

# Beyond the inner ring: air, coach and train services to regional centres further from state capitals

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## Abstract

Upgraded long distance passenger rail services, if and when implemented, will interface with a complex existing system of air, coach and train services. Drawing on publicly available service information and interviews in late 2021 and early 2022 with 17 regional centre councils, the paper analyses the capital city routes of 62 larger regional centres, located 200 or more kilometres (km) from a state capital. All routes in scope have one or more of coach, train or combined train and coach service. Between 200 and 349 km from state capitals, 30 per cent also have air service. Convenient same day return transport, essential for regional centre functioning, including for visits by medical professionals, is in this distance band provided by self-drive and, where in place, air transport. Rail service was regarded as too slow, unreliable and/or infrequent for this purpose, while improvements were seen as important. From 350 km, over 90 per cent of routes have air service. As at lesser distances, councils sought an early return to higher, pre-COVID-19 frequency levels. Airfare affordability, for personal/family travel, was also of some concern. Where in place, rail service was valued for servicing elderly, lower income and non-time poor passengers. Beyond 1,000 km, where self-drive is largely not a viable travel alternative in many circumstances, air transport affordability is problematic in locations that are not also low cost airline-receiving tourism centres. Implications for future planning include that: upgraded passenger rail services should connect, as a first priority, to larger regional centres within around 350 km of capital cities; and capped airfares to capital cities, as under a new Western Australian scheme, are important for affordable travel on non-tourism routes over the longest distances.

## 1. Introduction

In recent years alternative futures for long distance passenger rail transport in Australia have been outlined: on the one hand, faster rail services between major capital cities and surrounding regional centres, such as Geelong, Gold Coast and Newcastle (National Faster Rail Agency 2022), on the other, high speed rail connections between the east coast capitals of Brisbane, Sydney, Canberra and Melbourne (AECOM et al 2013).<sup>1</sup> Whichever is implemented in coming years, or if both are implemented,<sup>2</sup> new services will interface with a complex existing air, coach and train long distance system. Design strategy for the new is likely to be better if based on the best understanding of what is already in place. In focusing on the service profiles of

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<sup>1</sup> High speed rail involves track and train speed capabilities in excess of 250 kph, whereas the terms ‘faster’ and ‘fast’ rail indicate sub high speed rail objectives. NFRA (2022) defines faster rail as involving operating speeds up to 160 kph, i.e. within the capability of many of today’s trains, if often beyond that of the infrastructure.

Glazebrook (2021) states that ‘fast’ rail denotes operating speeds of up to 180 kph on suitable alignments and using trains such as the Talgo 250 Dual, that are also able to operate on electrified lines at speeds up to 250 kph.

<sup>2</sup> Michell, Martin and Laird (2014) and Glazebrook (2021) propose fast rail as a stage towards high speed rail.

regional centres further from, rather than closer to, capital cities, this paper aims to advance discussion of the service distances that may be most appropriate for upgraded rail. It also aims to add to knowledge of service needs that can arise at different distances from capital cities.

The paper has a two-part approach. Firstly, it adapts a quantitative service profile methodology, used previously in Potterton (2019, 2021), to analyse regional centre-capital city routes in up to four modes: air, coach, train and combined train and coach. The routes in scope link Australian Bureau of Statistics ‘significant urban areas’ (SUAs) located 200 or more kilometres (km) from a state capital city<sup>3</sup> with their own capital city and also with any nearer state capital city. There are 62 such SUAs, each with a minimum population of 10,000 people (ABS 2021).

Routes are analysed by mode, state and ‘distance band’. The mode suite includes self-drive. With 50 per cent of passenger kilometre travel outside capital cities undertaken by private vehicle,<sup>4</sup> the comparison between self-drive journey speeds and public transport journey speeds is a relevant reference point. The ‘distance band’ concept draws on Steer Davies Gleave (2004), which sets out the distances over which conventional rail, high speed rail and air are, on international experience, each successively the fastest mode. Chen and Hall’s (2012) analysis of the economic impact of the United Kingdom’s upgraded trains, with towns categorised as ‘within one hour’, ‘within two hours’ and ‘over two hours’ from London, also has influence.

The paper, secondly, reports the qualitative findings from a set of interviews with regional centres covering a selection of the 62 SUAs. The interviews, undertaken between November 2021 and March 2022, explored satisfaction with the existing long distance service profile, desired improvements in services and the potential economic and social impacts of these improvements, were they to be implemented.

In terms of structure, the paper first introduces the service data set and the service indicators. It then outlines the three distance bands, followed by the service indicator analysis. Next, the regional centre interview research is introduced and findings detailed. The paper concludes with implications for policy and planning and suggestions for further research.

## **2. Introducing the service data set**

The data set comprises four service indicators on each of 71 routes. 62 routes connect SUA regional centres located 200 or more km by road from the state capital city with that capital city. A further nine routes connect these regional centres with any nearer state capital city, where that distance is also 200 km or more. To illustrate, both Grafton-Sydney (610 km) and Grafton-Brisbane (333 km) are included. The data set also includes two general indicators: population and (Google Maps) road distance to/from the capital city.

### **2.1 Service frequencies**

For each public transport mode, services were counted, for all relevant carriers, over a full week in March 2022. Counting commenced in February 2022, for a ‘booking’ week 14 to 21 days ahead. Counted services are limited to direct routes, rather than indirect ones.

### **2.2 Journey speeds**

Average self-drive journey speeds were calculated by means of the Google Maps distance and travel time, for the quickest road routing as measured from the regional centre starting point on weekday mornings (7am to 8am AEDT) during March 2022.

