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Local Economic Competitiveness in Greater Perth

Georgia Harford-Mills

The key findings of this Bulletin are:

- Between 2011 and 2016, levels of competitiveness for Greater Perth were comparable or ahead of other major Australian cities.
- The main drivers of local competitiveness across Greater Perth by industry were health care and social assistance, accommodation and food services, construction and retail trade. Growth in these industries was underpinned by favourable local conditions across the metropolitan region.
- Sectors that are critical to the future of Perth lagged in terms of competitiveness over the 2011-2016 period, particularly in terms of professional, scientific and technical services.
- Across the metropolitan region, local competitiveness was high in the North-West sub-region and in the South Metropolitan Peel sub-region.
- SA2s within the Central sub-region had relatively low levels of overall local competitiveness in comparison to those in high growth, periphery SA2s.
- Competitiveness by industry sector was highly variable, emphasising the importance of local context in the development and implementation of urban policy.

Introduction

This FACTBase Bulletin presents an analysis of economic competitiveness in Greater Perth. It draws on a commonly used technique in assessing competitiveness, shift-share analysis, which provides insights into the performance of both locations and industry sectors. It updates earlier research from FACTBase Bulletin 10 that was undertaken in 2010 (Tonts, 2010). This Bulletin compares Perth with other major Australian cities, before considering competitiveness at a more local scale using Statistical Area Level 2 (SA2) data. The analysis presented here draws on Australian Bureau of Statistics, Census of Population, Working Population Profiles for the period 2011 to 2016. As in Plummer et al. (2014), employment data is used as a measure of economic performance due to the considerable attention it is given throughout Australian policy.

Understanding Local Competitiveness

Local economic competitiveness has become an increasingly important focus of policy-makers and planners in promoting urban development (Plummer et al., 2014). In essence, competitiveness in this context refers to local factors that drive economic growth. These attributes include human capital, innovation, technological advancement, entrepreneurship, agglomeration, infrastructure and accessibility, to name a few. Collectively, they contribute to the expansion of local economies and to increased prosperity and job creation, resulting in economic performance above the expected average.

It is important to note that competitiveness is a relative concept. In other words, it emphasises that some places, and their industry sectors, will perform better than others. This performance is in part linked to the presence or absence of some of those attributes listed earlier. It is also noteworthy that this competition is increasingly global. No longer is it enough for a local economy to be able to outcompete a neighbouring locality. Rather, it needs to be competitive relative to local economies in other parts of the nation or world. For Perth, this means considering performance relative to other Australian cities, and even cities in Asia, the Americas and Europe.

One means of assessing local competitiveness is through shift-share analysis. This technique has been widely used in urban economic analysis since the 1960s and provides a means of assessing competitiveness for individual sectors within a given geographical area (see Plummer et al., 2014). Shift-share also provides a means of comparing levels of competitiveness across localities. In this Bulletin, the competitiveness of Greater Perth is compared with other major Australian cities. The Bulletin then turns to a more localised analysis within the metropolitan region, focusing on SA2 areas. Further explanations of the shift-share methodology can be found at Appendix 1, which is drawn from techniques applied in Plummer et al. (2014).

Competitiveness in the National Urban System

Table 1 provides an overview of the local competitiveness score for each Australian capital city, and indicates the extent to which local competitive effects contribute to the economic performance of each capital city. Comparing Greater Perth to other Australian capitals, it has the second highest level of competitiveness, with a score of 7.29% behind Greater Sydney at 10.98%. This means that 7.29% of Perth's employment growth was linked to local competitiveness factors rather than being accounted for by broader national growth patterns or the particular combination of industries within the Perth and Peel region.

Table 1. Australian Capital Cities Local Competitiveness Score, 2011 to 2016

	Greater Perth	Greater Adelaide	Greater Brisbane	Greater Melbourne	Greater Sydney
Local Competitiveness	7.29%	1.28%	5.55%	5.96%	10.98%

