25th Australasian Transport Research Forum
Incorporating the BTRE Transport Policy Colloquium
Canberra 2-4 October 2002

Access to inter-regional public transport services

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Abstract
Access to long-distance public transport services is vital for many people living in regional areas. Rail and coach services often provide access to essential services and are key to mobility for those without access to an automobile. Whilst anecdotal evidence suggests that service adequacy is a concern in many regional ares, there has been little quantitative research conducted into inter-regional public transport services in Australia. The paper provides an assessment of the geographic coverage of existing inter-regional public transport services in Australia in 2000–01.

As part of its study into inter-regional public transport services, the BTRE compiled a database of all regular scheduled long-distance rail and express coach passenger transport services operating during 2000–01, from published electronic and printed timetables. The Air Transport Statistics (ATS) database provides similar information for air. Using *TransCAD*—the transportation based Geographic Information System (GIS) software—we undertook a geospatial analysis of the proximity of regional population centres to within a specified *reasonable access* distance of the geographic location of a regular public transport service. The results suggest that a relatively high proportion of persons living in population centres of 200 persons or more have access to some form of inter-regional public transport service.

The views expressed in this paper are those of the authors and do not necessarily represent those of the Bureau of Transport and Regional Economics.

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Introduction

Access to long distance public transport services is vital for many people living in regional areas. Rail and coach services often provide access to essential services and they are the key to mobility for those without access to an automobile. Whilst there has been anecdotal reports of inadequate services in regional areas, there has been little, if any quantitative research conducted into the accessibility of inter-regional public transport services in Australia.

The adequacy of public transport services may be defined in a variety of different ways. For example, timeliness, service frequency, or by some measure of the relative 'connectivity' provided by inter-regional public transport services. The most fundamental definition of service adequacy however is the availability of a service, regardless of its timeliness or frequency. In that sense, this paper provides an assessment of the geographic coverage of existing inter-regional public transport services and permits the identification of those towns and localities that have no access to inter-regional public transport services. The results are based on a geospatial analysis of the proximity of regional population centres to listed stops in published inter-regional public transport timetables. The method is similar to that applied by Spear and Weil (1999), who analysed the accessibility of public transportation services by small communities in the United States.

For the purposes of this paper, the term 'regional' is used to refer to areas outside the major metropolitan areas (ie. urban centres with a population of 100 000 persons or more). The term 'inter-regional' refers to public transport services between regional centres.

Background

The analysis presented in this paper was undertaken as part of the BTRE's study into Inter-Regional Public Transport. The study was commissioned as a result of the *Keeping Australia Moving* statement and includes a major analysis of the likely pattern of future demand for inter-regional public transport services in Australia.

The paper first provides an overview of existing inter-regional public transport services in each State and Territory, and then outlines the methodology, major assumptions and results of the geospatial analysis of access to existing inter-regional public transport services.

Overview of Current Services

State and Territory governments have varying degrees of involvement in regional public transport, either through regulatory arrangements or direct financial assistance, or a combination of both. Many States and Territories act in some way to ensure provision of some (minimum) level of passenger transport services to regional communities. For example, Transport NSW contracts private coach operators to provide a number of commercial coach services in

regional areas across NSW. The Queensland government regulates and subsidises air transport services to smaller populations centres in western and north–western Queensland. Before analysing the accessibility of inter-regional public transport services, we briefly outline the existing inter-regional services in each State and Territory.

New South Wales

In NSW public transport services are provided by a mix of public and private operators.

The State Rail Authority of NSW (StateRail) operates practically all country passenger rail services in NSW[1], under the CountryLink banner. The CountryLink rail services consist of the XPT and XPLORER services, which operate in a radial pattern from Sydney as far as Armidale, Grafton, Dubbo, Moree, Murwillumbah and Broken Hill, and interstate to Melbourne, Brisbane and Canberra. CityRail also provide some connecting rail services between Sydney and the surrounding centres of Lithgow, Bowral, Nowra and Newcastle.

Express coach services in NSW are provided by private operators either as purely commercial services–such as the interstate services operated by McCafferty's, Firefly, Murray's and Premier Motor Service–or under contract to StateRail or Transport NSW. StateRail has contracts with a large number of private coach operators to provide 'Rural Coach Services'. These contracts involve not only coach/train connections but also stand alone coach routes.

Intrastate regional aviation services in NSW consist mainly of routes radiating from Sydney to regional areas. The major regional routes in NSW are Sydney to Wagga Wagga, Tamworth/Armidale, Coffs Harbour, Albury and Newcastle. There are a large number of smaller airports in regional NSW that, according to the Air Transport Statistics (ATS) database (DOTARS 2002), receive minimal services and would not generally be considered to have a regular air service to Sydney. These include centres such as Coonamble, Walgett, Nyngan and Deniliquin, with an average of less than one flight per week.

Victoria

In Victoria, all intrastate country rail and road coach services are provided by privately owned companies under a long-term franchise or service agreement with the Victorian Department of Infrastructure (DOI). The National Express Group was awarded a 10-year franchise in August 1999, to operate the V/Line network of country rail and road coach passenger services. V/Line rail services extend from Melbourne to Geelong, Ballarat, Albury–Wodonga, Swan Hill, Echuca and Sale.