<sup>3</sup> Strictly, the capital cities of the six states and the Northern Territory. The Australian Capital Territory has no eligible regional centres. However, Canberra-Queanbeyan, a cross-border SUA, is included.

<sup>4</sup> BITRE 2021 Tables 5.1 and 5.3i and author analysis, for the pre-pandemic year of 2018-19.

Public transport journey speeds were calculated by reference to the scheduled service time and the mode distance (i.e. air, road – for both coach and combined train and coach – and rail). Where a route has more than one operator in a mode, the indicated service speed is that of the operator with the highest service frequency. Whereas competing airlines advise the same service time on all direct routes, for other modes it is sometimes necessary to choose among alternatives. The most frequently occurring time is selected.

### 2.3 Distance-standardised and absolute value fares

Fares included in the dataset are based on the least expensive, changeable – usually for a fee and not refundable – non-concession, adult single fares. For each operator on each route, the fare applying to a majority of the services is selected and, failing that, a ‘middle’ fare.<sup>5</sup> The highest or lowest fare on the route is not chosen, unless also a ‘majority’ fare. Distance-standardised fares (i.e. per 100 km) are calculated by reference to the mode route distance. As with service speeds, the value for the highest frequency operator is shown.

In all modes, absolute dollar fares increase with distance. In most modes, this is a statistically significant relationship: that is, the association is unlikely to be due to chance (Table 1). Accordingly at different distances to capital cities, absolute dollar fares are also analysed.

### 2.4 Relationships between indicators

Table 1 lists relationships (correlations) between route service indicators and regional centre population and capital city distance indicators. Statistically significant relationships exist between distance and speed in self-drive and air modes and between distance and absolute value fares, in air, coach and train. Distance and train frequency are negatively associated, as are distance and distance-standardised airfares. Correlations are also statistically significant between population and frequency of air, coach and total services.

**Table 1: Correlations between route service indicators by mode and regional centre indicators**

	Frequency pw	Journey speed kph	Fare \$	Fare \$/100 km
<b>SELF-DRIVE (n=71)</b>				
Distance to capital city		0.35 ( <i>p</i> <0.01)		
Population		0.05		
<b>AIR</b>				
Distance to capital city	0.08	0.89 ( <i>p</i> <0.01)	0.65 ( <i>p</i> <0.01)	-0.73 ( <i>p</i> <0.01)
Population	0.73 ( <i>p</i> <0.01)	-0.01	-0.12	0.15
<b>COACH (n=42)</b>				
Distance to capital city	-0.28	0.08	0.84 ( <i>p</i> <0.01)	-0.24
Population	0.79 ( <i>p</i> <0.01)	0.21	-0.07	-0.08
<b>TRAIN (n=39)</b>				
Distance to capital city	-0.43 ( <i>p</i> <0.01)	0.12	0.87 ( <i>p</i> <0.01)	0.02
Population	0.08	0.10	0.26	0.08
<b>TRAIN AND COACH (n=27)</b>				
Distance to capital city	-0.32	0.18	0.67	-0.31
Population	-0.23	0.07	0.27	-0.09
<b>TOTAL (PUBLIC TRANSPORT) (n=71)</b>				
Distance to capital city	-0.04			
Population	0.83 ( <i>p</i> <0.01)			

P-values below 0.05 (0.01) indicate there is a less than 5 (1) per cent probability respectively that the observed relationship is due to chance and is not statistically significant.

### 2.5 All routes table

Table 2 details self-drive speed, service and general indicators for the 71 routes in scope. Routes are listed alphabetically by state, commencing with New South Wales (NSW) routes.

<sup>5</sup> Rather than necessarily a strict median, to avoid any need for fare averaging.

**Table 2: Regional centre-state capital routes, 200 km minimum distance to capitals, self-drive speeds, service and general indicators, February-March 2022**

ROUTE TO STATE CAPITAL CITY <sup>1</sup>	Length (road km)	Pop 2020 000s	SELF-DRIVE Speed kph	AIR			COACH			TRAIN			TRAIN AND COACH			TOTAL services pw
				Services pw	Speed kph	Fare std <sup>2</sup> \$	Services pw	Speed kph	Fare std <sup>2</sup> \$	Services pw	Speed kph	Fare std <sup>2</sup> \$	Services pw	Speed kph	Fare std <sup>2</sup> \$	
Albury-Wodonga-Syd	554	96	100	37	348	37	7	72	20	14	70	11				58
Armidale-Syd	474	24	82	31	272	48				7	59	10				38
Armidale-Bne	464	24	80	4	334	47										4
Ballina-Syd	730	27	95	65	431	19	7	57	8				7	57	8	79
Batemans Bay-Syd <sup>3</sup>	280	17	71	18	236	66	7	47	16							25
Bathurst-Syd	200	38	71	1	248	72				7	55	12	36	49	5	44
Broken Hill-Syd	1,142	17	90	12	302	48				1	85	6	7	69	8	20
Broken Hill-Ade	414	17	89	2	414	40	2	77	9							4
Canberra-Queanbeyan-Syd	286	465	92	129	269	80	95	82	16	21	69	12				245
Coffs Harbour-Syd	525	73	94	37	350	41	7	59	13	21	58	9				65
Coffs Harbour-Bne	384	73	97	5	438	36	18	45	16	7	72	11	7	58	11	37
Dubbo-Syd	390	39	78	47	266	58				7	60	10	7	57	9	61
Forster-Tuncurry-Syd	305	21	86										7	36	5	7
Grafton-Syd	610	19	92	3	196	37	7	62	11	21	59	9				31
Grafton-Bne	333	19	93							7	82	10	7	62	10	14
Griffith-Syd	571	21	91	32	274	33				2	64	9	15	64	12	49
Griffith-Mel	333	21	88							2	50	17	21	70	10	23
Lismore-Syd	726	28	94				21	57	8				14	57	8	35
Kempsey-Syd	420	15	92				7	55	15	21	56	10				28
Mudgee-Syd	264	13	76	3	248	72							24	49	9	27
Muswellbrook-Syd	249	12	87							26	43	3				26
Nelson Bay-Syd	208	28	82				4	56	21							56
Orange-Syd	256	41	71	24	240	84				7	53	11	38	53	10	69
Parkes-Syd	355	11	74	6	287	59				1	51	11	39	46	10	46
Port Macquarie-S <sup>3</sup>	372	49	87	38	290	53	11	57	17	21	54	19				70
Singleton-Syd	200	16	87							38	45	4				38
Tamworth-Syd	406	43	85	19	294	46				7	66	19				26
Taree-Syd	313	26	90	1	260	57	7	55	19	21	57	11	21	52	9	50
Wagga Wagga-Syd	461	57	96	33	314	52				14	70	17	5	51	17	52
Wagga Wagga-Mel	452	57	95	11	312	46				14	98	18				25
Albury-Wodonga-Mel	326	96	96	11	257	58	7	74	25	35	81	13	12	73	13	65
Bairnsdale-Mel	282	16	82							19	73	14	12	65	14	31
Echuca-Mel	223	22	85				10	74	14	14	64	14	32	62	14	56
Horsham-Mel	299	17	87							2	62	25	42	72	15	44
Mildura-Mel	542	52	92	34	342	46	6	63	10				10	66	10	50
Mildura-Ade	397	52	91	3	310	50										3

