



Condition Critical

**An insight into the pressures that impact Liverpool
Hospital staff in servicing the needs of the community**

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ACRONYMS

ABS	Australian Bureau of Statistics (Commonwealth)
AIHW	Australian Institute of Health and Welfare (Commonwealth)
ATSI	Aboriginal and/or Torres Strait Islander
DSS	Department of Social Services (Commonwealth)
GP	General Practitioner
LGA	Local Government Area
LHD	Local Health District
NEP	National Efficient Price
NHS	National Health Survey
NSW	New South Wales
NWAU	National Weighted Activity Unit
PHA	Population Health Area
PHN	Population Health Network
RMO	Resident Medical Officer
SEIFA	Socioeconomic Index for Areas
WESTIR Limited	Western Sydney Regional Information and Research Service
WSROC	Western Sydney Regional Organisation of Councils Ltd

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EXECUTIVE SUMMARY

This report was commissioned by Liverpool Hospital Medical Staff Council to explore the current and future characteristics of the Liverpool community and the ability for Liverpool Hospital and the surrounding services to meet their needs.

Liverpool Hospital serves as a quaternary referral hospital for South Western Sydney, providing services to not only the residents of Liverpool City but also district services to residents and visitors in the surrounding region. The region has the largest residential population compared to other Greater Sydney regions and will continue to grow over the next twenty years, with most growth occurring in the older age groups.

The report found that Liverpool Hospital serves a community with substantial challenges notably above those seen in other regions in Greater Sydney. This is combined with relative under funding, lack of private hospital alternatives, comparatively very low rates of private health insurance and reduced comparative densities of specialist and non-specialist clinicians to support outpatient healthcare.

The key findings of the report are:

1. Funding is not equitable:

- South Western Sydney LHD had one of the lowest total annualised expense budgets per resident by LHD when compared with other regions in Greater Sydney.
- The low costs per National Weighted Activity Unit (NWAU) showed that the LHD can deliver a cost-effective health care, however this impacts the ability to deliver timely and effective care to patients with complex needs.
- The LHD also had the lowest average cost per acute encounter indicating that the region had less funding to deal with complex cases outside the NWAU system.

2. Socioeconomic challenges of the community are greater:

- Liverpool LGA and the South Western Sydney region has the highest rates for the following indicators that place a greater burden on our health system:
 - Higher one parent families, greater number with low household incomes (\$999 or less per week), lower labour force participation, higher socioeconomic disadvantage, high total fertility and crude birth rates, higher adult smoking and obesity and need for assistance with core activities.
 - Liverpool LGA and the South Western Sydney region has the lowest levels of English proficiency when compared to other Greater Sydney regions. This has impacts which are not accounted for, including the cost of clinicians and interpreters in the cascade of care that need more time to obtain medical

consent, medical history, social history and accurate record of medications.

- South Western Sydney has also taken over half of NSW's humanitarian settlers in recent times which have their own unique socioeconomic and health challenges.

All these factors contribute to more complex (and therefore more expensive) health care challenges for the district.

3. Alternative for medical care outside the hospital system is reduced:

- The South Western Sydney region has the lowest rates of private hospital beds and private health insurance hospital cover compared to other regions in Greater Sydney, placing further strain on the public hospital system.
- Liverpool LGA and the South Western Sydney region has a significantly lower number of medical and health services, particularly when compared to inner city areas.
- The much lower number of non-specialist (general practitioners) and specialist medical practitioners in the South Western Sydney region compared to rates for other Greater Sydney regions and NSW is likely to impact multiple elements of the patient healthcare journey before and after hospital.

In summary, this document provides evidence that the funding is unfairly low compared to other health districts. It also illustrates the community's socioeconomic and cultural/language challenges as well as the comparative lack of alternative healthcare providers and thus reliance on the public hospital system.

INTRODUCTION

This report was commissioned by Liverpool Hospital Medical Staff Council to explore the current and future characteristics of the Liverpool community and the ability of Liverpool Hospital and surrounding services in meeting its needs. WESTIR Limited (Western Sydney Regional Information and Research Service) developed the report on behalf of the Liverpool Hospital Medical Staff Council, inspired by a 2012 comparative study by WSROC (Western Sydney Regional Organisation of Councils Ltd) on health services in Western Sydney.

Liverpool Hospital serves as a quaternary referral hospital for South Western Sydney, providing services to not only the residents of Liverpool City but also district services to residents and visitors in the surrounding region. The Local Government Areas (LGAs) making up the South Western Sydney region include, Camden, Campbelltown, Canterbury-Bankstown, Fairfield, Liverpool, Wingecarribee and Wollondilly. In terms of size and importance, Liverpool Hospital is the largest hospital in New South Wales (NSW) and one of the leading trauma centres in Australia¹.

FIGURE 1: LIVERPOOL HOSPITAL



Source: WESTIR Limited 2018

The City of Liverpool and the surrounding South Western Sydney region is going through unprecedented change. Government commitments such as the Western Sydney Priority Growth area, the development of Western Sydney Airport and the Western Sydney City Deal aim to transform the city and its region into a global economy^{2,3}. The investment and urban development in the area will amplify the challenges facing the city region which include a

¹South Western Sydney Local Health District (SWSLHD) 2018, *Liverpool Hospital – General Manager's Welcome*, accessed 16 July 2018, <https://bit.ly/2NgA0gW>

²PwC 2017, *Reimagining...the Liverpool Health, Education, Research and Innovation Precinct*, accessed 17 July 2018, <https://pwc.to/2M0LpI>

³James, P et al 2018, *Circles of Social Life, Liverpool: Settling Strangers, Supporting Disability Needs*, Western Sydney University, accessed 17 July 2018, <https://bit.ly/2JHaTSU>

rapidly growing population, an ageing community, socioeconomic inequality, cultural and linguistic diversity, changing lifestyle behaviours and health status, and providing adequate health infrastructure and services⁴. The NSW Government has recently announced its intention to invest \$740 million into making Liverpool Hospital a world class health, education, research and innovation precinct, but this is not due for completion until 2026^{5,6}

FIGURE 2: ARTIST IMPRESSION OF THE FUTURE LIVERPOOL HOSPITAL (AS PART OF THE HEALTH, EDUCATION, RESEARCH AND INNOVATION PRECINCT)



Source: Health Infrastructure NSW 2018

This report examines the potential challenges in the community serviced by Liverpool Hospital which impact on the clinical care and timely discharge of patients. It explores a range of demographic, financial and service provision factors for Liverpool City, the surrounding region covered by South Western Sydney LHD and other LHD regions in Greater Sydney.

This report is a starting point in revealing these issues to key decision makers, with the hope that it will encourage and empower them to make informed and equitable decisions when allocating resources for Liverpool Hospital and the district so that patients and staff are adequately supported now and into the future.

⁴SWSLHD n.d., *Liverpool Hospital Operational Plan 2014-2018*, accessed 17 July 2018, <https://bit.ly/2KYCDY1>

⁵Health Infrastructure NSW 2018, *Liverpool Hospital set to be transformed after a new \$740 million injection*, accessed 17 July 2018, <https://bit.ly/2tlmQBO>

⁶Aubusson, K. 2018, *Liverpool's \$740m health precinct will rival the greatest in the world*, Sydney Morning Herald, 21 June, accessed 17 July 2018, <https://bit.ly/2MJJa3qO>

METHODS – DATA SOURCES AND LIMITATIONS

This report explores a range of data sources to understand the situation of Liverpool Hospital and its staff, and the community it serves.

Section 1: Demographic factors

Demographic indicators were sourced from the 2016 Australian Bureau of Statistics (ABS) Census of Population and Housing, with comparisons to the 2011 Census to analyse trends over a five-year period. The Department of Social Services (DSS) and HealthStats NSW datasets were also investigated for the latest migrant settlement patterns, birth and fertility rates and lifestyle behaviour and disease data.

The demographic indicators are presented for Liverpool LGA, the South Western Sydney region and comparative regions in Greater Sydney. These regions broadly cover the Local Health District (LHD) boundaries and are aggregated from existing Local Government Areas (LGAs) (See Table 1 for more details). This is the best and closest way to represent Census demographic data for LHD regions. Please note that all Census data is based on place of usual residence, except household data which is based on place of enumeration.

TABLE 1: BREAKDOWN OF GREATER SYDNEY REGIONS BY LGAs USED FOR 2016 CENSUS DATA IN THIS REPORT

Greater Sydney Regions by LGA, 2016			
Central Coast Region	Nepean Blue Mountains Region	Northern Sydney Region	South Eastern Sydney Region
Central Coast	Blue Mountains Hawkesbury Lithgow Penrith	Hornsby Hunters Hill Ku-ring-gai Lane Cove Mosman North Sydney Northern Beaches Ryde Willoughby	Botany Bay* Rockdale* Georges River Randwick Sutherland Shire Waverley Woollahra
South Western Sydney Region	Sydney Region	Western Sydney Region	
Camden Campbelltown Canterbury-Bankstown Fairfield Liverpool Wingecarribee Wollondilly	Burwood Canada Bay Inner West Strathfield Sydney	Blacktown Cumberland Parramatta The Hills Shire	

*Please note Botany Bay and Rockdale Councils amalgamated to form Bayside Council after the 2016 Census and therefore are still represented as two separate LGAs in this report.

Section 2: Budgetary factors

A range of budgetary data was explored to understand the financial resources of South Western Sydney LHD:

- *Total annualised expense budget per resident by LHD*: This was calculated using annualised expense budget data from service agreements and financial statements on Greater Sydney LHD websites between 2012/13 and 2017/18. This data was divided by corresponding estimated resident population data by LHD from HealthStats NSW.
- *Volume of work – National Weighted Activity Unit (NWAU)⁷ by LHD and estimated rates per 10,000 residents*: Estimated annual NWAU data from 2012/13 to 2017/18 was sourced from the National Health Funding Pool website and estimated rates per 10,000 residents were calculated by dividing this data by estimated resident population data by LHD from HealthStats NSW.
- *Average cost per National Weighted Activity Unit (NWAU) by LHD*: This data was sourced internally from South Western Sydney LHD for a six month period between July and December 2017.
- *Average cost per acute encounter (including acute mental health)*: This data was sourced internally from South Western Sydney LHD between 2013/14 and the first six months of 2016/17.

Section 3: Alternatives for inpatient health care outside of the public hospital system

Estimated public and private hospital bed rates were derived from data found in the 2010 NSW Health Services Data Book and estimated resident population data by LHD from HealthStats NSW.

The most recent estimates for private health insurance hospital cover (2014/15) were also obtained from the Social Health Atlas of Australia. The estimates are provided on a Primary Health Network (PHN) and LGA level.

Estimates at a PHN and LGA level were derived from Population Health Areas (PHAs) estimates. Estimates for PHAs are modelled estimates and were produced by ABS. In the absence of private health insurance data from administrative data sets, estimates have been

⁷The NWAU is an estimated monthly measure which is a measure of health service activity by LHD against which the national efficient price (NEP) is paid. It provides a way of comparing and valuing each public hospital service by weighting it for its clinical complexity. The average hospital service is worth one NWAU – the most intensive and expensive activities are worth multiple NWAUs while the simplest and least expensive are worth fractions of an NWAU.

NWAU is predominantly based on just the clinical aspects of a procedure or admission not demographics, except for Indigenous residents. Although, someone's disability may in some way be included, if it influences the complexity of a procedure it is not well understood. This would also apply to any residents who had less comprehension due to language skills, learning difficulties or other reasons.

produced from the 2014–15 National Health Survey (NHS), conducted by the Australian Bureau of Statistics (ABS). These data are based on self-reported responses, reported to interviewers in the 2014–15 NHS.

