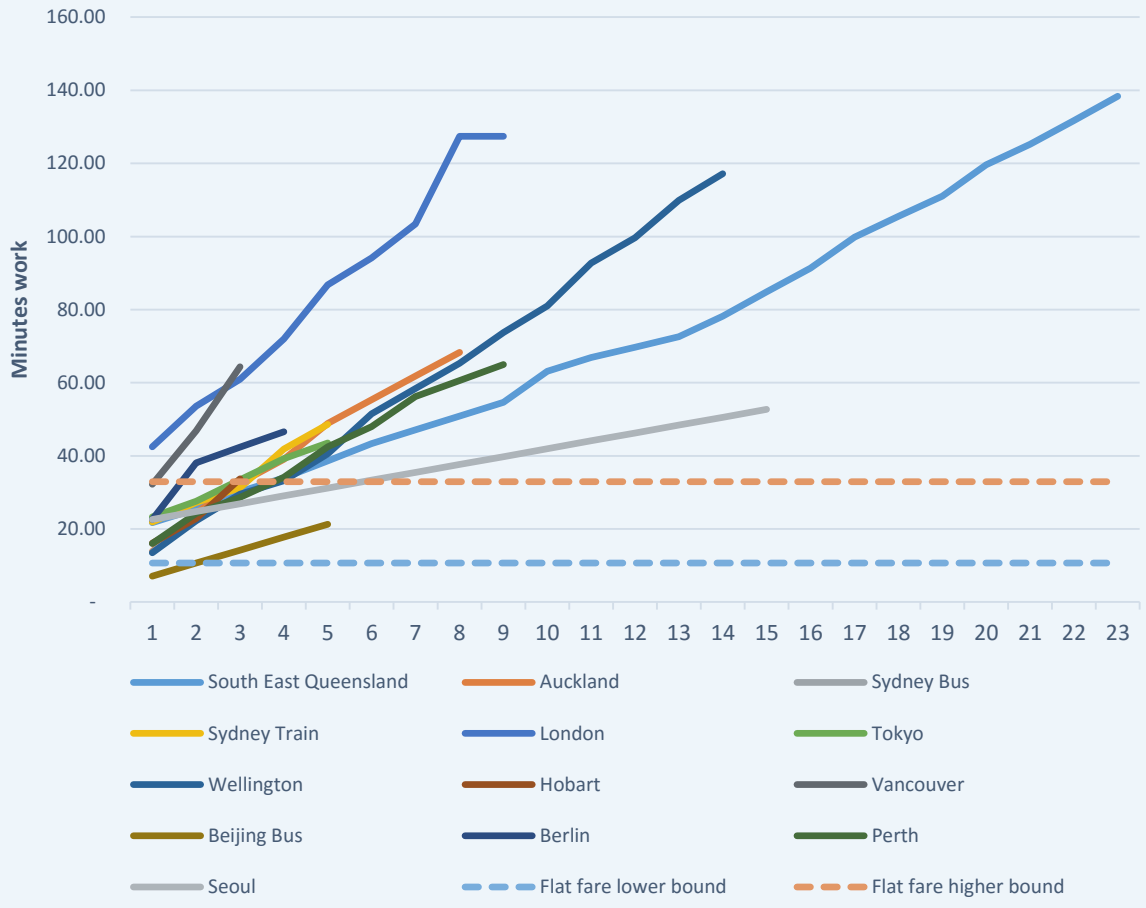
Original Rank	City	10 trips	Rank	Weekly	Rank	Monthly	Rank
1	London (Tube)	212.3	1	296.3	1	1138.2	2
2	Berlin	190.6	2	208.2	6	-	-
3	New York	164.6	3	212.6	5	-	-
4	Chicago (Rail)	163.6	4	203.6	7	727.3	5
5	Portland	162.2	5	168.6	8	468.6	8
6	Vancouver	152.7	12	-	-	532.7	11
7	Toronto	145.5	6	222.3	4	771.8	3
8	Glasgow	166.2	7	156.9	10	424.6	13
9	Chicago (Bus)	138.5	8	240.0	3	727.3	5
10	London (Bus)	125.9	9	296.3	2	744.9	4
11	Paris (Bus)	124.6	10	133.8	13	422.5	14
12	Jakarta	122.9	11	-	-	-	-
13	Melbourne	121.8	13	121.8	15	449.0	12
14	Los Angeles	120.0	15	166.7		666.7	7
15	Tokyo	116.7	14	-	-	1221.2	1
16	Paris (Rail)	112.9	21	133.8	14	422.5	14
17	Seoul	109.8	16	-	-	-	-
18	Adelaide	109.5	17	-	-	-	-
19	Sydney (Rail)	97.7	18	155.5	11	-	-
20	South East Queensland	94.3	19	-	-	-	-
21	Darwin	94.0	26	64.8	16	-	-
22	Canberra	88.8	20	-	-	-	-
23	Hobart	80.3	23	-	-	-	-
24	Perth	69.2	21	-	-	-	-
25	Auckland	67.5	24	-	-	559.5	10
26	Sydney (Bus)	64.8	27	155.5	11	610.2	9
27	Wellington	62.2	25	-	-	-	-
28	Beijing (Rail)	53.3	28	-	-	-	-
29	Beijing (Bus)	35.5	29	-	-	-	-

