



**Australian Government**  

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**Commonwealth Grants Commission**

## **HISTORY OF THE REGIONAL COSTS ASSESSMENT**

**INFORMATION PAPER**  
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## OVERVIEW

### The conceptual case

- 1 States spend different amounts per capita on people in different regions. This reflects both the differing use and costs of services in these regions. Costs generally increase as remoteness increases; for example, because labour, freight, travel and a range of other costs rise in more remote locations.
- 2 The Regional costs assessment recognises that services are more expensive to provide in more remote regions and that State populations are distributed differently across regions.<sup>1</sup> States with relatively large remote populations require a greater share of the Goods and Services Tax (GST), all other things being equal. More than 70% of the total Australia population live in major cities and as such are not considered to incur higher regional costs. In remote and very remote areas, costs have been found to be at least 45% higher than in major cities. While nationally only 2.5% of people live in remote and very remote areas, in the Northern Territory and Western Australia 43% and 7% respectively do, as shown in Table 1.
- 3 The Regional costs assessment aims to measure the relative spending per client in different regions. This may reflect different costs for comparable services, or different standards of service.
- 4 In addition, there are service use differences across regions. This is generally assessed separately as part of the socio-demographic composition assessment in each expenditure category. However, in some assessments, it is not feasible, given the data, to separate differences in the use and cost of services in different locations and an integrated approach is used. For example, health spending per capita varies with remoteness because of differences in use and cost, and we capture this in a single measure. Regional costs are therefore not recognised separately in most Health assessments.

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<sup>1</sup> As noted in *CGC 2015-05 History of the Gambling assessment*, the dispersion of population can also impact on the revenue raising capacity of States.

**Table 1 Estimated resident population by location and State, December 2013**

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
	'000	'000	'000	'000	'000	'000	'000	'000	'000
Major cities	5 537	4 430	2 908	1 956	1 231	0	383	0	16 445
Inner regional	1 440	1 105	950	231	182	337	1	0	4 246
Outer regional	448	247	689	190	203	166	0	138	2 082
Remote	31	5	80	105	46	8	0	50	326
Very remote	9	0	60	68	15	2	0	56	209
<b>Total</b>	<b>7 465</b>	<b>5 787</b>	<b>4 687</b>	<b>2 549</b>	<b>1 677</b>	<b>514</b>	<b>384</b>	<b>244</b>	<b>23 308</b>
	%	%	%	%	%	%	%	%	%
Major cities	74.2	76.5	62.0	76.7	73.4	0.0	99.8	0.0	70.6
Inner regional	19.3	19.1	20.3	9.0	10.8	65.6	0.2	0.0	18.2
Outer regional	6.0	4.3	14.7	7.5	12.1	32.3	0.0	56.6	8.9
Remote	0.4	0.1	1.7	4.1	2.7	1.6	0.0	20.6	1.4
Very remote	0.1	0.0	1.3	2.7	0.9	0.5	0.0	22.8	0.9
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Note: Under the Australian Statistical Geography Standard (ASGS), Tasmania and the Northern Territory are considered to have no major cities, as neither have cities with a population of more than 250 000 people.

Source: ABS data request.

## History of the assessment

- 5 The approach to the Regional costs assessment has changed significantly over time. The intrastate disabilities recognised by the current Regional costs assessment were previously recognised within the dispersion assessment.
- 6 The most significant changes to the assessment of regional costs are as follows (these changes have also been summarised in Table 2).
  - Pre-1981: The impact of population dispersion on the cost of providing services was recognised through an above-standard allowance for the dispersed claimant States.
  - 1981: A dispersion disability was assessed in the first Review in which equalisation was applied to all States. It sought to assess the additional costs States faced in providing services to dispersed populations. These populations were defined in relation to distances from capital cities and urban centres. It was a theoretical assessment and relied heavily on judgment.
  - 1988: The dispersion assessment began to focus more on empirical data rather than relying on formulae. State spending on a variety of functions and how this changed with distance from capital cities and regional centres was examined.
  - 2010: The regional costs assessment superseded the dispersion assessment. Both the contributing data and the geographic classifications used were substantially simplified.