Section 4: Access to health services and professionals

Extensive mapping of Australian private and public health services is currently done through Healthdirect Australia's National Health Services Directory and is visually mapped through the Healthdirect Australia HealthMap. Data from this mapping tool was analysed for Liverpool LGA as compared to other areas in Greater Sydney.

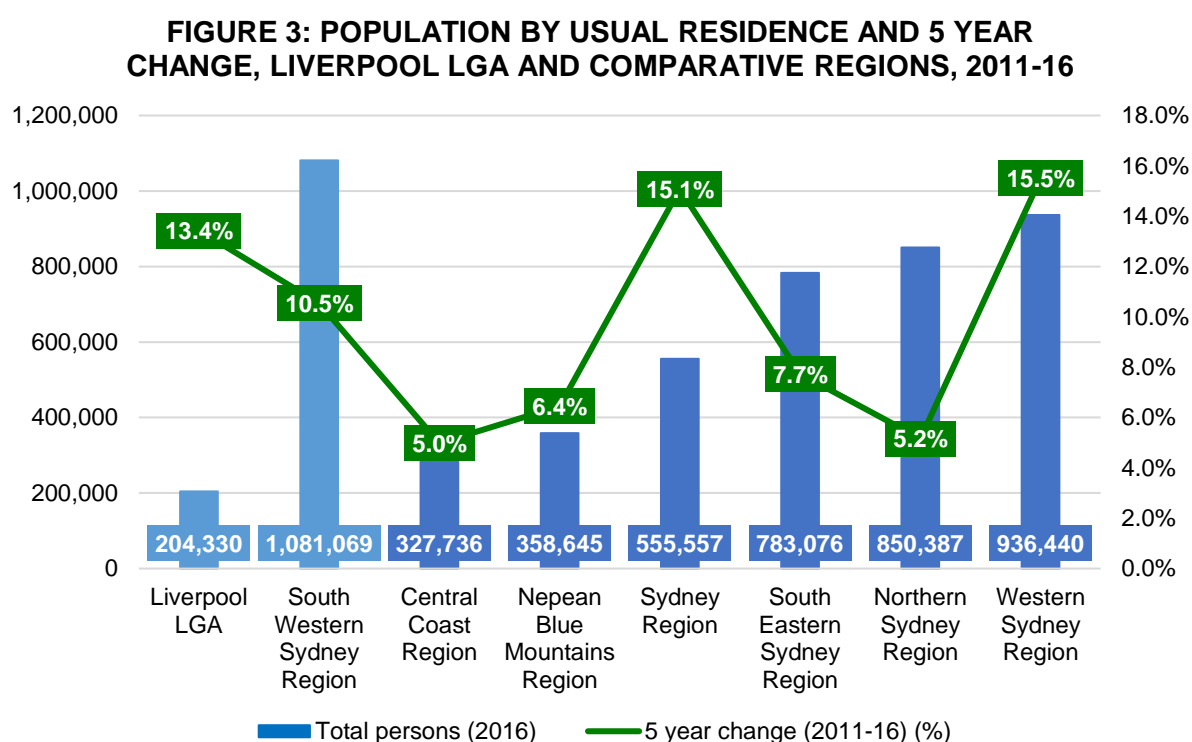
This section also looked at medical practitioner rates for LHD regions and NSW. Rates per 10,000 residents were calculated from medical practitioners sourced from the 2016 ABS Census Place of Work database and usual residence population data from the 2016 ABS Census of Population and Housing. The medical practitioner categories explored were General Practitioners (GPs) and Resident Medical Officers (RMOs), psychiatrists, anaesthetists, surgeons and specialist physicians.

RESULTS

SECTION 1: DEMOGRAPHIC FACTORS

1.1 Population and age

In 2016, Liverpool LGA had a total of 204,330 residents, growing by 13.4% since 2011. Liverpool Hospital serves as a quaternary referral hospital for South Western Sydney which had the largest residential population compared to other Greater Sydney regions, with a total of 1,081,069 residents. The residential population of South Western Sydney grew by 10.5% since 2011 (See Figure 3). The growth in Liverpool LGA and South Western Sydney region was higher than the NSW rate (8.1%).



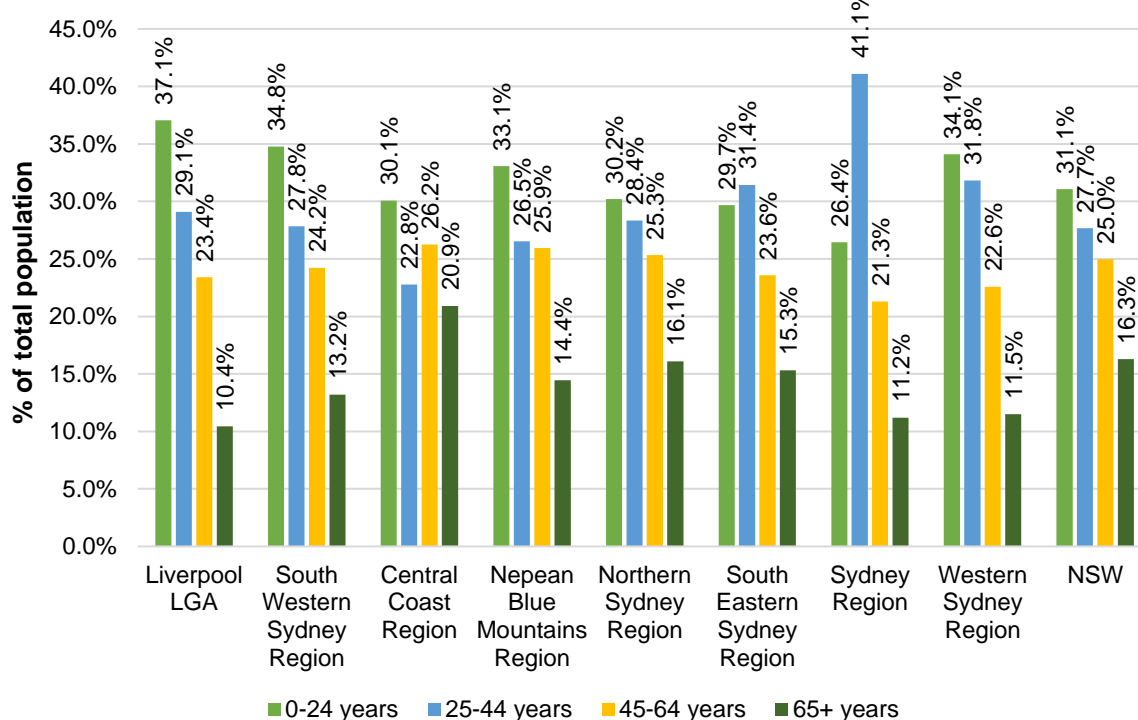
Source: ABS TableBuilder Pro, Census of Population and Housing 2011 and 2016.

The population of Liverpool LGA is expected to grow to 331,000 residents (+54.6%) while the South Western Sydney region is expected to grow to 1,402,850 (+45.2%) by 2036. Those aged 85 years and over will grow by 217.6% and lone households will grow by 91.0% between 2016 and 2036⁸.

Figure 4 shows the age distribution of Liverpool LGA and other Greater Sydney regions. The 65+ population in Liverpool LGA and South Western Sydney had the highest growth rate between 2011 and 2016 (+29.2% and +23.0%, higher than the NSW rate of 19.6%).

⁸NSW Department of Planning and Environment 2016, *NSW Population Projections*, <https://bit.ly/2TZ4nN2>

FIGURE 4: AGE DISTRIBUTION, LIVERPOOL LGA AND COMPARATIVE REGIONS, 2016



Source: ABS TableBuilder Pro, Census of Population and Housing 2016.

Liverpool LGA and the South Western Sydney also had a youthful population in 2016, with 37.8% and 34.8% of the respective residential populations aged under 25 years old (See Figure 4)⁹. These rates are higher than other comparative regions in Greater Sydney.

In terms of total births, South Western Sydney had the second highest total births (13,965) recorded in Greater Sydney in 2016 (with 3,401 births in Liverpool LGA alone that year). As a rate however, South Western Sydney had the highest total fertility rate (2.03) and the highest crude birth rates (14.36)¹⁰ in Greater Sydney (See Table 2).

⁹In numerical terms, there were 75,733 residents in Liverpool LGA and 375,761 residents in South Western Sydney aged under 25 years old in 2016. Over 60% of young residents under 25 years in Liverpool LGA (46,295 residents) and South Western Sydney (226,916 residents) were aged under 15 years old. Since 2011, those aged under 25 years have grown by 10.6% in Liverpool LGA and 7.4% for the South Western Sydney region. It is anticipated that from 2016 to 2036, there will be an additional 78,600 residents aged under 25 years living in Liverpool LGA and an additional 389,700 aged under 25 years living in the South Western Sydney region (ABS Census of Population and Housing 2016; NSW Department of Planning and Environment 2016).

¹⁰The total fertility rate represents the number of children a female would bear during her lifetime if she experienced current age-specific fertility rates at each age of her reproductive life. The crude birth rate is the number of live births occurring among the population of a given geographical area during a given year, per 1,000 of the total population of the given geographical area during the same year.

TABLE 2: BIRTH AND FERTILITY RATES, GREATER SYDNEY LHDs, 2016

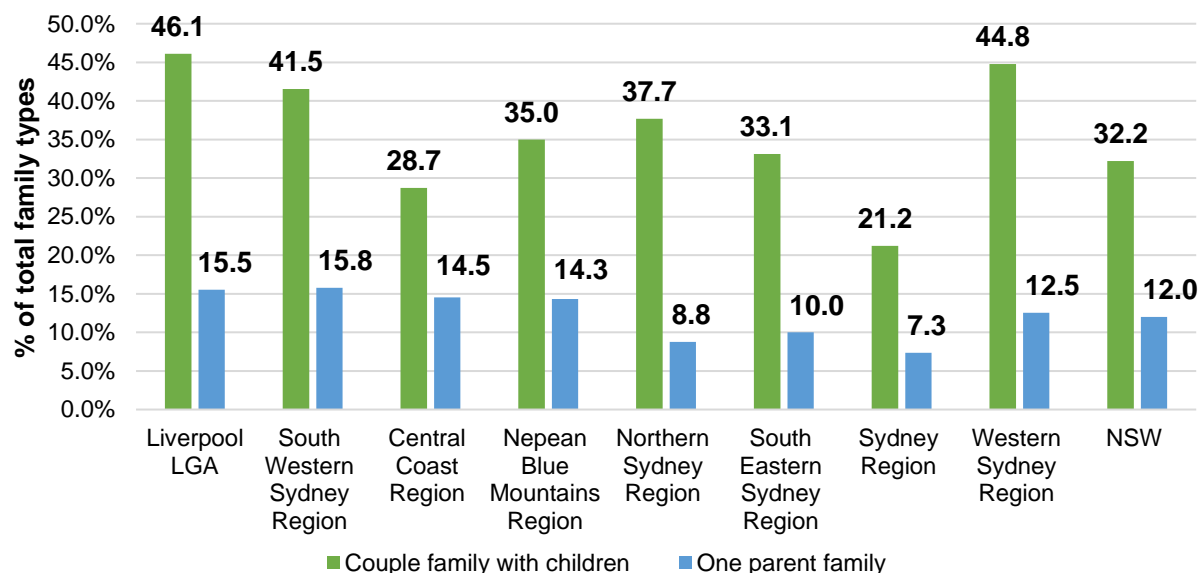
Birth and fertility rates, Greater Sydney LHDs, 2016			
Local Health District (LHD)	Total births	Total fertility rate	Crude birth rate per 1,000 population
South Western Sydney LHD	13,965	2.03	14.36
Central Coast LHD	3,880	1.96	11.34
Nepean Blue Mountains LHD	5,107	2.01	13.51
Sydney LHD	8,468	1.4	13.17
Northern Sydney LHD	10,958	1.64	11.98
South Eastern Sydney LHD	11,493	1.46	12.54
Western Sydney LHD	14,859	1.99	15.6
NSW	98,272	1.78	12.51

Source: HealthStats NSW 2018.