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[1] The Indian–Pacific and The Ghan, operated by Great Southern Railways, also operate from Sydney to Adelaide and beyond, providing passenger rail services between Sydney and Broken Hill.

Hoys Roadlines and West Coast Railways (WCR) also operate country rail passenger services under long-term service agreements with the DOI. Hoys Roadlines operate between Shepparton and Melbourne and WCR between Melbourne–Geelong–Warrnambool.

Inter-regional intrastate road coach services are provided by private operators under contract to the DOI ('privately marketed coach services') or under subcontract to the National Express Group ('rail replacement coach services'). These services extend to all parts of the State and into southern NSW (Moama, Albury, Bega and Narooma), the ACT and SA (Mt Gambier).

Two interstate express coach operators, McCafferty's and Firefly and two rail operators, GSR and StateRail, also provide interstate inter-regional public transport services to and from regional centres in Victoria.

Because of the small geographic size of the State, there is little demand for regional air travel. In 2000–01, the two intrastate regional air routes operating in Victoria were Melbourne-Portland and Melbourne–Mildura. The Melbourne–Portland service ceased during 2000–01. The Mildura service carried over 21 000 passengers in 2001. Whilst there is not a great deal of intrastate aviation in Victoria, there are services from Mildura and Shepparton to population centres in other states.

Queensland

Queensland Railways (QR), the Government-owned railway, provides all intrastate country passenger rail services in Queensland. Rail services operate along the coast between Brisbane and Cairns, providing links to regional population centres in between, and inland between Townsville–Mt Isa, Rockhampton–Longreach and Brisbane–Charleville. QR subcontract 'rail extension' road coach services between Charleville–Quilpie, Charleville–Cunnamulla, and Longreach–Winton, which connect with the train services. Interstate rail services from Brisbane to NSW are operated by StateRail (CountryLink).

There are only a handful of long distance coach operators in Queensland. McCafferty's is the largest and operates coach services throughout the State. The coach services in Queensland are generally concentrated along the coast and to a lesser extent along three inland corridors (Toowoomba–Charleville, Rockhampton–Longreach and Townsville–Mt Isa).

Unlike other States, regional aviation services in Queensland do not radiate solely out of the State capital. Townsville and Cairns also serve as hubs for services to north west Queensland. The majority of services in Queensland are either direct origin–destination services, or 'milk-run' services, which service a number of stops along a particular route. The major regional routes in Queensland are along the coast. In western Queensland, the major routes are Brisbane–Mt Isa, Brisbane–Charleville and Brisbane–Longreach (Queensland

Transport 2002). In 2000–01, major jet services were operated between Brisbane and Cairns/Townsville.

South Australia

Country bus services in regional South Australia are contracted by Transport SA and cover the following regions: Barossa Valley, Eyre Peninsula, Fluerieu, Hills Country, Mid North, Murray Bridge, Riverland and South East. They are operated by 4 major operators: Premier Stateliner Coach Group, Yorke Peninsula Coaches, Murray Bridge Passenger Service, and Barossa Valley Coaches. The services extend to Mt Gambier and Bordertown in the south, to Renmark and Loxton in the east, north to Wilpena Pound and Roxby Downs and in the west to Whyalla, Port Lincoln, Streaky Bay and Ceduna. In addition, McCafferty's and Firefly Coaches operate interstate coach services to and from South Australia, and the Victorian DOI contracts three operators to provide coach services from regional Victorian centres that operate to South Australian population centres.

There are no intrastate passenger rail services in South Australia. However, Great Southern Railways operate three interstate rail services: The Indian–Pacific, The Ghan and The Overland, that stop in South Australia.

Intrastate regional aviation services in South Australia operate in a radial pattern from Adelaide. Whilst most of these services are direct services, according to the Air Transport Statistics (ATS) database, in 2000–01 there were a small number of 'milk runs' to Coober Pedy and Leigh Creek as well as one service that operated between Adelaide and Birdsville.

The distinctive coastlines of the Spencer Gulf and the Gulf of St Vincent produce a unique situation for South Australian regional aviation. Destinations such as Cleve/Wudinna, Port Lincoln and Ceduna take relatively longer to reach by surface transport due to the need to traverse north around the Spencer Gulf from Adelaide. For example, an air service from Adelaide to Port Lincoln travels 245km and takes 1 hour. A private car must travel 670km, a trip of at least 7 hours. Under these unique conditions, air is a more attractive mode of transport on these routes than for similar distance air routes in other parts of Australia. In 2000–01, the Adelaide–Port Lincoln route was the largest intrastate air route in South Australia, followed by Kangaroo Island, Whyalla and Mount Gambier.

Western Australia

The West Australian Government Railways Commission (WAGR) operates three regional rail services, which link Perth with Bunbury (The Australind), Northam (The Avonlink) and Kalgoorlie (The Prospector). WAGR also operates an extensive network of road coach services. The WAGR road coach network provides the majority of coach services to towns in the southern third of the State (where 90 per cent of the WA population resides[2]). There are four other

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[2] Based on the 2001 Estimated Resident Population (ABS 2002).

significant (private) operators. McCafferty's (trading as Greyhound) provides interstate services to South Australia and the Northern Territory and intrastate services to the north of the State. Integrity Coachlines also operates coach services between Perth and Broome. Goldfields Express operates coach services between Perth and Kalgoorlie and Southwest Coachlines operates services between Perth and Bunbury, and has a network of shorter distances services in the south west of the State.