The longest trip

Just under half of the benchmarked cities and regions have distance based fares of some kind with the number of fare increments ranging from 3 (Sydney Bus, Hobart and Vancouver) to 23 (South East Queensland). With the exception of London and Vancouver, jurisdictions with distance based fares generally have shorter distance fares that are commensurate and in many cases lower than fixed fare cities.

The cost of these fares can, however, increase significantly above the level of even the highest fixed fare city in the study as can be seen in Figure 4. Indeed, leaving the analysis at this point would suggest that South East Queensland's are amongst the highest in the world when compared with the other benchmarked cities – at least if a customer is travelling 22 to 23 zones.

Figure 4 minutes of work required by fare increment



This analysis ignores the impact of distance, however. As seen in Figure 3, the maximum distance that can be travelled varies significantly across the benchmarked cities. As a result, while the longest South East Queensland fares would, indeed, require the longest amount of time spent working at minimum wage to pay for travel, there is no other city, other than Sydney, that offers customers a comparable journey distance, at least amongst the benchmarked cities.

To address this issue, we took into account the impact of distance by estimating the cost (in terms of minutes need to be worked) per kilometre of service for each of the longest possible trips for each of the jurisdictions. Data for this analysis was not available for Berlin, Auckland or Jakarta and they have been omitted from the analysis as a result. Other distance estimates were made on the basis of the road distance between stations or stops that were furthest apart and which could be travelled between for the fares included in each city's website. This means, for example, that intercity trains in the United Kingdom were not included but train travel between Newcastle and Wollongong in New South Wales was included.

Longest possible fare, unadjusted and adjusted for distance

Time required to be worked to pay for longest possible return journey

Rank	City	Unadjusted for distance (mins per trip)
1	South East Queensland	138.34
2	London (Tube)	127.38
3	Wellington	117.15
4	Auckland	68.34
5	Perth	64.99
6	Vancouver	64.39
7	Seoul	52.69
8	Sydney (Train)	48.60
9	Berlin	46.59
10	Tokyo	43.48
11	Hobart	33.69
12	New York	32.91
13	Chicago (Train)*	32.73
14	Portland*	32.43
15	Toronto*	30.55
16	Glasgow*	29.54
17	Sydney (Bus)	29.16
18	Chicago (Bus)*	29.09
19	London (Bus)*	27.69
20	Paris (Bus)*	25.18
21	Jakarta*	24.89
22	Melbourne**	24.36
23	Los Angeles*	23.33
24	Paris Metro*	22.67
25	Adelaide*	21.97
26	Beijing (Bus)	21.30
27	Darwin*	19.44
28	Canberra*	18.86
29	Beijing (Rail)*	10.65

Time required to be worked adjusted for distance of longest possible return journey