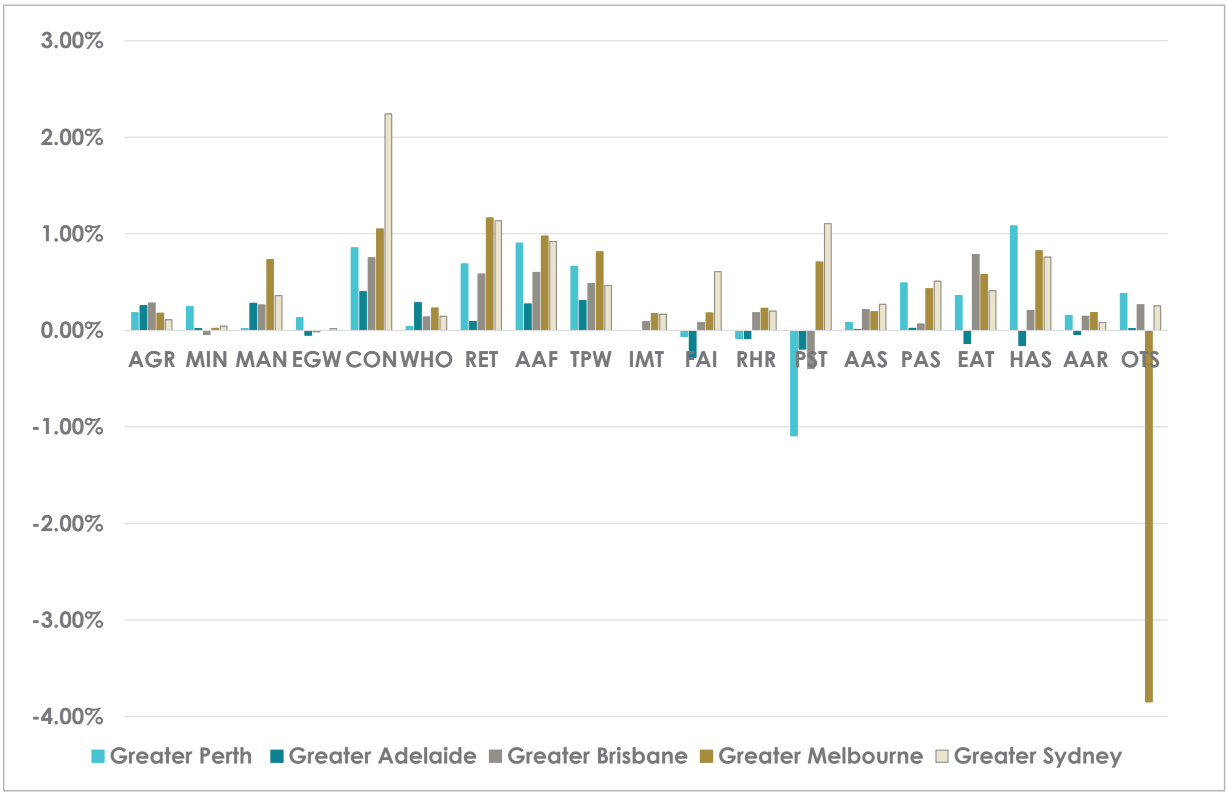
Source: ABS, 2012; ABS, 2017.

The competitiveness score in Table 1 for each capital city is determined by calculating the individual competitiveness score of industries within that economy. This provides insights into which industry sectors are driving economic performance, as shown in Figure 1.

For Greater Perth, the most competitive sectors between 2011 and 2016 were health care and social assistance, 1.08%; accommodation and food services, 0.90%; construction, 0.86%; and retail trade, 0.69%. This suggests that Greater Perth has particular local advantages that underpin employment growth that is faster than what might be expected based on its economic structure and the wider national economy for these industries.

Of importance for the Greater Perth economy was the significant underperformance of professional, scientific and technical services (PST). This is noteworthy given the value of this sector to economic growth and innovation, and suggests the need for explicit strategies to enhance success. Perth performed worse than all Australian cities in this sector, although Adelaide and Brisbane also underperformed. In essence, these cities were 'outcompeted' for growth by Melbourne and Sydney. Factors that are likely to have underpinned this include human capital, technological capacity, access to investment funds and infrastructure capabilities.

Figure 1. Employment Growth Linked to Local Competitiveness for Australian Cities by Industry, 2011 to 2016



AGR	Agriculture, forestry and fishing
MIN	Mining
MAN	Manufacturing
EGW	Electricity, gas, water and waste services
CON	Construction
WHO	Wholesale trade
RET	Retail trade
AAF	Accommodation and food services
TPW	Transport, postal and warehousing
IMT	Information media and telecommunications
FAI	Financial and insurance services
RHR	Rental, hiring and real estate services
PST	Professional, scientific and technical services
AAS	Administrative and support services
PAS	Public administration and safety
EAT	Education and training
HAS	Health care and social assistance
AAR	Arts and recreation services
OTS	Other services

Source: ABS, 2012; ABS, 2017.

Greater Sydney, which had the highest local competitiveness score of all capital cities, was particularly competitive in the industries of construction, 2.24%; retail trade, 1.14%; and professional, scientific and technical services, 1.11%. Greater Sydney had no industry with a negative local competitiveness score, meaning that local factors within this capital city facilitated growth in all industry sectors and provided for a diverse local economy. This is supported by previous FACTBase research, which identified that Sydney had a broad economic base with a diverse set of industries driving growth (Kazalac, 2018).

Greater Melbourne, Australia's third most competitive capital city, ranked poorly in other services at -3.85%, which is defined by the ABS as 'a broad range of personal services; religious, civic, professional and other interest group services; selected repair and maintenance activities; and private households employing staff' (ABS, 2013). Excluding this sector from Melbourne's local competitiveness score brings it up to 9.81%, which would place it second behind Sydney, and ahead of Perth, remaining in third place.

Industries in Greater Melbourne that were positively influenced by local effects between 2011 and 2016 included retail trade, 1.16%; construction, 1.05%; accommodation and food services, 0.98%; health care and social assistance, 0.82%; transport, postal and warehousing, 0.81%; manufacturing, 0.73%; and professional, scientific and technical services, 0.71%. This high level of competitiveness across a broad range of industry sectors indicates that local factors drive growth across the economy, rather than in a narrow set of industries.

Greater Brisbane had fewer industries that were influenced by positive local effects, with only two scoring above 0.70%. These included education and training, at 0.79% and construction, at 0.75%. The least competitive capital city, Greater Adelaide had few industries in which local effects contributed to positive growth, with construction the highest scoring at 0.40%.