Aviation services in WA generally radiate from the capital city, Perth. The major routes to northern WA are Perth-Leinster/Mount Keith mining operation, Perth–Karratha, and Perth–Broome. In Southern WA the major routes link Perth to the major regional centres of Kalgoorlie, Geraldton, Albany and Esperance.

Tasmania

The Tasmanian inter-regional coach industry consists of two private operators: Redline and Tigerline Coaches. The majority of services are concentrated along the routes to the centres of Hobart, Launceston, Devonport and Burnie. In addition to these trunk routes there are also services in the west to Strahan, in the south to Southport and in the east to Swansea and St Marys.

There were no intrastate air routes operating on the 'main island' in 2000–01. The major airlines operated services between Launceston, Hobart and the mainland. The only intrastate regular public transport air services operating in 2000–01 were between Tasmania and King and Flinders Islands, operated by Island Airlines Tasmania, King Island Airlines and Tasair. The islands also received services from the mainland of Australia.

Northern Territory

McCafferty's (operating as Greyhound) is the sole provider of inter-regional coach services in the Northern Territory. Most of the routes are part of its intercapital network; from Darwin to Adelaide via Alice Springs and Darwin to Brisbane via Mt Isa and to Perth via Broome. These services generally operate in a daily basis from Darwin (although in most cases, the trip is longer than 24 hours).

Apart from The Ghan, from Adelaide to Alice Springs, there are no inter-regional rail services in the Northern Territory.

In 2000–01, the two major airlines, Qantas and Ansett, provided aviation services to Darwin, Alice Springs and Uluru. There were also two regional operators, Airnorth and Missionary Aviation Fellowship (MAF). Airnorth operated regional aviation services between Darwin the main population centres of Katherine, Tennant Creek, Alice Springs, to Arnhem Land (Maningrida, Milingimbi, Elcho Island, Lake Evella, Ramingining), the Kimberley region (Kununurra, Broome) and the Gulf of Carpentaria (Gove, Groote Eylandt, Cairns). MAF operated services between Darwin and Gove and locations in Arnhem Land.

MEASURING ACCESS TO SERVICES

We now consider the level of access to inter-regional public transport services for persons living in regional urban centres and localities. We begin by outlining the assumptions and methodology, and then present the major findings.

Data Sources

Using published timetable information, from scheduled inter-regional rail and coach transport service operators who operated inter-regional services during 2000–01, the BTRE compiled a database of all rail stations and coach stops served by inter-regional public transport services. The database includes all long-distance public transport services operated by both private and publicly-owned regular scheduled public transport service providers[3]. A list of all regional airports, through which regional aviation services operated in 2000–01, were compiled from the ATS database.

Population data was drawn from the 1996 Census of Population and Housing data for urban centres and localities (UC/L) with 200 persons or more (ABS 1998)[4]. The geographic location of UC/Ls were assigned using the *Gazetteer of Australia 2001* database of geographical locations (Geoscience Australia 2001). Of course, using this approach the population is assigned to a single point, whereas for larger urban centres the population is likely to be dispersed around this point. Spear and Weil (1999) suggested that this assumption may result in a proportion of the population in UC/Ls being mis-assigned in the geospatial analysis.

Assumptions

A critical assumption in this analysis is the definition of a *reasonable access* distance. Spear and Weil (1999) defined a *reasonable access* distance to be the maximum distance people would be willing to travel to access inter-regional public transport services. They specified the following access distances for US intercity passenger transport:

1. For air transport services: 120 km to a large or medium-sized hub airport[5], and 40 km to small or non-hub airport having at least a daily service, or an airport subsidised under the US Department of Transportation's Essential Air Service (EAS) program.

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[3] The Transport Data Centre's Rural and Regional Database (2001) provides a similar snapshot of all public transport services in regional NSW more detailed than that compiled by the BTRE. As far as we area aware however, there are no similar electronic collections of all regional transport services for other States and Territories.

[4] At the time of writing, although preliminary results from the 2001 census were available, results at the UC/L level were not.

[5] Hub airports are defined by the US Federal Aviation Administration based on annual aircraft movements (Spear and Weil, 1999, p. 67).

2. For intercity rail services: 40 km to an intercity passenger rail station, having at least daily rail service in each direction with scheduled departures between 5 am and midnight.
3. For intercity bus services: 16 km to an intercity bus station or stop.

We have applied slightly different access distances for Australian inter-regional passenger travel. In particular, no distinction is made between large and small regional airports in Australia–access distances to airports were set at 120 km for any airport with a daily service[6]. The access distances to all coach and rail services were assumed to be 16 km. Formally then, the definition of *reasonable access* distances underlying the results presented here are:

1. For air transport services:

120 km to any airport with a daily air service.

