

# City of Monash Economic Profile

June 2017

prepared by **.id**

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# Executive Summary

## ***Prosperity through diversity***

The City of Monash is Victoria's second largest economic and employment generator and continues to grow from strength to strength.

- Economy*
- The City of Monash was a \$14.9 billion economy in 2015/16 and hosted 121,467 jobs, 19,490 registered businesses and 190,234 people. In terms of economic output (value of goods and services produced), it was the 14<sup>th</sup> largest economy out of all LGAs in Australia.
  - Economic growth has averaged a remarkable 2.9% since 2011, higher than the Greater Melbourne (2.5%) and Victorian average (2.1%)
  - Jobs growth (0.8%) has not matched growth in output, but this has meant that productivity has risen by 2.1% from 2011 to 2016.
- Industry*
- One of the key strengths of the local economy is its diversity. Substantial employment and value is generated by knowledge intensive services, industrial production, and household services sectors.
  - The City of Monash is home to one of Australia's most recognised innovation clusters. Key research institutions such as the CSIRO and Monash University combine with major facilities such as the Australian Synchrotron to generate one of the largest hubs for Professional, Scientific and Technical Services in Melbourne.
  - Often working in collaboration with research institutions is the local manufacturing sector that, even despite the recent downturn, is still one of the top 3 employers and value generators in the local economy.
  - Wholesale Trade is another specialisation of Monash, with many businesses using the proximity to transport networks, such as the Monash freeway, and the large manufacturing base to build strong supply chain links.
  - The large resident base in the City of Monash have access to an abundance of local jobs as well as high quality facilities such as Monash Medical Centre, University and TAFE campuses, and numerous well regarded schools. This contributes to Education and Training and Health Care and Social Assistance being the two largest employing sectors in the LGA.

- People*

  - International Education has become an additional source of exports for Monash over the last decade, with overseas enrolments at Monash University, Holmesglen Institute and local schools all experiencing growth.
  - Local businesses benefit from access to some of the most highly qualified residents in Greater Melbourne. Rates of higher education degree attainment amongst residents and local workers is well above the metropolitan average.
  - The City of Monash has a very multicultural resident base with a much higher proportion of the population born overseas than the rest of Greater Melbourne which influences local business ownership.
- Place*

  - Several large and small economic activity centres support business and employment across the City of Monash. The Monash Technology Precinct is the largest agglomeration of Manufacturing, Wholesale and Professional Services businesses in the LGA, and the Monash Education and Health Precinct is the densest employment node.
  - Other areas such as the Glen Waverly Activity Centre, that includes The Glen shopping centre and Kingsway restaurant strip, service regional as well as local retail and hospitality needs.
- Future*

  - Future growth is projected to be strong in health, international education and professional and technical services.
  - Promoting even more local collaboration between research institutions and industry will help boost value generated by the Monash Innovation Cluster.
  - The transformation of Manufacturing into the use of more advanced materials and production methods also has potential for considerable value generation.
  - The large resident Asian diaspora in the City of Monash could be better leveraged for growing business and investment with Australia’s key trading partners.
  - Addressing challenges such as increasing congestion and the demand for more diverse housing close to employment nodes will help maintain economic prosperity.



# Economic Snapshot - 2016

## KEY INDICATORS AND 5 YEAR CHANGE



GRP  
\$14.9B  
+\$2.0B



Jobs  
121,467  
+4,720



Employed Residents  
92,026  
+4,392



Businesses  
19,490  
+1,734

## LARGEST EMPLOYING INDUSTRIES, 2016



Health Care &  
Social  
Assistance



Education  
and Training



Manufacturing



Construction



Retail

## EXPORTS

**\$8.0 Billion**

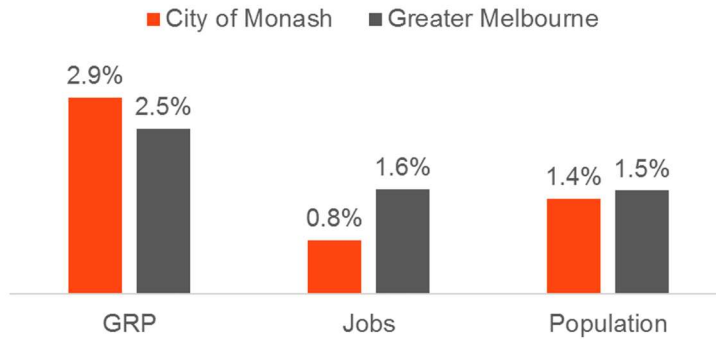
**\$2.2 Billion**



\$2.0B - Wholesale Trade  
\$1.7B - Manufacturing  
\$1.0B - Education and Training

\$0.9B – Manufacturing  
\$0.6B - Wholesale Trade  
\$0.4B - Education and Training

### Average Annual Growth 2011-2016



#### TOP GROWTH 2011-2016

##### VALUE ADDED



- Construction +\$282M
- Professional, Scientific and Technical Services +\$244M
- Financial and Insurance Services +\$205M
- Health Care and Social Assistance +\$185M
- Education and Training +\$183M

##### JOBS



- Education and Training +1,555
- Construction +1,435
- Professional, Scientific and Technical Services +1,352
- Health Care and Social Assistance +1,104
- Administration and Support Services + 598

### COMPARED TO GREATER MELBOURNE, PEOPLE WHO WORK IN THE CITY OF MONASH ARE MORE LIKELY TO:

Be employed as  
**PROFESSIONALS**  
(28.7% compared to 25.7%)

Have  
**BACHELOR OR HIGHER DEGREES**  
(37% compared to 33.7%)

Have  
**ENGINEERING QUALIFICATIONS**  
(13.2% compared to 10.3%)



Be  
**35 YEARS OLD OR OVER**  
(65.6% compared to 61.8%)

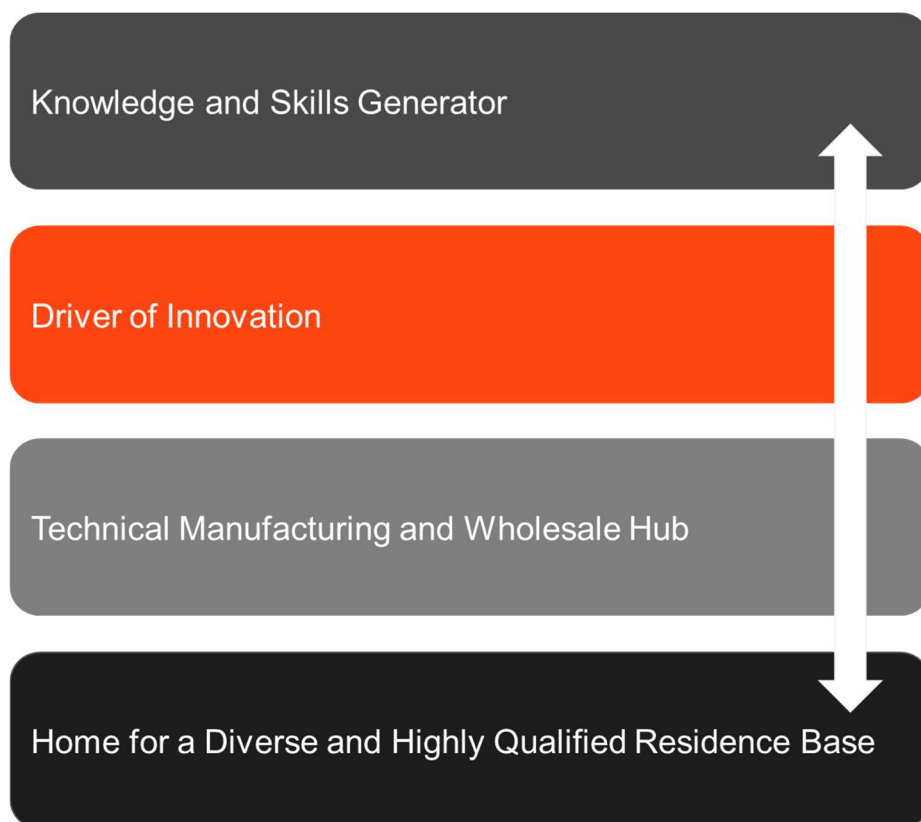
Be in the  
**TOP QUARTILE OF HIGH INCOME EARNERS**  
(31.5% compared to 28.0%)



## Economic Role and Function

The City of Monash has developed specialisations and strengths based on its world class education and research facilities and its strategic location in the heart of Melbourne’s populous and highly skilled eastern suburbs. It plays an important economic role as a driver of innovation and human capital development in Victoria.

Key educational and research facilities support the development of knowledge and skills amongst employees, students and residents. Collaboration between these institutions and local industry drives innovation and new product development. New products are developed using advanced manufacturing processes and local wholesalers allow for the distribution to retailers across Melbourne, around the country, and overseas. A large and diverse local residence base, attracted by the high value jobs and access to quality facilities, provides a strong pool of skilled labour and demand for retail and wholesale trade.



## Terminology

The following terms and acronyms are used in this report.

### **ABR**

Australian Business Register

### **ABS**

Australian Bureau of Statistics

### **CSIRO**

Commonwealth Scientific and Industrial Research Organisation

### **Employed Residents**

People living within the City of Monash who are employed either within the LGA or elsewhere

### **Employment Capacity**

Local workforce/Employed residents - the number of local jobs in an industry/LGA, divided by the number of local residents employed in that industry/all industries

### **LGA**

Local Government Area

### **Local Workforce**

People working within the City of Monash who reside either within the LGA or elsewhere

### **LQ**

Location Quotient, the percentage of the local economy indicator in a particular industry divided by the percentage of the wider area (region, state, nation) that this industry makes up

### **Monash**

City of Monash LGA

### **NIEIR**

National Institute of Economic and Industry Research, also known as National Economics



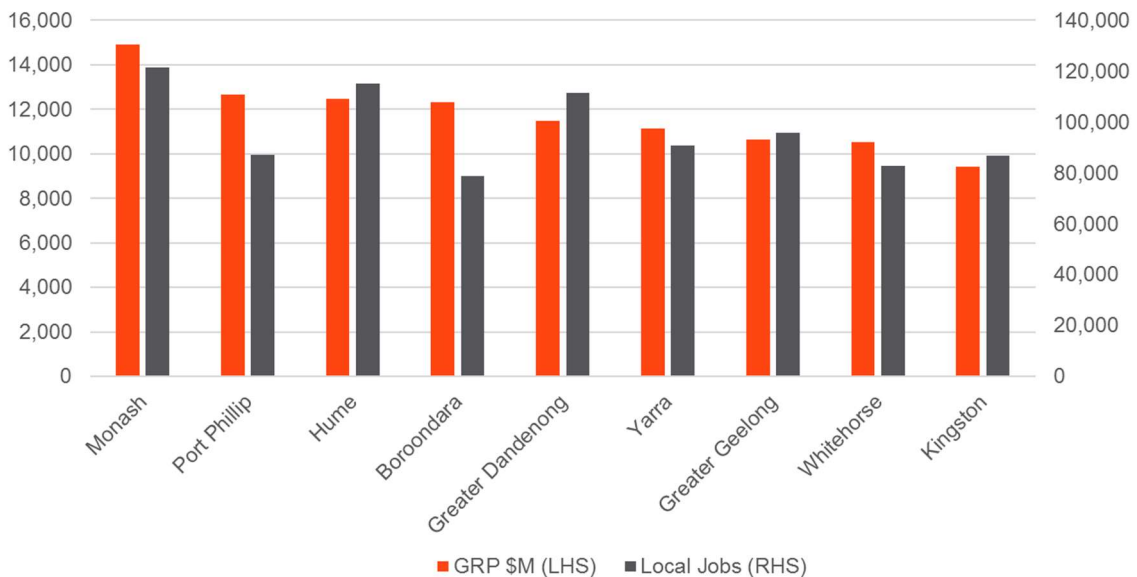
# 1. Building prosperity (current state)

The City of Monash has grown substantially from its largely rural base post 1950s when small townships such as Glen Waverley, Notting Hill and Mount Waverley serviced surrounding market gardens, poultry, sheep and cattle farms. Significant residential development took place in the post-war years, accompanied by industrial growth along transport corridors. Areas between the railway lines began to be developed for housing, with rapid growth during the 1960s and 1970s. Development eased in the 1980s and 1990s only to begin growing again after the turn of the century. Recent economic transformation is being led by technological advancements in key industries and an influx of new migrants from Asia, especially China. This section provides a profile of the City of Monash economy to highlight its economic role and key strengths.

## 1.1 Victoria’s second largest economy

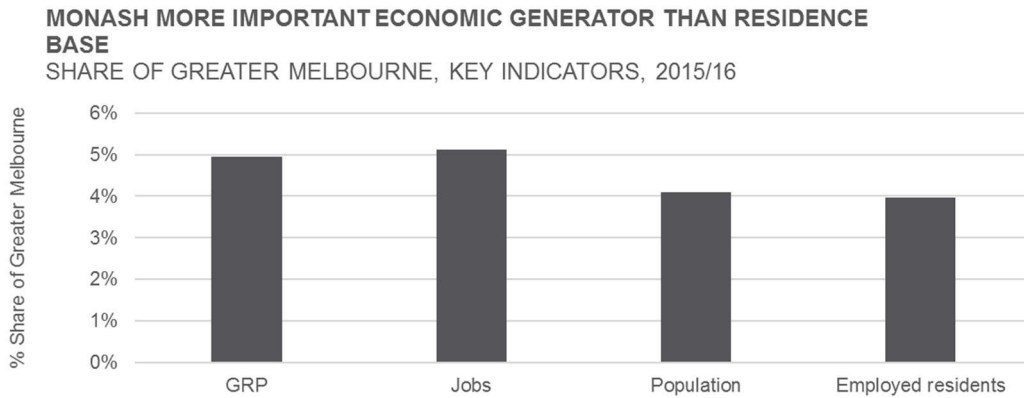
The City of Monash generated almost \$15 Billion in GRP in 2015/16 and supported 121,466 jobs. This represented 4% of the State’s economy, second only to Melbourne’s CBD in importance.

**MONASH IS VICTORIA'S SECOND LARGEST ECONOMY**  
 VICTORIAN LGAS (NON-CITY OF MELBOURNE) - GRP AND LOCAL JOBS 2015/16



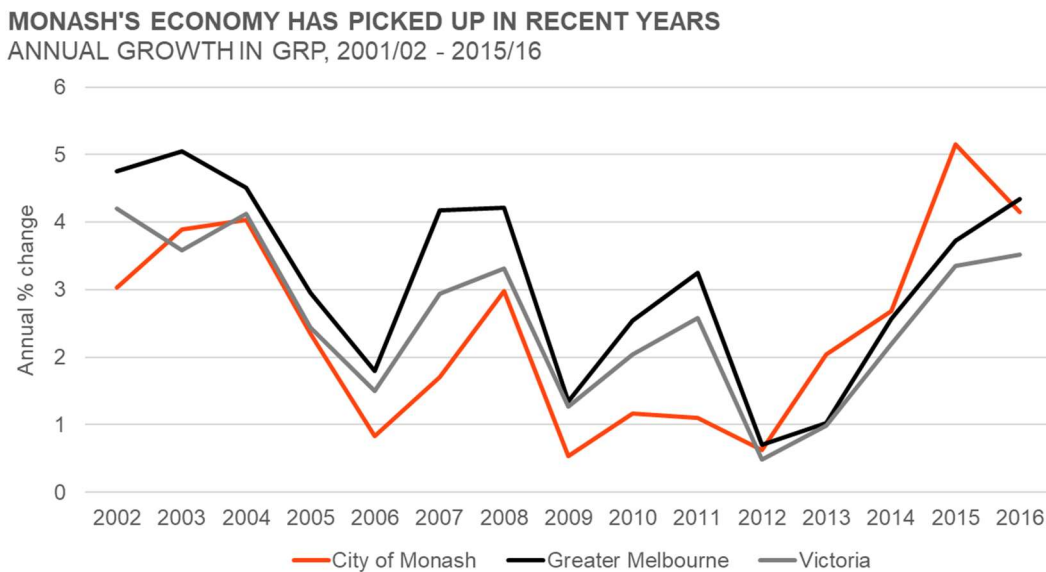
Source: National Institute of Economic and Industry Research (NIEIR) ©2016. Compiled and presented in economy.id by .id the population experts

City of Monash is a more important source of jobs and economic value than it is a population source. In terms of employment capacity, it has a substantial jobs surplus. In 2015/16, there were 29,441 more jobs than employed residents in the LGA.<sup>1</sup>



Source: National Institute of Economic and Industry Research (NIEIR) ©2016; Australian Bureau of Statistics, Regional Population Growth, Australia (3218.0). Compiled and presented in economy.id by .id the population experts

The economy is growing strongly, averaging 2.9% p.a. over the last five years. This is greater than the pace experienced by Greater Melbourne (2.5% p.a.) and Victoria (2.1% p.a.) This is a strong result after a long period where growth in the City of Monash trailed Greater Melbourne.<sup>2</sup>



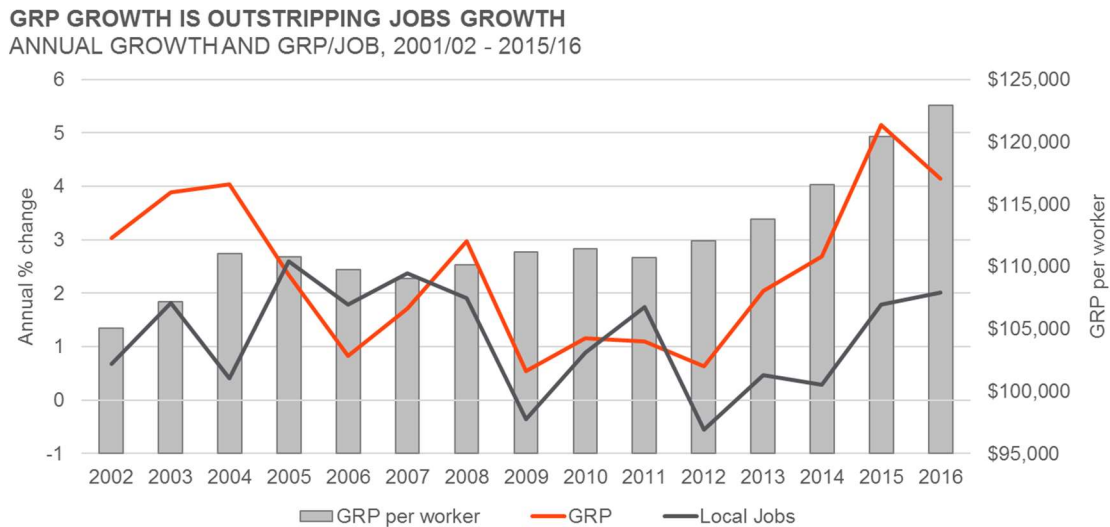
Source: National Institute of Economic and Industry Research (NIEIR) ©2016. Compiled by .id the population experts

Unfortunately, jobs growth has not been as strong. Local jobs grew by only 0.8% p.a. between 2010/11 and 2015/16. This was lower than the state (1.2%) and metro

<sup>1</sup> Jobs Surplus – more local jobs (larger local workforce) than employed residents. Please refer to Terminology page for explanation of these terms.