- 2015: A new remoteness classification allowed the assessment of interstate non-wage costs to be incorporated into the assessment of regional costs.

**Table 2 Significant changes to assessment**

Review year	Analytical approach	Data	Geography
Prior to 1981	Dispersion and density	Judgement	Population density
1981	Dispersion + Service Delivery Scale	Formula + judgement	Distance from capital city
1982	—	—	—
1985	—	—	—
1988	—	Multiple costs incorporated	Distance dominant variable, also used remoteness and population density
1993	Dispersion	—	—
1999	—	—	—
2004	—	—	—
2010	Regional costs	Schools and police	State-based remoteness areas
2015	—	—	Remoteness areas

Source: CGC Review reports.

- 7 This paper discusses the changing nature of the assessment of regional costs and considers the ways in which this has been due to evolving geographic classifications, changing data standards and changing data availability.

## ANALYTICAL APPROACH TO REGIONAL COSTS

- 8 Differences in regional costs were recognised in the work of the Commission during the special grants period (1933-81). In the early years regional costs were not assessed. The assessment of regional costs started as the delivery of social services became a significant part of what States did. By 1948, South Australia claimed that population dispersion was a factor of major importance in the costs faced in delivering social services. The Commission accepted this view but considered the costs were 'not capable of precise statistical computation'. It made a broad judgment assessment for Western Australia, South Australia and Tasmania, recognising they needed to spend more than the standard States of New South Wales and Victoria. By the 1970s, the Commission made adjustments in a small number of individual categories. For example, Queensland was assessed as requiring an additional 15 per

cent on standard per capita State expenditure on public libraries ‘to reflect cost disabilities arising from the more widely dispersed population in Queensland’.<sup>2</sup>

- 9 The dispersion disability, introduced in 1981 when equalisation for all States began, recognised that it cost more to provide services to a dispersed population than to a compact urban population. The Commission decided to distinguish between four types of dispersion disabilities.
- The first resulted from higher costs of operating regional or urban service centres (such as schools, hospitals, police stations, agricultural extension services) because of factors such as staff movements, remote area salaries and allowances, transport of equipment and materials, and charges for telecommunications and postal services, when the service centres were geographically separated from metropolitan areas.
  - The second form of dispersion disability resulted from the higher costs, in terms of staff time and travel costs, of providing services to persons in their own places of residence or to enterprises in their own locations away from the places where the service centres were situated.
  - The third type of differential dispersion expenditures flowed not from costs of moving services to the places where users were located but from the costs of moving users to service centres. For some categories this was assessed separately. For example, the transport of school children was assessed within the Education category.
  - While the first three types of dispersion disabilities were distance related, the fourth was related to the size of service centres. This resulted from the fact that service centres often had to be located in population centres which were too remote from other population centres to permit the service centres to operate at an optimal size. This was essentially a scale effect.
- 10 This understanding of dispersion disabilities has remained the same over time. However scale-related dispersion costs began being assessed separately as Service delivery scale in the 1993 Review. This assessment recognised that in closely settled areas, it is possible to provide outlets of optimal size, but in more sparsely settled regions, small outlets which are less economic are often needed to provide an accessible service.

## Integration of regional costs and interstate non-wage costs

- 11 In the 2015 Review, a change in geographical classification used by the Commission meant that not all State capitals were treated the same. As such, the regional costs assessment conceptually captured some of the disabilities previously captured within the isolation and interstate non-wage costs assessments such as those relating to

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<sup>2</sup> Commonwealth Grants Commission, 1977. *Forty-fourth Report 1977 on Special Assistance for States*, p. 69.

freight and travel costs. This was the first significant change to the conceptual basis of the dispersion/regional costs assessment since its inception.