1.2 Family household composition

In 2016, most households in Liverpool LGA and South Western Sydney consisted of a couple family with children (46.1% and 45.1% of total family types respectively). Liverpool LGA and South Western Sydney had the highest proportion of one parent families in Greater Sydney (15.5% and 15.8% respectively), much higher than eastern counterparts such as Sydney (7.3%), Northern Sydney (8.8%), South Eastern Sydney (10.0%) and NSW (12.0%) (See Figure 5).

FIGURE 5: FAMILY HOUSEHOLD COMPOSITION (SELECTED CATEGORIES), LIVERPOOL LGA AND COMPARATIVE REGIONS, 2016

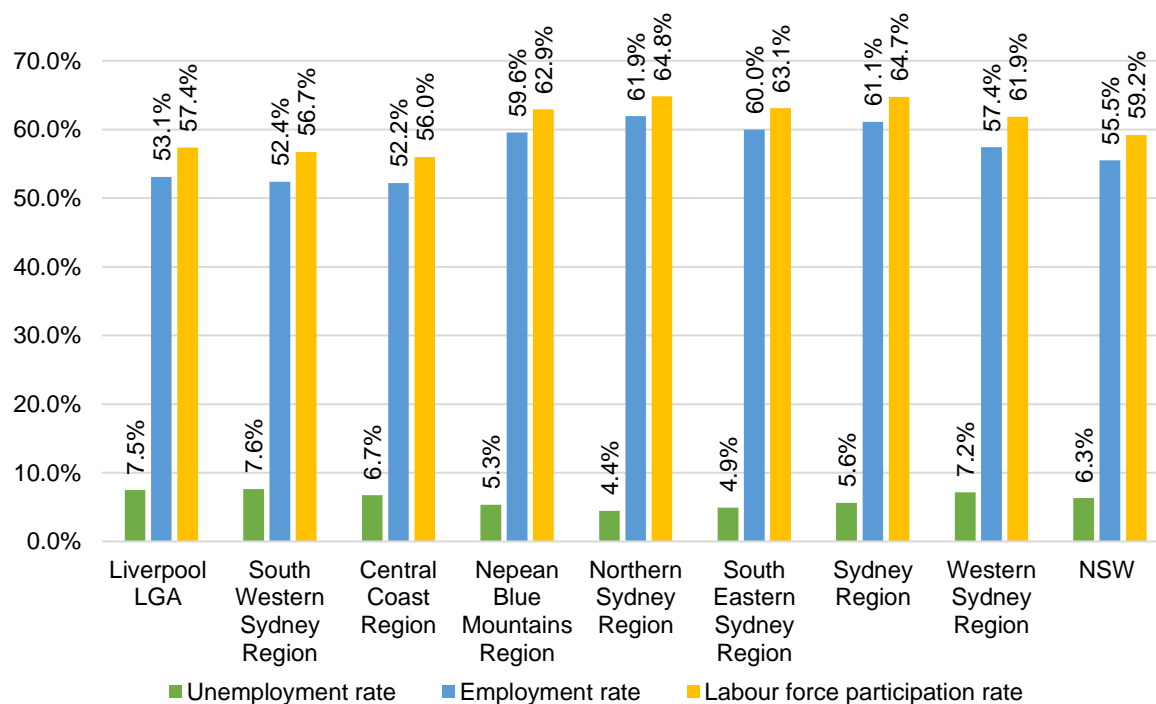


Source: ABS TableBuilder Pro, Census of Population and Housing 2016. Place of enumeration data.

1.3 Employment

The labour force participation rates¹¹ for Liverpool LGA (57.4%) and South Western Sydney (56.7%) in 2016 were among the lowest in Greater Sydney, notably lower than eastern counterparts in Northern Sydney (64.8%), South Eastern Sydney (63.1%) and Sydney (64.7%).

FIGURE 6: LABOUR FORCE STATUS, LIVERPOOL LGA AND COMPARATIVE REGIONS, 2016



Source: ABS TableBuilder Pro, Census of Population and Housing 2016.

¹¹Please note the following when interpreting labour force data:

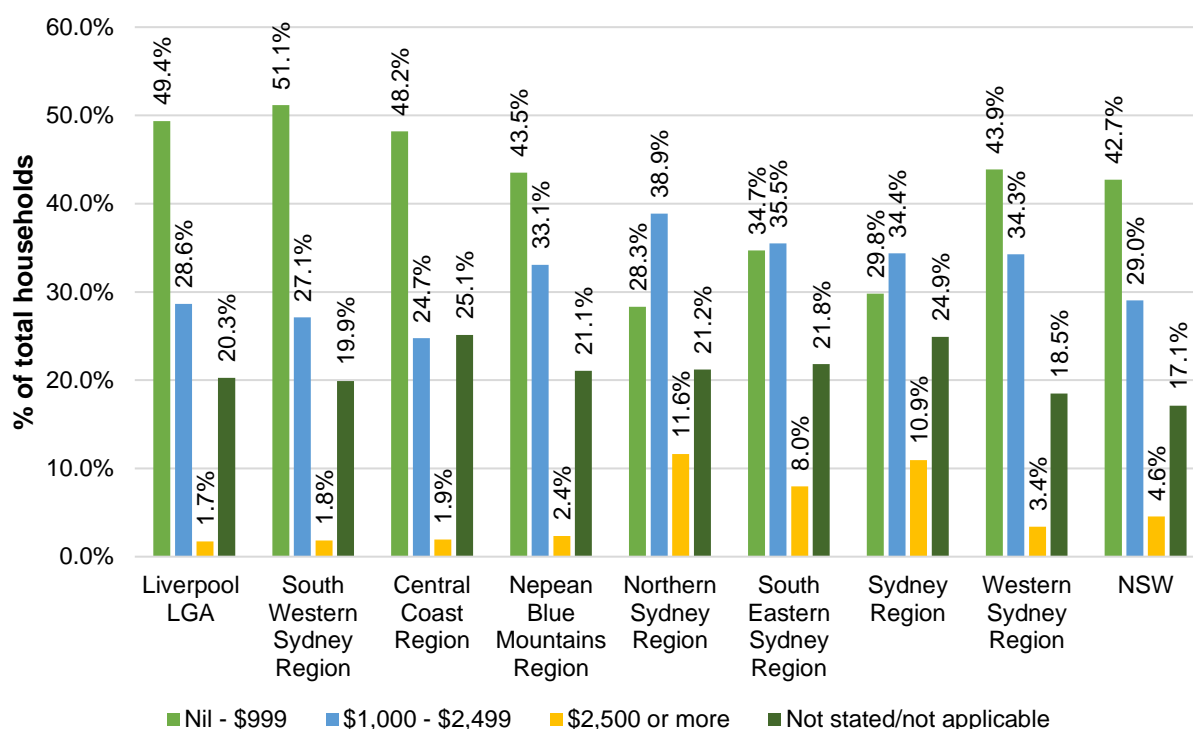
- The unemployment rate is calculated by the number of unemployed residents expressed as a percentage of the total labour force.
- The employment rate is the number of employed residents expressed as a percentage of residents aged 15 years and over.
- Labour force participation is the section of the working age population that are employed or seeking employment. It is calculated by dividing the number of residents in the labour force as a percentage of residents aged 15 years and over.

It is important to note that employment, unemployment and labour force participation rates fluctuate between Census periods, with the Australian Department of Jobs and Small Business collecting quarterly data on these indicators. The Census data nonetheless provides an overall snapshot of employment trends during this period.

1.4 Household income

In 2016, just under half (49.4%) of households in Liverpool LGA were on an equivalised total household income¹² of \$999 or less per week. The South Western Sydney region had a much higher proportion of households with an equivalised total household income of \$999 or less (51.1%), particularly when compared to Northern Sydney (28.3%), South Eastern Sydney (34.7%) and Sydney (29.8%) regions.

FIGURE 7: EQUIVALISED TOTAL HOUSEHOLD INCOME (WEEKLY), LIVERPOOL LGA AND COMPARATIVE REGIONS, 2016



Source: ABS TableBuilder Pro, Census of Population and Housing 2016. Place of enumeration data.

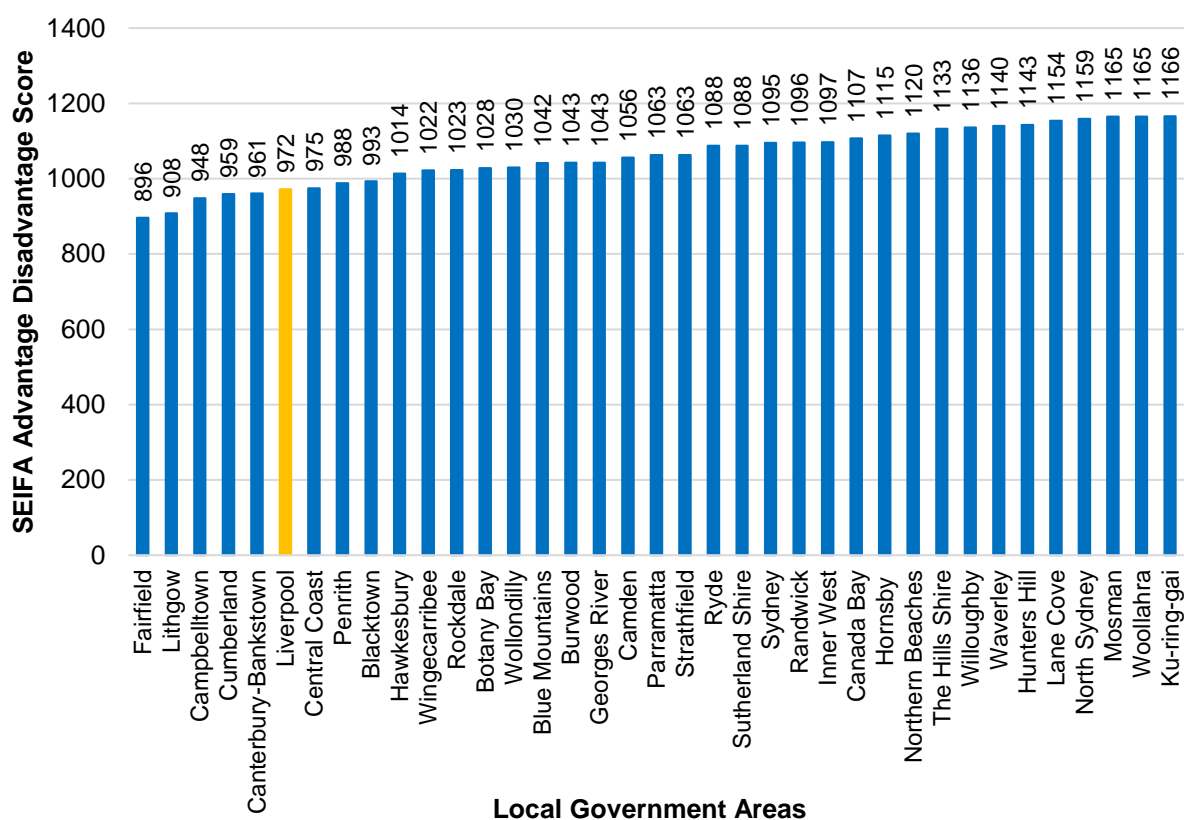
¹²Equivalised household income is a tool used to adjust total household income according to a household's size and composition to facilitate comparison of income levels. It acknowledges that larger sized households will require a higher level of income to achieve the same standard of living as a smaller household, hence all households are placed on an equal footing and assume that they are all the same size.