2. For inter-regional rail and coach services:

16 km to a passenger rail station, and

16 km to an inter-regional passenger coach stop.
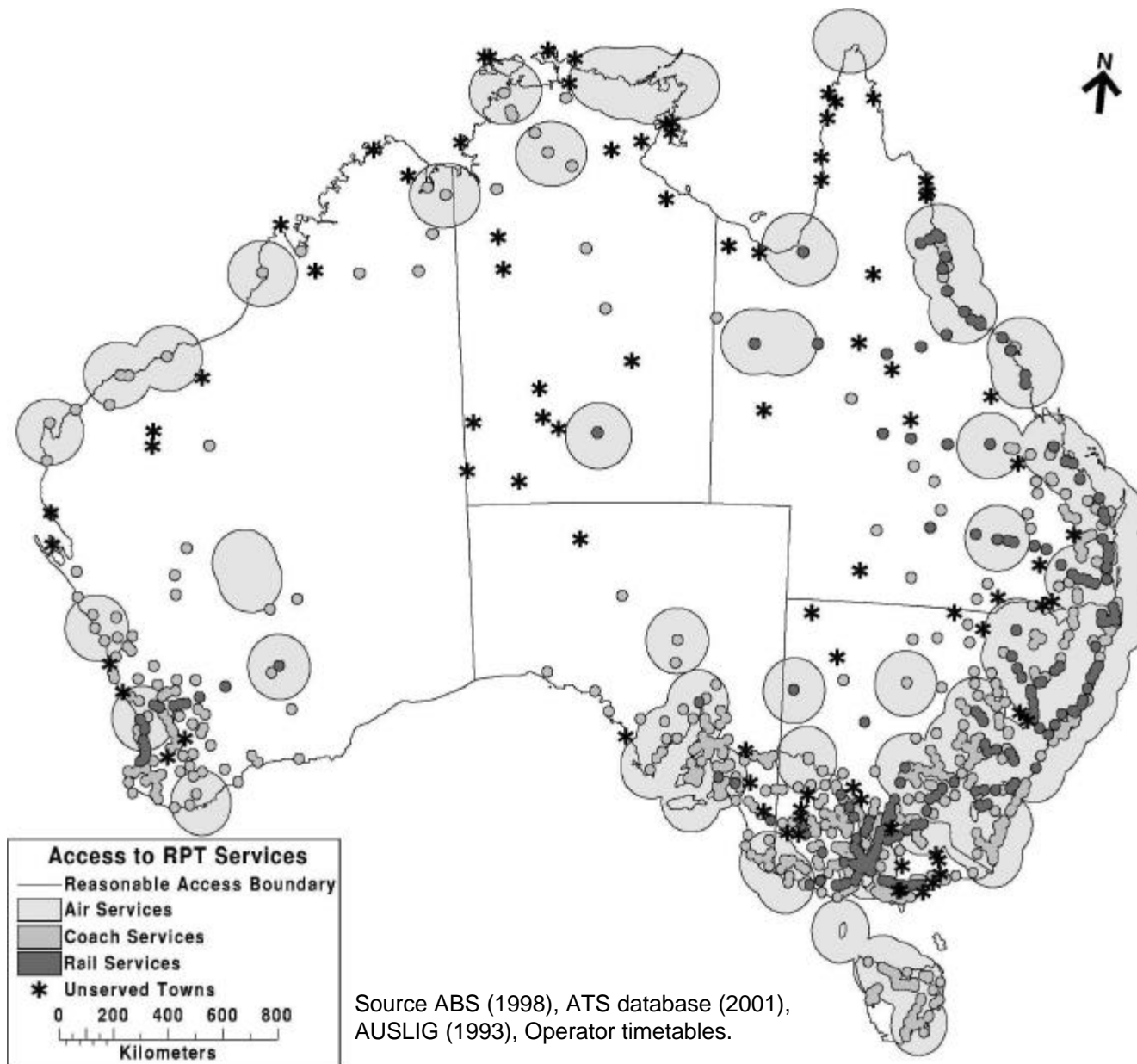
Methodology

Geographic Information System (GIS) software (*TransCAD: Transportation GIS Software*) was used to map all urban centres and localities with 200 persons or more. Bands around the location of all inter-regional air, rail and coach services were set equal to the assumed *reasonable access* distance of a public transport service. The GIS software was then used to select all towns not within a *reasonable access* distance. Figure 1 shows the assumed coverage of current inter-regional public transport services, for inter-regional coach, rail and air services, and the location of urban centres and localities lying beyond the assumed access distance. Figure 2 shows the assumed coverage of only inter-regional coach and rail services, and the location of urban centres and localities lying beyond a *reasonable access* distance.

Inspection of figure 1 shows there are relatively few population centres in Australia that are not within a *reasonable access* distance of some form of scheduled public transport service. For the majority of towns identified as outside a *reasonable access* distance, many are just beyond these defined boundaries. Towns that are a significant distance from any inter-regional public transport service are mainly confined to Outback NSW, far western Queensland, remote Northern Territory and the remote areas of WA. These towns include Thargomindah (QLD), Elliston (SA), Whitecliffs (NSW), Yuendumu (NT), Tom Price[7] (WA), and Tibooburra (NSW) and Weipa[7] QLD).