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ROUTE TO STATE CAPITAL CITY <sup>1</sup>	Length (road km)	Pop 2020 000s	SELF-DRIVE Speed kph	AIR			COACH			TRAIN			TRAIN AND COACH			TOTAL services pw
				Services pw	Speed kph	Fare std <sup>2</sup> \$	Services pw	Speed kph	Fare std <sup>2</sup> \$	Services pw	Speed kph	Fare std <sup>2</sup> \$	Services pw	Speed kph	Fare std <sup>2</sup> \$	
Portland-Mel	351	11	83										25	68	13	25
Sale-Mel	217	15	82							14	74	14	24	61	14	38
Swan Hill-Mel	339	11	88							14	75	14	13	71	14	27
Wangaratta-Mel	251	19	93							29	81	13	5	69	13	34
Warrnambool-Mel	256	36	82							25	75	15	3	62	14	28
Bundaberg-Bne	362	72	78	17	324	58	11	45	17	19	78	15				47
Cairns-Bne	1,681	154	85	42	617	14	11	57	13	5	68	13				58
Emerald-Bne	830	14	87	30	435	44				2	51	14				32
Fraser Coast-Bne	255	83	74	18	230	89	11	42	16	19	66	25				48
Gladstone-Tannum Sands-Bne	516	46	77	34	371	45	4	48	29	10	81	17				48
Kingaroy-Bne	210	10	75										3	54	26	3
Mackay-Bne	953	80	84	54	531	18	11	56	15	5	71	17				70
Mount Isa-Bne	1,824	18	89	16	674	28	5	67	12							21
Rockhampton-Bne	617	79	80	44	443	33	18	50	16	14	81	16				76
Townsville-Bne	1,335	182	85	55	605	23	11	58	15	5	72	14				71
Mount Gambier-A	435	30	92	27	318	45	7	65	19							34
Mount Gambier-M	420	30	85	20	330	50							18	67	11	38
Port Augusta-Ade	308	13	91				13	73	20							13
Port Lincoln-Ade	649	16	93	28	295	71	3	66	19							31
Port Pirie-Ade	228	14	89				13	74	22							13
Whyalla-Ade	384	21	89	7	275	75	13	70	18							20
Albany-Per	418	35	87	18	321	49	7	48	20							25
Broome-Pe	2,047	14	91	10	673	18	2	59	18							12
Broome-Dwn	1,871	14	98	10	565	12	5	68	18							15
Busselton-Per	222	40	87				42	56	28							42
Esperance-Per	697	12	92	19	366	37	6	69	14							25
Geraldton-Per	419	37	96	12	369	56	16	70	17							28
Kalgoorlie-Per	594	29	89	26	461	37				9	89	16				35
Karratha-Per	1,527	17	97	44	625	30	3	45	20							47
Port Hedland-Per	1,629	15	95	41	635	28	3	78	18							44
Burnie-Hob	326	28	83				19	49	25							19
Devonport-Hob	281	31	90				19	52	26							19
Launceston-Hob	201	89	88				19	71	22							19
Ulverstone-Hob	297	15	89				19	51	26							19
Alice Springs-Dwn	1,496	26	98	12	651	28	7	68	20							19
AVERAGE	552	43	87	25	375	46	12	61	18	14	72	12	17	60	12	39
MEDIAN	390	28	88	19	324	46	7	58	17	14	72	13	13	62	11	34

1. Routes with public transport services to the capital of another, nearer state/territory are also shown. Broken Hill-Melbourne (836 km) and Mount Isa-Darwin (1,600 km) have no services.
2. Distance-standardised fare, per 100 km. Road distances are used for coach and combined train and coach fares per 100 km. For reasons of space, air and rail distances and absolute value fares are not shown.
3. Moruya Airport and Wauchope Station are 28 km and 19 km from Batemans Bay and Port Macquarie respectively.

### 3. Distance bands

All regional centre-capital city routes in scope have one or more of coach, train or combined train and coach service and, on average, 2.1 modes service each route (Table 3). Between 200 and 349 km, just 30 per cent of routes have air service. In contrast, 93 per cent of routes at higher distances have air service. Indeed, only one higher distance regional centre is further than 50 km from an airport offering capital city service: Portland, 351 km from Melbourne.