1.5 Socioeconomic disadvantage

In 2016, Liverpool LGA had a SEIFA¹³ Advantage/Disadvantage score of 972. A score below 1,000 suggests that Liverpool LGA has areas within the city that have a high number of relatively disadvantaged residents and a low number of advantaged residents. Liverpool LGA was also surrounded by LGAs such as Fairfield (SEIFA: 896), Canterbury-Bankstown (961) and Campbelltown (948) which have notable concentrations of socioeconomic disadvantage (See Figure 9).

The SEIFA Advantage Disadvantage scores for Liverpool and South Western Sydney LGAs are markedly lower than LGAs located in the north and eastern areas of Sydney. The five LGAs with the highest levels of advantage in Sydney are Lane Cove (SEIFA: 1154), North Sydney (1159), Mosman (1165), Woollahra (1165) and Ku-ring-gai (1166) (See Figure 8).

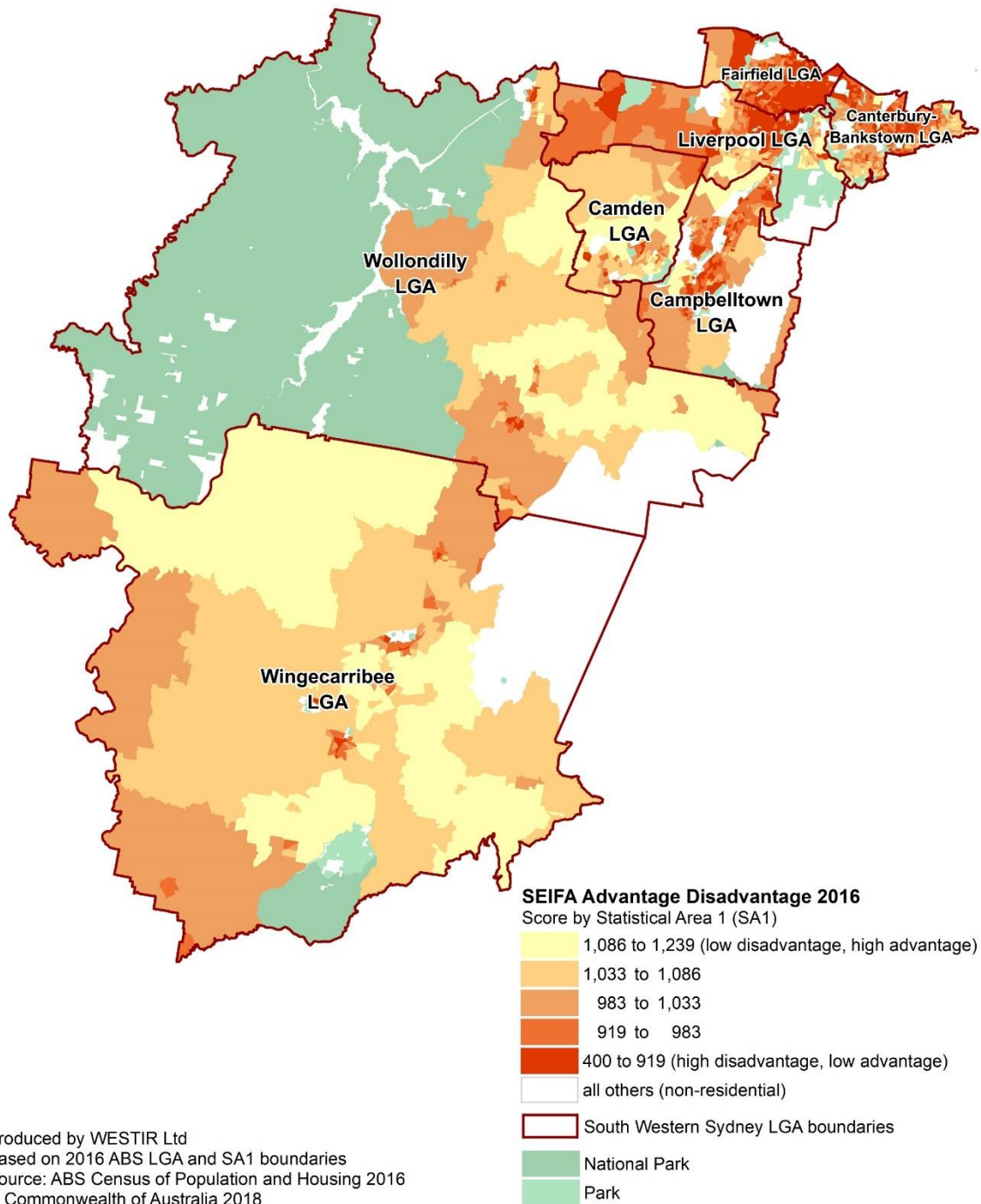
FIGURE 8: SEIFA ADVANTAGE DISADVANTAGE SCORES BY GREATER SYDNEY LGAs, 2016



Source: ABS Census of Population and Housing, 2016 – Socioeconomic Indexes for Areas (Cat No. 2033.0.55.001).

¹³SEIFA stands for Socioeconomic Index for Areas. It is an indicator used to measure an area's access to social and economic resources and the ability of their residents to participate in society. This section will focus on the SEIFA Advantage Disadvantage score. It is a general measure of both relative socioeconomic advantage and disadvantage at an area level. A low score indicates a low level of relatively advantaged residents and a high level of relatively disadvantaged residents (high score: vice versa). All SEIFA scores are standardised to a mean of 1,000, with low index values falling below the mean. SEIFA scores cannot be compared over time as it is calculated using different variables at each Census.

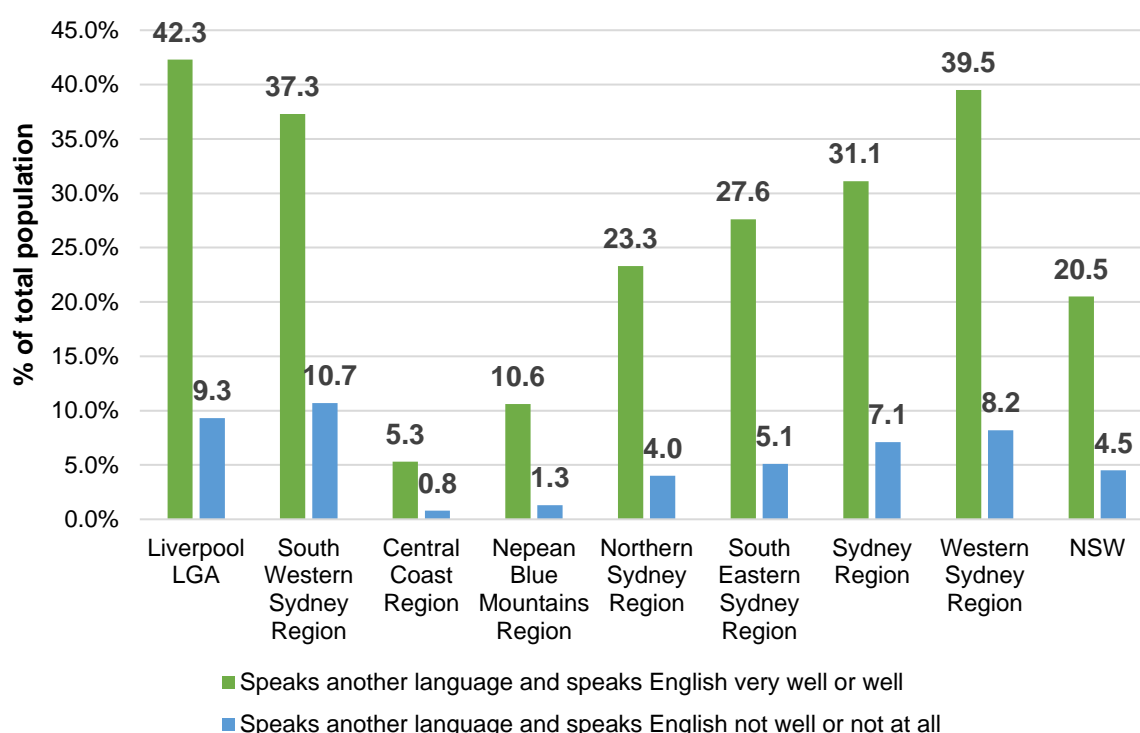
FIGURE 9: SEIFA ADVANTAGE DISADVANTAGE, SOUTH WESTERN SYDNEY REGION, 2016



1.6 Language and English proficiency

In 2016, Liverpool LGA and the South Western Sydney region had the highest rates of residents who do not speak English well or not at all (9.3% and 10.7% of residents respectively) when compared to other regions in Greater Sydney. Rates of limited or no English proficiency in the South Western Sydney region were considerably higher than eastern counterparts in Northern Sydney (4.0%), South Eastern Sydney (5.1%) and Sydney (7.1%) (See Figure 10).

FIGURE 10: ENGLISH PROFICIENCY (SELECTED CATEGORIES), LIVERPOOL LGA AND COMPARATIVE REGIONS, 2016



Source: ABS TableBuilder Pro, Census of Population and Housing 2016.

The top five languages other than English spoken at home in Liverpool LGA in 2016 were Arabic (11.4% of the population); Vietnamese (4.9%); Hindi (4.0%); Spanish (2.5%) and Serbian (2.4%). Arabic was much more highly represented in Liverpool than in NSW (See Table 3).

TABLE 3: TOP 5 LANGUAGES SPOKEN AT HOME (OTHER THAN ENGLISH), LIVERPOOL LGA AND NSW, 2016

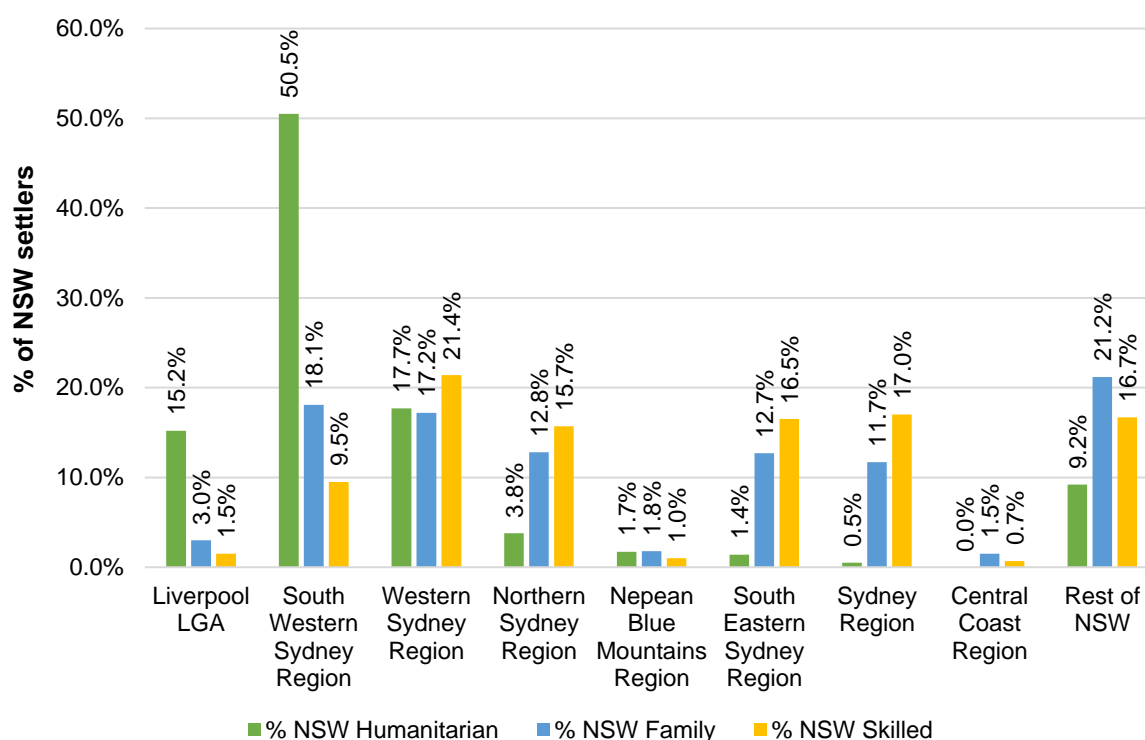
Top 5 languages spoken at home (other than English), Liverpool LGA and NSW, 2016					
Language spoken at home	Liverpool	%	NSW	%	
Arabic	23,247	11.4	200,825	2.7	
Vietnamese	9,974	4.9	102,896	1.4	
Hindi	8,142	4.0	67,034	0.9	
Spanish	5,195	2.5	63,527	0.8	
Serbian	4,997	2.4	21,488	0.3	

Source: ABS Census of Population and Housing 2016, QuickStats.