<sup>2</sup> Greater Melbourne largely influenced by substantial economic growth in the CBD.

averages (1.6%) and likely due to key sectors undergoing transformation e.g. Manufacturing. However, local jobs growth in numbers (+4,720) was still greater than growth in employed residents (+4,392). Jobs growth slower than GRP growth does mean that local worker productivity has been rising strongly. Each worker was generating \$122,897 in 2015/16, up from \$110,737 five years previous.



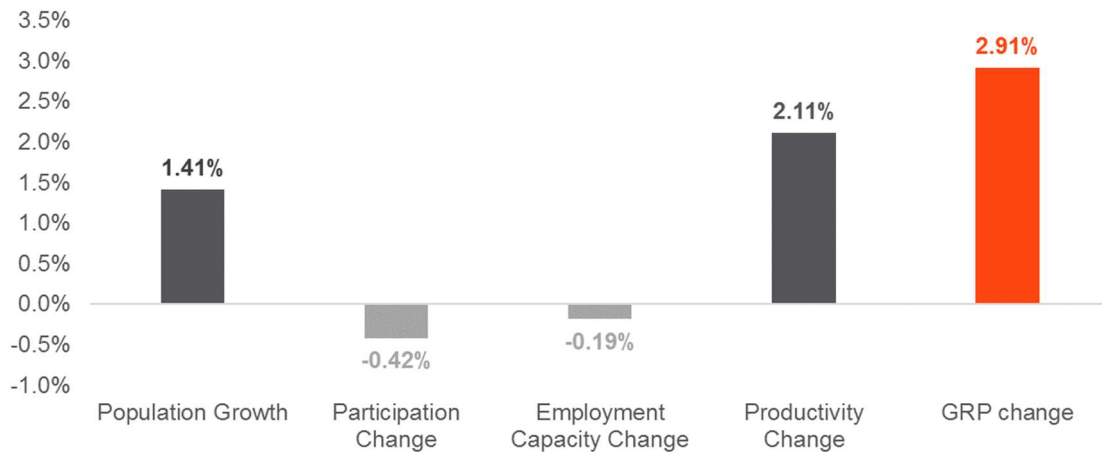
## 1.2 Value over quantity

As illustrated in the previous section, recent productivity growth has been strong. In fact, if we disaggregate GRP growth into four separate derived components, we can see that it was the main driver over the last five years.<sup>3</sup> While population growth averaged 1.4% p.a., the proportion of residents in employment (any location) actually fell by 0.42%. This can be due to less jobs, an increase in children (<15 years) or an ageing population leaving the workforce. Employment capacity<sup>4</sup> also fell slightly, meaning there was a slightly larger % growth in residents working outside the LGA compared to local jobs growth. In contrast, productivity grew by 2.11% per year on average.

<sup>3</sup> This is an illustrative exercise where individual components are derived from GRP growth. The four components include: Population growth; Participation change (employed residents/population); Employment capacity change (local jobs/employed residents); and Productivity change (GRP/local jobs).

<sup>4</sup> Employment capacity is a simple way of looking at whether the City of Monash could theoretically provide jobs for all its residents if they were to choose to work locally. Employment capacity is simply the number of local jobs in an industry/economy, divided by the number of local residents employed (anywhere) in that industry/all industries.

**PRODUCTIVITY KEY DRIVER OF RECENT GROWTH**  
CITY OF MONASH - AVERAGE ANNUAL CHANGE, 2010/11 - 2015/16



Source: National Institute of Economic and Industry Research (NIEIR) ©2016; Australian Bureau of Statistics, Regional Population Growth, Australia (3218.0). Compiled and presented in economy.id by .id the population experts

Productivity growth has meant that GRP per capita, a stronger measure of economic well-being, has increased strongly since 2011. During the five-year period, it increased from \$72,899 per person to \$78,471, or 7.6%. This compares to only a 1.4% increase for Greater Melbourne as a whole.

**MONASH GENERATES MORE VALUE PER PERSON THAN GREATER MELBOURNE**  
GRP PER CAPITA, 2011 AND 2016



Source: National Institute of Economic and Industry Research (NIEIR) ©2016; Australian Bureau of Statistics, Regional Population Growth, Australia (3218.0). Compiled and presented in economy.id by .id the population experts

### 1.3 Highly diverse economy

Monash’s economy is extremely well rounded with no sector generating more than 15% of the economy’s employment or value added. While it does have some specialisations, they are evenly spread - seven sectors support 8% or more of employment. It is not common for a suburban economy to generate substantial employment in both knowledge based and industrial sectors.



In comparison to Greater Melbourne, the City of Monash’s economy is over-represented in population servicing sectors (Health and Education), and also Manufacturing and Wholesale Trade. It is under-represented in Financial and Insurance Services, but this is largely because of the dominance of Melbourne’s CBD in this sector. However, the City of Monash is still the 5<sup>th</sup> largest employment node in Greater Melbourne for these workers.<sup>5</sup> Surprisingly given the large residence base and strong student population, the LGA overall is under-represented in Accommodation and Food Services.

**MONASH IS A DIVERSE ECONOMY**  
SHARE OF TOTAL EMPLOYMENT BY SECTOR 2015/16



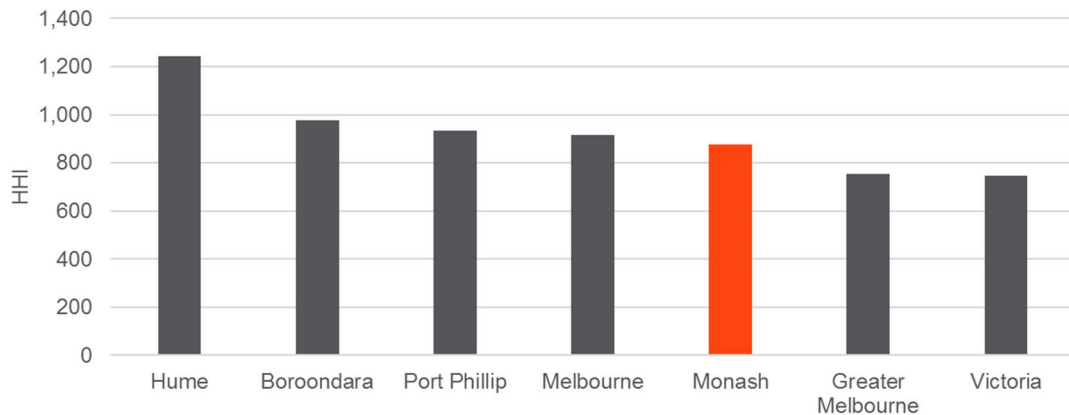
Source: National Institute of Economic and Industry Research (NIEIR) ©2016. Compiled and presented in economy.id by .id the population experts

A diversified economy is generally more resilient than a concentrated one, as declines in one sector can be compensated by growth in others. The Herfindahl-Hirschman Index (HHI)<sup>6</sup> is a tool that helps quantify the level of economic diversification of a city. A lower score signifies a higher degree of diversification. In 2015/16, based on employment by sectors, the City of Monash’s HHI was 875. This is quite low even for an urban economy and below that of other large LGAs in Victoria.

<sup>5</sup> In 2011, the City of Melbourne represented 60% of Greater Melbourne’s Financial and Insurance Services employment.

<sup>6</sup> The HHI is commonly used to measure market concentration to guard against monopolistic tendencies of companies; however, it is also effective as a general diversity metric. It involves a simple calculation of summing the squared shares of employment captured by the 19 economic sectors (ANSZIC). The index can range from 526 (completely balanced) to 10,000 (one sector provides all employment).

**MONASH IS ONE OF THE MOST DIVERSIFIED ECONOMIES**  
 VICTORIA'S FIVE LARGEST LGAS, HERFINDAHL-HIRSCHMAN INDEX LOCAL JOBS, 2015/16\*



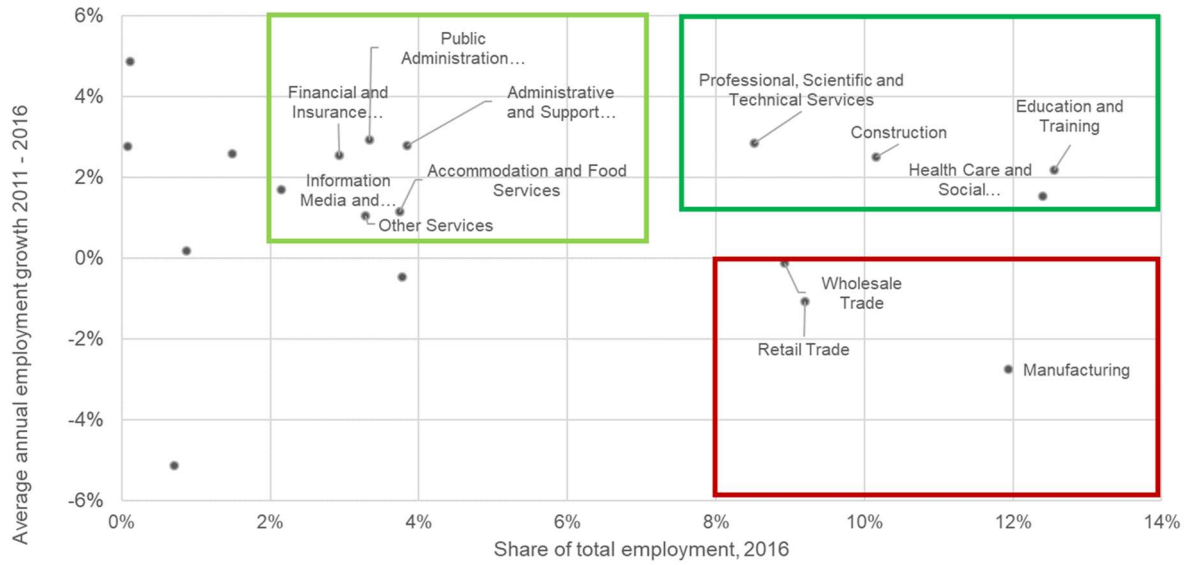
Source: National Institute of Economic and Industry Research (NIEIR) ©2016. Compiled and presented in economy.id by .id the population experts

### 1.4 Knowledge based services driving growth

The charts on the next page reveal that the key drivers of employment and value added growth in the City of Monash over the five years 2011 to 2016 have been knowledge intensive household and business service sectors. Some sectors, such as Health Care and Social Services and Education and Training, are already dominant within the LGA, while others have grown in prominence e.g. Information, Media and Telecommunication Services.

In contrast, large sectors such as Manufacturing, Wholesale and Retail Trade have experienced weaker growth or been in decline. This is roughly consistent with broader national trends and the challenge for the LGA will be in managing the transformation of these major employing sectors.

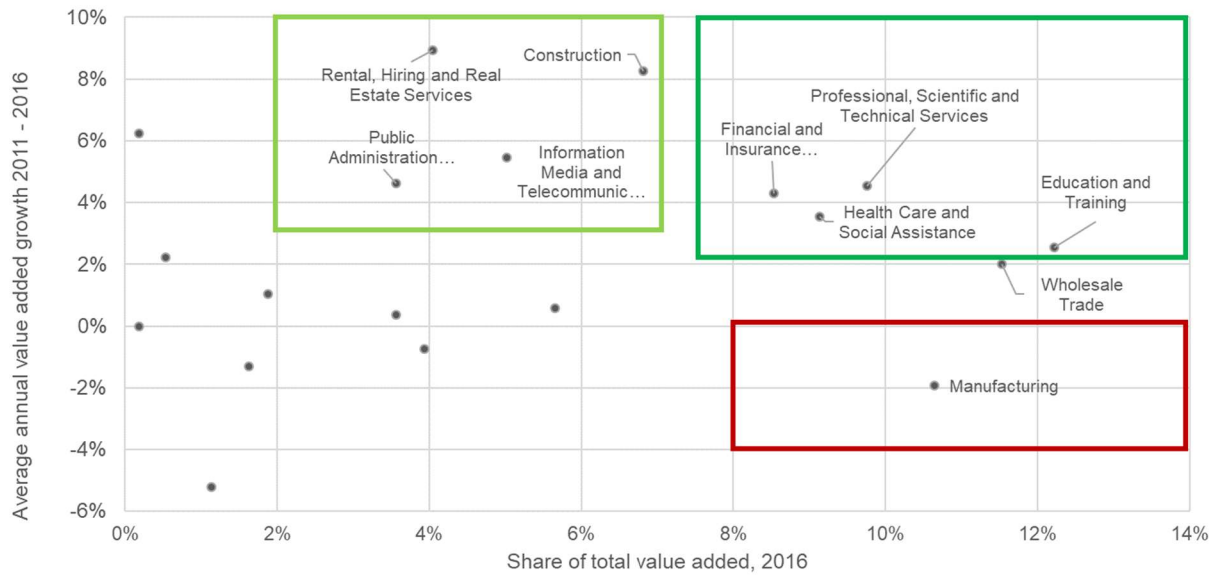
**SECTOR EMPLOYMENT SHARES AND GROWTH, 2011 - 2016**



Source: National Institute of Economic and Industry Research (NIEIR) ©2016., compiled by .id the population experts



**SECTOR VALUE ADDED SHARES AND GROWTH, 2011 - 2016**



Source: National Institute of Economic and Industry Research (NIEIR) ©2016., compiled by .id the population experts



## 1.5 Centre of research and innovation

The City of Monash is home to an incredible number of major research facilities. Most of these are situated in or around Monash University, which was established in 1961 as Victoria's second university. Key assets include the CSIRO Clayton, the Australian Synchrotron, Melbourne Centre for Nanofabrication and the Australian Regenerative Medicine Institute. A number of other scientific and commercial research centres are located in what is known as the Monash Science Technology Precinct. Due to this, a large section of the City of Monash is recognised in *Plan Melbourne 2017-2050* as a National Employment and Innovation Cluster.

It is no surprise then that Professional, Scientific and Technical Services is one of the key generators of employment and value in the LGA. In 2015/16 it created \$1.2B in value added (9.8% of total value added) and supported 10,344 jobs (8.5%). This sector has also experienced substantial growth in the last five years with value added increasing by 4.5% p.a. and jobs by 2.8% p.a.



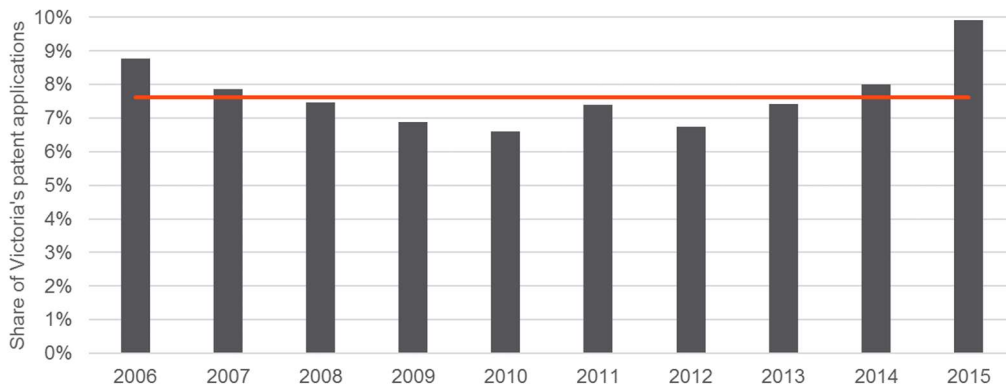
The largest sub-industries within this sector include:

- Computer System Design and Related Services
- Scientific Research Services
- Accounting Services
- Engineering Design and Engineering Consulting Services

Illustrating its role at the centre of innovation in Victoria, the City of Monash generates a substantial number of patent applications for new processes and technology each year. In the ten years between 2006 and 2015, 1,254 patent applications were filed. This represented 7.6% of Victoria's total patent applications, considerably more than its share of jobs (4.1%) or businesses (3.4%).



**MONASH IS A CENTRE OF INNOVATION**  
CITY OF MONASH, SHARE OF VICTORIAN PATENT APPLICATIONS, 2006 - 2015

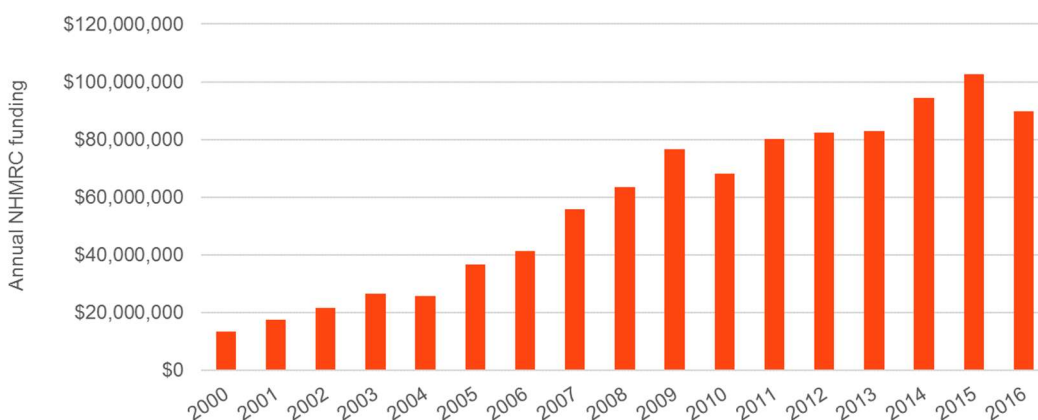


Source: IP Australia, 2016. Compiled and presented in economy.id by .id the population experts

Reflecting the strength of the innovation system within the City of Monash, there is considerable collaboration and overlap between research facilities and industry. For example, Monash University has partnered with CSIRO to establish the Australian Manufacturing and Materials Innovation Precinct at Clayton focused on materials science, engineering and advanced manufacturing research and its translation to local and national based industries.

Biomedical research is a strength within the LGA. Monash University has received almost a billion dollars in National Health and Medical Research Council (NHMRC) funding in the last 16 years, the third largest amount out of all institutions in Australia.<sup>7</sup> Funding to Monash University has increased considerably since the early 2000s and now averages \$90 million annually.

**MONASH UNIVERSITY OF ONE OF AUSTRALIA'S LEADING MEDICAL RESEARCH INSTIUTIONS**  
NHMRC FUNDING, 2000 - 2016



Source: NHMRC Grants Funding 2000 - 2016 Summary Tables, 2017, compiled by .id the population experts

<sup>7</sup> Note this figure also includes funding that may go to the Monash Institute of Pharmaceutical Sciences in Parkville.

## 1.6 Servicing its large residence base

The City of Monash is home to 4% of Greater Melbourne’s population and in 2015 had the largest residence base amongst non-outer urban LGAs. This means its catchment region for servicing is much greater than just the 190,000 people who live there. For this reason, health, education and retail services are three of the largest sectors in the economy.