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[6] 120 km would in most cases be approximately one hour's drive by private car, which the BTRE has assumed is a reasonable distance to travel to access air services.
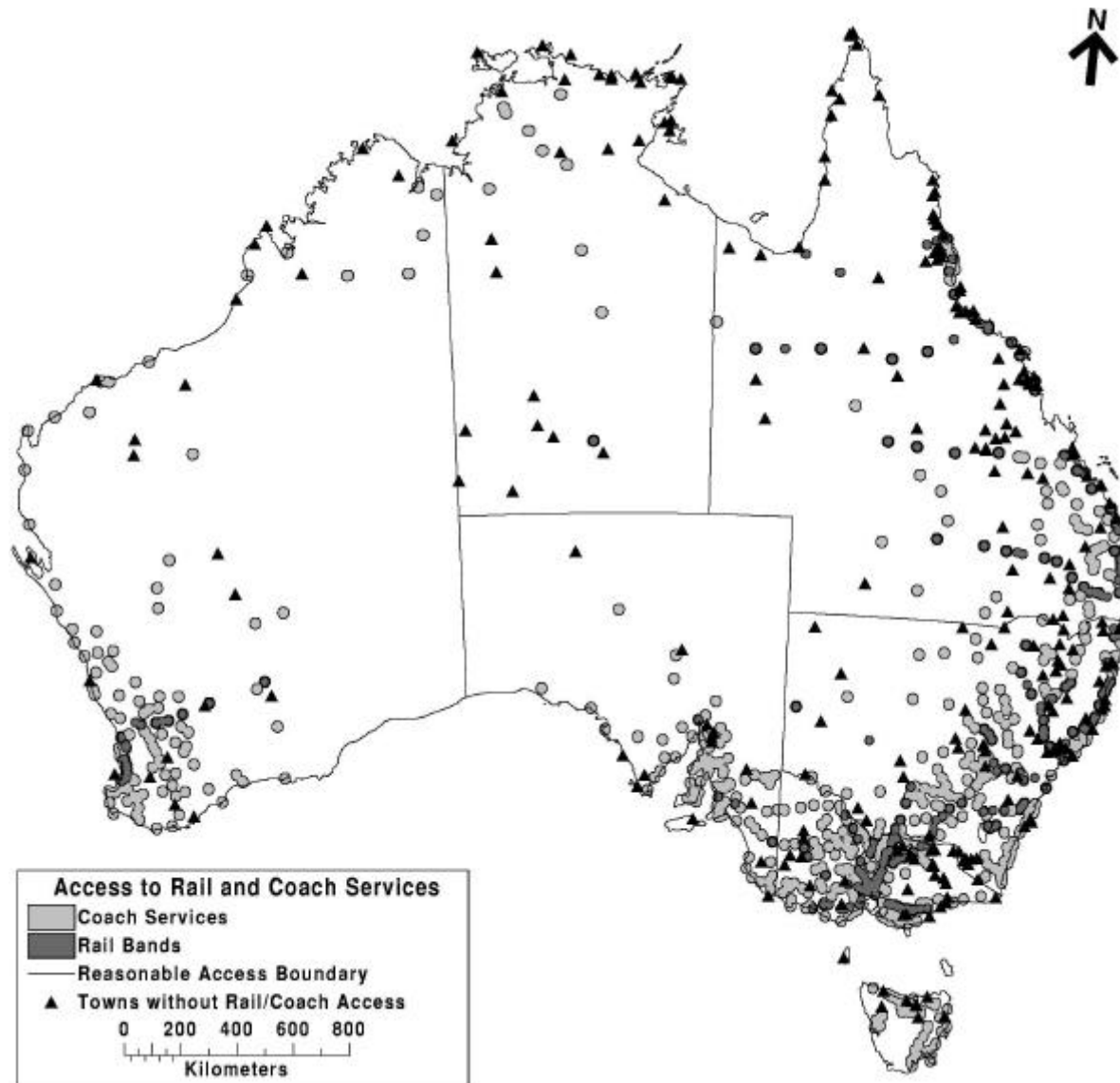
[7] Transport services to remote mining centres such as these are covered later in the paper.

Figure 1 **Location of urban centres and localities beyond reasonable access distance of all inter-regional Public Transport services, 2000–01**

Access to RPT Services
— Reasonable Access Boundary
Air Services
Coach Services
Rail Services
* Unserved Towns
0   200   400   600   800
Kilometers

Source ABS (1998), ATS database (2001),
AUSLIG (1993), Operator timetables.

FIGURE 2   LOCATION OF URBAN CENTRES AND LOCALITIES BEYOND REASONABLE ACCESS DISTANCE OF INTER-REGIONAL COACH OR RAIL PASSENGER TRANSPORT SERVICES, 2000–01

Access to Rail and Coach Services
Coach Services
Rail Bands
Reasonable Access Boundary
▲ Towns without Rail/Coach Access
0   200   400   600   800
Kilometers

Source ABS (1998), ATS database (2001), AUSLIG (1993), Operator timetables

Results

In 1996, including capital cities and other metropolitan centres there were 1652 UC/Ls with a population of 200 persons or more (ABS 1998). Table 1 shows the number of persons by State/Territory and section of State/Territory. In 1996, there were 11.3 million residents in capital cities and other major urban centres, approximately 63 per cent of the total population. A further 25 per cent of the population lived in other urban centres and bounded localities. Approximately 2.1 million persons, or 11.5 per cent of the population, lived in rural or other areas outside UC/Ls, and are outside the scope of this analysis[8].