1.7 Humanitarian settlement

Settlement data¹⁴ provides a snapshot of the proportion of individuals who have settled in NSW by visa stream during a three-month period. The data shows that the South Western Sydney region took 50.5% of humanitarian settlers migrating to NSW in the first three months of 2018, with 15.2% residing specifically in Liverpool LGA (See Figure 11). Although this data represents a brief period, it suggests that Liverpool LGA and South Western Sydney more broadly takes a higher share of humanitarian settlers and a lower share of skilled settlers than most Greater Sydney regions.

FIGURE 11: SETTLERS BY VISA STREAM AS A PROPORTION OF NSW SETTLERS, LIVERPOOL LGA AND COMPARATIVE REGIONS, 1 JANUARY 2018 - 30 MARCH 2018



Source: DSS Settlement Database 2018.

1.8 Indigenous status

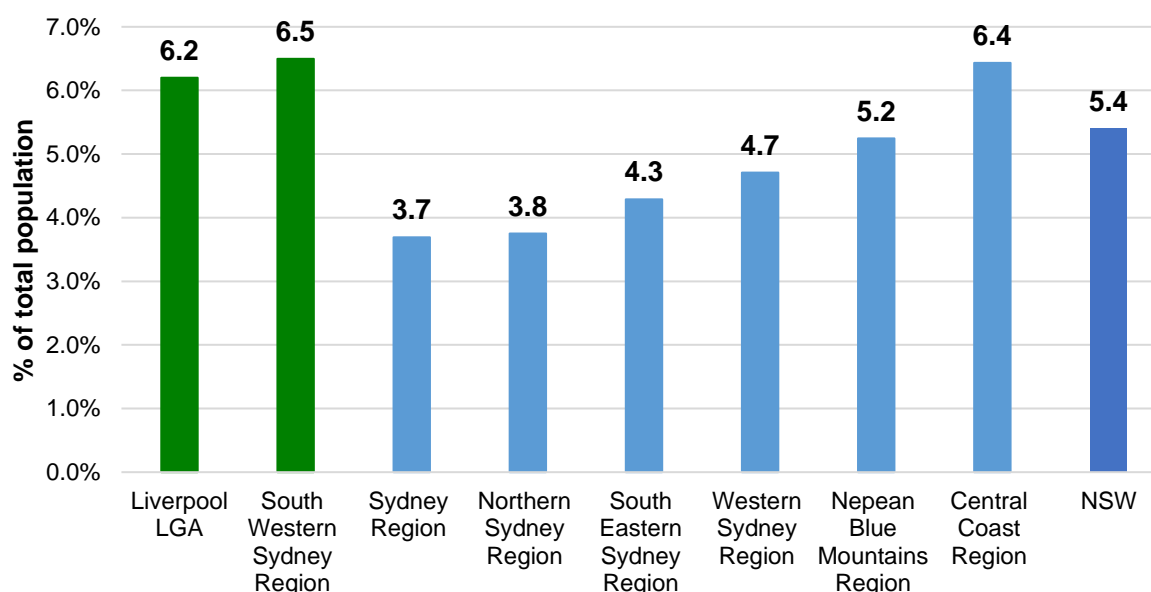
There was no significant difference in the proportion of residents in Liverpool LGA (1.6%) and South Western Sydney (1.7%) that identified as Aboriginal and Torres Strait Islander (ATSI). This is lower than the NSW rate (2.9%) with only a slight increase in the number of residents identifying as ATSI since 2011.

¹⁴Settlement data is sourced from the Australian Government Settlement Database: <https://bit.ly/2QVnQHt>. The data has been compiled into seven (7) LGA clusters that closely map onto the Greater Sydney Area LHDs.

1.9 Need for assistance

In 2016, 6.2% (or 12,756 residents) of the Liverpool LGA population stated that needed assistance with core activities¹⁵. The South Western Sydney region had the highest number (70,243) and proportion (6.5%) of residents requiring assistance with core activities in Greater Sydney, much higher when compared to eastern counterparts such as Sydney (3.7%), Northern Sydney (3.8%) and South Eastern Sydney (4.3%). (See Figure 12). The need for assistance in Liverpool LGA and the South Western Sydney region grew by 32.3% and 27.2% respectively since 2011.

FIGURE 12: NEED FOR ASSISTANCE WITH CORE ACTIVITIES, LIVERPOOL LGA AND COMPARATIVE REGIONS, 2016



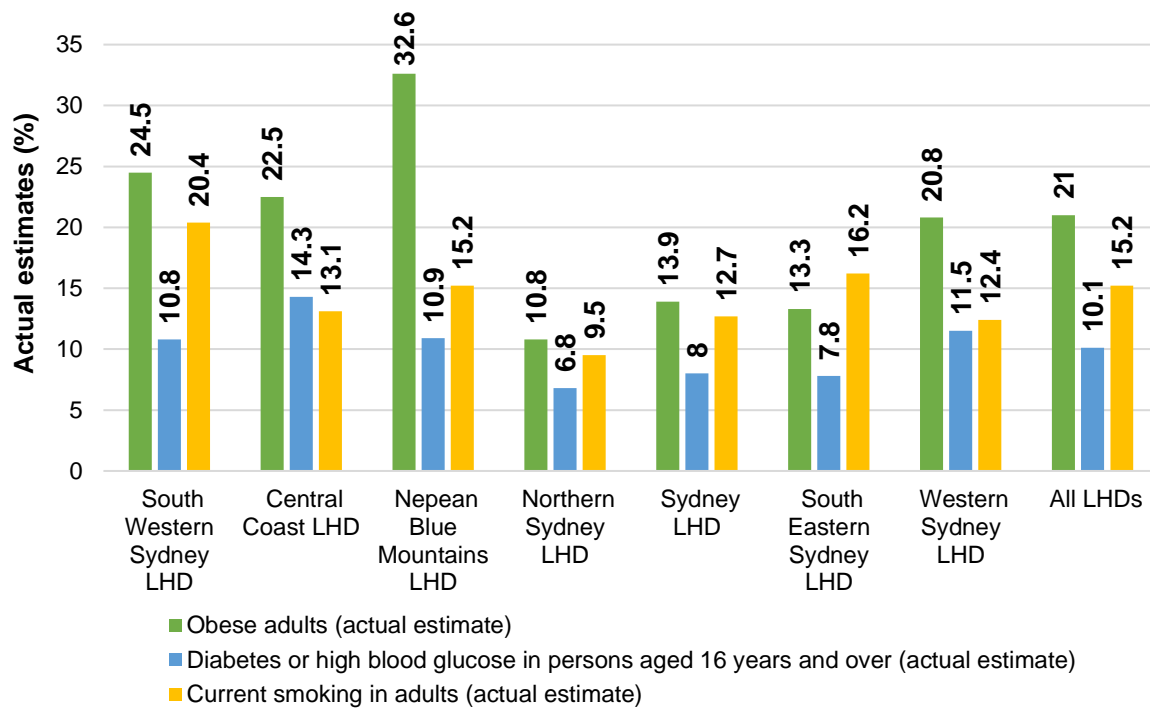
Source: ABS TableBuilder Pro, Census of Population and Housing 2016.

1.10 Lifestyle behaviours and diseases

In 2017, it was estimated that 24.5% of adults in South Western Sydney LHD were obese, 10.8% of residents aged 16 years and over had diabetes or high blood glucose, and 20.4% of adults were current smokers. These estimates are somewhat higher than those for all NSW LHDs combined (21.0% for obesity, 10.1% for diabetes or high glucose and 15.2% for current smoking) although the rates in all regions are certainly alarming. South Western Sydney LHD had the second highest obesity rate and the highest adult smoking rate out of all the Greater Sydney LHDs (See Figure 13). Comparative figures for these lifestyle indicators are not available on a city level, however in 2014/15 it was estimated that 30.2% of adults in Liverpool LGA were obese, 9.5% of adults had diabetes or high blood glucose, and 17.8% of adults were current smokers.

¹⁵Please note, the purpose of the need for assistance measure is to identify residents with disability who need assistance in their day to day lives with any or all the following core activities: self-care, body movements or communication. The Census need for assistance measure is the best indicator available to indicate disability on a local level but does have its limitations and should be treated with caution. Specifically, the data is based on a resident's self-reported need for assistance rather than an official medical or service assessment. In addition, the ABS does not release the exact nature of need for assistance so it is unknown if the assistance is required for self-care, communication or mobility.

FIGURE 13: ACTUAL ESTIMATES OF LIFESTYLE BEHAVIOURS AND DISEASES, NSW LHDs, 2017



Source: HealthStats NSW 2018.

SECTION 1: WHAT DOES THIS MEAN?

This section highlights several demographic characteristics that increase the degree of difficulty for Liverpool Hospital staff to meet the needs of patients from the local and regional communities. The city and region are growing and will continue to grow over the next 20 years, placing even further demand on Liverpool Hospital and its supporting services now and in the future.

Liverpool Hospital is also located in a community and region with notable challenges. When compared to other areas in Greater Sydney, Liverpool LGA and the South Western Sydney have the highest rates for one parent families, unemployment, households on \$999 or less per week, total fertility and crude birth rates, those requiring assistance with core activities, and adult smoking rates. The region also has notable areas of socioeconomic disadvantage, some of the highest in Greater Sydney. This social and economic inequality decreases the ability of community members to weather health shocks and prioritise healthy behaviours, and these pressures are undoubtedly experienced by Liverpool Hospital and the local health system daily.

Liverpool LGA and the South Western Sydney region also has the lowest levels of English proficiency when compared to other regions in Greater Sydney and has taken over half of NSW’s humanitarian settlers in recent times. Despite the best intentions of staff, healthcare can take longer or can be compromised when dealing with the complex needs of these communities, especially if culturally appropriate support and resources are not readily available.