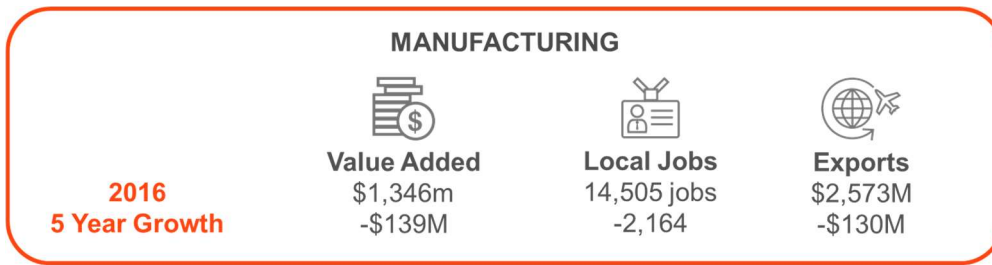
The LGA is home to one of Melbourne’s major health facilities, the Monash Medical Centre in Clayton. It is the base for the planned MonashHEART, a centre of excellence in cardiac assessment, treatment and research, and Monash Children’s, the third largest provider of paediatric services in Australia. In 2015/16, Health Care and Social Assistance was the second largest employing sector and fifth largest value generator in the local economy.



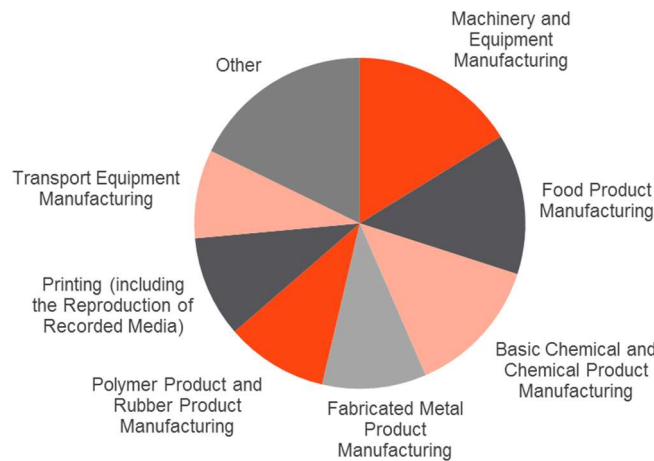
The fifth largest employing sector in the City of Monash is Retail Trade with an estimated 11,176 jobs. The sector is comparatively quite large given high order retail needs are met by nearby retail nodes outside the LGA such as Chadstone Shopping Centre and Springvale Homemaker Centre.

## 1.7 Manufacturing and wholesale trade hub

The City of Monash has been home to a large number of manufacturing facilities since the 1960s, accessing the labour pool from newly established growth areas in the south east and sometimes utilising the expertise from Monash University which opened in 1961. Despite the recent downturn in manufacturing in Monash and Australia more generally, the sector is still one of the top three employers and value generators in the local economy. Manufacturing in the City of Monash is also quite diverse when compared to other manufacturing hubs in Victoria with seven different sub-industries generating more than 10% of Manufacturing value added in 2015/16.



**MANUFACTURING IN MONASH IS QUITE DIVERSIFIED**  
SHARE OF TOTAL MANUFACTURING VALUE ADDED, 2015/16



Source: National Institute of Economic and Industry Research (NIEIR) ©2016. Compiled by .id the population experts

Wholesale trade developed in combination with many of the small goods manufacturers. The development of the Monash Freeway during the 1970s and 1980s entrenched the LGA as a key location, especially the Notting Hill precinct, for wholesale distribution. The industrial precincts in Monash offer adaptable premises in close proximity to most of eastern Melbourne’s large residence base and some of the key retailer destinations. Wholesale Trade in the City of Monash is considerably over-represented when compared to Greater Melbourne as a whole. In 2015/16, it generated 11.5% of value added and supported 8.9% of jobs, compared to 5.4% and 4.6% for Greater Melbourne. Despite not adding any jobs between 2011 and 2016, the sector continues to grow in value suggesting productivity improvements are driving the way.



## Time series - Value add (\$m)



Source: National Institute of Economic and Industry Research (NIEIR) ©2016  
Compiled and presented in economy.id by .id the population experts



Both Manufacturing and Wholesale Trade are incredibly important to the City of Monash economy as they both represent a quarter of all exports generated in the LGA.

## 1.8 Knowledge and skills generator

The City of Monash is home to Monash University, the largest university in Australia by enrolments. Its Clayton campus had over 36,000 students in 2016.<sup>8</sup> It has an exceptional reputation for research and teaching regularly being ranked in the top 1% of world universities. For this reason, it attracts a large number of international students and was ranked 21st in the World's Most International Universities in 2017. A campus of Holmesglen Institute of TAFE is also located in the LGA offering a limited number of vocational courses but also a Bachelor's Degree in Early Childhood Teaching. Monash University is crucial to the local economy as Tertiary Education generates substantial exports (11.3% of total LGA exports and 17.2% of Greater Melbourne's total exports in this industry) bringing wealth into the LGA, which has multiplier benefits to other industries. The industry continues to grow strongly with its exports value growth being the highest out of all sub-Sector industries in the LGA between 2011 and 2016.

<sup>8</sup> Monash University, 2016 Annual Report



**TERTIARY EDUCATION**

**2016**  
**5 Year Growth**



**Exports**  
\$1,154M  
+\$293M

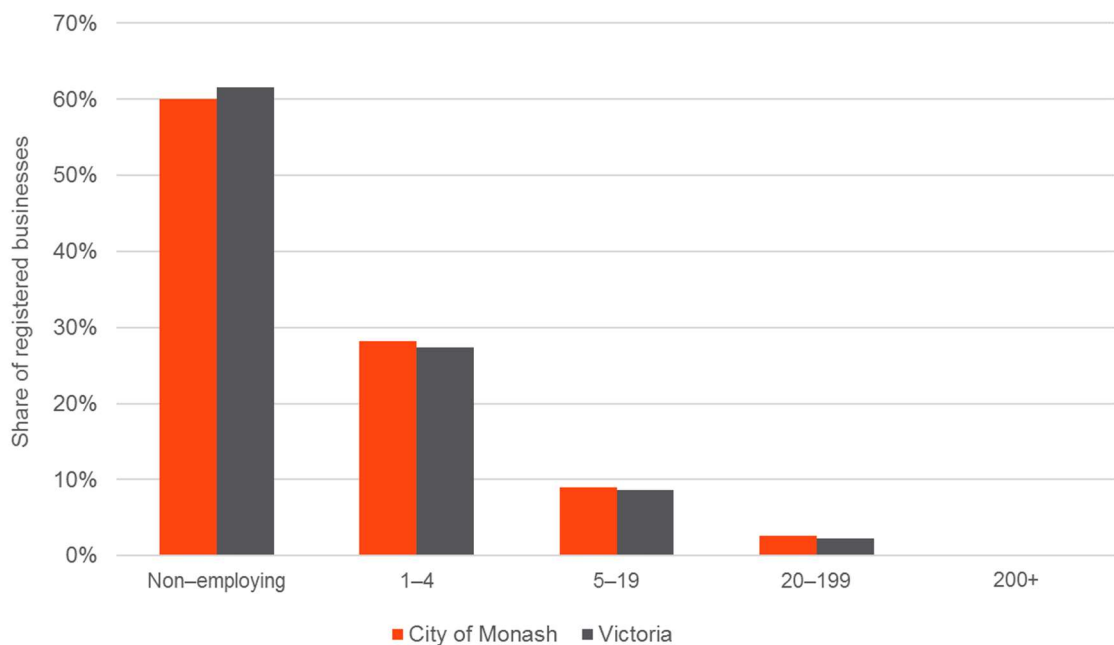


**Local Jobs**  
8,555 jobs  
+777

## 1.9 Strong business growth

The City of Monash has a strong entrepreneurial culture but its share of businesses in Victoria (3.4%) is actually lower than its employment contribution (4.1%). This highlights that the LGA supports a higher share of employing businesses. In 2016, 40% of businesses in the City of Monash were employing businesses, compared to 38.4% of total Victorian businesses. However, the overwhelming majority of businesses in the LGA are still non-emplying.

**MONASH HAS A SLIGHTLY HIGHER SHARE OF EMPLOYING BUSINESSES**  
REGISTERED BUSINESSES BY EMPLOYMENT SIZE, 2016



Source: Australian Bureau of Statistics, 8165.0 Counts of Australian Businesses, including Entries and Exits, Jun 2012 to Jun 2016, compiled by .id the population experts

As would be expected given the employment structure, City of Monash has a higher share of businesses in Professional, Scientific and Technical Services (14.1%) than the state average (12.5%). The largest over-representation is in Wholesale Trade businesses which represent 7.1% of City of Monash businesses, compared to only 3.0% at the state level.

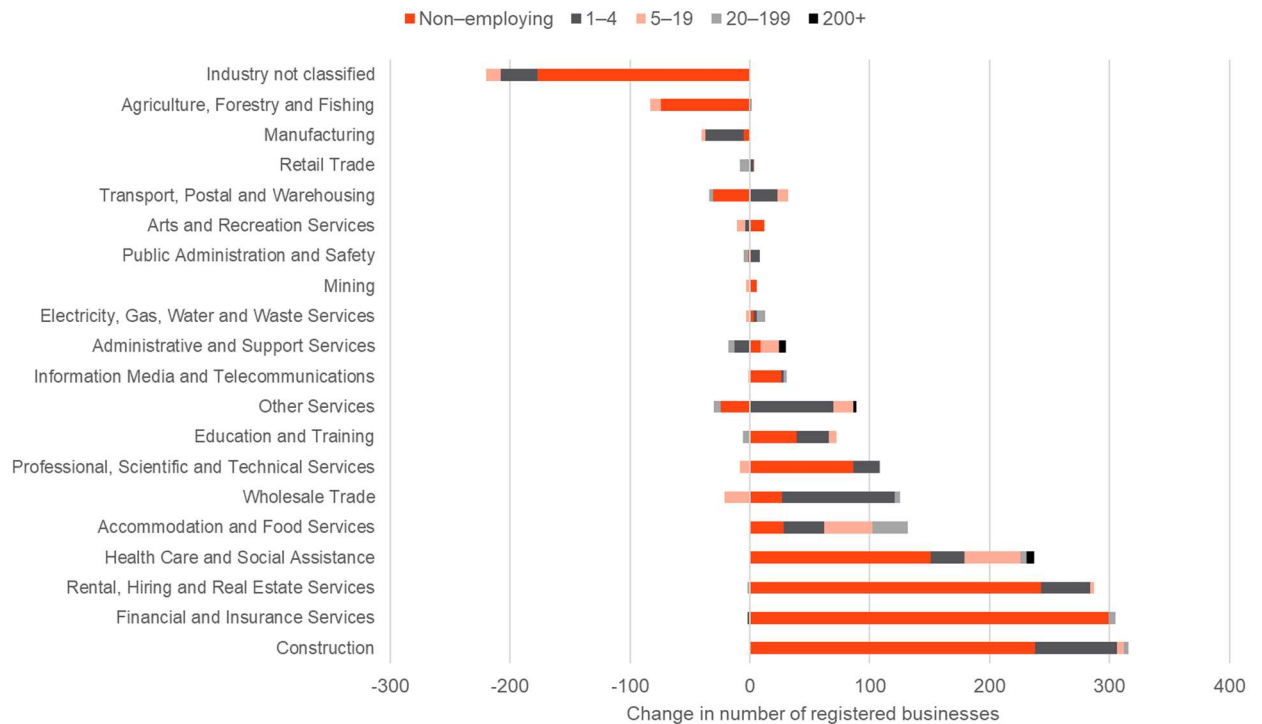
**MONASH OVER-REPRESENTED IN BUSINESS SERVICES AND WHOLESALE TRADE REGISTERED BUSINESSES BY SECTOR, 2016**



Source: Australian Bureau of Statistics, 8165.0 Counts of Australian Businesses, including Entries and Exits, Jun 2012 to Jun 2016, compiled by .id the population experts

The City of Monash has experienced quite substantial business growth in the last four years, well above state and national averages. Between 2012 and 2016, average growth in businesses numbers was 1.76% p.a., more than double the Victorian growth rate (0.83%) and five times the Australian rate (0.35%). Most this growth was in non-employed or micro businesses (1-4 employees). However, Accommodation and Food Services saw substantial growth in small (5-19) and medium (20-199) business numbers, increasing by 70 in these categories. Health Care and Social Assistance also saw strong growth in small businesses (+47) and large businesses (+6, or 40% of big business growth in the LGA).

**MOST GROWTH IN SMALL BUSINESSES, EXCEPT HEALTH CARE AND HOSPITALITY**  
**CHANGE IN REGISTERED BUSINESSES BY EMPLOYMENT SIZE, 2012 - 2016**



Source: Australian Bureau of Statistics, 8165.0 Counts of Australian Businesses, including Entries and Exits, Jun 2012 to Jun 2016, compiled by .id the population experts

## 1.10 Highly qualified workforce

The amenity of the City of Monash and its accessibility to education facilities<sup>9</sup> and knowledge-intensive employment opportunities means that it has attracted a highly skilled resident base. In 2011, around 66.9% of employed residents held post school qualifications and 41.6% had a bachelor degree or higher. This compares to 61.3% and 32% for Greater Melbourne. The nature of the industries operating in the City of Monash means the local workforce is also more qualified on average than the rest of Greater Melbourne. In 2011, 37% of the workforce held a bachelor degree or higher, compared to 34% for Greater Melbourne.

<sup>9</sup> Aside from Monash University and Holmesglen Institute of TAFE, other education institutions such as Deakin University, Swinburne University of Technology, and Chisholm Institute are also highly accessible for Monash businesses, workers and residents.

**MONASH WORKERS ARE HIGHLY QUALIFIED**  
**QUALIFICATION LEVELS, 2011**



Source: Australian Bureau of Statistics, Census of Population and Housing 2011, compiled by .id the population experts

The qualification levels of both residents and workers is also increasing which is important given the fact that the rewards of the new economy increasingly favour those with higher qualifications. In 2015, Australians with a degree qualification had higher participation rates, faced lower unemployment and earned far more.

**In 2015:**



86% Participation Rate  
 4.5% Unemployment Rate  
 74% of Employed working Full-Time  
 \$1,151 Median Weekly Income



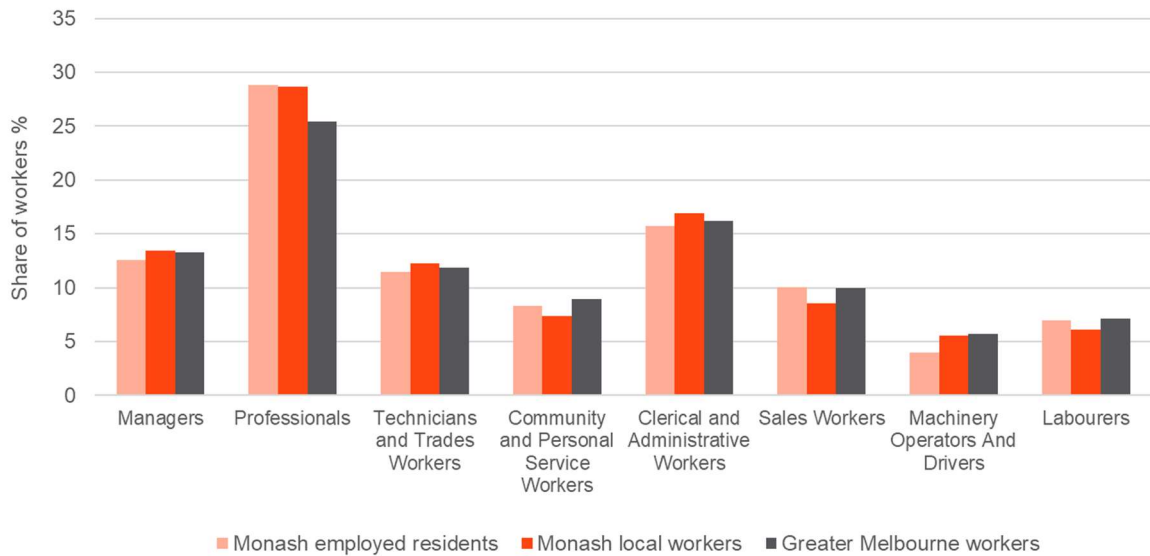
66% Participation Rate  
 8.1% Unemployment Rate  
 61% of Employed working Full-Time  
 \$784 Median Weekly Income

Source: ABS Cat. 4235.0 - Qualifications and Work, Australia, 2015

Given the qualification levels, it is no surprise that both City of Monash employed residents and local workers are also more likely to be in professional occupations (approx. 29%). The largest group of professionals in the City of Monash workforce are midwives/nurses and school teachers. However, the key occupations that are over-represented in the local workforce are Natural and Physical Science Professionals and Tertiary Education Teachers.



**MONASH WORKERS ARE MORE LIKELY TO BE IN PROFESSIONAL OCCUPATIONS, 2011**



Source: Australian Bureau of Statistics, Census of Population and Housing 2011, compiled by .id the population experts

**OVER-REPRESENTED OCCUPATIONS IN MONASH**

**Local workers**

- Natural and Physical Science Professionals
- Tertiary Education Teachers
- ICT and Telecom. Technicians
- Medical Practitioners
- Engineering Professionals

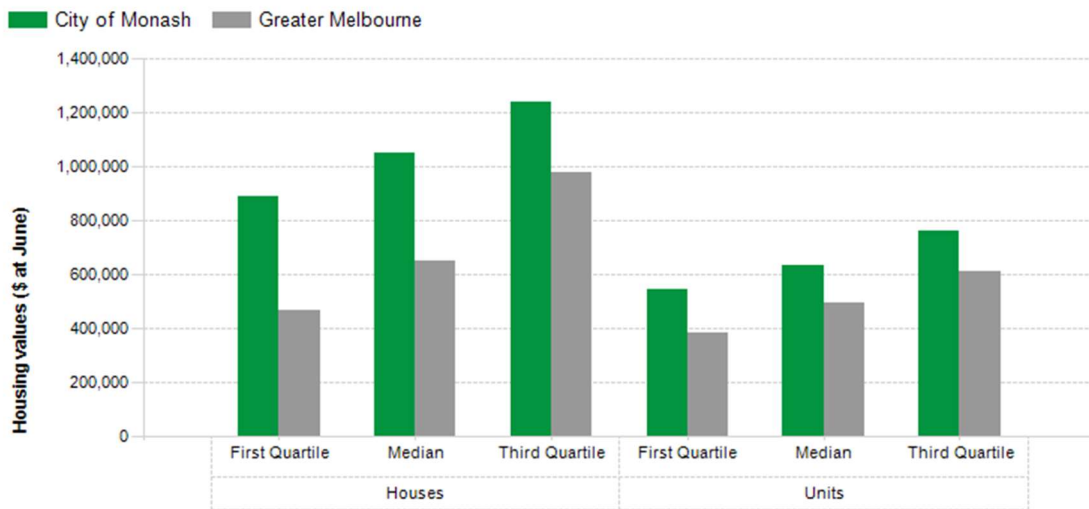
**Employed residents**

- Business and Systems Analysts, and Programmers
- Engineering Professionals
- Accountants, Auditors and Company Secretaries
- Natural and Physical Science Professionals
- Medical Practitioners

**1.11 Highly liveable location**

The accessibility to employment, education, health and retail facilities has made the City of Monash a highly desirable place of residence. In fact, no area within the LGA is more than 30 minutes’ drive from a hospital, school, or supermarket. This desirability has contributed to house values far exceeding the metropolitan average. In 2016, the median house price was over a million dollars, or \$400,000 (62%) above the Greater Melbourne median. Unit prices were also well above average.