- 12 The assessment of Regional costs has been substantially simplified over time. However, the current approach has introduced a large judgment based adjustment to acknowledge that, although the use of ABS remoteness areas captures significant interstate non-wage cost impacts, it does not fully recognise the cost pressures faced by all capital cities. The adjustment therefore recognises that Perth, Canberra, Hobart and Darwin face cost pressures that differ from other cities of corresponding remoteness.
- 13 In the 2015 Review, most States supported the move to cease a separate interstate non-wage costs assessment and recognise differences in interstate non-wage costs in the Regional costs assessment. However, Western Australia and the Northern Territory considered that the interstate non-wage costs differences should continue to be assessed separately.

## VIEWS ON WHETHER THE DISABILITY SHOULD BE ASSESSED

- 14 Whether regional costs should be assessed has been questioned by the States for a variety of reasons. In the early years of the assessment, the issues raised related to the validity of the assessment. However, in more recent years the conceptual case has been widely accepted. More recent State submissions have focused on the reliability of the assessment methodology and on external influences on regional costs, such as the influence of technology on the cost of providing services.

### Efficiency

- 15 The terms of reference for the 1988 Review required that the Commission report on whether the application of the principle of fiscal equalisation has any significant consequences for the efficient allocation of resources across Australia. In their submissions to this review New South Wales and Victoria said that location-specific expenditure equalisation was efficiency detracting, as it distorted price signals on the costs of locating in high cost areas.
- 16 All other States with the exception of the ACT were generally opposed to the views of New South Wales and Victoria, although most conceded that there could be efficiency implications and some contended that it was not possible to determine those consequences either theoretically or empirically. They all rejected the argument that there was no case for location-specific expenditure equalisation.
- 17 Queensland submitted that cost equalisation in sparsely populated areas cannot be considered independently of the contributions which those areas make to national output and government revenues, and that location decisions depend more on

private production initiatives, employment, housing and potential development than on the fiscal activities of governments. It submitted that the development of the nation's resources and hence allocative efficiency would be inhibited if States were to be penalised for providing services in high-cost agricultural and mining areas which nevertheless have a comparative advantage in world trade.

18 The Commission considered that:

... while some of the efficiency effects have been stated incorrectly or exaggerated, the principle of fiscal equalisation does have some consequences for the efficient allocation of resources across Australia. But these consequences are not serious enough to warrant any significant changes in the manner in which the fiscal equalisation process is carried out.<sup>3</sup>

19 Given this determination, the consideration of allocative efficiency has not been raised in subsequent reviews and the need to recognise locational disabilities in some way has been accepted by both the Commission and the States.

20 However, the impact of HFE on efficiency was recently raised in submissions to the GST distribution review (including those from New South Wales, Victoria, Queensland and Western Australia). Whether HFE discouraged efficient migration was among a number of efficiency issues considered. The review panel found that 'the current system creates perverse theoretical incentives in some instances, but there is little evidence that they have any effect in the real world.'<sup>4</sup>

## Policy neutrality of population distribution

21 Over time, States have also raised concerns that both fiscal equalisation and individual State policy choice may influence where people live and in turn impact on the location assessments. The recent Western Australian proposal to close up to 150 remote communities is an illustration of how State policy could impact on dispersion.

22 In the 1988 Review the Commission responded to this concern, in part through reference to Queensland's submission:

The Commission considers that settlement patterns depend primarily on economic and social considerations rather than on fiscal arrangements. While fiscal incentives may have some influence on whether or not citizens migrate from one area to another, this influence has been very much exaggerated in the economics literature. As Queensland indicated in its submission, locational choice is determined mainly by private production and consumption activities, such as development

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<sup>3</sup> Commonwealth Grants Commission, *Report on General Revenue Grant Relativities 1988*, p. 147.