SECTION 2: BUDGETARY FACTORS

2.1 Total annualised expense budget per resident by LHD

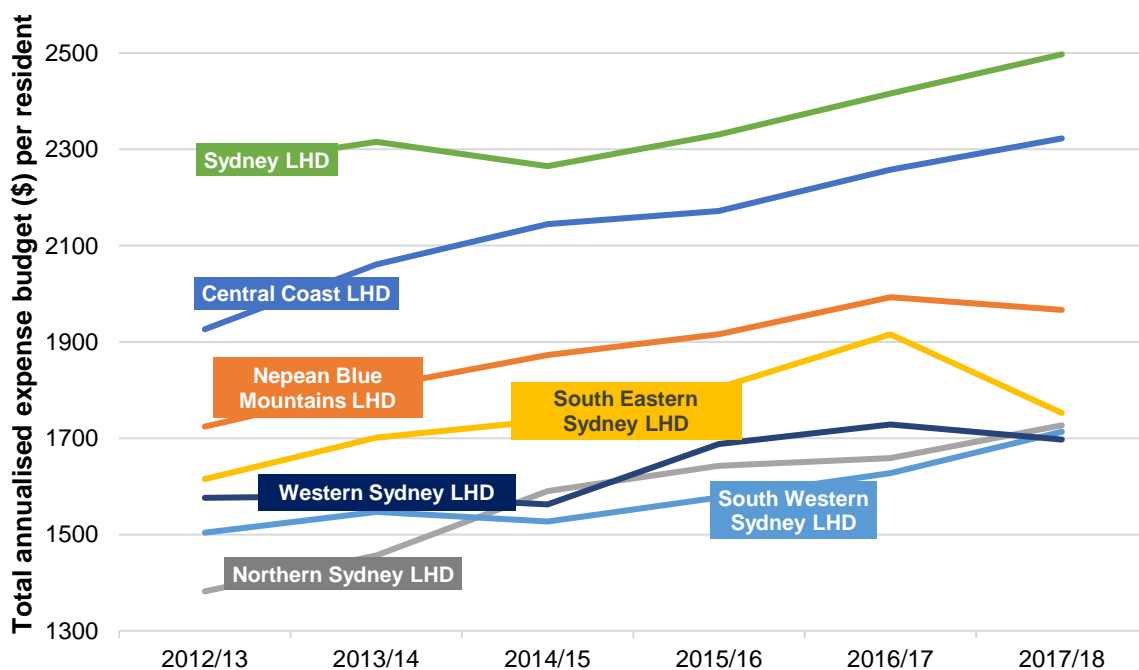
The most recent data (See Figure 14) showed the total annualised expense budget per resident for the South Western Sydney LHD in 2017/18 was \$1,714, growing by only \$210 per resident since 2012/13.

The total annualised expense budget per resident for South Western Sydney LHD (\$1,714) in 2017/18 was markedly lower than other LHDs such as Nepean Blue Mountains (\$1,967), Central Coast (\$2,323) and Sydney (\$2,497). Western Sydney (\$1,697), Northern Sydney (\$1,727) and South Eastern Sydney (\$1,753) had similar expense budgets to South Western Sydney LHD.

Western Sydney LHD is the only similar LHD in terms of all the socioeconomic factors put together, and of note, significantly over their budgets in recent times. South Western Sydney LHD has successfully kept within budget.

It is also important to acknowledge that complex patients are often treated at multiple hospitals that span across LHD boundaries, therefore the use of LHD population numbers may still underestimate the demand and compounding impact on the LHD budgets presented.

FIGURE 14: TOTAL ANNUALISED EXPENSE BUDGET (\$) PER RESIDENT BY LHD, 2012/13 - 2017/18

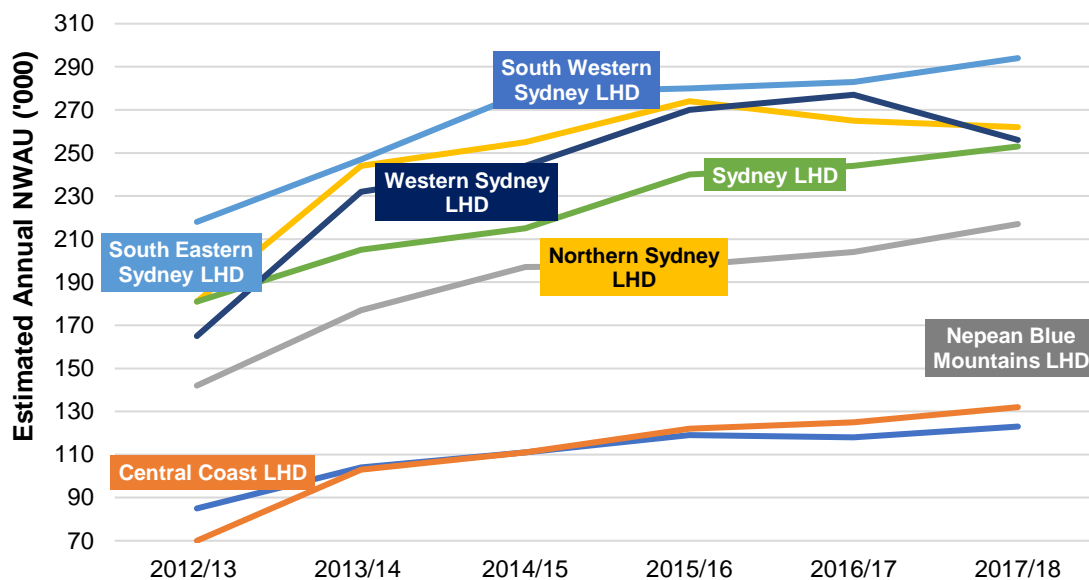


Source: LHD Budget Data from Service Agreements and Financial Statements on respective LHD Websites; LHD estimated resident population data at 30 June of respective year from HealthStats NSW.

2.2 Volume of work – National Weighted Annual Unit per resident by LHD

The most recent data for estimated annual National Weighted Annual Unit (NWAU)¹⁶ by LHD showed that South Western Sydney LHD (293,223) had the highest estimated annual NWAU out of all the Greater Sydney LHDs in 2017/18 (Central Coast: 122,703; Nepean Blue Mountains: 131,313; Northern Sydney: 216,357; South Eastern Sydney: 261,773; Sydney: 252,297; Western Sydney: 255,098). This means that the hospital services within South Western Sydney LHD were the most clinically intensive and demanding according to this measure (See Figure 15).

FIGURE 15: VOLUME OF WORK, GREATER SYDNEY LHDs, 2012/13 - 2017/18
Expressed as Estimated Annual National Weighted Activity Unit (NWAU) by LHD

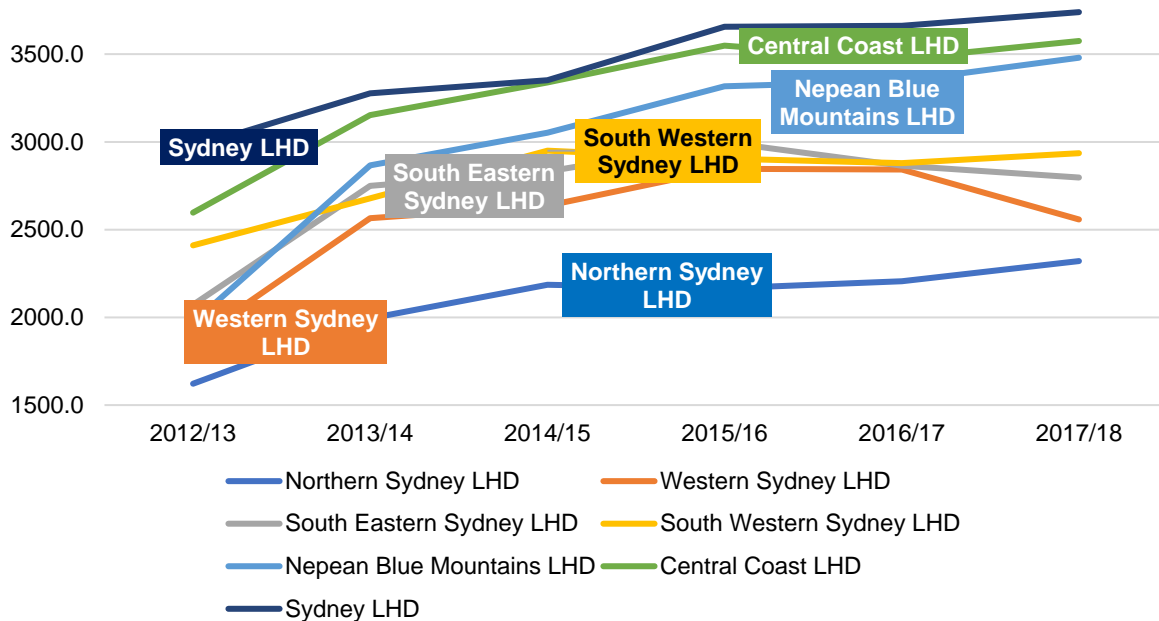


Sources: NWAU data from: <https://www.publichospitalfunding.gov.au/reports/local-hospital-network?state=nsw>

The NWAU calculated per 10,000 residents by LHD (See Figure 16) is not equal, suggesting that the residents of South Western Sydney do not get their health care needs met locally. This is theoretical and does not account for what proportion of district funds that are spent on outliers.

¹⁶The NWAU is an estimated monthly measure which is a measure of health service activity by LHD against which the national efficient price (NEP) is paid. It provides a way of comparing and valuing each public hospital service by weighting it for its clinical complexity. The average hospital service is worth one NWAU – the most intensive and expensive activities are worth multiple NWAUs while the simplest and least expensive are worth fractions of an NWAU.

FIGURE 16: VOLUME OF WORK PER 10,000 RESIDENTS, GREATER SYDNEY LHDs, 2012/13 - 2017/18
Expressed as Estimated Annual National Weighted Activity Unit (NWAU) per 10,000 residents by LHD



Sources: NWAU data from: <https://www.publichospitalfunding.gov.au/reports/local-hospital-network?state=nsw>; LHD estimated resident population data at 30 June of respective year from HealthStats NSW.

2.3 Average cost per National Weighted Activity Unit by LHD

The average cost per National Weighted Annual Unit (NWAU) for South Western Sydney was \$4,306 between July and December 2017, lower than the average of \$4,457 for all NSW LHDs (See Figure 17). This shows that South Western Sydney does deliver a cost-effective service.

Hunter New England might be considered a comparable LHD when taking into consideration size and complexity of service. If South Western Sydney LHD received the discrepancy between this “reasonable and comparable” cost (\$4,500) and the actual cost (\$4,306) over a twelve month period, this would equate to an additional \$59 million¹⁷ for the LHD.

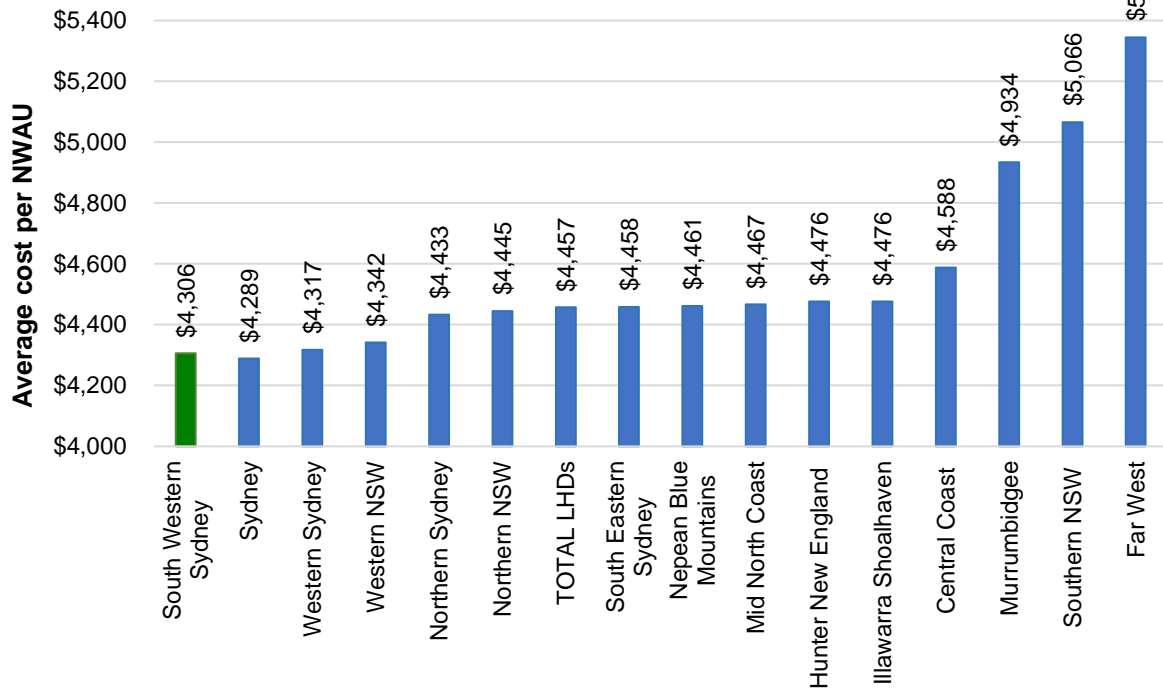
2.4 Cost per acute encounter by LHD

South Western Sydney LHD had the lowest average cost per acute encounter (\$4,090) for the first six months of 2016/17, lower than Central Coast (\$4,425), Nepean Blue Mountains (\$4,915), South Eastern Sydney (\$5,066) and Northern Sydney (\$5,077). Data for Sydney and Western Sydney LHDs are not available at this stage (See Figure 18).