### Housing values, 2016

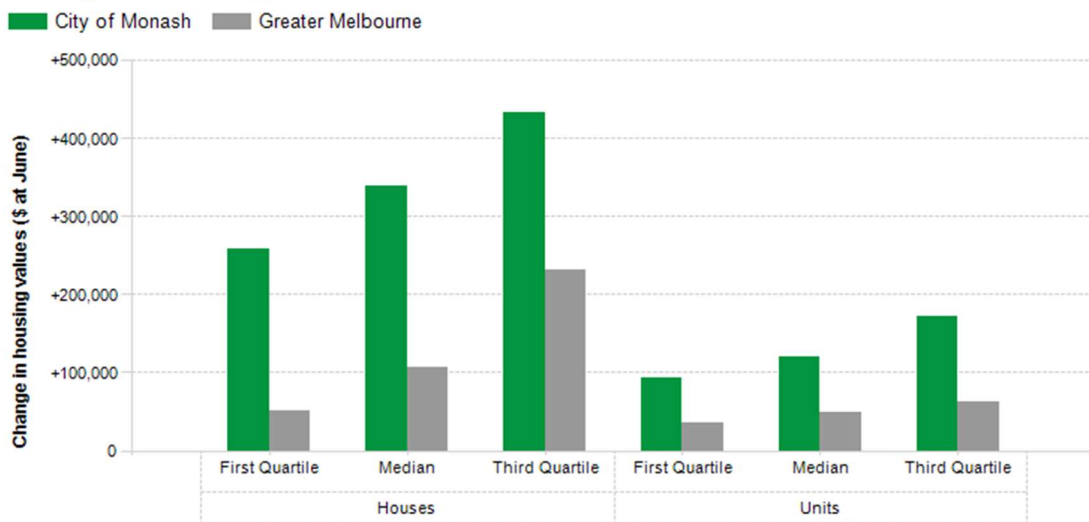


Source: Hometrack 2011-2016, Housing Valuation System



House values have risen by over \$300,000 in the last five years, or 47%, well above the growth seen in other areas of Melbourne. Local demand has been in competition with overseas investment, particularly from China and Malaysia. The suburbs of Glen Waverly and Mount Waverley are regularly in the list of top searched suburbs by Chinese property buyers.<sup>10</sup>

### Change in housing values, 2011 to 2016



Source: Hometrack 2011-2016, Housing Valuation System



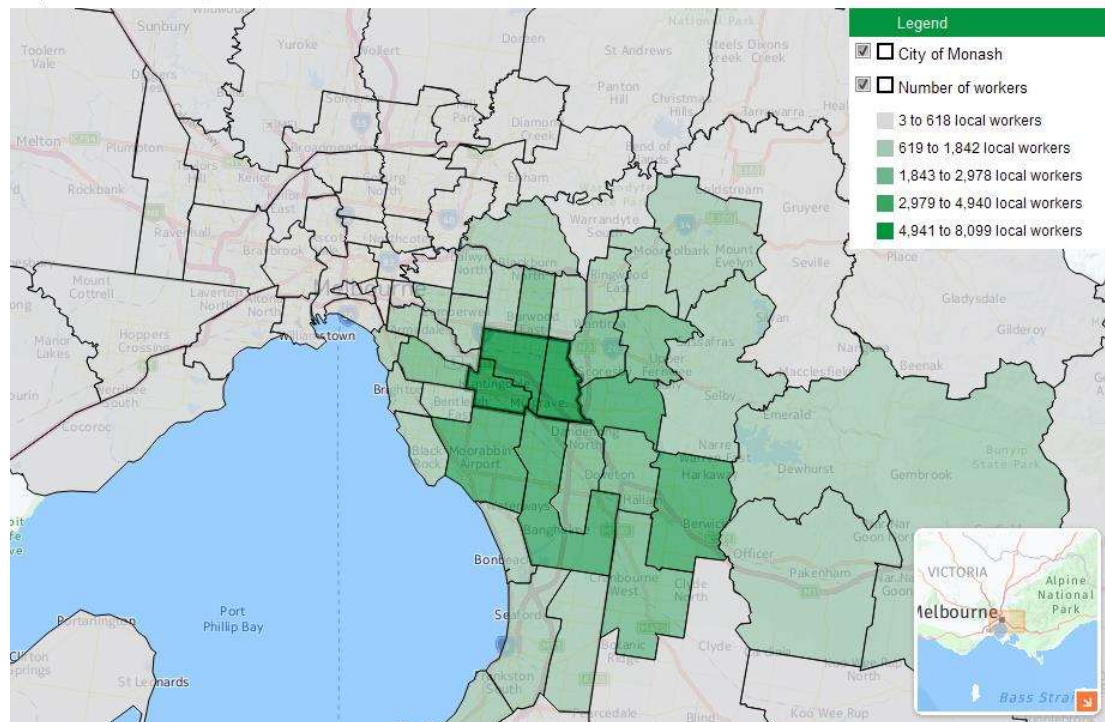
<sup>10</sup> See: <http://www.news.com.au/finance/real-estate/chinese-househunters-click-on-victorian-real-estate-listings/news-story/284c92e9bee0ea4a1b221dfa652e1aca> and <http://www.realestate.com.au/news/where-international-buyers-are-hunting-for-property/>

## 1.12 Commuter churn

The City of Monash is characterised by a substantial inflow and outflow of workers every day. As a large employment hub, the LGA draws workers from around Greater Melbourne and in 2011 only 23% of the local workforce were City of Monash residents. As the map shows, workers are largely drawn from the south-eastern suburbs but there are strong flows from areas in all directions.

### Residential locations of local workers by SLA by industry, 2011

City of Monash - Total area (All SLAs) - All industries

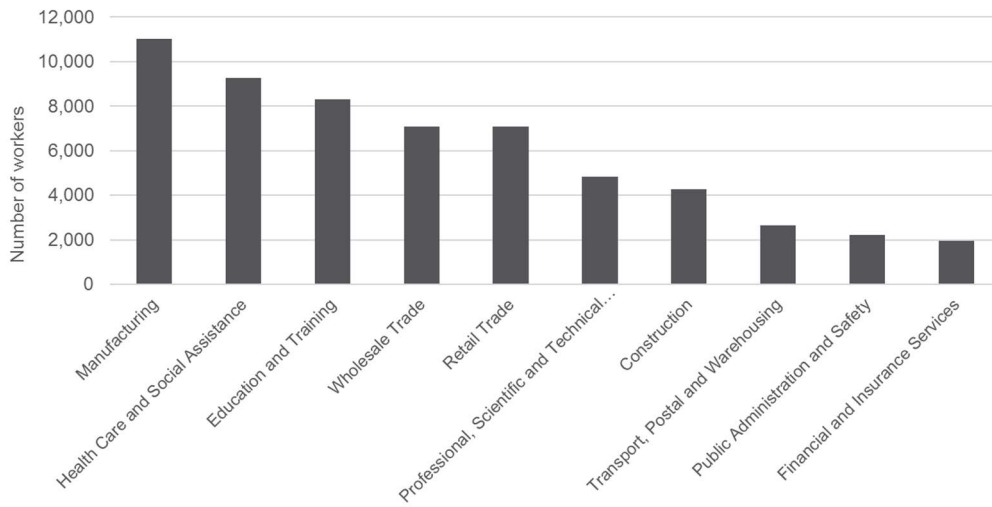


Source: Australian Bureau of Statistics, Census of Population and Housing 2011. Compiled and presented in economy.id by .id, the population experts.

.id  
the population experts

The main sectors drawing workers from outside the LGA were Manufacturing, Health Care and Social Assistance, and Education and Training.

**MONASH DRAWS WORKERS FROM ALL OVER GREATER MELBOURNE**  
 NUMBER OF LOCAL JOBS FILLED BY NON-RESIDENTS, 2011

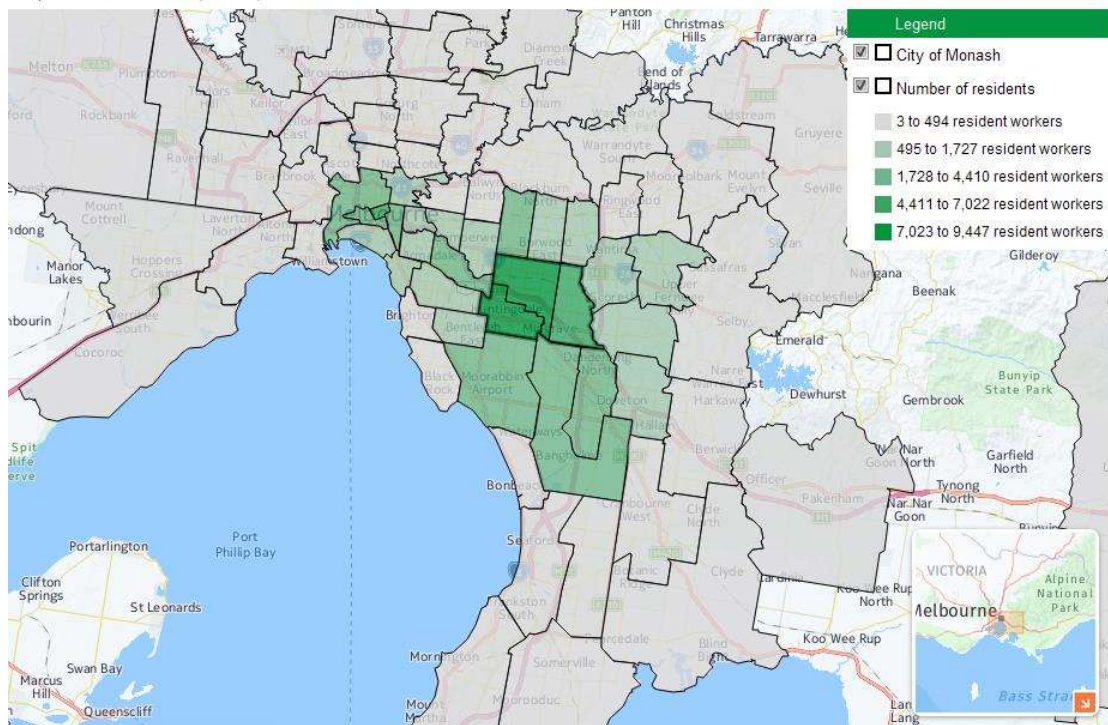


Source: Australian Bureau of Statistics, Census of Population and Housing 2011, compiled by .id the population experts

The City of Monash residents also have comparatively high commuter rates, with only 26.7% employed within the LGA in 2011. The main sectors where residents travelled outside of the LGA for work were Retail Trade, Health Care and Social Assistance, Professional, Scientific and Technical Services, and Manufacturing. Unlike the local workforce, employed residents work patterns are more concentrated to neighbouring LGAs and the Melbourne CBD, which provided jobs for almost 9% of residents in 2011.

**Employment locations of resident workers by SLA by industry, 2011**

City of Monash - Total area (All SLAs) - All industries



Source: Australian Bureau of Statistics, Census of Population and Housing 2011. Compiled and presented in economy.id by .id, the population experts.



The inward movement of workers and students (to Monash University, Holmesglen Institute and major high schools) everyday combined with internal commutes creates traffic congestion and a huge demand on local transport connections. In 2011, there were an estimated 79,000 workers coming into the LGA each day for work and approximately 50,000 residents working outside the LGA. If this is combined with the estimated 30,000 students studying internally at Monash University and Holmesglen Waverley Campus at the time, peak morning and afternoon traffic would generate considerable congestion costs.

### 1.13 Migrant population base with strong international links

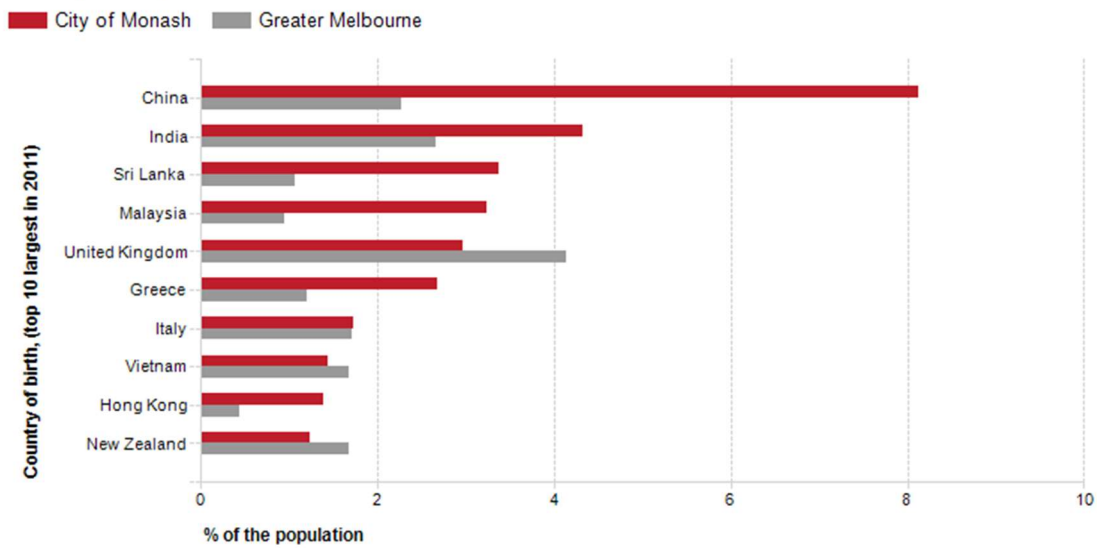
The City of Monash has a very multicultural resident base. In 2011, 44.7% of the population were born overseas, this compares to only 31.4% for Greater Melbourne. The LGA has a substantially larger proportion of residents from Asian countries, especially China (8.1% of residents). Even more residents associate with Chinese ancestry (18.3%). The first wave of arrivals from Hong Kong and Malaysia in the 70s and 80s has been replaced by more migrants from mainland China in the last decade.

There are two distinct groupings of Chinese population within Monash:

- The Clayton area - having mainly students and young adults,
- Glen Waverley - including more mature families and 'upgraders' who have been in the country for longer. This is a somewhat older population.
- In addition, there are moderate levels of Chinese population throughout the LGA, with a small pocket of higher proportion in Chadstone, near Holmesglen station & Institute of TAFE.



## Birthplace, 2011



Source: Australian Bureau of Statistics, Census of Population and Housing, 2011 (Usual residence data)  
 Compiled and presented in profile.id by .id, the population experts.

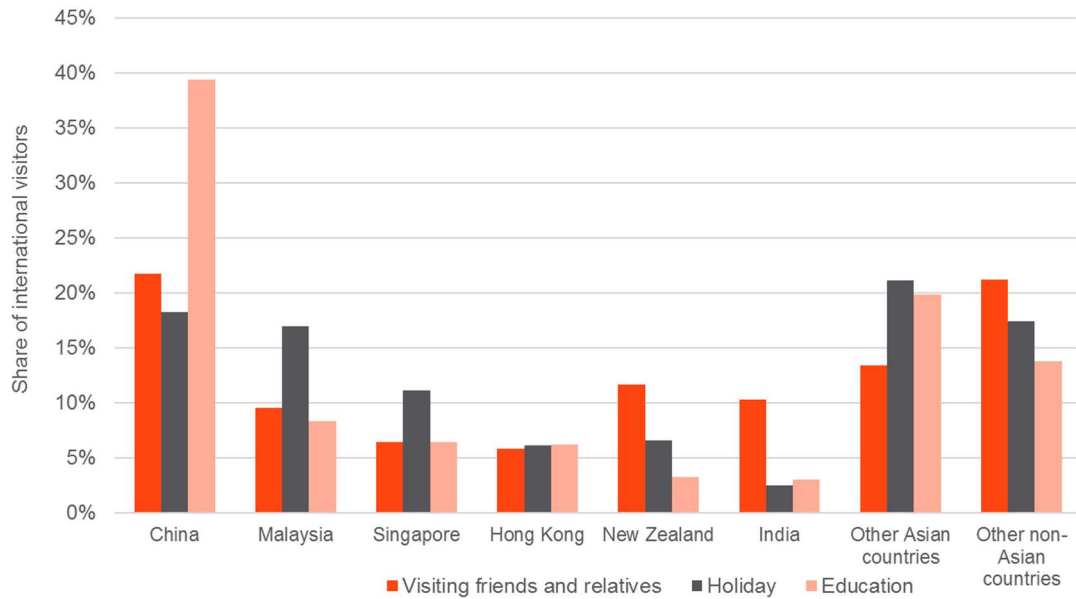


This cultural mix has shaped the business and investment environment in the LGA. Numerous small businesses are family owned by Asian immigrants (7% of all employers in the LGA in 2011 were born in China and 4% born in India) and there has been substantial Chinese investment in the local property market. Many are attracted by the City of Monash’s great transport and education facilities. As noted by the Principal of Glen Waverly Secondary College in a news article in 2012, 80 per cent of its 2,000 enrolled students had Asian backgrounds and about half had Chinese ancestry.<sup>11</sup>

The residence base in the City of Monash is also a crucial driver for international tourism in the LGA. The largest reasons for international visitation are visiting friends and families (36% of all trips between 2011/12 and 2015/16), holidays (25%) and education (18%) purposes. China is by far the greatest source of overseas visitation in all these categories, and overall represented 23% of all international visitation to the LGA in the same period.

<sup>11</sup> <http://www.theage.com.au/victoria/most-liveable-chinese-think-so-20120804-23mno.html>

**CHINA AND OTHER ASIAN COUNTRIES DOMINATE TOURISM MARKET**  
**INTERNATIONAL VISITORS BY COUNTRY, 2012 - 2016 FIVE YEAR TOTALS**

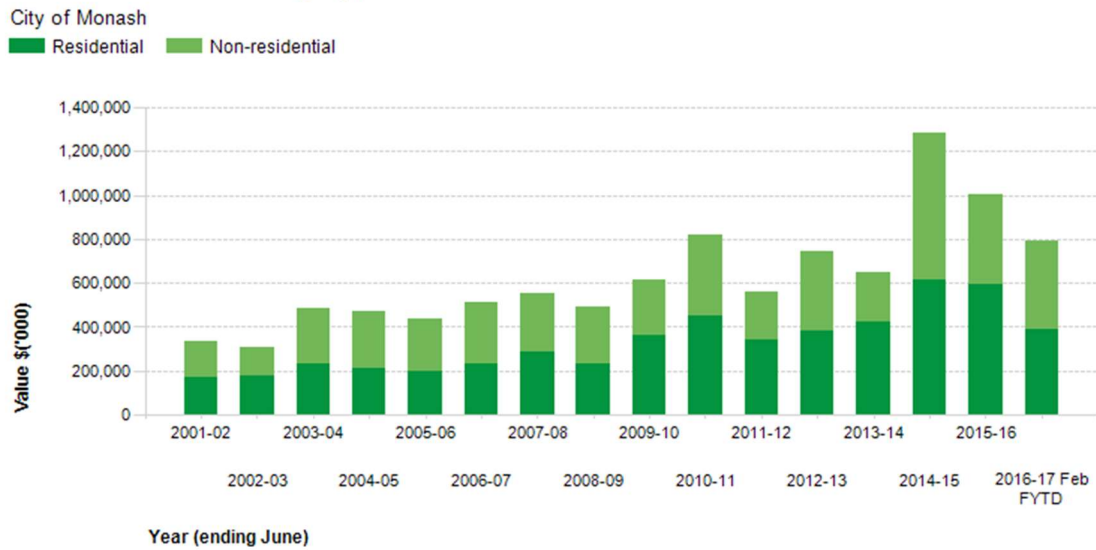


Source: Tourism Research Australia , Unpublished data from the International Visitor Survey 2016, compiled by .id the population experts

### 1.14 Growing pipeline of developments supporting construction

After a period of weak development levels, the City of Monash is undergoing considerable growth in commercial and residential building. The value of building approvals in the five years 2010/11 to 2015/16 averaged \$848M, compared to \$600M in the five years prior to that. This represents a 41% increase in value and is almost double the growth experienced by Victoria as a whole (21%).