Competitiveness across the Greater Perth Region

Understanding the competitiveness of Greater Perth's SA2s assists in identifying locations where local factors are contributing to economic growth. Figure 2 groups SA2s across the metropolitan region into areas of high, medium and low local competitiveness scores. It is important to note that this Figure does not indicate whether these areas have experienced significant employment growth or decline, it simply shows those locations where change can be attributed to particular local conditions.

Areas that were highly competitive between 2011 and 2016 were predominantly located in outer Greater Perth, both in the North-West sub-region and in the South Metropolitan Peel sub-region. Most of these locations were competitive across a range of industry sectors, which contributed to their high overall scores, such as in Forrestdale – Harrisdale – Piara Waters, which had seven industries with more than 15% of employment growth linked directly to local competitiveness.

Clusters of highly competitive SA2s could also be found within and surrounding existing industrial estates. The SA2s of Hope Valley – Postans, Bertram – Wellard (West), Parmelia – Orelia, and Calista are all located within or close to the Western Trade Coast, Western Australia's premier industrial area, and were highly competitive across the industries of manufacturing and construction, with some also providing local conditions for growth in transport, postal and warehousing industrial activities.

Many of the well-established SA2s within the Central sub-region of Greater Perth demonstrated relatively low levels of local competitiveness including Subiaco – Shenton Park, Mount Lawley – Inglewood, Perth City and South Perth – Kensington. This does not necessarily mean that these locations are experiencing a decrease in employment over this period, however it means that growth tended to be constrained by local factors. Understanding the exact nature of these local factors requires further investigation, but can include variables such as technological infrastructure, transport efficiency, property costs and human capital.

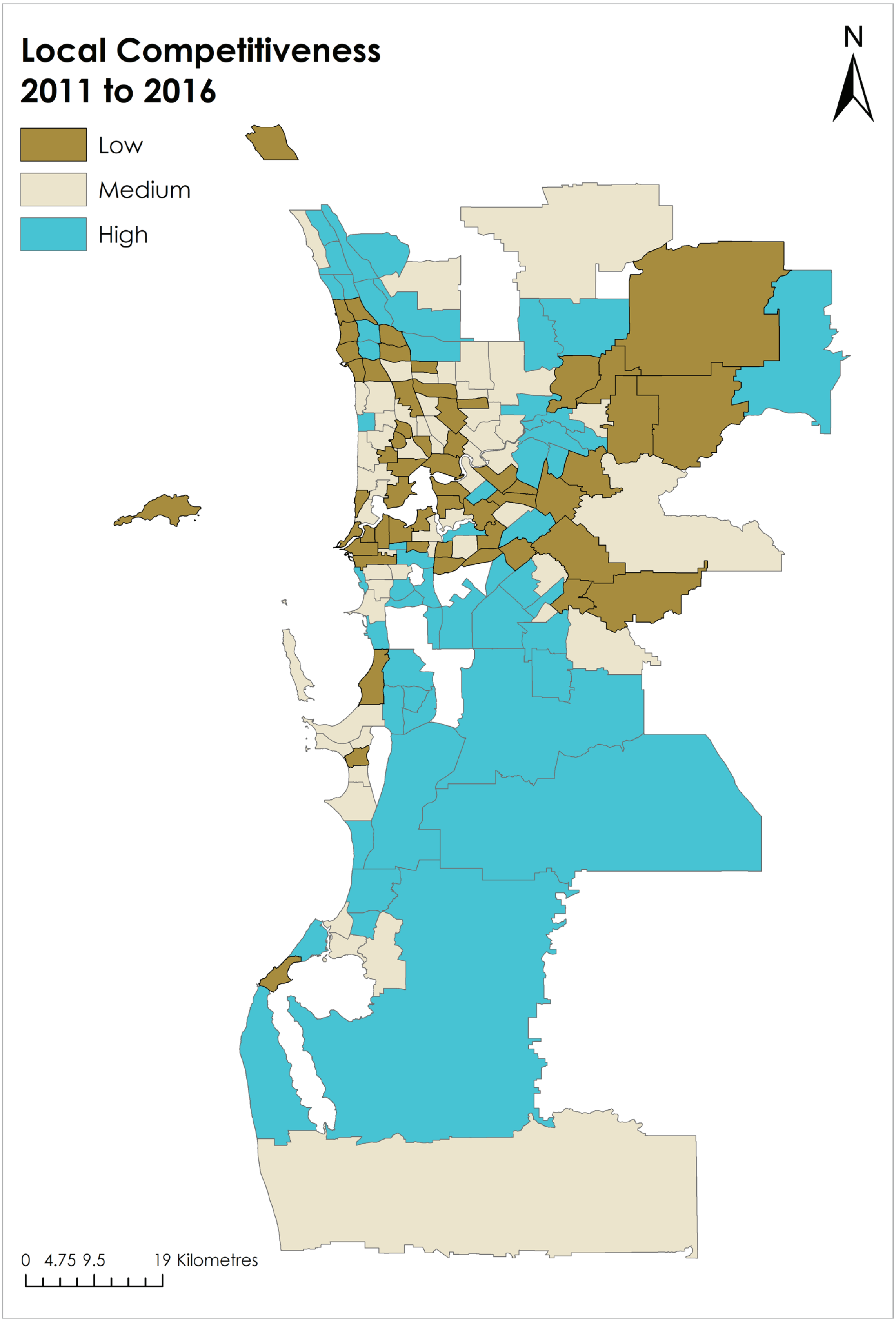
Retail trade was the most significant industry to influence those SA2s falling into the low local competitiveness bracket. Yet, at the broader metropolitan level the sector was highly competitive. In essence, this points to a high degree of spatial variability in competitiveness across the sector and emphasises the importance of local conditions in shaping its performance.