**Table 3: Modes on regional centre-capital city routes, with median service lengths, by distance band**

MODE	Median service length km	200-349 km	350-999 km	1,000+ km	Total
		(n=30)	(n=32)	(n=9)	(n=71)
Air	464	30%	91%	100%	65% (47)
Coach	420	43%	63%	89%	58% (42)
Train	372	53%	59%	33%	54% (39)
Train and coach	333	53%	31%	11%	38% (27)
Modes per route (average)		1.8	2.4	2.3	2.1

Accordingly, 350 km is adopted as the boundary between the first and second distance bands. In the lower distance band, all regional centres have self-drive access to the state capital city within six hours. In the middle band, centres continue to have a feasible, if less convenient, self-drive alternative available, in addition to air and surface public transport services.

The boundary between the second and third distance bands, 1,000 km, is that distance at which the self-drive alternative is considered inconvenient and not readily feasible in many journey circumstances. While more research could be beneficial, evidence from the regional centre interviews (Section 5) supports this choice.

Specifically, council interviewees at Rockhampton (617 km from Brisbane) and Esperance (697 km from Perth) indicated that self-drive to the capital, in each case involving a trip of up to eight hours, was a distinctly feasible option. In Mount Isa, a ten hour (904 km) drive to the nearest large regional centre, Townsville, is found to be still feasible, if more arduous. Responding to a recent Mount Isa City Council consultation process, a resident wrote: “My husband had to drive [my daughter, for representative sport] to and from training in Townsville every 2 weeks as airfares were too expensive”.<sup>6</sup> However, regarding travel to the capital, Brisbane (1,824 km), the same person reported: “For the [representative] carnival we had to drive 2 full days down and back as it was too expensive for all 4 family members to fly. This cost both parents an extra week’s annual leave to drive”.

Long distance travel in the upper distance band typically involves a choice between air travel on the one hand – the costliest mode in all distance bands, but with the highest absolute fares at these distances – and very time-consuming self-drive travel on the other. The latter necessarily involves advance planning, as well as a range of financial and non-financial costs.

Table 4 shows median route lengths and regional centre populations for the three distance bands.

<sup>6</sup> Mount Isa City Council community consultation regarding the high cost of airfares: emails, June 2021

**Table 4: Median regional centre route length and population, by distance band**

	200-349 km	350-999 km	1,000+ km	Total
<b>Route length km</b>	272	463	1,629	390
<b>Population</b>	24,026	32,177	18,310	27,535

## 4. Service indicator analysis

### 4.1 Frequencies

Population size is a statistically significant driver of air, coach and total service frequency (Table 1). The four largest regional centres in scope, Canberra-Queanbeyan (population 464,995), Townsville (181,859), Cairns (153,938) and Albury-Wodonga (96,075), have weekly frequencies to the state capital ranging between 58 (Cairns) and 245 (Canberra-Queanbeyan), compared to an all routes median of 32. In each case air services comprise at least 50 per cent of the total.<sup>7</sup>

Air-based tourism also drives service frequency. Ballina in northern New South Wales, with a busy tourism airport and a population of only 27,000, has the second highest weekly air service frequency in the data set (65), behind Canberra-Queanbeyan (129).

Median total frequencies are highest in the (middle) 350 to 999 km distance band (36 per week). While regional centre populations are highest at these distances (Table 4), a further factor is the relatively greater convenience of self-drive in the 200 to 349 km distance band. Consistent with this, there is an average of 1.8 public transport modes servicing routes in the shorter band, compared to 2.4 modes per route in the middle band (Table 3).

**Table 5: Regional centre-capital city median route weekly frequencies, by mode and distance band**

MODE	MEDIAN ROUTE WEEKLY FREQUENCIES			
	200-349 km	350-999 km	1,000+ km	All routes
<b>Air</b>	7	26	30	19
<b>Coach</b>	13	7	5	7
<b>Train</b>	17	14	5	14
<b>Train and coach</b>	17	12	0	13
<b>ALL MODES</b>	27	36	32	32

Victoria (VIC), with South Australia (SA), Tasmania (TAS) and Northern Territory (NT), have median regional centre populations below 20,000 (Table 6). Yet VIC has a high median weekly service frequency (35), behind QLD and NSW. VIC regional centre routes have the highest weekly train service frequency, at 15 and the second highest train and coach frequency (13). With a statistically significant negative relationship between train frequency and distance (Table 1) – indicative of the importance of traffic density for train economics (Amos and Bullock) – VIC benefits from a short median route distance (291 km).

### 4.2 Speeds

Median scheduled speeds for all surface public transport modes are at least 20 kilometres per hour (kph) less than corresponding self-drive speeds. Journey speed deficits are 31 kph for coaches, 27 kph for combined coach and train services and 16 kph for trains.

For surface modes, higher speeds are to be expected for longer distance routes, with lesser proportionate weighting of the more congested urban and near-urban parts of the journey. For

<sup>7</sup> Launceston is an exception. At 89,178 its population is fourth highest, while weekly coach service frequency to the capital, Hobart (201 km distant), is just 19. Weekly air service frequency to Melbourne is also 19.



**Table 6: Regional centre-capital city median route weekly frequencies, by mode and state**

STATE	MEDIAN ROUTE WEEKLY FREQUENCIES						
	Pop 000	Length km	Air	Coach	Train	Train and coach	All
NSW	26.4	390	32	7	7	15	38
VIC	18.1	291	36	8	15	13	35
QLD	58.6	724	34	11	8	3	48
SA	16.5	384	27	13			20
WA	23.2	645	18	3	7		24
TAS	29.2	289		19			19
NT	26.4	1,496	12	7			19

these modes, increases in median journey speeds between the first and third distance bands km and beyond band range from five per cent (self-drive) to 13 per cent (coach).