<sup>4</sup> GST Distribution Review, 2012. *Final Report*, p. 140.



opportunities, employment and housing, rather than by the fiscal and other activities of governments.<sup>5</sup>

- 23 While the activities of governments have subsequently not been considered to impact on population distribution, the issue of policy neutrality in determining appropriate measures of the location assessments remains an ongoing issue and is discussed later in this paper from paragraph 34.

## Reliability

- 24 The assessment of dispersion developed in the 1981 Review was not considered to be sufficiently reliable by some States as it relied heavily on judgment due to insufficient available data.
- 25 There has been significant diversity in State views on the reliability of the regional costs assessment, particularly for categories to which cost gradients are extrapolated. For example, in submissions to the 2015 Review, Queensland, Western Australia, Tasmania and the Northern Territory considered the average of the schools and police gradients could be reliably extrapolated to other services. New South Wales did not support extrapolation as it considered that cost differentials and combinations of inputs faced in providing services could be quite different across categories. Victoria did not consider the conceptual case for services other than schools and police was strong enough to justify extrapolation.
- 26 To recognise the perceived unreliability of this assessment States have argued different levels of discounting are appropriate. For example, in submissions to the 2015 Review, New South Wales and Victoria generally supported higher discounts to the regional costs assessment whereas Queensland and Western Australia generally supported lower discounts. The Northern Territory does not support discounting at all as it considers it requires a significant amount of judgment and does not always bring assessments closer to equalisation.
- 27 Individual State views on reliability have been fairly consistent over time.

## Technology

- 28 Victoria has argued (most notably in the submission to the 2004 Review) that the developments in information technology, telecommunications and other approaches to service delivery should reduce the range and level of the dispersion affected costs. It also said that States that continued to incur high levels of dispersion-affected costs did so in part because of their own policy decisions.
- 29 In contrast Queensland, Western Australia, Tasmania and the Northern Territory argued that new technologies had not reduced dispersion-related costs, rather they

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<sup>5</sup> Commonwealth Grants Commission, *Report on General Revenue Grant Relativities 1988*, p. 135.

had improved service standards, increased demands for new services and bridged the gap in service standards between the regional and metropolitan areas. They also noted that deficiencies in infrastructure prevented them from using technology in a cost-effective and reliable manner. Therefore, the use of technology was not as widespread as Victoria claimed.

- 30 The Commission concluded that conceptually the availability of technology changed the mix of inputs used to provide services. This could impact costs through substitution and result in a reduction of costs or an increase in the quality of services implying more of all inputs. It concluded that, due to these impacts moving in different directions, the effects of technology on the dispersion assessment were not large. It also concluded that the impacts were likely to affect States and regions differently but that most effects could be captured in the dispersion factor. This would be done by updating the cost-distance relationships using the latest price schedules and proportions of dispersion affected costs using recent data on State expenses. Alternatively, specific technology based adjustments could be made to the scope and methods used in the assessment. For example, in the 2004 Review, the telephone component was replaced with two separate components; voice and non-voice communication.

## Comparable communities

- 31 Generally, we have observed that services are more expensive to provide in more remote areas. On average, States may respond to this cost pressure, at least for some services, by providing a lower standard of service, although we have not tested this empirically.
- 32 Our regional costs assessment aims to measure the relative spending per client in different regions. This may reflect different costs for comparable services, or different standards of service. Any difference in the number of clients in different areas, is captured in the category assessments, generally through the socio-demographic composition assessment.
- 33 Western Australia argued that HFE would be best served by giving States the capacity to provide the same standard of service to all people, regardless of their remoteness. The Commission, in 2010, considered that this would violate our 'what States do' supporting principle. The 2015 schools regional costs assessment very specifically captures what States do in different regions by calculating funding per student in different areas.

## DATA AVAILABILITY AND POLICY COMPARABILITY

34 Since equalisation was first applied to all States, the Commission has sought a policy neutral measure of the impact of regional costs. The data standards over time and the data that are available have influenced the structure and methodology of the assessment.