TABLE 1   POPULATION OF URBAN CENTRES AND LOCALITIES, 1996
(thousand persons)

State	Section of State/Territory						Total
	Capital city	*Other major urban[a]*	*Other urban*	*Bounded localities[b]*	*Rural*	*Migratory*	
NSW	3276.2	781.2	1280.3	134.6	563.7	2.6	6038.7
Victoria	2865.3	125.4	841.9	76.6	463.5	0.8	4373.5
Queensland	1291.1	384.1	1042.9	103.8	543.9	3.0	3368.9
SA	978.1	na	250.7	41.6	156.9	0.6	1427.9
WA	1096.8	na	394.4	47.0	184.8	3.0	1726.1
Tasmania	126.1	na	207.9	27.2	97.8	0.6	459.7
NT	70.3	na	71.2	17.2	35.9	0.5	195.1
ACT	297.0	na	na	0.3	1.9	na	299.2
Total	10001.0	1290.7	4089.3	448.4	2048.5	11.2	17889.1

na – not applicable
a.   Other major urban centres are those urban centres with more than 100 000 persons in 1996, and include:
      Newcastle, Wollongong, Central Coast, Gold Coast-Tweed Heads (Tweed Heads part) and Canberra-Queanbeyan (Queanbeyan part) in NSW; Geelong in Victoria; and Gold Coast-Tweed Heads (Gold Coast part) and Townsville-Thuringowa in Queensland.
b.   Bounded localities include areas between 200 and 999 persons.
Source   ABS (1998).

Access to inter-regional air services

In 2001, there were 187 airports served by scheduled RPT air services. Of those, 93 had an average of at least one service, each way, per day. There are 1285 UC/Ls above 200 persons, within the assumed reasonable access distance of these airports, providing links for around 15.1 million persons (or 96 per cent of the persons living in localities of 200 or more persons). For persons living in UC/Ls outside capital cities and major urban areas, there were 1273 UC/Ls within reasonable access distance of an air service, comprising around 3.8 million persons (approximately 84 per cent of the total population in UC/Ls of less than 100 000 persons).

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[8] The ABS UC/L population data only permits population centres of 200 or more persons to be assigned to a geographic location. Hence it is not possible to enumerate what proportion of the population living in Rural and Migratory areas are within *reasonable access* distance of public transport services.

Access to inter-regional rail services

In 2001, the seven inter-regional rail operators provided connecting rail services which stopped at 212 UC/Ls[9]. There were 524 UC/Ls within reasonable access distance of these inter-regional rail services, providing services for 12.5 million persons (79 per cent of the population living in localities of 200 or more persons). Outside the major urban areas, inter-regional rail services provide services to 506 UC/Ls, comprising 1.2 million persons, or 26 per cent of the population in UC/Ls of less than 100 000 persons.

Access to inter-regional coach services

Inter-regional coach services are defined here to include both rail replacement coach services and other regular scheduled coach services. Assuming a reasonable access distance of 16 km, inter-regional coach services provide connecting services to approximately 1202 UC/Ls, providing public transport services for approximately 14.8 million persons, or 94 per cent of all persons living in localities of 200 or more persons. Of those UC/Ls of less than 100 000 persons, inter-regional coach services provide services for approximately 3.5 million persons, or 77 per cent of the population living such areas.

Access to all inter-regional public transport services

Including all inter-regional public transport services, over 99.6 per cent of the population have access to at least one mode of inter-regional public transport, 66 per cent have access to at least two modes and 36 per cent have access to all three modes of transport. When considered as a proportion of those UC/Ls outside the major urban centres, almost 95 per cent of such UC/Ls have access to at least one mode of transport, providing services for 4.3 million persons. Put another way, based on the set of inter-regional public transport services in 2001, and the 1996 population, approximately 58 000 persons in UC/Ls in 1996 would not have had access to at least one mode of public transport, which is approximately 1 per cent of the total population living in UC/Ls outside the major urban areas in 1996.

Table 2 shows the estimated number of towns, and population, with and without inter-regional public transport services in 2001, by type of transport service and size of urban centre. It shows that towns with populations above 20 000 are well served–with all such towns having some form of access to inter-regional public transport services. Only Bunbury and Shepparton, with populations of 24 883 and 31 898 respectively, do not have regular scheduled air services. However, these centres are within 2 hours drive of Perth and Melbourne, respectively.

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[9]   This figure refers to UC/Ls in which a rail service actually stops. Residents of these UC/Ls do not have to travel to access this service (i.e. an assumed access distance of 0 km).

TABLE 2   PROVISION OF INTER-REGIONAL PUBLIC TRANSPORT SERVICES TO URBAN CENTRES AND LOCALITIES, 2000–01

Mode	Population size	Centres with access		Centres with no access	
	(persons)	*No. towns*	*Population ('000 persons)*	*No. towns*	*Population ('000 persons)*
Air services	Less than 2 000	290	1648	292	198
	2 000–20 000	934	696	73	369
	More than 20 000	63	12795	0	0
	Total	1285	15139	367	624
Rail services	Less than 2 000	573	434	653	460
	2 000–20 000	220	1345	143	672
	More than 20 000	53	12501	10	294
	Total	846	14279	806	1426
Coach services	Less than 2 000	970	735	256	160
	2 000–20 000	333	1899	30	118
	More than 20 000	63	12794	0	0
	Total	1366	15428	286	278
All services	Less than 2 000	1145	851	81	44
	2 000–20 000	360	2004	3	13
	More than 20 000	63	12794	na	na
	Total	1568	15649	84	56

Source   BTRE estimates.