The comparable increase for air is 152 per cent. This reflects the lesser impact of takeoff and landing time – and of the allowance made in schedules for delays associated with these journey stages – as line haul time and distance increase. A further factor is greater use of faster jet aircraft, rather than turboprop fleet, on larger, longer distance routes.<sup>8</sup>

**Table 7: Route median journey speeds, by mode, including self-drive and by distance band**

MODE	MEDIAN ROUTE JOURNEY SPEEDS KPH				
	200-349 km	350-999 km	1,000+ km	All routes	Speed increase with distance
Air	248	330	625	324	+152%
Coach	56	58	63	58	+13%
Train	72	72	73	72	+1%
Train and coach	62	58	69	62	+11%
Self-drive	87	89	91	88	+5%

On a state basis, air service speeds are higher in the three geographically larger states, Queensland (QLD), Western Australia (WA) and NT (Table 8), reflecting these same air-related factors. Train service speeds are lower in NSW than in the other states with train service (VIC, QLD and WA), reflecting, in particular, the continuing impact of steam era winding alignments (Laird 2014, Lee 2009).

**Table 8: Regional centre-capital city median route journey speeds, by mode and state**

STATE	MEDIAN ROUTE JOURNEY SPEEDS, KPH			
	Air	Coach	Train	Train and coach
NSW	281	57	67	53
VIC	345	69	75	68
QLD	443	53	72	54
SA	295	70		
WA	461	59	98	
TAS		52		
NT	673	59		
AVERAGE	375	61	72	60
MEDIAN	324	58	72	62

### 4.3 Fares

Whereas median distance-standardised fares in the three surface public transport modes are largely uniform across the distance bands, airfares decline sharply, from \$69/100 km below 350 km to \$28/100 km above 1,000 km (Table 9). This is consistent with expectation regarding differing mode cost structures. As Zhang et al (2018) put it, “airport charges ... and costs associated with ground manoeuvring, ground handling and take-off and landing activities become relatively smaller per passenger kilometre as stage length increases”. In contrast,

<sup>8</sup> Average cruise speed for the widely used 74 seat Bombardier Dash 8 Q400 is 667 kph (Qantas 2022a), compared to 863 kph for the 180 seat Airbus A320 (Qantas 2022b).



coach and train operations involve, on the one hand, less complex ‘terminal’ processes and, on the other, extensive, linear ‘en route’ road and rail infrastructure (Steer Davies Gleave 2016).

Despite distance-standardised airfares declining with greater route distance, airfares on routes servicing centres further from capitals are almost invariably higher in absolute terms than those servicing nearer locations (Table 9, lower section). Higher fares, in the absence of a fast and convenient self-drive alternative, as travel distances approach and exceed 1,000 km, lend force to well documented concerns regarding air transport affordability in regional and remote Australia (Department of Transport 2020, Senate Rural and Regional Affairs and Transport References Committee 2019). In the upper distance band, there is a dichotomy between, on the one hand, tourism routes, deploying larger, high load factor aircraft (e.g. Cairns-Brisbane, Broome-Perth), with fares in the \$200 to \$300 range and, on the other, smaller mining centre routes (e.g. Broken Hill-Sydney, Mount Isa-Brisbane), with fares between \$360 and \$450.

**Table 9: Median route fares per 100km and absolute fares, mode and distance band**

MODE	MEDIAN ROUTE FARES				
	200-349 km	350-999 km	1,000+ km	All routes	Band 1 to 3 change
<i>Fare \$ per 100 km</i>					
<b>Air</b>	72	46	28	46	-61%
<b>Coach</b>	21	16	18	17	-15%
<b>Train</b>	13	13	13	13	+1%
<b>Train and coach</b>	13	11	8	11*	-37%
<i>Fare \$</i>					
<b>Air</b>	159	174	362	179	+90%
<b>Coach</b>	55	70	257	70	+261%
<b>Train</b>	35	71	189	53	+336%
<b>Train and coach</b>	62	58	94 <sup>1</sup>	62	+52%

\* Single route (Broken Hill-Sydney), rather than median

From a state perspective, SA stands out with high air fares at \$71 per 100 km, \$25 above the all regional centres median (Table 10). This reflects both use of smaller aircraft – with limited economies of density (Button 2010) – to service centres with small populations, as elsewhere and the unusual geography of the Spencer Gulf and Eyre Peninsula. Routes such as Whyalla-Adelaide and Port Lincoln-Adelaide combine short air distances with long road distances. SA regional centres also have the second highest coach fares per 100 km, behind those of TAS.

**Table 10: Regional centre-capital city median route fares per 100 km, by mode and state**

MODE	MEDIAN ROUTE FARES \$ PER 100 KM			
	Air	Coach	Train	Train and coach
<b>NSW</b>	50	13	10	9
<b>VIC</b>	42	12	14	14
<b>QLD</b>	33	15	16	26
<b>SA</b>	71	19		
<b>WA</b>	37	18	14	
<b>TAS</b>		25		
<b>NT</b>	28	18		
<b>AVERAGE</b>	46	18	12	12
<b>MEDIAN</b>	46	17	13	11

## 5. Regional centre interviews

Of the 62 regional centres in scope, 29 were invited for on-line interview. Selections provided for: a mix of locations with and without passenger rail service; a mix of distances from state capitals; and some centres closer to an interstate capital city than to the state capital. 17 councils<sup>9</sup> were interviewed (Table 11), a response rate of 59 per cent.