This data accounts for the extra encounters experienced by LHDs that are not reflected in the NWAU system. This goes some way to understanding how other Greater Sydney LHDs have a low NWAU cost yet can fund additional staff and resources.

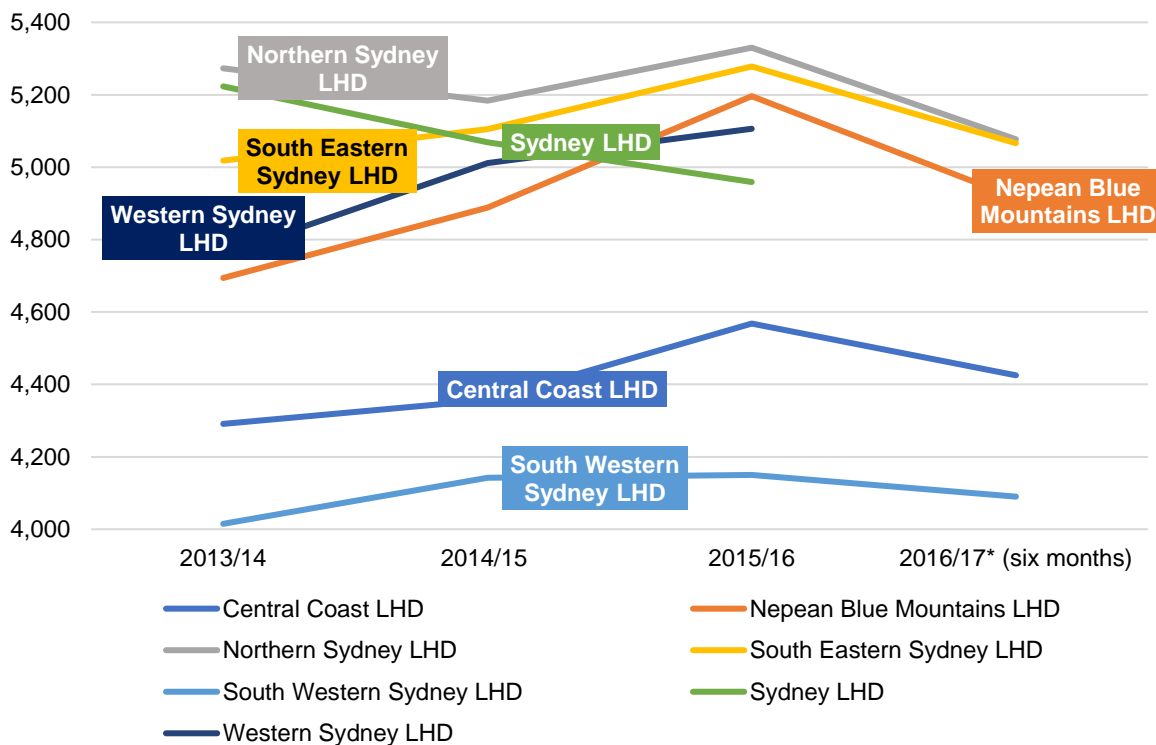
¹⁷This is calculated by subtracting the desired average cost (\$4,500) from the actual average cost (\$4,306) divided by the total NWAU (150,896). This figure is then doubled to get the approximate cost for a twelve month period (as opposed to a six month period).

FIGURE 17: AVERAGE COST PER NATIONAL WEIGHTED ACTIVITY UNIT (NWAU) BY NSW LHDs, JULY TO DECEMBER 2017



Source: Internal data from South Western Sydney LHD, Provided November 2018.

FIGURE 18: AVERAGE COST (\$) PER ACUTE ENCOUNTER (INCLUDING ACUTE MENTAL HEALTH), GREATER SYDNEY LHDs, 2013/14 - 2016/17



Source: Internal data from South Western Sydney LHD, Provided November 2018.

SECTION 2: WHAT DOES THIS MEAN?

South Western Sydney LHD has one of the lowest total expense budgets per resident and the lowest average cost per National Weighted Activity Unit (NWAU) compared to other Greater Sydney regions. The LHD also has the lowest average cost per acute encounters, suggesting that South Western Sydney has less access to specialised funding to provide for additional staffing and resources outside the NWAU system. Although cost effective care is important, relative underfunding in the region has an impact on both Liverpool Hospital staff and patients, notably in terms of patient loads and delivering timely and effective care.

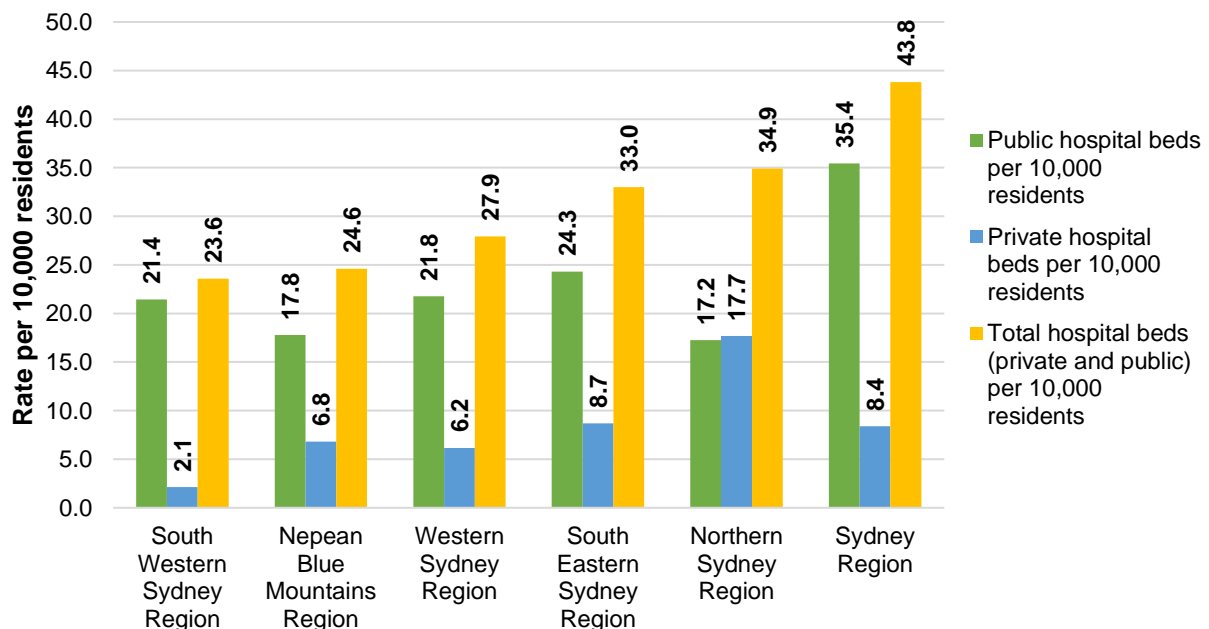
SECTION 3: ALTERNATIVES FOR INPATIENT HEALTHCARE OUTSIDE OF THE PUBLIC HOSPITAL SYSTEM

3.1 Private hospital bed rates

Actual numbers of public and private hospital beds have not been published since 2010, however the most recent data by the Australian Institute of Health and Welfare (AIHW) shows that the number of private hospitals in NSW have only grown on average by 2.6% while public hospitals in NSW have declined on average by 2.0% since 2011/12¹⁸. Therefore 2010 figures still provide a relative picture of private hospital bed distribution across Greater Sydney.

Figure 19 shows there were an estimated 23.6 total hospital beds (private and public) per 10,000 residents in South Western Sydney in 2010, with 21.4 being public beds and 2.1 being private beds. South Western Sydney had a much lower total hospital bed rate (23.6 per 10,000) than Sydney (43.8), South Eastern Sydney (33.0) and Northern Sydney (34.9). The region also had the lowest private hospital bed rate in Greater Sydney (2.1 per 10,000 residents), much lower than their eastern counterparts (Sydney: 8.4; South Eastern Sydney: 8.7; Northern Sydney: 17.7). It is anticipated that these rates would have continued to deteriorate since 2010, given the overall stagnant growth of hospital resources and the ever-growing population.

FIGURE 19: ESTIMATED HOSPITAL BED RATES PER 10,000 RESIDENTS, GREATER SYDNEY LHDs, 2010



Source: NSW Health Services Data Book 2010 (presented in the 2012 WSROC Critical Conditions Report); LHD estimated resident population data at 2010 from HealthStats NSW.

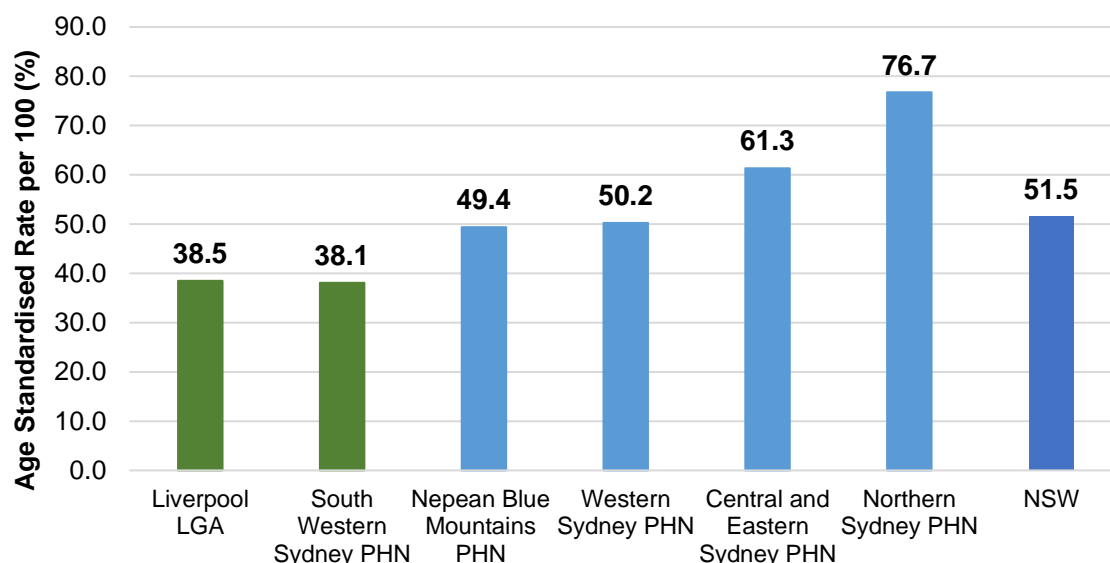
¹⁸AIHW 2018, *Hospital resources 2015-16: Australian hospital statistics*, <https://bit.ly/2FhelFW>

3.2 Private health insurance hospital cover

The most recent estimates for private health insurance hospital cover showed:

- Only 38.5% of Liverpool LGA residents and 38.1% of South Western Sydney residents aged 18 years and over had private health insurance hospital cover. This was notably lower than other regions in Greater Sydney (See Figure 20) and the NSW rate (51.5%). Given the socioeconomic challenges outlined and the fact that not all private health insurance is equal, it is a concern that if patients have private health insurance but with large excess payments or on cheaper packages, the utilisation of a patient private health insurance for an inpatient stay in South Western Sydney LHD will be lower than reflected by the raw rates.
- The rate of private health insurance hospital cover varied within LGAs in the South Western Sydney region: Fairfield (25.6%), Campbelltown (34.8%), Canterbury-Bankstown (36.3%), Wollondilly (56.0%), Wingecarribee (56.6%) and Camden (62.3%). These rates impact Liverpool Hospital as a quaternary level hospital supporting these communities.