## Value of total building approvals



Source: Australian Bureau of Statistics, Building Approvals, Australia, catalogue number 8731.0. Compiled and presented in economy.id by .id the population experts



This increase in development is driving large increases in the Construction Sector which experienced the second largest growth in employment out of all sectors in the five years between 2010/11 to 2015/16.

**CONSTRUCTION**



**Value Added**  
\$863m  
+\$282M



**Local Jobs**  
12,336 jobs  
+1,435

2016  
5 Year Growth

### 1.15 Synergistic links

Many of the Sectors, sub-industries and businesses within the City of Monash have strategic complementary links between them. For example, it is no surprise that as Scientific Research Services is one of the largest industries in the economy, we also find significant employment in Professional and Scientific Equipment Manufacturing and Professional and Scientific Goods Wholesaling.

Different facilities in the LGA also support multiple industries. For example, the Monash Medical Centre is not only a hospital but also serves as the base for Monash University's Southern Clinical School. It also hosts the Hudson Institute of Medical Research consisting of 51 research laboratories undertaking both basic and clinical research across cancer, innate immunity and infectious diseases, and women's and

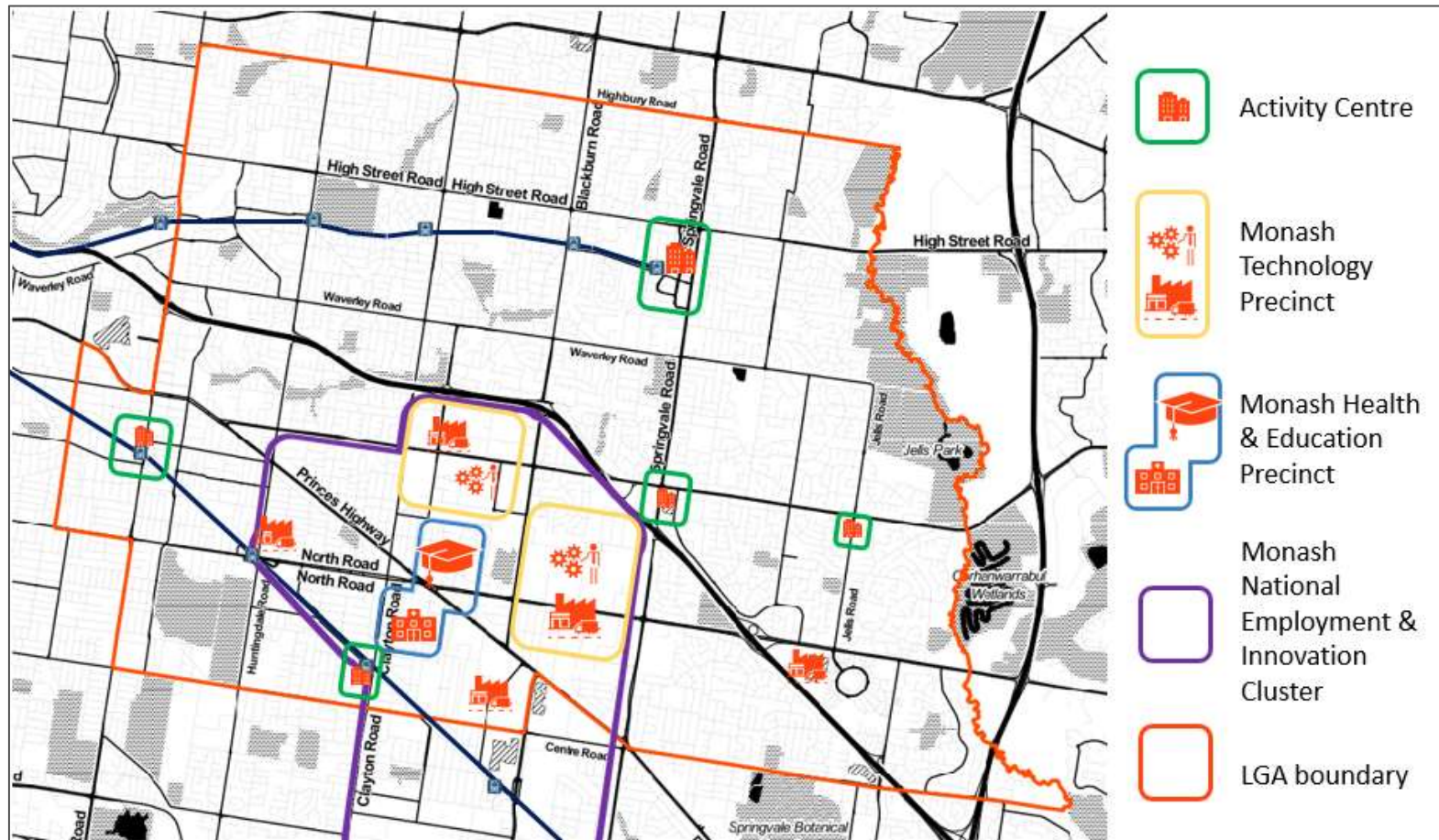
baby health. Some of the key linked industries where the City of Monash has a specialisation in are presented below.<sup>12</sup>

- |  |  |   |
|--|--|---|
| <ul style="list-style-type: none"> <li>• Hospitals (except Psychiatric Hospitals)</li> <li>• Pathology and Diagnostic Imaging Services</li> <li>• Other Allied Health Services</li> <li>• General Practice Medical Services</li> <li>• Health Care and Social Assistance, nfd</li> </ul> | <ul style="list-style-type: none"> <li>• Scientific Research Services</li> <li>• Scientific Testing and Analysis Services</li> <li>• Medical and Surgical Equipment Manufacturing</li> <li>• Other Professional and Scientific Equipment Manufacturing</li> <li>• Professional and Scientific Goods Wholesaling</li> </ul> | <ul style="list-style-type: none"> <li>• Higher Education</li> <li>• Technical and Vocational Education and Training</li> <li>• Secondary Education</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Human Pharmaceutical and Medicinal Product Manufacturing</li> <li>• Pharmaceutical and Toiletry Goods Wholesaling</li> <li>• Pharmaceutical, Cosmetic and Toiletry Goods Retailing</li> </ul>   | <ul style="list-style-type: none"> <li>• Computer and Computer Peripheral Wholesaling</li> <li>• Computer and Computer Peripheral Retailing</li> <li>• Electronic (except Domestic Appliance) and Precision Equipment Repair and Maintenance</li> </ul>  | <ul style="list-style-type: none"> <li>• Telecommunication Goods Wholesaling</li> <li>• Wired Telecommunications Network Operation</li> <li>• Telecommunications Services</li> </ul>                                    |
| <ul style="list-style-type: none"> <li>• Printing</li> <li>• Pulp, Paper and Paperboard Manufacturing</li> <li>• Paper Stationery Manufacturing</li> <li>• Paper Product Wholesaling</li> <li>• Magazine and Other Periodical Publishing</li> </ul>                                      | <ul style="list-style-type: none"> <li>• Other Motor Vehicle Parts Manufacturing</li> <li>• Car Wholesaling</li> <li>• Car Retailing</li> <li>• Motor Vehicle Parts Retailing</li> </ul>   | <ul style="list-style-type: none"> <li>• Other Electrical Equipment Manufacturing</li> <li>• Other Electrical and Electronic Goods Wholesaling</li> <li>• Electrical, Electronic and Gas Appliance Retailing</li> </ul> |

<sup>12</sup> Industries chosen based on links, 150 jobs or more (ABS Census 2011), and a Location Quotient (LQ) >1.2 (over representation against Greater Melbourne shares)

## 1.16 Key industry and employment locations

The key economic areas, precincts and cluster in Monash are highlighted in the following map.

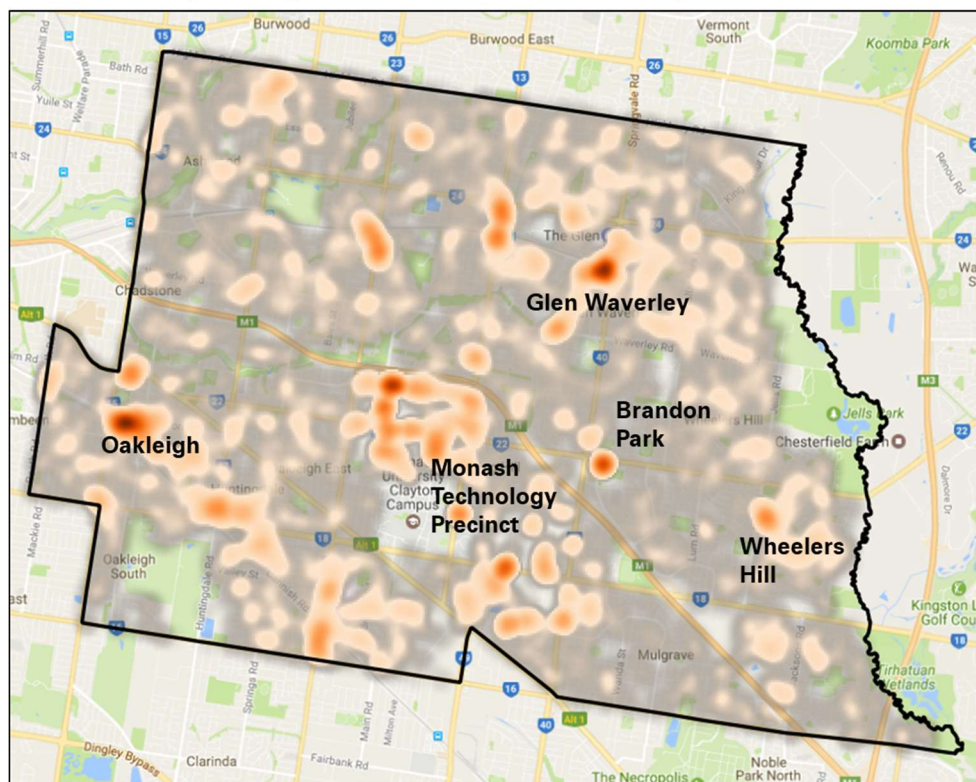




A heatmap of registered businesses by location highlights the key commercial and industrial areas of the LGA. The Monash Technology Precinct to the north and east of Monash University appears strongly as a hot spot of business activity. Other major areas include:

- the Glen Waverley Activity Centre around Glen Waverley station that includes The Glen shopping centre and Kingsway restaurant strip
- Oakleigh Major Activity Centre and the Oakleigh South and East Industrial areas
- Brandon Park
- Wheelers Hill Neighbourhood Centre.

**Heat map of registered businesses in City of Monash, 2017**

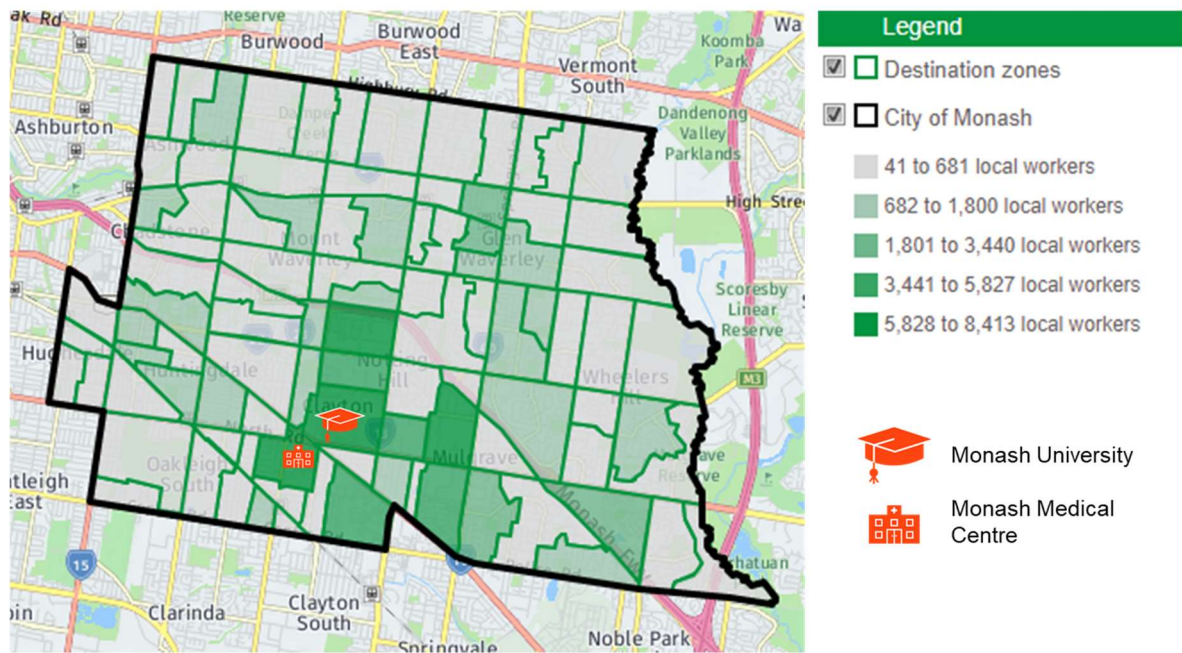


Source: Australian Business Register data, extracted May 2017, filtered and compiled by .id the population experts



The location of employment in the City of Monash roughly corresponds with business activity. However, the role of Monash University and Monash Medical Centre as large employing institutions is better illustrated when mapping local workers by destination zone in the LGA.

### Jobs concentration in Monash, 2011



Source: Australian Bureau of Statistics Census of Population and Housing 2011, compiled by .id the population experts

## 2. Maintaining its edge (future state)

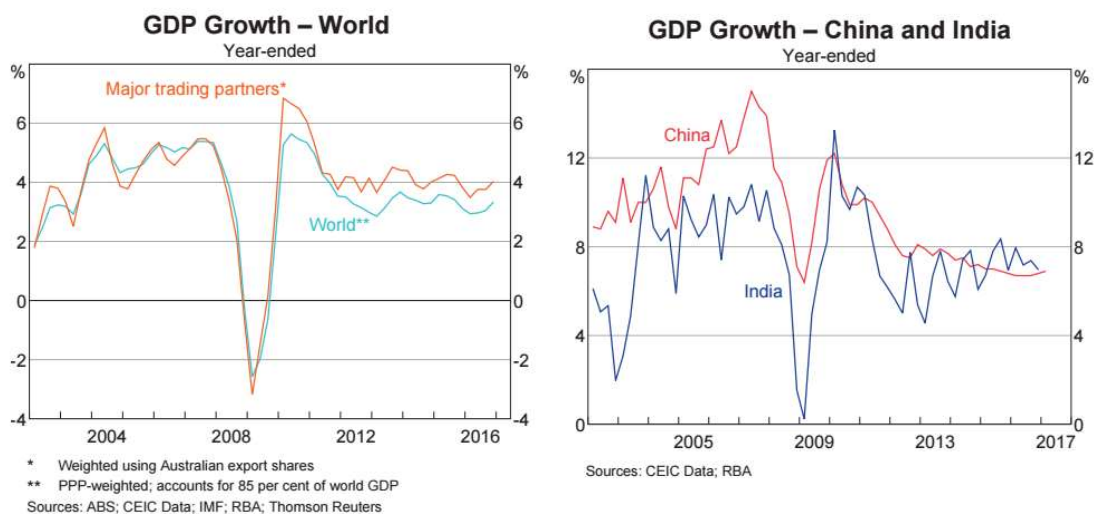
The City of Monash will continue to maintain its prosperity if it manages to leverage its strategic advantages, grasp opportunities influenced by macroeconomic trends, and address challenges appearing due to local industries and places transforming into new roles.

### 2.1 Understanding the forces driving economic change

There are several regional, national and global trends driving change in the environment in which the City of Monash operates.

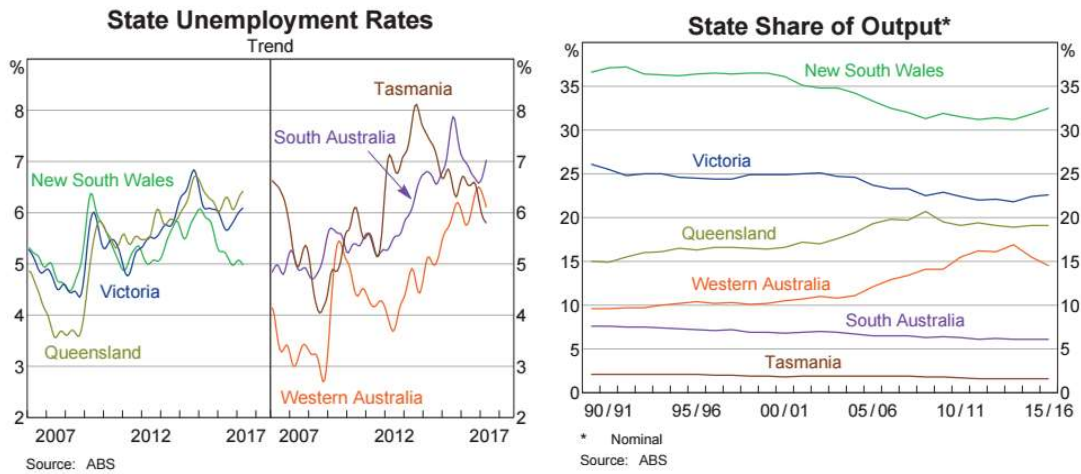
#### 2.1.1 Flat lining global economy

Since the Global Financial Crisis (GFC), the world economy has remained relatively flat, hovering around 3% growth per annum. However, most of Australia’s trading partners are in Asia and are still growing more rapidly than advanced economies in Europe and northern America. China’s economy has also slowed but at 7% per annum, the volume of growth is still substantial.