Professional, scientific and technical services and education and training were also significant in influencing locations which had overall low local competitiveness. Both industries were influenced by local conditions which resulted in constrained employment growth within 12 SA2s in the low local competitiveness bracket.

Overall, this paints a complex picture of local competitiveness across Greater Perth, and suggests that there are multiple factors that influence a location's ability to attract employment growth over and above the national average. SA2s within the Central sub-region with significantly low local competitiveness scores are potentially impacted by infrastructure that is ageing, congestion and transport efficiency issues and higher land costs, all of which impact on their ability to enhance local performance.

Comparatively, outer suburban SA2s are likely to have higher population growth, newer infrastructure and the ability to attract investment in industry sectors that have large space requirements seeking land at a lower cost.

Figure 2. Local Competitiveness across Greater Perth's SA2s, 2011 to 2016



Source: ABS, 2012; ABS, 2017.

In terms of urban policy, this points to a need to not only consider competitiveness at the broader metropolitan scale, but also at local scales. The spatial variability evident in Greater Perth suggests that local context and need is particularly important in driving industry performance. Similarly, the data suggests that local context needs to be understood alongside highly variable performance across industry sectors.

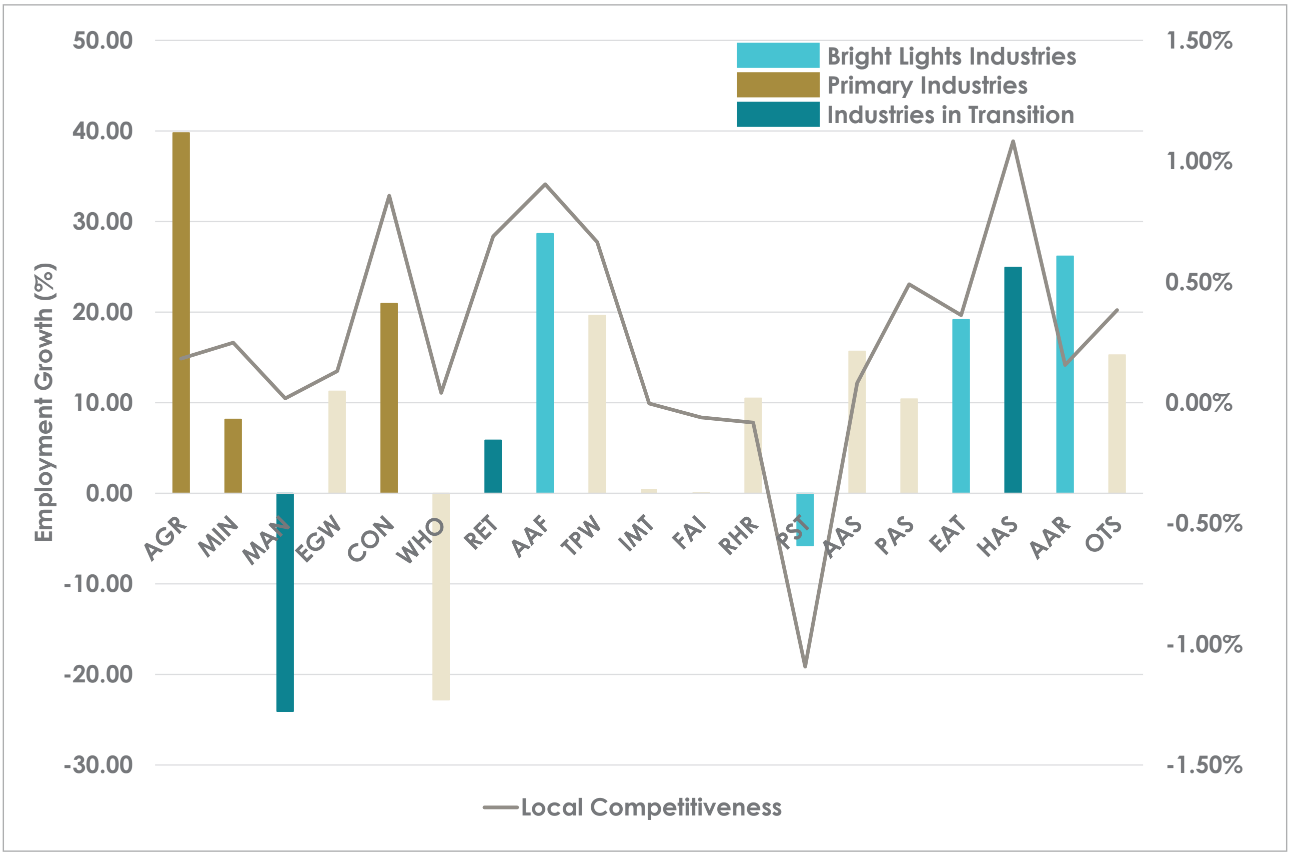
Competitiveness by Sector in Greater Perth

This section delves further into local competitiveness across the Greater Perth region by unpacking the most competitive industry sectors by location. This, in turn helps to determine which SA2s are the most significant in providing local conditions that boost high performing industries. The Committee for Perth's FACTBase Special Report – *Perth as a resilient economy*, grouped industries into three categories - Bright Lights, Primary Industries and Industries in Transition (Tonts et al., 2017). This section will reflect on the competitiveness within each of these industry categories to determine whether local factors across Greater Perth's SA2s are contributing towards growth or decline in each sector.