### Early data sources

35 In 1980, the Commission asked States to provide dispersion related costs for six expenditure categories. These dispersion related costs included postal and telephone charges, transport costs, location and transfer allowances, and an estimate of wage and salary costs of officers employed in non-metropolitan locations.

36 The States experienced considerable difficulties in providing these dissections. They were unable to separately identify expenditures subject to different kinds of location, distance or population density influences. A further problem arose because the data provided lacked comparability due to both classification problems and policy differences.

37 These data constraints led the Commission to rely heavily on simple, assumption based formulas for assessing dispersion rather than on the empirical data provided. These formulas are described in Box 1.

#### **Box 1            Formulas used to model dispersion funding in 1981**

The 1981 Commission used two different formulas, each relating to a different proportion of expenses. Areas within 50km of a capital city, or within 25km of an urban area with 40 000 people are assumed to have no additional expenses. Outside these areas:

- expenses increase proportionately with distance from a State's capital city
- expenses increase in proportion to the square root of the distance from a capital city (the marginal increase in cost of an additional km in distance is less at large distances from the capital).

38 By 1988, the States were able to provide some data, similar to that the Commission had requested in 1980, and the assessment became more empirically based. It assessed differences in a range of expense drivers, assuming these varied as a function of some geographical classification. The geography used is described in paragraph 46. The expenses assessed were:

- telephone expenditure
- intrastate travelling expenses
- motor vehicle expenses
- expenditure on freight
- locality allowances paid to staff

- State expenditure on patient travel to hospitals.

39 Some aspects of the impact of location on costs were data driven, but some significant judgment was still required. The proportions of expenditure were taken, as far as possible, from State accounts and annual reports, but usually the available information was incomplete and many judgments had to be made.

## Simplified data sources

40 In the 2010 Review, in response to the complexity and reliance on judgment, the Commission simplified its approach. Rather than estimating the impact of individual cost drivers, it measured the average cost per worker for police and schools. It found costs increased with remoteness, and this gradient formed the basis of the regional costs assessment.

41 In 2011, the Australian Curriculum, Assessment and Reporting Authority (ACARA) launched its MySchool website. These data underlying this website provides detailed information for each school in Australia. This data allowed the schools regional costs gradient to be more accurately calculated in the 2015 Review than had been possible with the less comparable State provided data. The reliance on imputing measures was further diminished as the Commission changed from calculating average cost per teacher in each remoteness area to the impact of remoteness on the cost per student in each remoteness area.

42 States have supported the use of ACARA data and State provided police data in developing the regional costs assessment for the 2015 Review.

## EVOLVING GEOGRAPHIC CLASSIFICATIONS

43 The appropriate geographical classification of areas has been a major issue throughout the history of the Regional costs assessment and has also influenced the structure of location assessments. However, the general understanding of how location impacts dispersion and regional costs has been the same. That is, distance from urban centres has always been the foundation of measuring the disability. A number of different geographic classifications with distance from urban centres as their core have been implemented.

## Initial approach

44 When dispersion was first assessed for all States in the 1981 Review, an index was calculated that related the impact of dispersion to the distance from the capital city. The formula differed depending on whether expenditures were considered to increase proportionately or less than proportionately with distance. This concept of a

cost gradient ranging from urban to remote areas has persisted; a cost gradient is still being applied in the Regional costs assessment in the 2015 Review.