#### 2.1.2 Return of service states

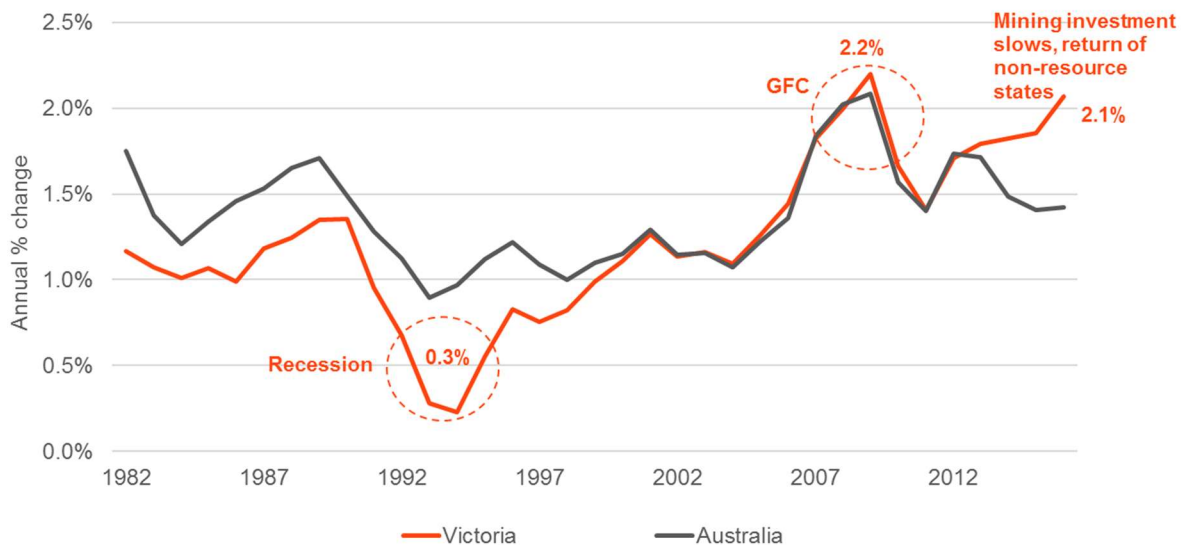
The slowing in construction in China, our largest export partner for commodities, and the transition of large scale mining operations into their production phases has led to reduced employment opportunities in the resource states. This has led to rising unemployment in WA and QLD. These states’ share of national output has now flattened or, in the case of WA, dropped considerably.



### 2.1.3 Rapid population growth in Victoria

With the decline of employment in resource states, there has been a rise in migration to Australia’s largest economies and service centres of NSW and Victoria. Population growth in Victoria has exceeded the nation’s for the last four years.

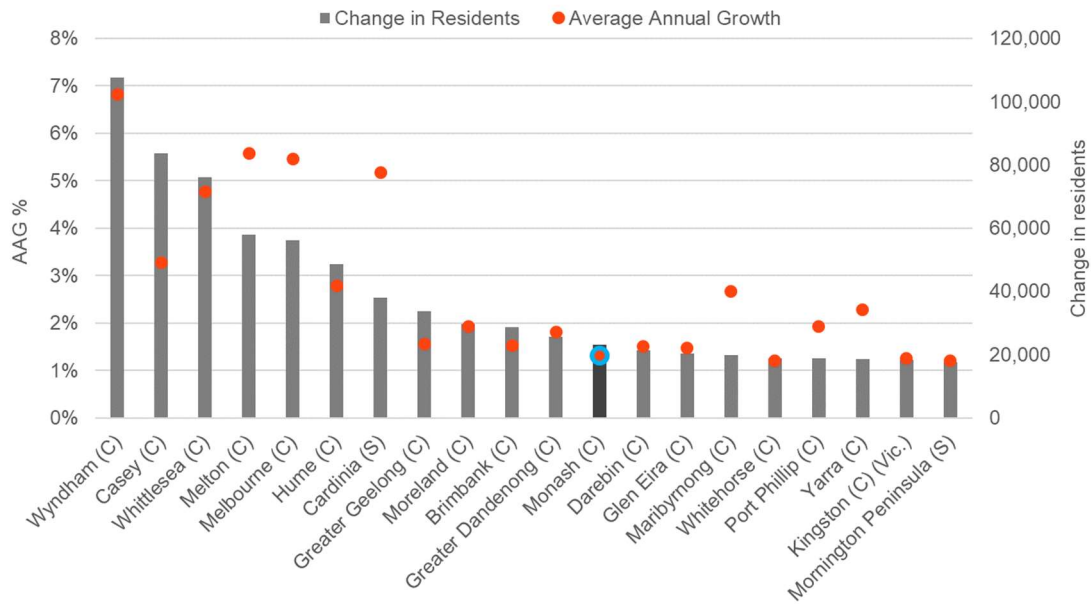
#### VICTORIA'S POPULATION GROWTH IS OUTPACING AUSTRALIA'S ANNUAL POPULATION GROWTH, 1982/83 - 2015/16



Source: ABS Cat: 3101.0 - Australian Demographic Statistics, 2017. Compiled by .id the population experts

Most of this growth in Victoria is being absorbed by growth areas surrounding Greater Melbourne. Six out of ten of the fastest growing LGAs in terms of % and absolute growth between 2006 and 2016 were on Melbourne’s periphery. Inner Melbourne is also absorbing growth with the increasing popularity of high density living leading to the City of Melbourne experiencing substantial development in the same period. It is important to note that in terms of middle ring suburbs, the City of Monash had one of the largest increases in absolute population growth.

**OUTER SUBURBS FASTEST GROWING**  
**POPULATION GROWTH, TOP 20 LGAS BY ABSOLUTE CHANGE, 2006 - 2016**



Source: ABS Cat 3218.0 Regional Population Growth, 2017. Compiled by .id the population experts.

**2.1.4 Need for more diversified and connected housing**

A rapidly growing population that is forced into outer suburbs via supply and affordability challenges creates constraints on productivity and liveability. An increase in the amount and length of automotive vehicle commutes leads to greater congestion which cost Australia an estimated \$16.5 billion in 2015.<sup>13</sup> It also has a substantial impact on the welfare of individuals and families, affecting health and wellbeing.

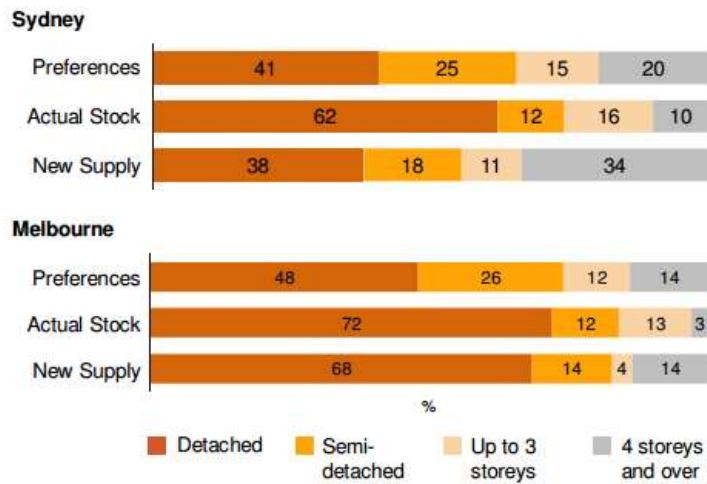
Research has illustrated that Australians increasingly value locations with high accessibility and have greater preference for higher density living than the current housing stock supplies. A Grattan Institute report revealed that when taking into account real world distance and affordability trade-offs, less than half the people surveyed in Melbourne wanted to live in detached housing.<sup>14</sup> However, over two thirds of the housing stock in 2006 and new supply between 2001 and 2010 was detached housing. There was an estimated large shortfall in semi-detached and high density housing stock in Melbourne’s middle ring suburbs.

<sup>13</sup> Bureau of Infrastructure, Transport and Regional Economics (BITRE), 2015, *Traffic and congestion cost trends for Australian capital cities*

<sup>14</sup> Grattan Institute, 2011, *The housing we’d choose*



### Comparison of housing preferences, stock and supply

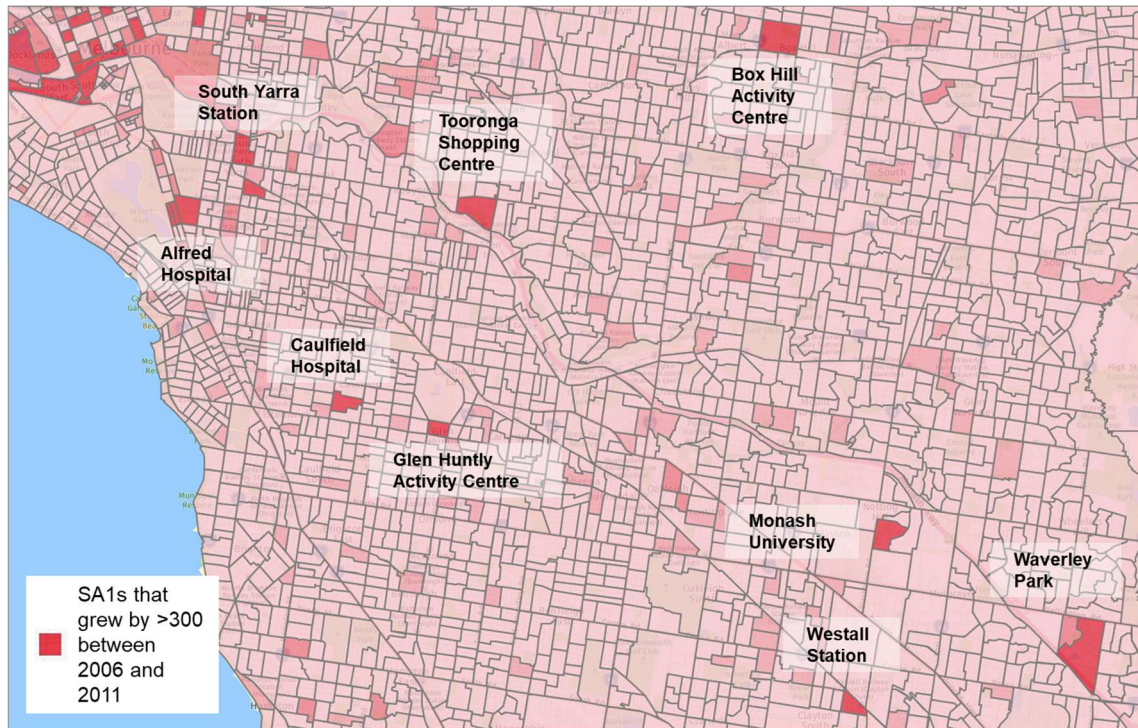


Notes: Preferred stock based on Trade-Off Survey; Actual stock as of 2006; New supply refers to 2001-2010 construction

Source: Grattan Institute, 2011, *The housing we'd choose*

Since 2006, there has been a clear movement towards increasing densities around transport nodes, activities centres and near key facilities. This trend will continue, especially as the recently updated Plan Melbourne has nominated a key outcome to 'provides housing choice in locations close to jobs and services'.<sup>15</sup>

### Major population growth areas, eastern suburbs, 2006 to 2011

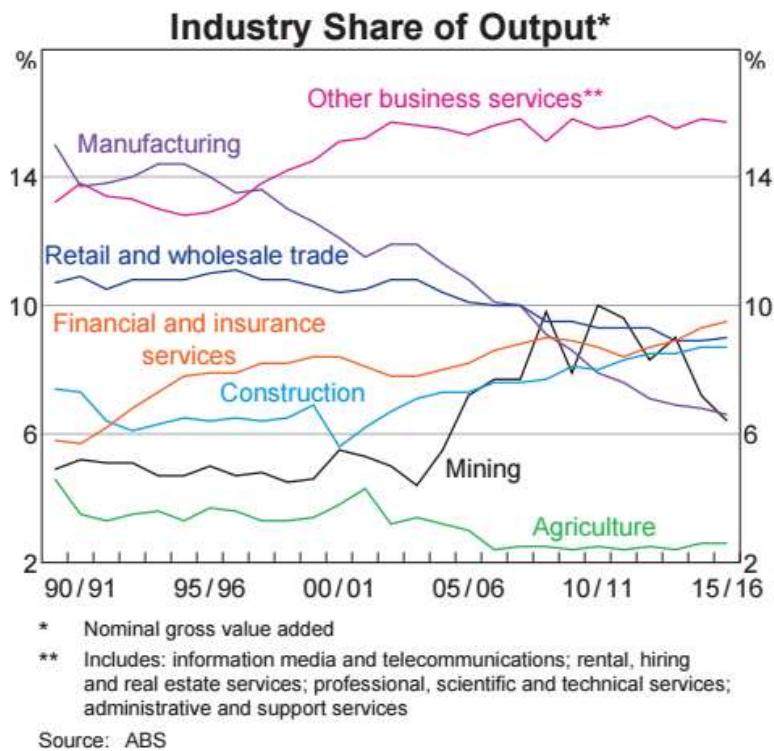


Source: ABS Census of Housing and Population, 2006 and 2011

<sup>15</sup> Victorian Government, 2016, *Plan Melbourne 2017-2050*

### 2.1.5 Transitioning economy

The mining boom had a substantial impact on the rest of the economy over the last decade. Not only did it generate substantial employment and output on its own, it contributed greatly to supporting sectors such as construction and financial services that enabled the investment phase. It also contributed in part to the continuing decline of Manufacturing, with rising exports in resource commodities forcing up the exchange rate and placing considerable pressure on the competitiveness of local manufacturers. Agriculture was also hit by several climatic events during this period that impacted output substantially. Retail and wholesale trade’s share of output has fallen as technology, process improvements, and consumer trends have driven down value in these sectors compared to others.

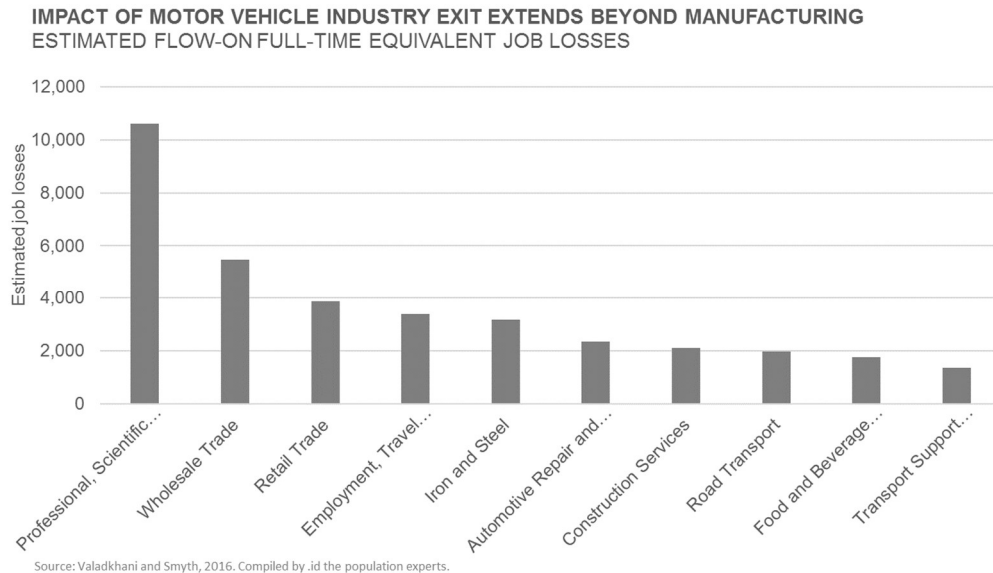


### 2.1.6 Exit of Automotive manufacturing

One of the main industries to be impacted by declining competitiveness has been the Automotive manufacturing industry. By the end of 2017, car manufacturers Mitsubishi, Ford, Holden and Toyota will all have largely exited Australian manufacturing. This has huge impacts on the thousands of workers in these companies but also has considerable downstream and upstream impacts on industries in the supply chain. Research by Swinburne University has estimated that the largest non-Manufacturing sectors to be impacted are Professional, Scientific and



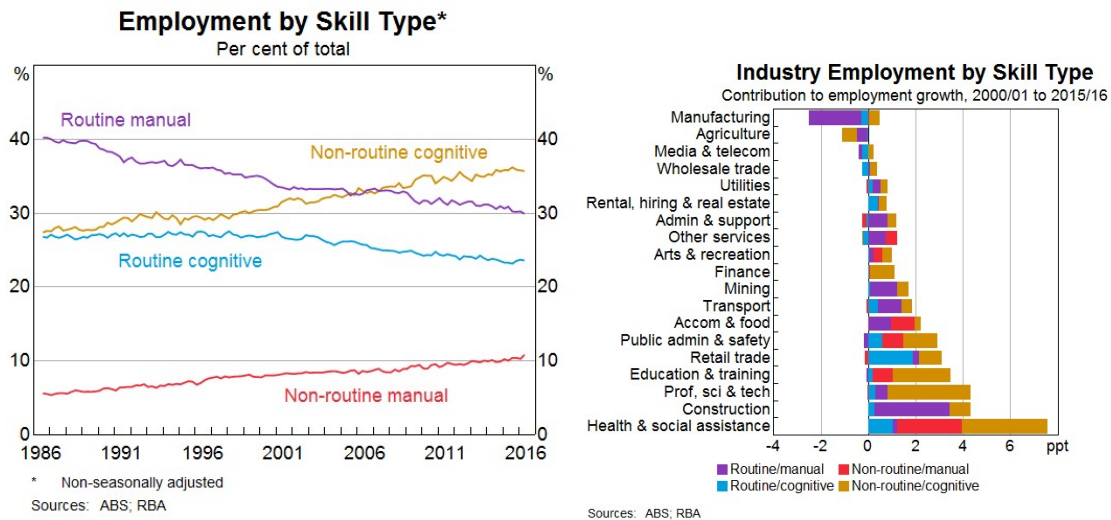
Technical Services, Wholesale Trade, and Retail Trade.<sup>16</sup> It is believed that a considerable amount of research and development conducted in Australia is related to Automotive design and product innovation. The decline of this sector is of importance to the City of Monash given extensive supply chain links.



### 2.1.7 Changing workforce skills demand

Along with the transition towards a predominately service based economy, is the increase in jobs that have a need for more cognitive skills and/or rely on non-routine work. Going forward, these jobs will become more and more important as they are difficult to automate, often requiring creativity, problem solving and/or human presence e.g. Child Care. In fact, the large majority of jobs created in three of the largest sectors in terms of national employment growth over the past 15 years (Health Care, Professional Services, and Education) all require non-routine cognitive based skills. Also, even though there has been an overall decline in Manufacturing employment, there has actually been jobs growth in non-routine/cognitive Manufacturing (advanced manufacturing). This is of particular relevance to the City of Monash given its employment specialisations.

<sup>16</sup> Valadkhani, A. and Smyth, R., 2016, "The effects of the motor vehicle industry on employment and research innovation in Australia", *International Journal of Manpower*, Vol. 37 Issue: 4, pp.684-708



## 2.2 Riding the wave of growth sectors

It is challenging to predict which sectors will generate future growth due to rapidly changing global conditions. However, specific potential ‘future growth’ sectors have been identified in recent years by consultancies and governments alike. The City of Monash has a competitive position in a number of these areas including:

- Pharmaceutical, biotech and medical
- International education
- Professional & financial services
- Advanced manufacturing

Key facilities such as the Australian Synchrotron and Australian Regenerative Medicine Institute (ARMI), one of the world’s largest regenerative medicine and stem cell research centres, are critical to maintain this competitiveness.

There are several major planned or recently developed projects which will strengthen the LGA’s competitiveness in each of these sectors. Some of the projects in the first two sectors will be detailed in brief in this section while the last two are explored in subsequent sections.