As suggested in recent research across Europe, North America and Australasia, the factors that appear to enhance local competitiveness are diverse, and include attributes such as technological adaptation, entrepreneurship, knowledge and human capital, agglomeration, infrastructure investment, local amenity and economic and social diversification (Plummer et al., 2014).

Figure 3 shows how each industry performed in terms of employment growth by sector, and how the local competitiveness across Greater Perth influenced each of these industries between 2011 to 2016. In addition, it identifies each of the three industry categories to show how local competitiveness is affecting their performance across Greater Perth.

Figure 3. Greater Perth's Growth in Employment by Industry Sector and Growth Linked to Local Competitiveness, 2011 to 2016



Source: ABS, 2012; ABS, 2017.

Bright Lights Industries

The Bright Lights industries are those that are emerging within Greater Perth's economy and include tourism; professional, scientific and technical services; higher education and vocational education and training; and arts and recreation services.

These industries provide opportunity for economic growth and diversification due to their size and turnover activity, as identified by Tonts et al. (2017).

Table 2 identifies the most competitive, mid-performing and least competitive locations for each of the Bright Lights Industries between 2011 and 2016 for 160 SA2s across the metropolitan region (some SA2s were excluded due to changing boundaries, which included Beeliar – Wattleup, Jandakot and Casuarina – Wandi; Working Population Profiles were not available for some SA2s).

Table 2. Most Competitive SA2s in Greater Perth's Bright Lights Industries, 2011 to 2016

	Accommodation and food services	Professional, scientific and technical services	Education and training	Arts and recreation services
1.	Forrestdale – Harrisdale – Piara Waters	North Coogee	Butler – Merriwa – Ridgewood	Serpentine – Jarrahdale
2.	Baldivis	Bertram – Wellard (West)	Padbury	South Perth – Kensington
3.	Currambine – Kinross	Forrestdale – Harrisdale – Piara Waters	Byford	Dawesville – Bouvard
4.	North Coogee	Iluka – Burns Beach	Baldivis	Forrestdale – Harrisdale – Piara Waters
5.	Success – Hammond Park	Baldivis	Mandurah – North	Marangaroo
6.	Butler – Merriwa – Ridgewood	Chidlow	Forrestdale – Harrisdale – Piara Waters	Maylands
7.	Carramar	Coolbellup	Bertram – Wellard (West)	Leeming
8.	City Beach	Huntingdale – Southern River	Banjup	Mundaring
9.	Girrawheen	Wembley – West Leederville – Glendalough	Ellenbrook	Singleton – Holden Bay – Secret Harbour
10.	Scarborough	The Vines	Mandurah – East	Parmelia – Orelia
75.	Port Kennedy	Mount Lawley – Inglewood	Rockingham	Subiaco – Shenton Park
76.	Coogee	Duncraig	Subiaco – Shenton Park	Booragoon
77.	Bateman	Wembley Downs – Churchlands – Woodlands	Fremantle	Mandurah
78.	Stirling – Osborne Park	Balga – Mirrabooka	Belmont – Ascot – Redcliffe	Manning – Waterford
79.	Swanbourne – Mount Claremont	Ellenbrook	Currambine – Kinross	Bicton – Palmyra
80.	Bentley – Wilson – St James	Canning Vale-West	Morley	Willagee
81.	Innaloo – Doubleview	Mandurah	Bentley – Wilson – St James	Butler – Merriwa – Ridgewood
82.	Joondalup – Edgewater	Hope Valley – Postans	Lesmurdie – Bickley – Carmel	Osborne Park Industrial
83.	Stratton – Jane Brook	Herdsman	Mullaloo – Kallaroo	Henderson
84.	Middle Swan – Herne Hill	Hamilton Hill	Mandurah	Welshpool
151.	Calista	Mullaloo – Kallaroo	Helena Valley – Koongamia	City Beach
152.	Marangaroo	Roleystone	Cottesloe	Gidgegannup
153.	Mullaloo – Kallaroo	Stirling – Osborne Park	Winthrop	Lockridge – Kiara
154.	Padbury	Gidgegannup	Beechboro	Safety Bay – Shoalwater
155.	Rivervale – Kewdale – Cloverdale	Subiaco – Shenton Park	Marangaroo	Floreat
156.	Safety Bay – Shoalwater	South Perth – Kensington	Tuart Hill – Joondanna	North Coogee
157.	Mandurah – South	Applecross – Ardross	Warnbro	Camillo – Champion Lakes
158.	Coolbellup	Leeming	Girrawheen	Balga – Mirrabooka
159.	Hillarys	Glen Forrest – Darlington	Thornlie	Mandurah East
160.	Parkwood – Ferndale – Lynwood	Perth City	Balga – Mirrabooka	Hope Valley – Postans

Source: ABS, 2012; ABS, 2017.

The most competitive locations for growth in accommodation and food services largely occurred in places outside of the Central sub-region, in periphery areas such as Forrestdale – Harrisdale – Piara Waters, Baldivis, Carramar and Butler – Merriwa – Ridgewood. This is unsurprising, as the metropolitan region continues to expand, it is expected that additional hospitality services are in increasing demand.