## Calculations based on empirical data

- 45 From the 1988 Review, the dispersion disability was considerably reworked in response to criticism that 'earlier methods not only were difficult to understand but also relied too heavily on abstract formulae and not enough on reliable empirical data'.<sup>6</sup> Given the inherent complexity of the influences of dispersion on cost, the Commission sought to develop a simple procedure focusing on major common influences on costs. It used data from States to allow the method to be empirically verified.
- 46 This new approach involved developing a variety of geographical classifications to be applied to different cost components. Some of these classifications were adjusted over time but the approach employed in the 2004 Review was broadly similar to that used in 1988. However, it was not a simple assessment. The Commission variously used the following geographical classifications:
- the geographic cost structures used by telephone companies and freight companies, such as subscriber trunk dialling (STD) regions
  - distances from centres, with the definition of a centre varying from capital city, regional centre or town of 1000 people, depending on the nature of the service being modelled
  - combinations of straight line distances, average sinuosity of the road network in an area, and the mix of sealed and unsealed roads
  - population density
  - areas which are generally inaccessible by road for more than five months in a year due to monsoon conditions
  - standard independent measures of remoteness such as the Rural, Remote and Metropolitan Areas (RRMA) classification and the State-based Accessibility/Remoteness Index of Australia (SARIA).
- 47 Having such a range of geographical classifications resulted in complex assessments that often required a large number of judgment calls to be made because the assessments relied on detailed methods not necessarily supported by adequate data.

## Simplification of geography definitions

- 48 When the location assessment methodology was simplified in the 2010 Review the geographical classifications were also simplified. The Commission decided that only one index of remoteness (SARIA) would be applied across assessments. This measure

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<sup>6</sup> Commonwealth Grants Commission, *Report on General Revenue Grant Relativities 1988*, p. 46.

applied to the regional costs methodology and to categories where the socio-demographic composition included remoteness.

- 49 The appropriate remoteness index to be applied to the dispersion/regional costs assessment had been debated since the first review. Remoteness classifications that have been used in the assessment include:
- a Commission developed concept incorporating density, and distance from both capital cities and urban centres (1993-1998)
  - the Rural, Remote and Metropolitan Areas (RRMA) classification (1999-2003)
  - the State-based Accessibility/Remoteness Index of Australia (SARIA) (2004-2014)
  - ABS remoteness areas based on the Accessibility/Remoteness Index of Australia (ARIA) (2015 onwards).
- 50 Each of these remoteness indexes incorporates both distance and urban centres of varying sizes. All but ABS remoteness areas are State-based measures in that they have a criteria relating specifically to the State capital rather than to an urban centre of a certain size. Rather than being classified as major cities under ABS remoteness areas, Hobart and Darwin are classified as inner regional and outer regional respectively.
- 51 The Commission considered that, in terms of the cost of providing services and the pattern of service use by residents, Hobart and Darwin are more like regional cities of comparable size than they are like capital cities. The move to ABS remoteness areas was contentious; Queensland and Western Australia were critical of the ability of ABS remoteness areas to capture and assess the size of fiscal consequences of remote communities. Queensland did not consider it likely that some aspects of service delivery were not available in States that did not contain a major city (i.e. Tasmania and the Northern Territory). Western Australia considered that truncation<sup>7</sup> did not allow for an accurate assessment of cost pressures beyond a certain distance from a major city. It noted that this attribute resulted in a substantial decline to the proportion of its population classified as very remote; it considered these areas incurred higher costs that were no longer recognised.

## How the remoteness concepts relate

- 52 The criteria used to measure remoteness have differed significantly since 1981. However, the general principle of a cost gradient has survived. We cannot readily measure, on a comparable basis, whether remoteness now redistributes more or less