## Identified Potential Growth Sectors

	Deloitte	PwC	IBIS World	Outlook Economics	McKinsey	CSIRO	Victorian Government	Australian Government	City of Monash competitive position
<b>Oil, gas and energy</b>	✓	✓	✓	✓	✓	✓		✓	
<b>Food &amp; beverage processing</b>	✓		✓		✓	✓	✓	✓	
<b>Pharmaceutical, biotech and medical</b>	✓	✓			✓	✓	✓	✓	✓
<b>Agribusiness</b>	✓	✓			✓	✓	✓	✓	
<b>International education</b>	✓		✓	✓	✓		✓		✓
<b>Tourism</b>	✓	✓		✓	✓				
<b>Mining equipment and/or services</b>		✓		✓	✓	✓		✓	
<b>Professional &amp; financial services</b>	✓	✓	✓	✓			✓		✓
<b>Distribution services</b>	✓	✓							
<b>Advanced manufacturing</b>	✓					✓	✓	✓	✓

Source: Deloitte, 2014, Positioning for prosperity: catching the next wave; PwC, 2013, Industry Sectors: Analysis and forecasting; IBIS World, 2013, Australia's Top 5 New Exports; Outlook Economics, 2014, AUS-M; McKinsey Australia, 2014, Compete to Prosper: How Australia can gain a global edge; CSIRO, 2016, Australia 2030 – Navigating our uncertain future; Victorian Government, 2016, Future Industries. Building a stronger Victoria; Australian Government, 2014, Industry Innovation and Competitiveness Agenda

### 2.2.1 Monash Children's Hospital

Opened in 2017, the new 230-bed Monash Children's Hospital in Clayton is one of the largest children's hospitals in Australia and one of only two tertiary paediatric hospitals in Victoria. Co-located next to Monash Medical Centre in Clayton, the new dedicated hospital has been built with the needs of patients and their loved ones in mind. By partnering with Monash University, the new hospital will help expand research into childhood illness and ensure patients have access to the latest treatments. In 2017, it was announced that \$63 million would be provided by the State Government for a dedicated emergency department for kids next to the Monash Children's Hospital.

### 2.2.2 Victorian Heart Hospital

MonashHeart, the cardiac care provider for MonashHealth, Monash University and the Victorian State Government are planning on building Australia's first heart hospital at Monash University, Clayton. It would be the first centre of excellence dedicated to cardiac care in Australia. \$150 million of funding has been committed by the State Government.

### 2.2.3 Monash Health Translation precinct

A collaborative initiative of Monash Health, Monash University and Hudson Institute of Medical Research, the Monash Health Translation Precinct (MHTP) strengthens links between education and training, basic and clinical research, and patient care. Enhancing translational research capabilities on the precinct, MHTP expedites discovery and innovation to deliver world-leading healthcare in Melbourne's southeast.

### 2.2.4 Monash's new Learning and Teaching Building

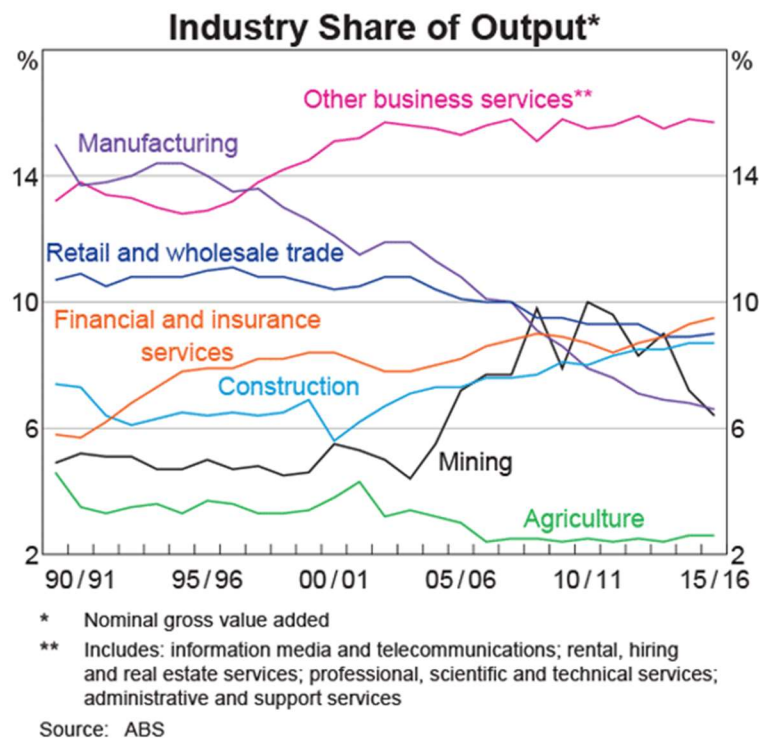
Set to open in 2018, the Clayton campus's new Learning and Teaching Building will create a dynamic learning environment, and a striking entrance for the campus from Wellington Road. More than 60 formal and informal learning and teaching spaces will provide a student-centred learning experience for Monash University and Monash College Diploma students.

### 2.2.5 Clayton Urban Community

In 2016, Monash University opened four new halls of residence to house 1000 students. Communal spaces, shops, cafes and an outdoor cinema also form part of the state-of-the-art student living precinct.

## 2.3 Managing transformation of key sectors

It is no question that some of the City of Monash’s key sectors are undergoing transitional challenges. Manufacturing as a whole has experienced significant declines in employment and value over the last decade. Retail and Wholesale Trade have also experienced drops in their share of local employment and value added. However, this is consistent with broader national trends as evidenced by the following chart of Australian Gross Value Added by Industry for the last 15 years.



The reality is that these sectors are facing specific challenges that impact their long-term growth forecast including:

- **Manufacturing** – continued lack of competitiveness when compared to low cost production environments in Asia and other developing regions; the demise of automotive manufacturing in Australia having flow through impacts on other manufacturers in the supply chain.
- **Wholesale Trade** – rise of private-label market segments that allows large retailers, especially supermarkets, to bypass the wholesaler and directly link with manufacturers.
- **Retail Trade** – rise of online marketplaces allowing consumers to purchase directly from suppliers or via large online companies that have no physical retail presence e.g. Amazon; consumers demanding more of an upmarket experience from shopping centres and increased facilities beyond retail.

However, in terms of value generation it is not all negative. In fact, while both Wholesale and Retail Trade in the City of Monash shed jobs over the five-year period 2011 to 2016, their value increased, representing rising productivity. Total sector productivity in Manufacturing also actually increased by \$3,731 per worker between 2011 and 2016, likely due to greater production efficiencies. It is also relevant to note that in the most recent year (2014/15 – 2015/16), Manufacturing had an estimated job increase of 500 workers, or 3.6% annual growth.

These sectors are undergoing transformation and still have the potential to grow via innovation. Illustrating their reliance on identifying and applying new technology and processes is the fact that the two sectors that were estimated to earn the most sales from innovation goods and services in 2014/15 were Wholesale Trade and Manufacturing.<sup>17</sup> As highlighted in section 2.1, the transformation of Manufacturing into using more advanced production methodologies and materials is actually likely to slow or even reverse the decline in the sector. An example of this ‘return of Manufacturing’ to developed countries is Adidas which is opening a sports shoe factory in Germany in 2017 using robots and 3D printing methods.<sup>18</sup>

Transformation of these sectors needs to be encouraged and often this requires the redevelopment or rezoning of existing sites to meet the needs of new technology or businesses practices. There are several examples of major projects or existing facilities in the City of Monash that may help address the need for transformation of processes or land use in these industries. A snapshot of each is provided below.

### 2.3.1 Monash Centre for Additive Manufacturing (MCAM)

The Monash Centre for Additive Manufacturing takes fundamental research from a broad range of disciplines and applies them to manufacturing challenges. These disciplines include material science, alloy design and processing, surface engineering, corrosion and hybrid materials. MCAM works with its partners to invent bespoke solutions to unique manufacturing challenges. Using networks within research centres in the Clayton precinct and beyond, MCAM draws on a number of

<sup>17</sup> ABS in Department of Industry, Innovation and Science, 2016, *Innovation System Report, 2016*

<sup>18</sup> See: <http://www.economist.com/news/business/21714394-making-trainers-robots-and-3d-printers-adidass-high-tech-factory-brings-production-back>



different cutting edge capabilities and expertise and apply them in novel and innovative ways to provide new opportunities for manufacturers.

### 2.3.2 Green Chemical Futures building

Opened in 2015, the Green Chemicals Future Building at Monash University supports academic and industrial research within the chemicals and plastics sector in Australia and provides world-class research to expand Australia's 'green workforce'. Green Chemical Futures houses over 100 chemists and engineers and allows the growth of basic science research to targeted industry-driven research. It has 17 specialist sectors, training programmes for industry practitioners and laboratory spaces available for over 1000 students and 100 industry partners. The Victorian Centre for Sustainable Manufacturing is also located in the building.

### 2.3.3 Melbourne Centre for Nanofabrication (MCN)

The MCN is a world-class nanofabrication centre, combining cutting-edge technologies with the knowledge and skills of expert process engineers. The MCN represents a \$50 million investment in micro-nanotechnology infrastructure as a joint venture between six Victorian Universities and the CSIRO. It is located in the heart of the South-East Melbourne Innovation Precinct and is openly accessible to any researchers in academia, CSIRO or industry.

### 2.3.4 “Floworks” Centre for Industrial Flow Chemistry

In 2016, CSIRO launched FloWorks which will provide cutting-edge research into flow chemistry capability, making it more accessible to the chemical manufacturing industry.

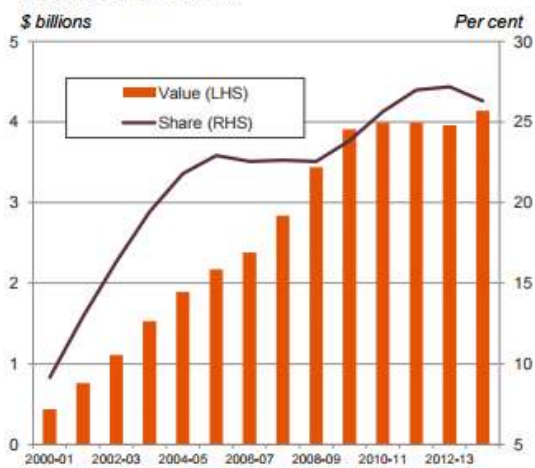
### 2.3.5 Re-development of The Glen shopping centre

The Glen shopping centre in Glen Waverly is undergoing a \$500 million redevelopment to expand the retail offer, provide co-located residential space and create a new public square at the entrance to the shopping centre, with cafes and restaurants creating a cosmopolitan connection between Kingsway and The Glen.

## 2.4 Growing exports and investment in key markets

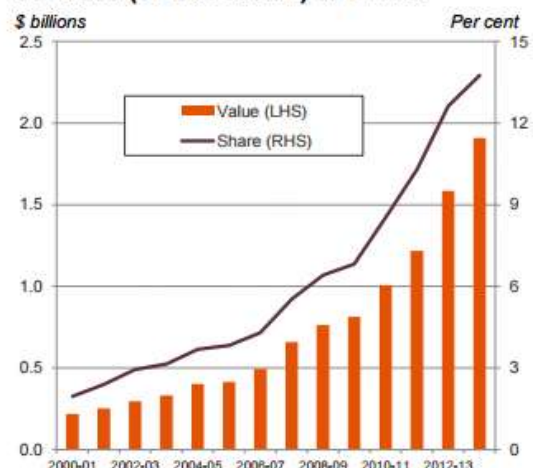
It is no question that China is Australia’s most important trading partner. China has been Australia’s largest export market since 2009 and in 2015/16, Australia sold China goods and services worth A\$86 billion, or 27.5% of total exports.<sup>19</sup> While most of this export value is in raw commodities, which is not as relevant for the City of Monash, China also represent the largest source of service exports and elaborately transformed manufactured products<sup>20</sup>. Importantly in 2015/16, China generated \$5.4 billion worth of Education related travel services exports, or 27% of the total; and 14.5% of Australia’s short term visitors were from China. However, it is not all about China as other Asian countries, especially those in the ASEAN region are becoming increasingly important.

**Australia: Exports of education travel services to China**



Source: ABS

**Australia: Exports of personal travel services (ex education) to China**



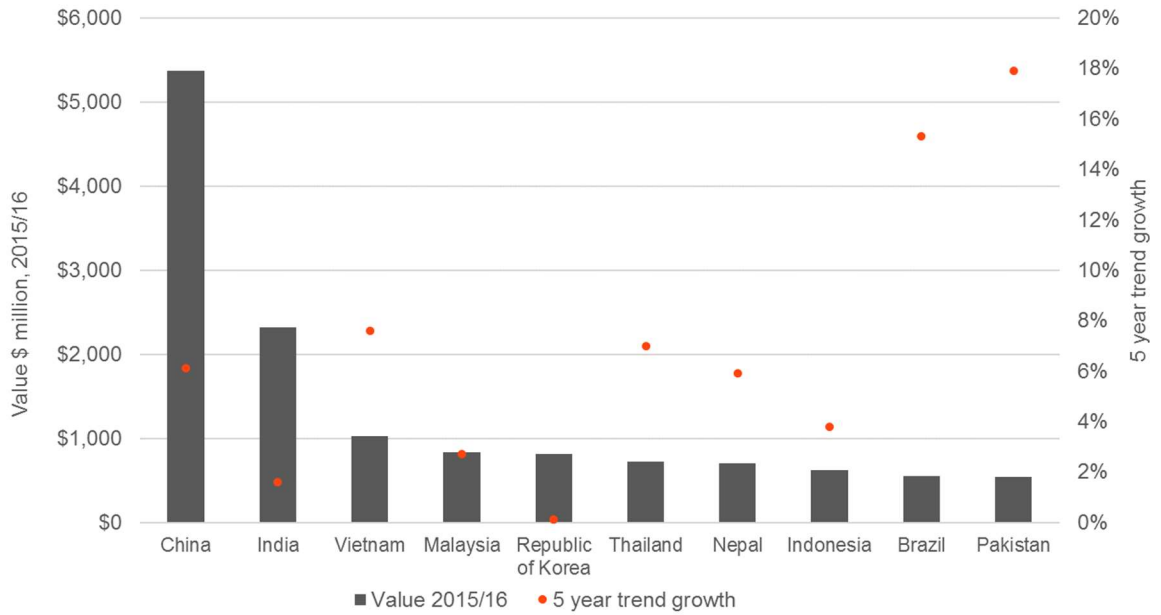
Source: ABS

It has already been shown that China is the City of Monash’s largest source of international visitation (section 1.13), especially related to education related travel. However, it is interesting that India, which is Australia’s second largest source of education service exports and over-represented in terms of demographics in the City of Monash, generates considerably less education related travel in the LGA than other Asian countries.

<sup>19</sup> Australian Government Department of Foreign Affairs and Trade, 2017, *Composition of Trade, Australia, 2015-16*

<sup>20</sup> Elaborately transformed manufactures represent products that have undergone the highest level of transformation or value adding. They include processed mineral products, chemical and engineered machinery and equipment.

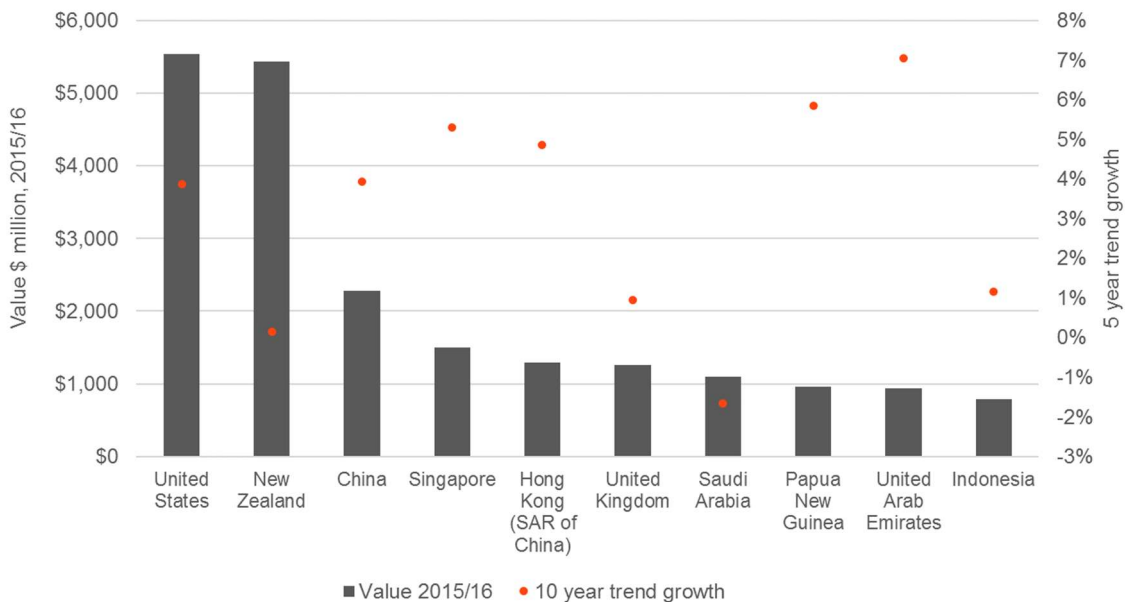
**CHINA AND INDIA DOMINATE INTERNATIONAL EDUCATION AUSTRALIAN EDUCATION EXPORTS**



Source: DFAT, 2016, Trade in Services Australia 2015-16, compiled by .id the population experts

In regards to advanced manufactured products, the United States and New Zealand are the key destinations. However, China and other Asian countries demand is growing strong and China is set to become the leading destination for manufactured chemical products, a major export area of the City of Monash, in the next few years.

**US AND NZ STILL LEAD ADVANCED MANUFACTURED EXPORTS DEMAND AUSTRALIAN ELABORATELY TRANSFORMED MANUFACTURED EXPORTS**



Source: DFAT, 2016, Trade in Merchandise Exports Australia 2015-16, compiled by .id the population experts

### 2.4.1 Leveraging demographics

The City of Monash has one of the highest concentrations of Chinese immigrants in Australia and the proportion of residents from India is also greater than the Greater Melbourne average. Considering that China is currently Australia's most important export market, there is potential economic opportunities to be gained from leveraging the large Asian countries diaspora living in the LGA. Recent research conducted by ACOLA has highlighted that:

“... contemporary Chinese and Indian business diasporas in Australia ... are, in general, highly motivated and globally networked, with a larger proportion possessing a university degree than the general Australian population. They engage in high-skills industries that often require a predisposition towards enterprise, innovation and commercialisation of knowledge.”<sup>21</sup>

The report notes that they can be utilised to develop the transnational cultural, political and commercial links with their home countries that can help boost investment and trade opportunities.