While professional, scientific and technical services was the least competitive industry in Greater Perth, across the metropolitan region there were still SA2s that performed well in terms of creating local conditions to grow employment in this industry sector. These locations were also predominantly outside of the Central sub-region, which is where a majority of the employment in this industry is located. This means that existing and well-established areas of an industry sector will not necessarily result in a greater ability to attract additional growth in employment.

Highly competitive education and training SA2s were widely spread across the metropolitan region between 2011 and 2016. These locations are likely influenced by the establishment of infrastructure investment in the form of new education and training facilities, which drives employment growth above the national benchmarks. For example, the opening of Butler College in 2013 could explain why Butler – Merriwa – Ridgewood was the top performing SA2 in terms of local competitiveness (Butler College, 2018).

The final Bright Lights industry to be examined was arts and recreation services. Despite this industry experiencing significant employment growth between 2011 and 2016, of 26.17% across Greater Perth, local competitiveness was low compared to other Australian cities, only 0.16%. This means that growth in arts and recreation in Greater Perth was not enhanced by local conditions but led by a more general expansion of the sector. It also suggests that more directed strategies that improve competitiveness, like investment in infrastructure and talent development, are likely to further drive growth over and above what is already being experienced.

Primary Industries

The Primary Industries identified in *Perth as a resilient economy* include agriculture, forestry and fishing; mining; and construction, all of which are strong performers and contribute significantly to Greater Perth's economy. Table 3 identifies the most competitive, mid-performing and least competitive locations for each of the Primary Industries between 2011 and 2016.

Table 3. Most Competitive SA2s in Greater Perth's Primary Industries, 2011 to 2016

	Agriculture, forestry and fishing	Mining	Construction
1.	Bullsbrook	Waroona	Hope Valley – Postans
2.	Hope Valley – Postans	Pinjarra	Forrestdale – Harrisdale – Piara Waters
3.	Mundijong	Perth Airport	Bertram – Wellard (West)
4.	Tapping – Ashby – Sinagra	Bertram – Wellard (West)	North Coogee
5.	Carramar	Applecross – Ardross	Mundijong
6.	High Wycombe	Hope Valley – Postans	Yangebup
7.	Cottesloe	Serpentine – Jarrahdale	The Vines
8.	Huntingdale – Southern River	Forrestdale – Harrisdale – Piara Waters	Beckenham – Kenwick – Langford
9.	Mandurah – East	Stratton – Jane Brook	South Lake – Cockburn Central
10.	Beechboro	Gidgegannup	Helena Valley – Koongamia
75.	Kwinana Industrial	Nollamara – Westminster	South Perth – Kensington
76.	Middle Swan – Herne Hill	Hillarys	North Perth
77.	Bassendean – Eden Hill - Ashfield	Cannington – Queens Park	Welshpool
78.	Dianella	Singleton – Golden Bay – Secret Harbour	O'Connor
79.	Mount Lawley – Inglewood	Greenfields	Nedlands – Dalkeith – Crawley
80.	Bertram – Wellard (West)	Dianella	Tuart Hill – Joondanna
81.	Parmelia – Orelia	Joondalup – Edgewater	Subiaco – Shenton Park
82.	Success – Hammond Park	Butler – Merriwa – Ridgewood	Gosnells
83.	Iluka – Burns Beach	Success – Hammond Park	Seville Grove
84.	Henderson	Currambine – Kinross	East Fremantle
151.	Lesmurdie – Bickley – Carmel	Mundaring	Heathridge – Connolly
152.	Coogee	Kwinana Industrial	Huntingdale – Southern River
153.	Baldivis	Camillo – Champion Lakes	Kingsley
154.	Bicton – Palmyra	South Lake – Cockburn Central	Padbury
155.	North Coogee	Nedlands – Dalkeith – Crawley	Camillo – Champion Lakes
156.	Wanneroo	Bullsbrook	Waroona
157.	Gidgegannup	Yanchep – Two Rocks	Kwinana Industrial
158.	Roleystone	Forrestfield – Wattle Grove	Yanchep – Two Rocks
159.	Forrestdale – Harrisdale – Piara Waters	Belmont – Ascot – Redcliffe	Murdoch – Kardinya
160.	Yanchep – Two Rocks	Como	Herdsman

Source: ABS, 2012; ABS 2017.

The agriculture, forestry and fishing sector includes a complex array of activities from production through to aspects of agribusiness. This latter component of the sector is particularly important in some of Perth's inner metropolitan areas given the role of industry groups, corporate agribusiness and advisory services. Outer metropolitan areas tend to be led by more production oriented activities, particularly horticulture, dairy and equine industries. In a number of coastal areas, the fisheries industries remain important.

Mining also exhibits a complex structure linked to both the leadership and management of the industry and aspects of production and logistics. Waroona and Pinjarra perform particularly well, as does the emerging logistics and remote area operations hub around Perth Airport. There are some usual performers in the top 10, such as Applecross – Ardross where rapid growth in the presence of smaller companies over the period emerged.