<sup>9</sup> The 17 acceptances covered 18 SUAs, with Fraser Coast Regional Council encompassing both Maryborough and Hervey Bay SUAs.

**Table 11: Regional centre (SUA) interviews by capital city distance band and passenger rail status**

200-349 km		350-1,000 km		1,000 km +	
With pass rail (5/16)	W/o pass rail (3/14)	With pass rail (4/19)	W/o pass rail (3/13)	With pass rail (0/3)	W/o pass rail (2/6)
AlburyCity (Albury-Wodonga NSW, VIC)	City of Busselton (Busselton WA)	Port Macquarie-Hastings Council (Port Macquarie NSW)	Shire of Esperance (Esperance WA)		Chamber of Commerce NT (Alice Springs NT)
Orange City Council (Orange NSW)	Mid-Western Regional Council (Mudgee NSW)	Tamworth Regional Council (Tamworth NSW)	Mildura Rural City Council (Mildura VIC)	Mount Isa City Council (Mount Isa QLD)	
East Gippsland Shire Council (Bairnsdale VIC)	Port Pirie Regional Council (Port Pirie SA)	Wagga Wagga City Council (Wagga Wagga NSW)	City of Mount Gambier (Mount Gambier SA)		
Horsham Rural City Council (Horsham VIC) <sup>1</sup>		Rockhampton Regional Council (Rockhampton QLD)			
Fraser Coast Regional Council (Hervy Bay, Maryborough QLD) <sup>2</sup>					

1. Horsham has Melbourne-Adelaide interstate Journey Beyond rail service and V/Line combined train and coach service.
2. The Fraser Coast Property Industry Association was also interviewed.

Regional centre-capital city routes of the interview group: had a similar median distance to that of all routes in scope (Table 12); were more likely to have air service; had a slightly higher total weekly service frequency; and featured median populations 50 per cent higher than that of all routes. It is possible this latter difference indicates greater administrative capacity in larger regional centres to respond to research invitations of this kind than in other centres. Responding councils may also be less satisfied than others with existing services.

**Table 12: Route indicators, interview group and all regional centres**

	Interview group routes	All routes (n=71)
<b>Median distance to capital city km</b>	397	390
<b>Median population</b>	40,888	27,535
<b>Total services pw</b>	41	34
<b>Route mode service:</b>		
<b>Air</b>	79%	66%
<b>Coach</b>	58%	58%
<b>Train</b>	53%	54%
<b>Train and coach</b>	42%	38%

## 5.1 Service problems and suggested improvements

### 5.1.1 200 to 349 km from state capitals

Albury-Wodonga, Fraser Coast, Mudgee, Orange all have air services to state capitals and Mildura (VIC) has air services in this distance band to Adelaide (SA). Mudgee and Orange both have below median speed road service into Sydney, as does Fraser Coast into Brisbane (Table 2), adding to the challenge of convenient self-drive day return travel. All of these centres viewed return to pre-COVID-19 air frequency levels as very important.

Albury-Wodonga, Fraser Coast and Orange, with the largest populations of the centres interviewed, have both air and train services. Bairnsdale and Horsham have train services (both without air), in Horsham's case comprising a twice weekly Journey Beyond *Overland* Melbourne-Adelaide service, rather than the VIC norm of V/Line regional service.

Regional centres with train services raised a number of issues with existing services:

- Slow travel times with poor reliability (Albury-Wodonga, Bairnsdale, Orange)

- Frequent replacement, without advance notice, of trains with coaches, adding to unreliability and with less journey amenity (Albury-Wodonga, Bairnsdale, Mildura)
- A slow winding track alignment into Sydney, with community upgrade proposals “to support fast passenger rail and freight rail services” (NSW Parliament 2019) backed by a petition signed by 10,000 persons (Orange)
- New V/Line train carriages that are seen as more suited to commuters and are less fit for purpose for longer distance travel, e.g. no baggage compartment (Bairnsdale)
- Timetable clustering in the middle of the day, precluding same day return travel to and from Brisbane (Fraser Coast)
- Very low frequency interstate service into Melbourne (two per week), precluding both same day and overnight return travel (Horsham)

Two regional centres interviewed, Busselton and Port Pirie, within 250 km of Perth and Adelaide respectively, have only coach service. With below median coach service frequency, above median fares and a low socio-economic profile, Port Pirie attaches importance to its government subsidised volunteer transport network that provides taxi-style transport to medical appointments in Adelaide. Mudgee (trips to Dubbo and Sydney), Horsham (Ballarat) and Mildura (Bendigo) also spoke of the importance of this service.

Improved passenger rail service was top overall transport priority for Albury-Wodonga, Bairnsdale<sup>10</sup> and Orange. Albury-Wodonga has experienced service disruption during years of now completed (broad to standard) gauge conversion on the North East line to Melbourne.<sup>11</sup> Orange seeks track, timetabling and other improvements that could enable same day return train service to Sydney. Beyond the reach of the V/Line rail network, Horsham seeks a ‘rail shuttle’ service that would use the existing interstate standard gauge line to connect with regional V/Line broad gauge trains at Ararat, a distance of 110 km. In contrast, Busselton, Mudgee, Fraser Coast and Port Pirie attached the greatest importance to duplication, city bypass and other upgrades of road routes connecting to capital cities and larger regional cities.

Affordability of public transport was of quite low concern for regional centres in this distance band, reflecting the proximity of destinations and convenience of the self-drive alternative.

### **5.1.2 350 to 999 km from state capitals**

All eight centres interviewed in this distance band have air services to the state capital. Similarly to centres closer to capitals, a return to pre-pandemic service frequency of five to six per weekday was seen as very important.