Access to inter-regional public transport services by State and Territory

Table 3 shows the total number of UC/Ls with no access to inter-regional public transport services by State and Territory. The evidence shows the three largest States in geographic terms, Queensland, Western Australia, and the Northern Territory have the largest number of persons in UC/Ls beyond a reasonable access distance to inter-regional public transport. Western Australia and Queensland are the only States in which there are towns of more than 2 000 persons that do not have reasonable access to any mode of public transport. Two of these towns, Weipa and Tom Price, are essentially mining towns, and at least in the case of the latter, there are regular charter air services available to a significant proportion of the town's population. There are also a number of similar mining towns of less than 2 000 persons, such as Marble Bar and Paraburdoo in WA, that are classified as not within reasonable access distance of regular public transport services that do have regular charter air services.

TABLE 3   NUMBER OF URBAN CENTRES AND LOCALITIES BEYOND REASONABLE ACCESS DISTANCE TO INTER-REGIONAL PUBLIC TRANSPORT SERVICES, 2000–01

State	Size of urban centres and localities (persons)			Total	Population ('000 persons)
	Less than 2 000	*2 000– 20 000*	*More than 20 000*		
NSW	8	-	-	8	4458
Vic	15	-	-	15	6935
Qld	21	2	-	23	20354
SA	4	-	-	4	1272
WA	13	1	-	14	10951
Tas	-	-	-	0	0
NT	20	-	-	20	12428
ACT	-	-	-	0	0
Total	81	3	0	84	56398

Source BTRE estimates.

Access to Surface (Rail or Coach) Services

One conclusion drawn from figure 1 is that there are large areas of Australia which have access to air services only. Whilst some of the towns in these regions may be located within 120 kms of an air service, the access to, and cost of this service may make the service inappropriate for many everyday transport needs. In addition, the majority of aviation services in Australia radiate out of capital cities. For residents needing to access services in regional centres, these aviation services are not an option. Therefore, it is useful to identify towns that have no access to any surface-based inter-regional public transport. Figure 2 identifies those towns and localities with more than 200 persons that do not have access to a rail or coach service. There are a total of 259 UC/Ls with no access to rail or coach services, approximately 15 per cent of all UC/Ls. Approximately 236 000 people reside in these centres. Excluding major metropolitan areas[10], this represents approximately 4.9 per cent of all persons living in UC/Ls with a population greater than 200. Table 4 shows the number of towns, and the proportion of the population with access to rail and coach services, by population size.

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[10] Includes all State and Territory capitals, Gold Coast–Tweed Heads, Central Coast, Wollongong, Geelong and Newcastle

TABLE 4   NUMBER OF URBAN CENTRES AND LOCALITIES WITHIN REASONABLE ACCESS DISTANCE FROM SURFACE INTER-REGIONAL PUBLIC TRANSPORT SERVICES, BY POPULATION SIZE, 2000–01

| Population (persons)	Access to rail or coach	Towns		Population	
		(No.)	(per cent)	('000 persons)	(per cent)
Less than 2 000	Yes	991	81	749	84
	No	235	19	145	16
2000–20 000	Yes	340	94	1938	96
	No	23	6	79	4
More than 20 000	Yes	23	100	12794	100
	No	0	0	0	0
Total	Yes	1354	84	15482	99
	No	258	16	224	1

Source BTRE estimates.

The data in table 4 shows that 84 percent of small towns (below 2 000 persons) have access to rail and coach services, representing 84 per cent of residents in this category. Over 96 per cent of medium sized towns (2 000–20 000 persons) have access to rail and coach services whilst no towns in the largest category are without access.

What are the characteristics of these towns? This paper does not provide commentary on the economic or demographic characteristics of these towns. However, the significant geographic characteristics of these unserved towns are analysed.

Firstly, there are a large number of UC/Ls in Northern Territory which have sizeable populations and are unserved by surface inter-regional public transport services (figure 3). Over 21 700 persons reside in these 29 communities. Given the 1996 population of the Northern Territory (excluding Alice Springs and Darwin) was 37 691, it becomes clear that a significant proportion of NT residents do not have access to rail or coach