Across Greater Perth, construction was the third most competitive industry for the entire metropolitan region. This means that generally, local conditions in Greater Perth contribute to growth of this industry. An examination of SA2s which were highly competitive in construction identified that a majority of these were in outer metropolitan suburbs.
As the region continues to grow, construction of new residences to house our population is likely to increase local competition in this industry for SA2s in growing outer suburbs, making them more competitive than the rest of the nation.

Industries in Transition

The Industries in Transition identified by *Perth as a resilient economy* included manufacturing, retail trade and health care and social assistance. These industries were recognised as a key part of the Greater Perth economy, however are likely to face significant disruption in the near future due to changes in technology, social structure and increasing international competition (Tonts et al., 2017).

Table 4 identifies the most competitive, mid-performing and least competitive locations for each of the Industries in Transition between 2011 and 2016.

Table 4. Most Competitive SA2s in Greater Perth's Industries in Transition, 2011 to 2016

	Manufacturing	Retail trade	Health care and social assistance
1.	Hope Valley – Postans	Forrestdale – Harrisdale – Piara Waters	Murdoch – Kardinya
2.	Forrestdale – Harrisdale – Piara Waters	Baldivis	Forrestdale – Harrisdale – Piara Waters
3.	Bertram – Wellard (West)	Halls Head – Erskine	Banjup
4.	Henderson	Bertram – Wellard (West)	Midland – Guildford
5.	Chidlow	North Coogee	Willagee
6.	Parmelia – Orelia	Success – Hammond Park	Currambine – Kinross
7.	Calista	Butler – Merriwa – Ridgewood	Bateman
8.	Bullsbrook	Clarkson	Success – Hammond Park
9.	North Coogee	Parmelia – Orelia	East Victoria Park
10.	Madeley – Darch – Landsdale	Willagee	Ellenbrook
75.	Perth Airport	Rockingham	Rockingham
76.	Safety Bay – Shoalwater	Perth City	Falcon – Wannanup
77.	Woodvale	Wembley – West Leederville – Glendalough	Scarborough
78.	Subiaco – Shenton Park	Nollamara – Westminster	Thornlie
79.	Ocean Reef	Port Kennedy	Madeley – Darch – Landsdale
80.	Hillarys	The Vines	Mundijong
81.	Mandurah	Gosnells	Balcatta – Hamersley
82.	Warnbro	Nedlands – Dalkeith – Crawley	Heathridge – Connolly
83.	Scarborough	Kelmscott	Innaloo – Doubleview
84.	Girrawheen	Mosman Park – Peppermint Grove	Woodvale
151.	Forrestfield – Wattle Grove	Yangebup	Subiaco – Shenton Park
152.	Maddington – Orange Grove	Swan View – Greenmount – Midvale	Girrawheen
153.	Bassendean – Eden Hill - Ashfield	Glen Forrest – Darlington	Melville
154.	Rivervale – Kewdale – Cloverdale	Heathridge – Connolly	Nollamara – Westminster
155.	Kwinana Industrial	Calista	Mount Lawley – Inglewood
156.	Balcatta – Hamersley	Bull Creek	Waikiki
157.	Welshpool	Rivervale – Kewdale – Cloverdale	Yanchep – Two Rocks
158.	Bayswater – Embleton – Bedford	Hillarys	Fremantle
159.	Kewdale Commercial	Mandurah	East Fremantle
160.	Coogee	Parkwood – Ferndale – Lynwood	Middle Swan – Herne Hill

Source: ABS, 2012; 2017.

Manufacturing across Greater Perth declined in terms of number of employees, however local conditions across the metropolitan region meant that this sector was still competitive. This means that without these locally competitive factors, manufacturing may have experienced an even greater decline in employees between 2011 and 2016.

Retail trade is an industry that has gone through significant disruption over the past decade, with online shopping creating unprecedented competition on a global scale for the sector. Despite this, Greater Perth still experienced a slight increase in the number of employees engaged in this industry between 2011 and 2016, by 5.87%, which was likely assisted by local competitiveness in this industry, being fourth highest across the metropolitan region.

SA2s that assisted growth in retail trade employment above the national average were similar to those identified earlier for accommodation and food services, such as Forrestdale – Harrisdale – Piara Waters and Baldivis. Again, it is likely that these SA2s are assisted by high growth conditions in outer metropolitan Greater Perth.

Health care and social assistance was Greater Perth's most competitive sector across the metropolitan region, growing by 24.93% to reach 110,161 employees by 2016. This was underpinned by local competitive factors across a number of SA2s throughout the metropolitan region.

The location of hospitals and aged care facilities is likely to have a substantial impact on the local competitiveness of SA2s in health care and social assistance industries. This was the case for Murdoch – Kardinya, which was likely influenced by the opening of Fiona Stanley Hospital in 2014.

It is noteworthy that across a number of industry sectors, local competitiveness was low in the Kwinana Industrial SA2, which scored poorly in mining, construction and manufacturing. As identified in earlier research by the Committee for Perth (Harford-Mills, 2018), a decline in employment in Kwinana could be potentially linked to technological advances and the increasingly global nature of enterprise. This highlights the complexity of determining local conditions which can be associated with growth and emphasises the importance in understanding local and historical context during decision-making processes.

Conclusion

As identified by this Bulletin, local competitiveness is important in driving economic activity and can substantially impact on performance, creating growth in particular sectors above and beyond the expected average. Across Greater Perth, local competitiveness in a few key SA2s meant the difference between employment growth or decline across an entire industry sector.