Esperance and Mildura, drew attention to a limited affordability of air fares, Mildura noting the region’s low socio-economic profile. In contrast, the self-drive alternative is highly feasible for many in and around these two centres, as elsewhere, given driving times of eight hours to Perth and six hours to Melbourne respectively. As at lower distances, driving offers both ‘last mile’ transport to reach the destination and travel convenience following arrival. In addition, where the opportunity exists, many will drive a distance in order to access an airport with low cost airline service: Port Macquarie noted passenger leakage from its own airport to Coffs Harbour, 160 km to the north and to Newcastle, 244 km to the south.

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<sup>10</sup> Improved freight rail through Melbourne is equally important for Bairnsdale. A day curfew for freight trains transiting Melbourne to the Port of Geelong contributes to high numbers of heavy vehicles on the road system.

<sup>11</sup> A new gauge-related issue is access for North East Line standard gauge trains to the future Sunshine Station Melbourne Airport Rail Link interchange, planned under a joint VIC and Commonwealth project to accommodate broad gauge line trains only (Fletcher and Allan 2022, Ryan 2021).

Mildura commented further that the coach service time to Melbourne had recently lengthened to over eight hours, express buses from the interchange point of Swan Hill to Melbourne having been withdrawn. Passenger amenity could be improved with the coach terminal being opened more than 30 minutes before a 3am departing coach service. Rockhampton commented that a seven hour or more coach journey can be “too long” for people with health conditions: the council has advocated for a subsidised air service to and from Longreach in Central West Queensland, 698 km from Rockhampton.<sup>12</sup>

In this distance band, both coach and train are considered too slow where time is constrained. Tamworth’s daily train service to Sydney provides good service and is enjoyed by older people in particular. Port Macquarie noted the Sydney-Brisbane train service is heavily used by tertiary students travelling to Newcastle. Patronage could benefit from better integration with the local bus network: the station at Wauchope is 25 minutes distant, yet only one of three daily services has a connecting bus.

A number of regional centres raised improvement issues, while stopping short of identifying specific actions. Esperance would like to see larger aircraft than the 36 seat Saab 340, to avoid situations where, in poor weather and with a higher fuel load requirement, two seats are left empty. However, larger jet aircraft could require runway lengthening and retaining the frequency that smaller aircraft allow is also important. Wagga Wagga has found that, as a Commonwealth (RAAF) owned airport, it is ineligible to apply for government terminal upgrade grants that would benefit passenger amenity and security. In rail, Mildura is one of six councils which have advocated to restore passenger rail service to Maryborough, a distance of 391 km and connecting through to Melbourne.<sup>13</sup> Along with three other regional centres, Mildura’s highest priorities relate to local public transport.

### **5.1.3 1,000 km upwards from state capitals**

Alice Springs, 1,496 km from Darwin, 1,534 km from Adelaide and Mount Isa, 1,824 km from Brisbane, are both beyond a convenient capital city self-drive distance, with a minimum two days needed for the journey. In addition, air travel is regarded as generally unaffordable for family travel. Mount Isa-Brisbane is the third longest route in the data set and, with a low passenger load factor at 48 per cent (BITRE 2022),<sup>14</sup> records the second highest fare.<sup>15</sup> Driving substantial distances to access lower air fares – at Ayers Rock (470 km from Alice Springs) and Townsville (906 km from Mount Isa) is a common practice.

Mount Isa is also the only regional centre in scope without public transport connection to its nearest, albeit still distant, interstate capital city – Darwin, 1,600 km away. While, as elsewhere, the main gravitational pull is towards the state capital, a Brisbane-Mount Isa-Darwin air service of years ago is remembered with appreciation (“Bands came in”).

In Alice Springs, a daily coach service between Adelaide and Darwin provides a slightly more affordable travel option than air service, used by younger people in particular. An express coach service, with a more drive-competitive travel time, could provide a valuable addition. As well as a coach service to Townsville, Mount Isa also has similarly low frequency passenger

<sup>12</sup> Longreach (population 3,386) has subsidised air service to Brisbane, a distance of 1,177 km.

<sup>13</sup> A viable passenger service would require attention to gauge disconnects, Mildura-Maryborough having been standardised, for freight use, through a joint VIC-Commonwealth program and with Maryborough-Ballarat-Melbourne a continuing broad gauge line. Gauge disconnects also compromise freight efficiency (Alsop 2022).

<sup>14</sup> In calendar 2021, the median passenger load factor for 56 larger routes where two or more airlines operate in competition in calendar 2021 was 60 per cent.

<sup>15</sup> \$438, behind Broken Hill-Sydney, \$445.

rail. However, with black soil, flood and other hazards along the route (Australian, Queensland and Northern Territory Governments 2018), line engineering remains challenging: a service time of over 20 hours is twice the self-drive travel time.

## **5.2 Better long distance public transport – what potential impacts?**

The most frequently cited benefit of improving long distance public transport, within 350 km of capital cities and also beyond, was better access and connectivity to health services. Firstly, visiting professionals require comfortable, convenient and reliable same day return travel options, which, in public transport terms, can, in principle, be provided by either air or rail. Fraser Coast, 255 km from Brisbane and with a self-drive journey speed of 74 kph, well below the all-routes self-drive median of 88 kph, commented that “doctors won’t drive” and that, with only one flight per day during the pandemic, hospital specialist rooms had become dysfunctional. Bairnsdale, 282 km from Melbourne and with a higher self-drive speed of 82 kph and no air service, noted that, as train services have become less reliable and more prone to replacement by coach services, visiting professionals are now more likely to drive than take the train, adding to road traffic. Secondly, patients travelling to larger regional centres and capital cities, to access services not available locally, would also benefit similarly from higher service frequencies that eliminate or reduce the need for overnight stays.