FIGURE 3   URBAN CENTRES AND LOCALITIES BEYOND REASONABLE ACCESS DISTANCE OF RAIL AND COACH SERVICES – NORTHERN TERRITORY
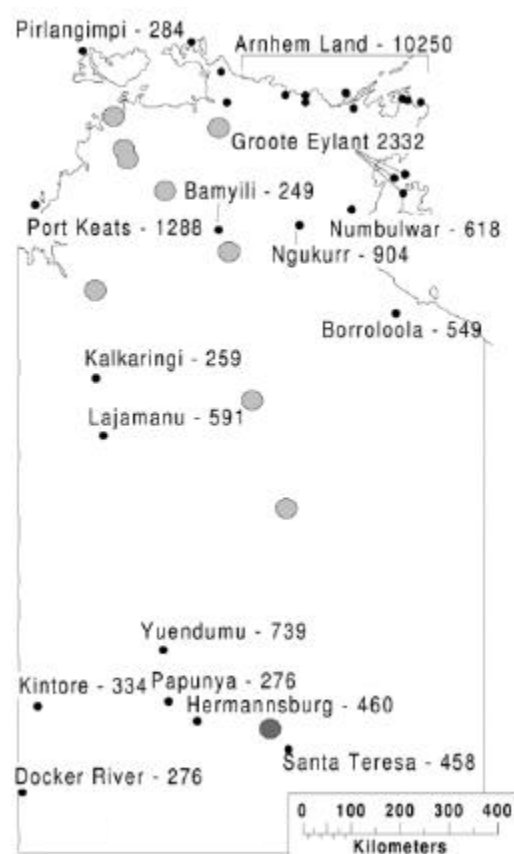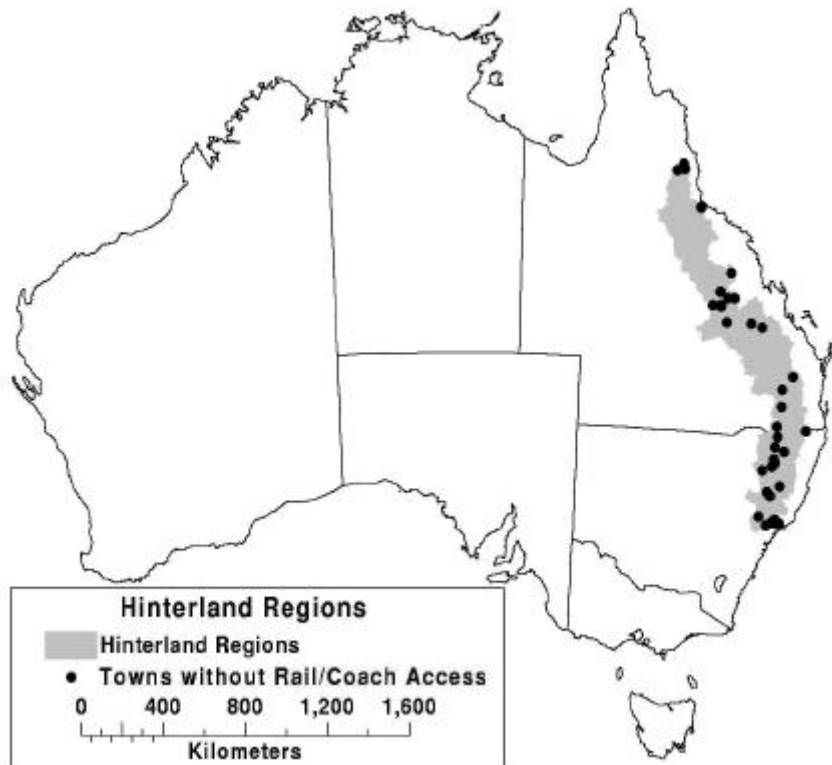

Source ABS (1998), ATS database (2001), AUSLIG (1993), Operator timetables.

services. Table 3 shows that 20 of these towns do not have access to an air service either. A number of these towns are located in the remote south-west of the state.

Secondly, a large number of the UC/Ls without access to rail or coach services are located in the hinterland areas of the eastern seaboard (figure 4). The majority of these communities lie within 50 km of a service. The large number of towns in these areas suggests a significant number of UC/Ls are "falling through the cracks". There are approximately 31 000 persons residing in the 32 towns identified in figure 4. The largest cluster of these towns is located in a strip which stretches from the Hunter Region of NSW to the Sunshine Coast hinterlands. Another cluster of towns without reasonable access to rail or coach services is located inland from Rockhampton and Mackay in Queensland.

FIGURE 4 URBAN CENTRES AND LOCALITIES BEYOND REASONABLE ACCESS DISTANCE OF RAIL AND COACH SERVICES – HINTERLAND REGIONS

Source ABS (1998), ATS database (2001), AUSLIG (1993), Operator timetables.

The key point to be gained from this analysis is that these are not remote places where one would expect access to rail and coach services to be difficult. The total population of all towns in the hinterland region identified in figure 4 is over 508 000 persons. A closer inspection of the locations of these towns shows that they tend to be away from main transport routes. For example the UC/Ls identified in northern NSW and southern Queensland are generally situated between the Newell and New England highways where coaches tend to operate.

CONCLUSION

The simple analysis presented here is intended to provide some basic quantitative geographic data relating to the accessibility of inter-regional public transport services in regional Australia.

Overall, these results suggest that a relatively high proportion of persons in UC/Ls have access to at least one mode of inter-regional public transport service. Approximately 99 per cent of the population living in UC/Ls of less than 100 000 persons have access to at least one mode of public transport. These results are obviously dependent on the choice of reasonable access distance. In particular, these figures are heavily influenced by our assumption of 120km as a "reasonable access distance" to a served airport. Given that aviation services are not always a feasible option (due to cost and distance considerations) additional analysis was conducted into the accessibility of rail and coach services only. The analysis indicates that 99 per cent of persons living in urban centres and localities with populations above 200 have access to a rail or coach service. A closer geospatial analysis of these data however shows that there are significant concentrations of towns beyond reasonable access distance to public transport services. Notably, in the Northern Territory and in the hinterland areas of Queensland and northern NSW.

The public transport service data collected during this analysis also includes information on service frequency, travel times and transport routes, and could be used for more detailed analysis of public transport services to and from selected population centres.

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