Understanding local conditions that are important for driving growth in particular industry sectors is important, however this research identified the need to understand local context due to the highly complex nature of Greater Perth's economy. Increasing global competition has no doubt added additional complexity in understanding local drivers which result in a location's ability to grow employment and therefore produce a competitive economy.

The research also highlighted the importance of understanding local competitiveness within the confines of a specific industry sector, as some industries will bolster a local economy whilst others detract from the same location, resulting in a net overall growth or decline in employment within the area.

Whilst local competitiveness is clearly an important consideration, there are a number of macroeconomic processes that need to be understood when assigning policies that seek to enhance economic performance. These include commodity prices, exchange rates, trade policies and interest rates (Plummer et al., 2014).

Clearly, Greater Perth has pockets of areas that perform well in specific and related industry sectors, which can be assisted by targeted strategies and policies which take into account the local economic landscape.

Appendix A: Shift-Share Analysis Explained

The shift-share analysis in this Bulletin was conducted using techniques from Plummer et al. (2014), as follows:

For each census period, *t*, let the regional economy be subdivided into *r* localities (*r* = 1,.....*R*) defined in terms of Statistical Area Level 2s (SA2s) across Greater Perth. The economic activity in each locality is measured in terms of the number of persons employed (*E*) disaggregated by industrial sector *i*, where the locality has *i*=1,......*N* industrial sectors. Accordingly, the number of persons employed in industrial sector *i* in locality *r* at time t is E_{ir}^{t}. Hence, the growth rate in employment between period t and period *t*-1 in region *r*, industrial sector *i* is defined as:

(1)

$$g_{ir} = \frac{E_{ir}^{t}}{E_{ir}^{t-1}} - 1$$

Similarly, the growth rate in SA2 *r* is:

(2)

$$g_{r}^{t} = \frac{\sum_{i}^{N} E_{ir}^{t}}{\sum_{i}^{N} E_{ir}^{t-1}} - 1 = \sum_{i=1}^{N} \theta_{ir}^{t-1}\, g_{ir}^{t}$$

Where $\theta_{ir}^{t-1} = \frac{E_{ir}^{t-1}}{\sum_{i=1}^{N} E_{ir}^{t-1}}$ is the employment in industry *i*, region *r*.

Similarly, the growth rate in industry *i* across the reference economy is:

(3)

$$g_{i} = \frac{\sum_{r}^{R} E_{ir}^{t}}{\sum_{r}^{R} E_{ir}^{t-1}} - 1$$

And, the growth rate in the reference economy is:

(4)

$$g_{N}^{t} = \sum_{i}^{N} \lambda_{i}^{t-1}\, g_{i}^{t}$$

Where $\lambda_{i}^{t-1} = \frac{E_{i}^{t-1}}{\sum_{i=1}^{N} E_{i}^{t-1}}$ is the share of employment in industry *i* in the reference economy.

The aim of this shift-share decomposition was to account for differences in growth rates between each SA2 and Australia (A_r), expressed as:

(5)

$$A_r^t = g_r^t - g_n^t = \sum_{i=1}^{N} \theta_{ir}^{t-1}\, g_{ir}^t - \sum_{i=1}^{N} \lambda_i^{t-1}\, g_i^t$$

Consequently, employment variances depend on the local (θ_{ir}^t) and reference economy (λ_i^t), shares and industry growth rates. The industry mix effect (*IM_r*) is the growth rate that would have occurred locally if each industry had grown at the corresponding rate in the reference economy. That is, the variation between the amount of employment in a specific industry in the local economy compared to the amount of employment in the same industry in the reference economy:

(6)

$$IM_r^t = \frac{\sum_{i=1}^{N} E_{ir}^{t-1} g_i^t}{\sum_{i=1}^{N} E_{ir}^{t-1}} - \sum_{i-1}^{N} \lambda_i^{t-1} g_i^t = \sum_{i=1}^{N} (\theta_{ir}^{t-1} - \lambda_i^{t-1}) g_i^t$$

Accordingly, the local competitiveness effect (*LC_r*) is the variation between the SA2 and Australia growth rate in industry *i*, weighted by the SA2s share of employment in the same industry:

(7)

$$LC_r^t = \sum_{i=1}^{N} \theta_{ir}^{t-1}\, (g_{ir}^{t-1} - g_i^{t-1})$$

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About FACTBase

FACTBase is a collaborative research project between the Committee for Perth and The University of Western Australia to benchmark the liveability of Perth and its global connectedness through an examination of Perth's economic, social, demographic and political character.

The FACTBase team of academics and researchers condense a plethora of existing information and databases on the major themes, map what is happening in Perth in pictures as well as words, and examine how Perth compares with, and connects to, other cities around the world.

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About the author

Georgia is a Research Officer with the Committee for Perth, joining the organisation in 2014. She holds a Bachelor of Science, Geography and received First Class Honours in Urban and Regional Planning from The University of Western Australia. In addition, Georgia received the 2015 Patrick Armstrong Prize in Geography for her research thesis.

To date, she has been involved in researching and coordinating a number of Committee for Perth projects including the landmark *Get a Move On!* report and the What We Thought Would Kill Us series. She is also responsible for coordinating the annual FACTBase Research program and the Committee's Working Groups and Project Steering Committees. Georgia is an Adjunct Research Fellow with The University of Western Australia.

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