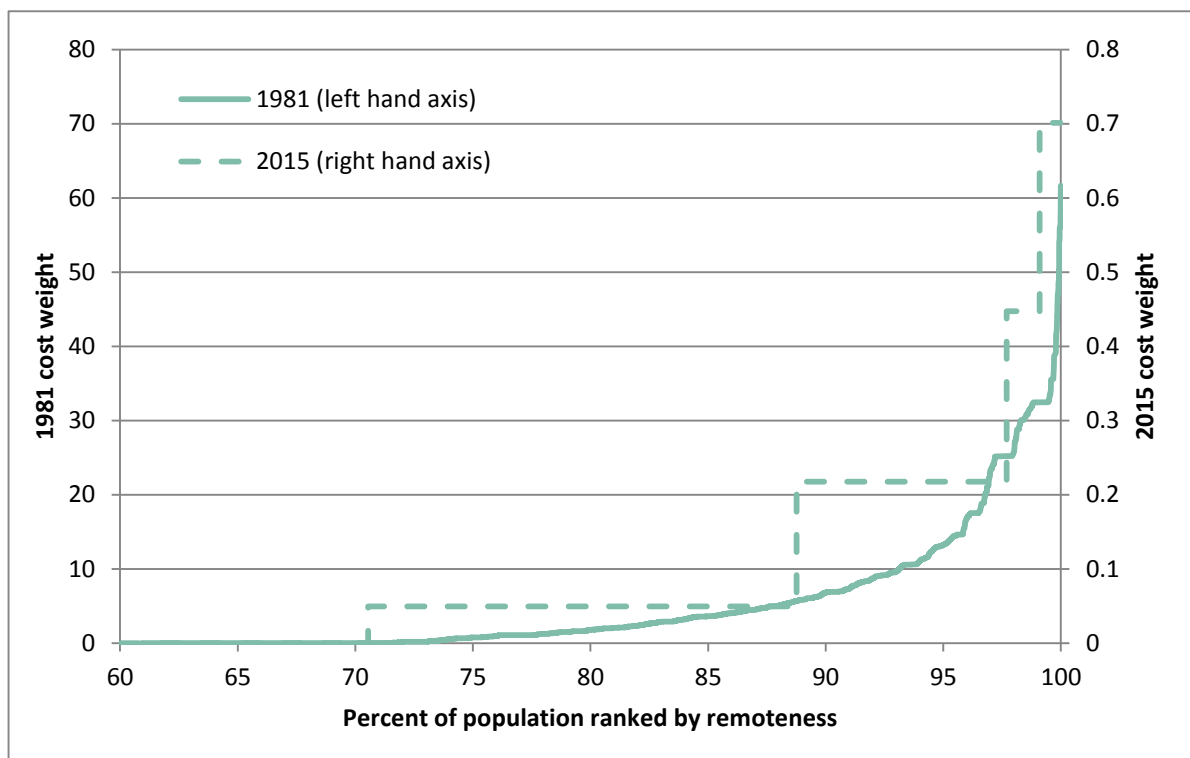
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<sup>7</sup> To avoid very long distances from a large city from having a disproportionate impact on remoteness, distances contributing to the calculation of ABS remoteness areas are truncated at three times the national average distance from each class of service centre.

GST than it has in previous reviews. However, it is possible to calculate how the remoteness gradient related to the dispersion of the population.

53 Figure 1 illustrates the proportion of the population to which the 1981 and 2015 regional cost weights were applied. The graph shows that neither approach attributes increased costs to the least remote 70% of the population. This is approximately the proportion of the population living within 50 km of a capital city (the 1981 approach) and the proportion of the population living in a major city (the 2015 approach). For the rest of the population, in the 1981 approach, the cost of providing services increased linearly as distance from the capital city increased. The individual who is in the 90<sup>th</sup> percentile for remoteness, lives 390km from a capital city, and in 1981 would have had a cost weight of 6.80 (applied to only a proportion of total expenses). In 2015, the 90<sup>th</sup> percentile for remoteness was within the outer regional areas, and attracted a cost weight of 1.22. The difference in scale between these two approaches reflects that the 2015 approach applied to all costs within affected categories, while the 1981 approach applied to only a small proportion. We have not been able to identify that proportion from surviving documentation, if it were 10% (and we have no reason to suspect it is), we could conclude that the lines in Figure 1 are comparable.