FIGURE 20: ESTIMATED NUMBER OF RESIDENTS, AGED 18 YEARS AND OVER, WITH PRIVATE HEALTH INSURANCE HOSPITAL COVER (MODELLED ESTIMATES) 2014-15



Source: Social Health Atlas of Australia New South Wales, Data by Primary Health Network (PHN) and Local Government Area (LGA), October 2018.

SECTION 3: WHAT DOES THIS MEAN?

South Western Sydney has the lowest rates of private hospital beds and private health insurance hospital cover when compared to other regions in Greater Sydney. As a result, Liverpool Hospital staff have difficulty providing adequate medical care to patients that cannot afford routine procedures and services that are necessary to maintaining their health. The budget includes an estimated allocation from privately insured patients and whilst there may be some adjustment for varying rates of private insurance in different LHDs, there are still questions as to whether this allows for all the relevant contributors in this space.

SECTION 4: ACCESS TO HEALTH SERVICES AND PROFESSIONALS

4.1 National Health Services Directory mapping

Liverpool LGA had a lower number of medical and health services when compared to other areas in Greater Sydney.

Liverpool LGA had a lower number of public and private hospital services when compared to other health precincts located in Western Sydney, Eastern Sydney and Northern Sydney regions (See Table 4).

There were only four documented private same day hospitals in Liverpool LGA, that being Liverpool Day Surgery, Liverpool Eye Surgery, Genea Liverpool and South Western Endoscopy Centre. There were also very few private options in the surrounding LGAs.

TABLE 4: ESTIMATES FROM NATIONAL HEALTH SERVICES DIRECTORY MAPPING, LIVERPOOL LGA AND COMPARATIVE REGIONS (AS AT OCTOBER 2018)

National Health Services Directory Mapping				
	General mental health services (no.)	Hospital services (public and private) (no.)	Private same day hospitals (no.)	GP services (no.)
Liverpool LGA	15	2	4	80
South Western Sydney Region	44	12	8	454
Central Coast Region	3	7	1	91
Nepean Blue Mountains Region	3	7	2	133
Northern Sydney Region	18	27	19	238
South Eastern Sydney Region	10	20	21	329
Sydney Region	41	16	14	252
Western Sydney Region	54	15	10	352

Source: HealthDirect Australia HealthMap 2018. Accessed October 2018, <https://studio.healthmap.com.au/>

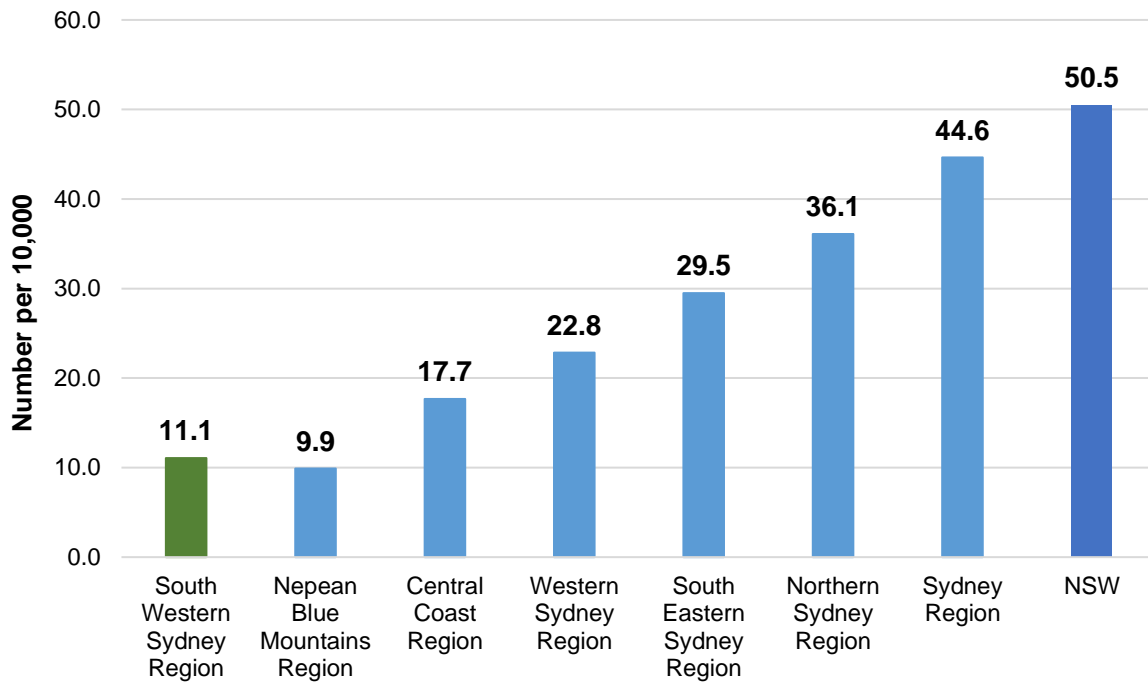
4.2 Medical practitioner rates

There were 80 documented General Practitioner (GP) services in Liverpool LGA, but this was supported by a larger network of GP services in Fairfield (122 GP services) and Canterbury-Bankstown (159 GP services).

An exploration of medical practitioner rates shows that the South Western Sydney region had 11.1 General Practitioners (GPs) and Resident Medical Officers (RMOs) for every 10,000 residents, much lower than Eastern Sydney (29.5 per 10,000), Northern Sydney (36.1) and Sydney (44.4).

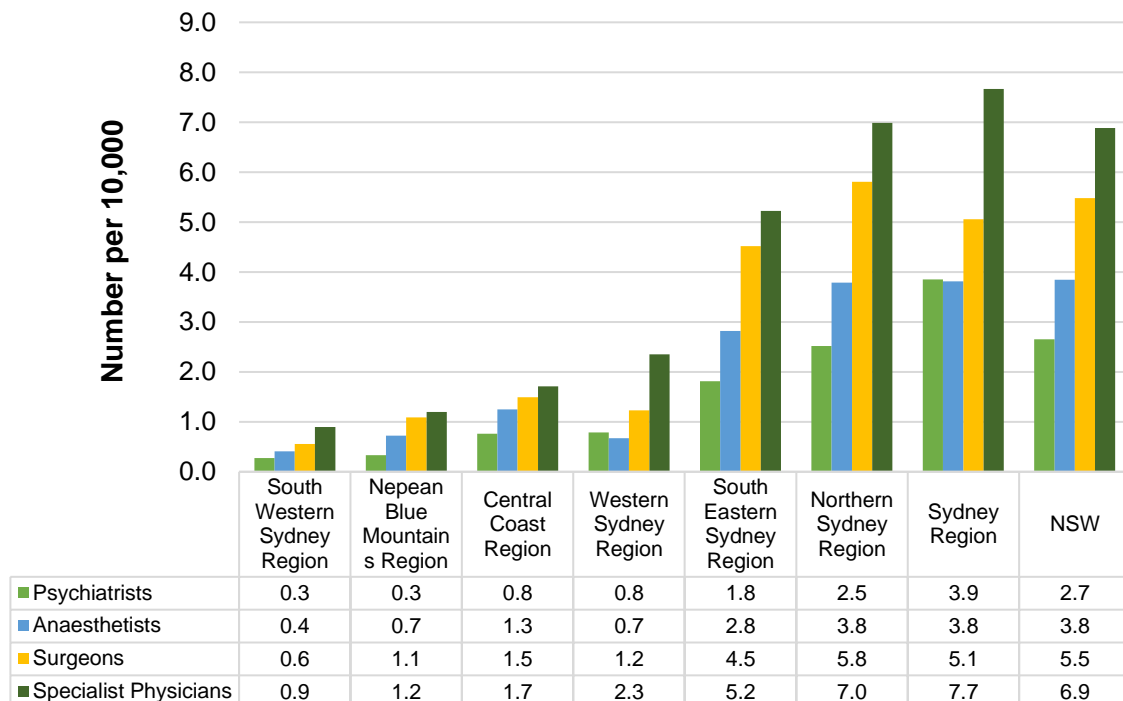
South Western Sydney also had the lowest specialist rates in Greater Sydney, with 0.3 psychiatrists, 0.4 anaesthetists, 0.6 surgeons and 0.9 specialist physicians per 10,000 residents (See Figure 21 and 22).

FIGURE 21: NUMBER OF GENERAL PRACTITIONERS AND RESIDENT MEDICAL OFFICER PER 10,000 RESIDENTS, 2016



Source: Australian Bureau of Statistics, Census of Population and Housing, 2016, Place of Work database.

FIGURE 22: NUMBER OF SPECIALISTS PER 10,000 RESIDENTS, 2016



Source: Australian Bureau of Statistics, Census of Population and Housing, 2016, Place of Work database.

SECTION 4: WHAT DOES THIS MEAN?

The rate of GPs, RMOs and specialists per 10,000 residents in the South Western Sydney region was notably lower compared to rates for other Greater Sydney regions and NSW.

Liverpool LGA and the South Western Sydney region also had a generally lower number of medical and health services, particularly when compared to inner city areas. This is concerning as it suggests that residents may not have access, or have the resources to travel, to services that prevent them from landing in hospital in the first place.

The lack of health professional numbers places a strain on the local hospital system, its existing staff, and its supporting services in trying to meet the medical needs of the community. It has an impact on what hospital specialists are required to do to provide care, as compared with what GPs can be expected to do. There are also less GPs to continue care after discharge and provide overall preventive care strategies in the community to prevent readmission back into hospital.

CONCLUSION

This report provides a snapshot of the Liverpool and South Western Sydney LHD community in terms of socioeconomic status, an LHD budget equity analysis, and an assessment of alternatives outside the hospital regarding inpatient and outpatient health care resources available. There appears to be greatly increased resident need and significantly less available resources compared with other Greater Sydney LHDs. This is particularly felt by Liverpool Hospital which functions as a quaternary service hospital for the district.

There are several demographic factors that are, and will continue to, place pressure on Liverpool Hospital and the supporting health system. This includes a growing and ageing residential population and a notable presence of low income households, unemployment, disability and socioeconomic disadvantage. Liverpool LGA and the South Western Sydney region also has the lowest levels of English proficiency in Greater Sydney and is home to a large proportion of the state's humanitarian settlers. The region also has some of the highest rates of adult obesity and smoking.

South Western Sydney LHD has one of the lowest total annualised expense budgets per resident by LHD yet one of the lowest average costs per National Weighted Activity Unit (NWAU). The LHD can deliver a cost-effective service. South Western Sydney has the lowest cost per acute encounter suggesting less access to specialised funding to deal with complex cases outside the NWAU system.

South Western Sydney region has fewer hospital beds per head of population, both public and private. There are low rates of private medical insurance, fewer specialists and far fewer GPs when compared to other Greater Sydney regions. This impacts on the dependence upon the public hospitals, and the transition of care from hospital to a community that lacks the infrastructure to manage these complex and needy patients post discharge.

It is clear, from this review, that Liverpool Hospital does not have equitable access to funds and also has a greater than average challenge in its efforts to meet their health care of their community. It is hoped that this report will encourage and empower key decision makers to invest in these solutions now and in the future.

ACKNOWLEDGEMENTS

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