Rank	City	Adjusted for distance (sec per km)
1	London (Tube)	113.91
2	Wellington	71.29
3	Glasgow	59.22
4	Vancouver	57.15
5	London (Bus)	51.87
6	Sydney (Bus)#	50.27
7	New York	49.68
8	Paris (Bus)	47.97
9	Toronto	47.48
10	Chicago (Train)	44.05
11	Paris Metro	43.17
12	Los Angeles	41.13
13	Chicago (Bus)	39.15
14	Portland	34.25
15	Darwin	30.77
16	South East Queensland	30.18
17	Perth	29.77
18	Seoul	27.56
19	Hobart	27.06
20	Canberra	27.00
21	Adelaide	15.52
22	Melbourne	11.79
23	Sydney (Train)	10.92
24	Beijing (Rail)	10.19

** Fixed fare systems*

*** Melbourne has been included as a fixed fare system despite having a lower fare for travel exclusively in Zone 2 and a higher fixed fare for travel in Zone 1 or 1 and 2.*

 # based on Sydney Bus (STA) distance estimates

An average trip

The concept of an average trip is specific to location. In London, the average trip on bus is around 3.5km. In Sydney, the average bus trip in 2011-12 was reported as 6.7km while the average train trip was higher at 17.1 km[iv.] For the purposes of the benchmarking, we have used the average distance travelled on public transport In South East Queensland, a distance of 15.4 km[ii].

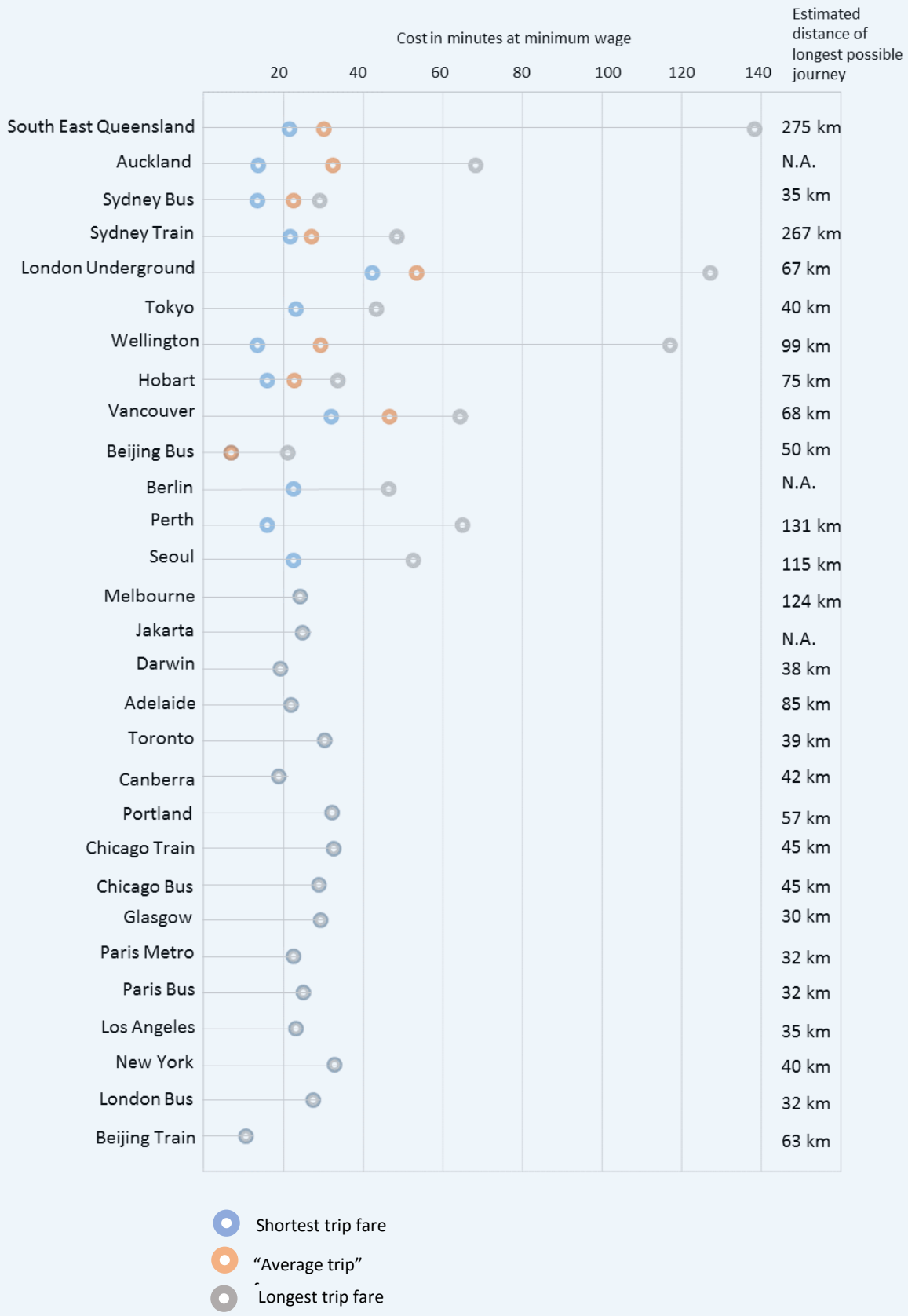
In this regard, 15.4 km is approximately a 3 zone trip in the Brisbane Metropolitan area of the South East Queensland transit area[v]. To benchmark the cities in the study, we estimated the fare that would be required in each of the cities to travel from the centre of the city to a distance of approximately 15.4 km on an 'as the crow flies' basis.