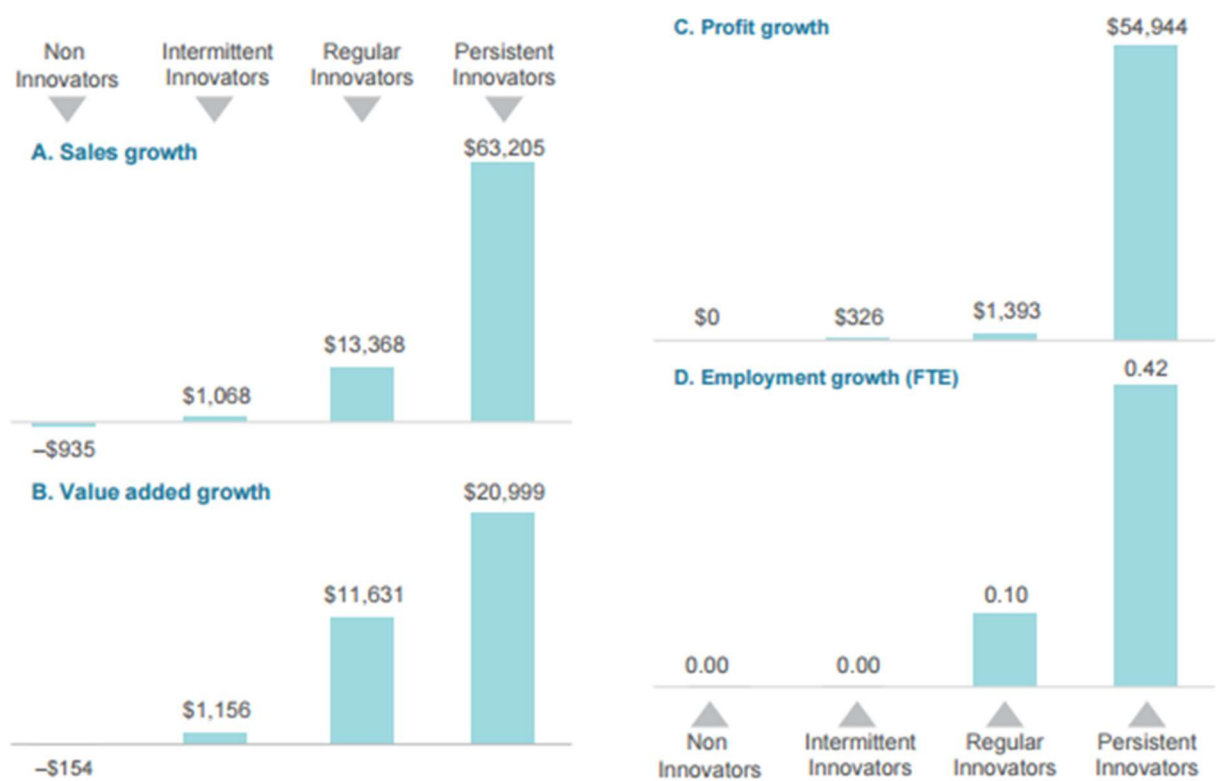
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<sup>21</sup> Australian Council of Learned Academies, 2016, *Australia's Diaspora Advantage: Realising the potential for building transnational business networks with Asia*

## 2.5 Boosting value from the innovation cluster

Productivity growth - the growth in output above that explained by growth in measured capital and labour inputs – is the largest driver of long term economic prosperity. The Productivity Commission argues: ‘Innovation and diffusion of new and better production methods, and the introduction of new goods and services, are the core drivers of productivity growth.’<sup>22</sup> Analysis covering the 10 years to 2005 showed that almost two-thirds of Australia’s productivity growth was driven by innovation.<sup>23</sup> Research conducted by the ABS has shown a significant positive relationship between innovation and business performance – persistent innovators outperform other businesses in sales and employment growth.

### Median growth of key indicators by innovation persistence, 2008/09 – 2010/11



Source: ABS, 2016, in Department of Industry, Innovation and Science, 2016, *Innovation System Report, 2016*

<sup>22</sup> PC, 2008. *Annual Report 2007-08. Chapter 1: Enhancing Australia's productivity growth*  
<sup>23</sup> BCA, 2014, *Building Australia's Innovation System*



As noted previously, the City of Monash contains one of Australia’s leading innovation precincts which has been designated as a National Employment and Innovation Cluster (NEIC). Strong clusters evolve over time based on locational advantages, economic trends and the strengths of key assets. To boost the potential value of this cluster, the City of Monash and stakeholders need to continually invest in three types of assets: economic, physical and networking.

- **Economic assets** are the firms, institutions and organizations that drive, cultivate or support an innovation-rich environment.
- **Physical assets** are the public and privately-owned spaces—buildings, open spaces, streets and other infrastructure—designed and organized to stimulate new and higher levels of connectivity, collaboration, and innovation.
- **Networking assets** are the relationships between actors—such as between individuals, firms, and institutions—that have the potential to generate, sharpen, and/or accelerate the advancement of ideas.

Source: Brookings, 2014, *The Rise of Innovation Districts: A New Geography of Innovation in America*

The Monash NEIC contains an extremely valuable concentration of ‘Innovation drivers’, those organisations and individuals that focus on exploring and developing new technologies, products and processes and ‘Innovation cultivators’, organisations that support the growth of innovation drivers by providing specialist enabling facilities and services such as incubators, accelerators, financial and legal advice.<sup>24</sup>

Increasing the employment and value generated by this precinct requires increased collaboration between institutions and businesses and commercialisation - the conversion of scientific knowledge or invention into a marketable product or industrial process.<sup>25</sup> Australia typically performs well below the OECD average in these areas<sup>26</sup>, however there are some major projects in the City of Monash that are working to address this weakness.

<sup>24</sup> Brookings Institute, 2014. *The Rise of Innovation Districts: A New Geography of Innovation in America*

<sup>25</sup> Definition from Department of Industry, Innovation and Science, n.d., *National Survey of Research Commercialisation (NSRC)*

<sup>26</sup> Department of Industry, Innovation and Science, 2016, *Innovation System Report, 2016*

### 2.5.1 Australian Synchrotron now part of ANSTO

The Australian Synchrotron is a world class research facility that empowers researchers and industry from across Australia and New Zealand to problem solve and innovate, by revealing how matter fits together, moves, interacts and changes – on scales ranging from the atomic to the macroscopic – in ways that outshine what can be achieved in a conventional laboratory.

The Australian Synchrotron uses accelerator technology to produce a beam of high energy electrons that circulate around a 216-metre ring at nearly the speed of light, creating synchrotron light ranging from X-rays to infrared radiation that is channelled down linear beamlines to individual experiments. The Australian Synchrotron supports a broad range of high-quality research with applications in sectors including medicine, agriculture, environment, defence, transport, advanced manufacturing and mining.

In 2015/16, the Australian Synchrotron secured \$520 million to support ongoing operations for a further ten years and ownership was transferred to the Australian Nuclear Science and Technology Organisation (ANSTO). The new ownership model builds on the previous partnership between the organisations and allows for greater research collaboration and access to other key infrastructure.

### 2.5.2 New Horizons Research Centre

The New Horizons Research Centre is a collaborative research environment to create new multi-disciplinary research opportunities for industry, engineers, scientists, researchers and government. Officially opened in 2013, the building was co-funded by the Australian Federal Government, through the Education Investment Fund, Monash University and the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

The New Horizons Research Centre co-locates and integrates around 500 staff from Monash University and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). The New Horizons Research Centre provides platforms for global research and teaching collaboration through state-of-the-art information technology and research equipment that facilitates greater linkages with business and the community.

### 2.5.3 Regenerative Medicine Industry Interface

An industry-led consortium is being developed to boost growth in this sector by linking industry partners with regenerative medicine academic research. The consortium will accelerate commercialisation and translation of academic research into products and solutions for industry. Monash University, ARMI and the Monash Institute of Medical Engineering (MIME) are taking the initial lead, but they are also working with CSIRO, the BioMelbourne Network and other research institutes involved in regenerative medicine research.

### 2.5.4 Eastern Innovation Business Centre

The Eastern Innovation Business Centre is a unique business centre that provides crucial support services to start-up small businesses in Melbourne's east and south east. The Eastern Innovation Business Centre opened in late-August 2015 in Hartnett Close, Mulgrave, next door to the Tom Morrissey Building. City of Monash Council built the centre using \$4.75 million of Federal Government funding from the Regional Development Australia Fund. The State Government also provided \$245,000 towards the project from its \$50 million Living Victoria Fund.

### 2.5.5 Monash University commercialisation agreement with UK-listed IP Group

Monash University has entered an agreement with leading intellectual property commercialisation company IP Group plc to secure additional investment which will drive the commercialisation of Monash's ground-breaking scientific and technical research. Monash has been working with the other Group of Eight Universities and the University of Auckland, which are each individually partnering with IP Group, to demonstrate that there is significant investment quality deal flow in Australasia. Under the agreement the university partners can secure a minimum of AUD\$200m over 10 years to help spin out new companies.

### 2.5.6 CSIRO Kick-Start

CSIRO Kick-Start is a new initiative that offers dollar-matched funding of up to \$50,000 to enable research projects for start-ups and small businesses. One of the first six businesses to receive the funding is Tomcar Australia who are using it to conduct feasibility research into electrification of their modified off-grid, off-road vehicles with CSIRO's Manufacturing team. Tomcar Australia manufactures its advanced off road vehicles at their state of the art factory in South Oakleigh with their manufacturing partner MTM Auto.

## 2.6 Sustaining urban amenity

The City of Monash has managed to maintain its position as a desired residence for highly qualified professionals because of its access to employment, open space and quality population servicing facilities. However, due to its economic success and current residential desirability it may face land demand pressures from an ever-increasing Greater Melbourne. The City of Monash’s resident population has grown slower than Greater Melbourne and Victoria for the last decade as outer suburban growth areas take the large share of new development.

Estimated Resident Population (ERP)

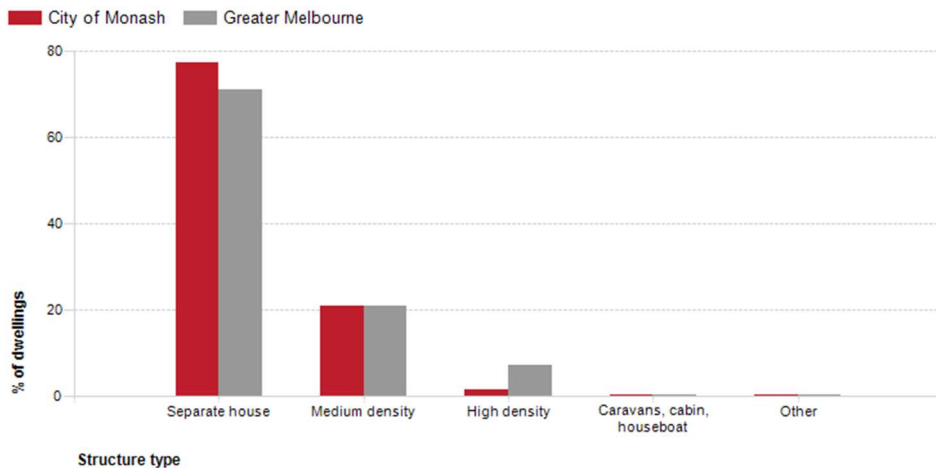


Source: Australian Bureau of Statistics, Regional Population Growth, Australia (3218.0). Compiled and presented in economy.id by .id, the population experts



However, as section 2.1.4 noted the recently updated Plan Melbourne calls for an increase in the diversity of housing stock and an increase in the supply of affordable housing in areas close to jobs, public transport and services. As Section 1.11 illustrated, housing values in the City of Monash are at 60% premium to Greater Melbourne, and units 28%. The LGA will increasingly come under pressure to supply a greater quantity and more diverse range of affordable housing around key transport and activity centres. There is scope for an increased supply of higher density housing as Monash is currently slightly under-represented in this dwelling type.

### Dwelling structure, 2011



Source: Australian Bureau of Statistics, Census of Population and Housing, 2011 (Enumerated data)  
Compiled and presented in profile.id by .id, the population experts.



Managing the daily traffic flows of students and employees in the LGA is also an increasing challenge. Section 1.12 highlighted that a large majority of workers come to the City of Monash each day from the south-eastern suburbs, areas that not as well connected by public transport. This meant that in 2011, 89% of workers in the Monash Employment Cluster came by car. Projects to reduce reliance on cars internally within the LGA or to improve traffic flows during peak periods will be needed to prevent the large costs associated with congestion.

The City of Monash can look at these challenges as an opportunity to improve the adaptability of buildings and infrastructure within the LGA. An adaptable city is able to evolve in response to the changing needs and preferences of its residents and local industry.<sup>27</sup> This allows it to maintain its economic competitiveness over time. Adaptability is supported by ensuring mixed land sizes and uses in close proximity to each other, and planning policy and zoning that allow for redevelopment as the economy and society changes.

Some of the key projects that will help to maintain urban amenity and adaptability in the City of Monash are detailed in brief.

<sup>27</sup> Grattan Institute, 2012, *Tomorrow's Suburbs: Building flexible neighbourhoods*



### 2.6.1 Clayton Activity Centre

Clayton is ideally situated on the Caulfield to Dandenong rail corridor, providing great access across the south-east region. The level crossing removal at Clayton will provide the opportunity to better integrate the Clayton shopping centre and provide improved cycling and pedestrian access and movement. The surrounding residential areas are undergoing urban renewal and Planning Scheme Amendment C125 to the Monash Planning Scheme has designated much of it to be placed within a Residential Growth Zone.

### 2.6.2 PMP Printing redevelopment

This 11-hectare site in Clayton currently housing PMP Printing's plant has been nominated as a site for future development due to its proximity to the Clayton Activity Centre, Clayton Railway station, Monash Medical Precinct and Monash University. The Victorian Planning Authority is working closely with City of Monash to develop a Comprehensive Development Plan that will facilitate the redevelopment of the land.

### 2.6.3 M-City

A 3.52-hectare site on the corner of Princess Highway and Blackburn Road, close to Monash Health and Education Precinct, is set to be developed into one of the largest mixed-use locations in Monash.

Dubbed M-City, the development is planned to comprise of over 600 apartments across four towers, a 250-bed hotel, a 17,500 square-metre office building and a 26,000 sqm mall to be anchored by Kmart, Woolworths and a cinema complex.

### 2.6.4 Level crossing removals

The Caulfield to Dandenong Level Crossing Removal Project is removing nine level crossings and rebuilding five stations. As part of this project the level crossing at Centre Road in Clayton will be removed and Clayton Station will be rebuilt above ground.

## 3. Positioning Monash as Victoria's centre of innovation and diversity

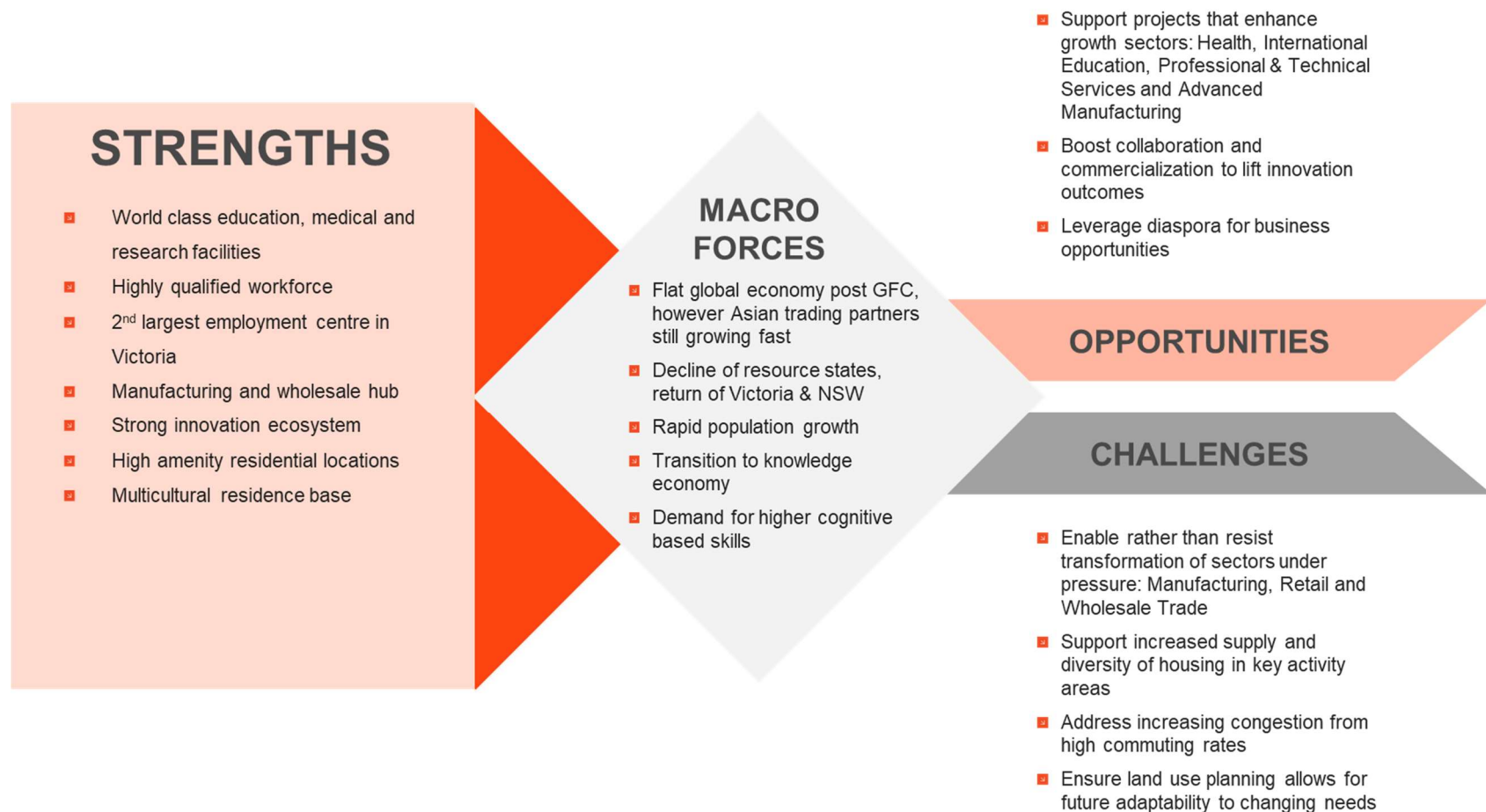
The City of Monash's economic role as a driver of innovation and human capital development in Victoria is built on the strength of its high-quality facilities, large and well qualified resident base, and strategic location.

Some key macro trends are influencing the future economic outcomes of the LGA and driving the transformation of some major employing sectors. However, the City of Monash is well positioned to take advantage of opportunities provided by these trends due to the diversity within its economy and resident base. Economic diversity provides resilience against downturns in particular industries and serves as a driving force behind innovation.

To enable stronger growth, the LGA can continue to support projects that reinforce growth sectors such as health, international education and professional and technical services. It can also facilitate the transformation of Manufacturing into more advanced areas, a transformation that is supported by the strong collaborative links in the LGA between research institutions and local industry. The large resident Asian diaspora in the City of Monash could be better leveraged for growing business and investment with Australia's key trading partners.

However, there are some forces that may present challenges to the City of Monash achieving continued growth. The LGA needs to better support increased supply and diversity of housing around major activity centres and transport nodes to better accommodate future demographic needs. Transport bottlenecks need to be identified and addressed and internal transport connections improved to reduce productivity costs stemming from increasing congestion. Transformation in sectors such as Manufacturing, Retail and Wholesale trade need to be encouraged via supporting redevelopment of sites to meet the new needs of advanced technology and changing consumer and business practices.

## 3.1 Strategic overview



## For more information...

For further information, please refer to the City of Monash's online information tools:

- economy.id - <http://economy.id.com.au/monash>
- profile.id - <http://profile.id.com.au/monash>
- atlas.id - <http://atlas.id.com.au/monash>
- forecast.id – <http://forecast.id.com.au/monash>

.id's landing page gives access to all these resources in one place.

<http://www.id.com.au/monash>



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