After improved health service access, tourism growth was the next most frequently nominated potential impact of better long distance public transport services. This goal goes well beyond linking with the regional centre’s own capital city, as illustrated by Albury-Wodonga’s air service to Brisbane and Busselton’s Margaret River Airport low cost airline service to Melbourne. Esperance, Mount Gambier, Mount Isa and Port Macquarie all aspire to adding air travel-sourced tourism to their existing drive-sourced tourism markets. This calls for sufficiently frequent air services and is explicitly linked, in Port Macquarie’s case, to attracting low cost carrier service, ideally to Melbourne.

The three centres interviewed with the largest populations, Albury-Wodonga, Fraser Coast and Rockhampton, each nominated economic development as a desired impact of better public transport links. Fraser Coast referred to an opportunity to address the region’s high unemployment rate and Rockhampton expressed interest in reducing ‘economic leakage’ to Brisbane – in the sense of forgone business and education sector growth opportunities, arising from insufficient public transport access from inland central Queensland to Rockhampton.

A goal of greater ‘liveability’ – to retain and benefit existing residents and to help attract new ones – was identified by Albury-Wodonga, Alice Springs and Mount Isa. For the latter two, this was linked to achievement of lower air fares and, for Albury-Wodonga, to improved passenger rail transport and continued expansion of air service links. Family liveability was emphasised: affordable, reliable rail travel so that recent migrants living in Albury-Wodonga can connect easily with their relatives in Melbourne; affordable air fares so that grandparents can come to Alice Springs and Mount Isa to help care for children during school holidays.

## **6. Some implications for future planning**

Several economic and other policy rationales could help motivate investment in improved long distance public transport services for regional centres 200 or more km distant from capital cities, in particular: establishing a high speed rail-enabled ‘megaregion’ (SGS Economics and Planning 2020); ‘population rebalancing’ away from major capitals (Australian Government 2019); advancing towards a net zero emission transport sector (Garnaut 2020); and better complementing state government Commonwealth-supported patient assisted travel schemes

(National Rural Health Alliance Ltd 2019). Rather than explore the particular relevance of these rationales to identified service shortcomings, this section draws on the paper's analysis to list broad upgrade opportunities, in each of the distance bands.

Between 200 and 350 km from capital cities, convenient same day return travel to a capital city mostly involves either self-drive or – for a minority of regional centres – air travel. While additional air service links could, in principle, provide this convenience, air transport's limited coverage and high cost per 100 km underscores the opportunity for faster, more frequent and more reliable rail transport between larger regional centres such as Albury-Wodonga, Canberra, Fraser Coast and Orange with the respective nearest state capital city.

Lesser interest in passenger rail improvement, as conveyed by interviewed regional centres in the 350 to 1,000 km distance band, is consistent with the centrality of air services (Section 4). It is reasonable to infer from this that only high speed rail, with operating speeds above 300 kph, could challenge air's dominance – and then only for those regional centres on the relevant intercapital corridors. Nevertheless, faster or fast rail services, if extended beyond a 350 km capital city range, could improve affordable connectivity to larger regional centres – for example, between Port Macquarie and Newcastle – as also between pairs of larger regional centres, most notably between Albury-Wodonga and Canberra. In addition, new rail infrastructure, if constructed to high speed rail standards, would ease the pathway to high speed rail in the longer term (Glazebrook 2021, Michell, Martin and Laird 2014).

For regional centres that are not major tourism destinations and are located more than 1,000 km from capital cities, airfare affordability to the capital is a pressing issue. WA's Regional Airfare Zone Cap Scheme provides a model that other jurisdictions might consider. Under the scheme, airlines offer return fares to Perth, capped, at these distances, at \$299 each way, to regional centre residents for personal travel (Department of Transport 2022).

With limited integration between passenger rail networks of adjoining states, the Commonwealth could promote enhanced network integration through funding of upgraded rail connections, in the first instance over shorter (i.e. within 350 km) capital city distances. Areas include: overcoming rail gauge disconnects and capacity limitations to better connect northern NSW regional centres with the major QLD centres of Gold Coast and Brisbane;<sup>16</sup> and promoting further integration between services operating on different gauges in VIC, as well as broad to standard gauge conversion (Shepherd 2020). While the (286 km by road, NSW rail system) Sydney-Canberra route could form part of an initial stage, intercapital upgrades, including between Melbourne and Adelaide, would be at the centre of a second, later stage.

## 7. Further research

A multivariate modelling tool drawing on the concepts and indicators employed in this paper could be developed for use in regional, state and national transport planning. Such a tool would benefit from further investigation of the distance or distances from capital cities at which the self-drive option becomes less convenient and less prevalent, testing the 1,000 km distance band boundary used in this paper. The Queensland coast, with cities and towns evenly spaced over distances up to 2,000 km from Brisbane, would be prospective for this research. In addition, a sharper understanding of any attitudinal differences to long distance travel mode choice across the country would complement this investigation.

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<sup>16</sup> There is no passenger train connection between Gold Coast and northern NSW, while two of three NSW Trains Sydney-Brisbane services involve coach transfers (one at Grafton, one at Casino). The one full distance train service arrives at and departs Brisbane between 4am and 5am: "Limited track capacity and priority given to suburban services are usually offered as the official reasons for these unfriendly operating times" (Martin 2019).

The regional centre interview research for this paper did not extend to centres from a number of larger regions, in particular northern NSW, Eyre Peninsula SA, central and northern WA and northern TAS. These could be included in any more comprehensive study.

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