Figure 5 (next page) extends this analysis by estimating the cost of travel (in minutes worked at the minimum wage in each city) for the average trip in each city that has distance based fares. Data for estimating the average trip in each city is generally based on household travel survey data for each of the cities.

Minutes required to be worked to pay for a return fare for an 'average' trip

Rank	City	Minutes required
1	London (Tube)	86.77
2	Auckland	39.05
3	Berlin	38.12
4	Tokyo	33.46
5	New York	32.91
6	Chicago (Train)	32.73
7	Portland	32.43
8	Vancouver	32.20
9	Toronto	30.55
10	South East Queensland	30.19
11	Glasgow	29.54
12	Sydney (Bus)	29.16
13	Chicago (Bus)	29.09
14	London (Bus)	27.69
15	Sydney (Train)	27.21
16	Paris (Bus)	25.18
17	Jakarta	24.89
18	Seoul	24.73
19	Melbourne	24.36
20	Perth	24.23
21	Los Angeles	23.33
22	Paris (Metro)	22.67
23	Adelaide	21.97
24	Darwin	19.44
25	Canberra	18.86
26	Hobart	16.07
27	Wellington	13.51
28	Beijing (Rail)	10.65
29	Beijing (Bus)	10.65

Figure 5 Summary of the lowest, average and longest fare



Conclusion

Public transport agencies are required to balance a number of competing objectives when it comes to setting fares. In this regard, not only is the level of the fare important but also the structure of the fare and product suite that allows customers to obtain the best fare for their travel. Balancing these objectives is made more difficult by having to take into account how customers travel and the geography and urban form that affects that travel as well as the overriding need to achieve a budget outcome that funds the continued provision of services.

We have not attempted to address any of these issues in this report. What we hoped to have done is provide a comparison across a number of cities both in Australia and internationally to allow policy makers some sense of where individual jurisdictions sit with respect to some of their fares policies. We believe that our approach provides a more meaningful indicator than approaches based on, for example, purchasing power parity, which while useful in providing an overall indicator of prices relative to other countries, is not as useful when looking at specific elements of public transport fares from the perspective of policy making.

We hope that the report is useful for those involved in fares policy. We also hope to publish future and expanded editions of this study and would welcome comments for improvements.

notes

[i] Transport for London: Travel in London Supplementary Report: London Travel Demand Survey (LTDS), 2011
[ii] Department of Transport and Main Roads, Public Transport Travel, May 2012
[iii] Demographia World Urban Areas, 11th Annual Edition 2015
[iv] Bureau of Transport Statistics 2011/12 Household Travel Survey Summary Report, 2013
[v] Note that the Brisbane zones are generally smaller than zones in other parts of South East Queensland which would mean that 15.4km trip could be made using just two zones which would reduce the cost of the trip further.