**Figure 1 Regional costs gradient over time**



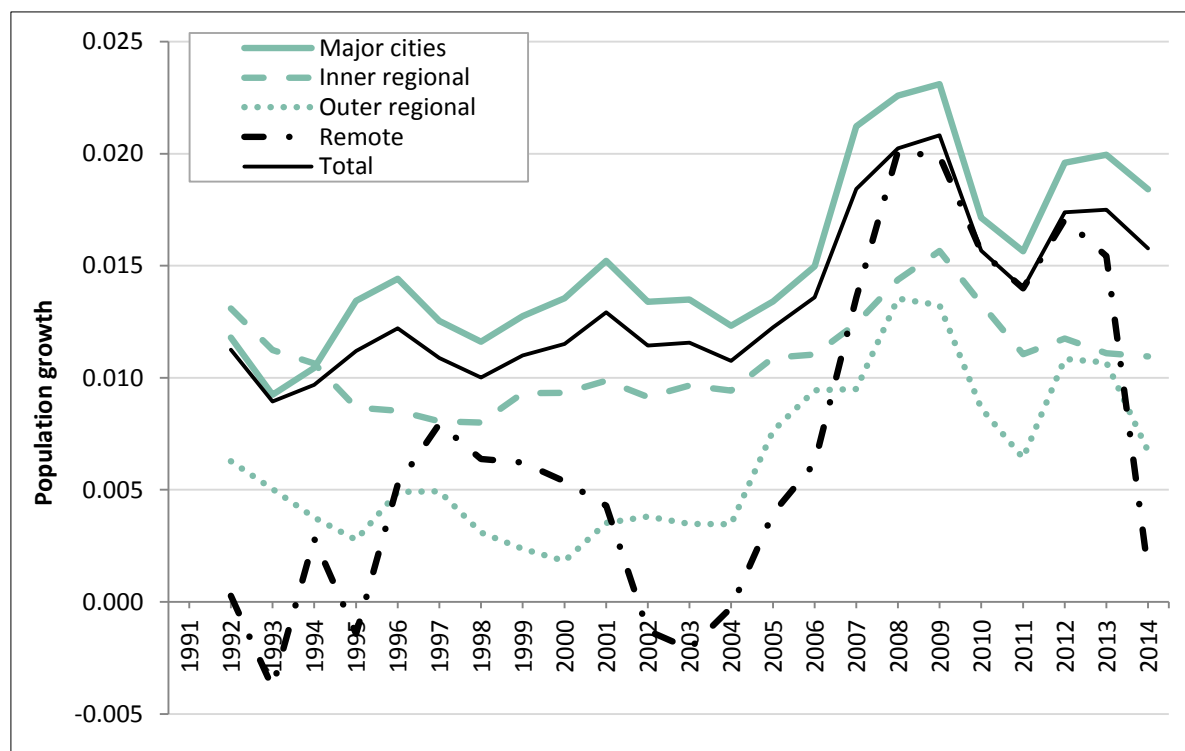
Source: Formula provided in the 1981 Report, State provided police data, ACARA data.

Note: Only the linear formula described in Box 1 has been presented here.

## CHANGING POPULATION DISTRIBUTION AND THE GST IMPACT

- 54 In addition to changes made to how we assess regional costs/dispersion, the actual dispersion of State populations has changed. The Australian population is becoming more urbanised. As more people move to urban areas, the remoteness weights are applied to a smaller proportion of total population.
- 55 Figure 2 shows that since 1991 the population in major cities has consistently grown faster than the national population while the population in all other areas has grown slower than the national population. The more remote areas generally have slower population growth than the more accessible areas, although between 2008 and 2013, remote populations grew at about the national average. As a result their share of the national population stopped declining in this period.

**Figure 2 Population growth by remoteness area over time**



Source: Australian Bureau of Statistics. ABS Cat No. 3218.0, *Population Estimates by Statistical Geography* (ASGS 2011), 1991 to 2014.

- 56 Throughout its history, the regional costs and dispersion assessments have redistributed GST (or FAGs) from centralised States of New South Wales, Victoria and the ACT, to other States. The size and pattern of this redistribution has varied as population distributions, State spending, and our methods for making the assessment have changed.