data sources

Public transport fares

http://www.firstgroup.com/ukbus/glasgow/tickets/return/
http://www.kias.re.kr/sub06/sub06_06.jsp
http://www.chinadaily.com.cn/china/2014-12/28/content_19183282.htm
http://www.transport.nt.gov.au/public/fares-concessions-and-subsidised-travel
https://www.adelaidemetro.com.au/Tickets/Fares#Concession_and_Tertiary_Student_Fares
https://ttc.ca/Fares_and_passes/Prices/index.jsp
http://www.action.act.gov.au/fares/bus-fare-increase
http://www.metlink.org.nz/tickets-and-fares/
https://at.govt.nz/bus-train-ferry/fares-discounts/bus-train-fares/
http://www.transitchicago.com/fares/
http://www.tokyometro.jp/en/ticket/types/regular/index.html
http://parisbytrain.com/paris-train-metro-week-pass-navigo-decouverte/
http://media.metro.net/riding_metro/fares/fares_English.pdf
https://www.tfl.gov.uk/fares-and-payments/fares/
http://translink.com.au/tickets-and-fares/fares/current-fares
http://web.mta.info/metrocard/mcgtreng.htm
http://www.transportnsw.info/sites/en/tickets/ticket-types/train.page
http://www.transportnsw.info/sites/en/tickets/ticket-types/bus.page
http://ptv.vic.gov.au/tickets/metropolitan-myki-fares/
http://www.berlin.de/en/public-transportation/1772016-2913840-tickets-fares-and-route-maps.en.html
http://trimet.org/fares/
http://www.metrotas.com.au/fares/
http://www.translink.ca/en/Fares-and-Passes.aspx
http://www.globalmasstransit.net/archive.php?id=9756
http://www.transperth.wa.gov.au/Tickets-Fares/Fares

Minimum wage rates

http://www.wageindicator.org/main/salary/minimum-wage/
http://www.saranghaekorea.com/2014/08/south-koreas-government-announces-raise.html
http://www.business.govt.nz/laws-and-regulations/employment-regulations/minimum-pay
http://stats-japan.com/t/kiji/11521
https://www.gov.uk/national-minimum-wage-rates
http://www.fairwork.gov.au/awards-and-agreements/awards/list-of-awards
http://www.ncsl.org/research/labor-and-employment/state-minimum-wage-chart.aspx

About NineSquared

NineSquared is a specialist advisory firm supporting companies and governments to make and implement great decisions. We provide economic, commercial and public policy advisory services that are underpinned by the use of data and evidence.

NineSquared provides clients with economic, commercial and strategic advice in relation to transport. Our principals, directors and consultants have significant experience in working in, and advising clients on, both passenger and freight sectors and across both public and private sectors. Our experience, expertise and skills cover economic research and analysis, commercial advisory services and public policy development and analysis.

NineSquared's focus on transport economics includes significant experience in the economics and policy issues relating to pricing. Our public transport related pricing experience includes working on fare policy development, demand forecasting, revenue and patronage modelling and the estimation of price and service elasticities for a range of private and public sector organisations.

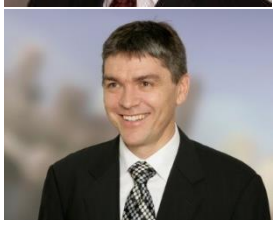
Roles undertaken by our principals and consultants in this sector include leading the development and operation of TransLink and the TransLink Transit Authority as well as senior roles in the broader passenger transport business of the State Government. These roles allow us to bring a strong understanding of the economic and political realities of the passenger transport sector and have seen us working with participants from small scale community transport services to the largest bus and rail operators in Australia.

Our combined experience in the public sector, spanning more than 45 years, means that we understand the issues facing the public sector and the processes within which those issues are resolved. We bring this experience and expertise to bear on each of our client engagements, whether it be working directly for the public sector or working with private sector clients who are engaging with the public sector.

For more information

Nine-Squared Pty Ltd
Level 6, 243 Edward Street
Brisbane QLD 4000
GPO Box 21
Brisbane QLD 4001 Australia
www.ninesquared.com.au

Robin Barlow
Director
m. +61 (0) 0409 878 984
rbarlow@ninesquared.com.au



Tom Frost
Director
m. +61 (0) 414 316 656
tfrost@ninesquared.com.au

NineSquared