

STATE OF THE SECTOR

Medical Technologies
and Pharmaceuticals
2017

Victoria's
Future
Industries

VICTORIA
State
Government

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Ministers' Foreword

We are pleased to present the Victorian Government's first State of the Sector overview for medical technologies and pharmaceuticals. Medical technologies and pharmaceuticals is a growth sector vital to the future economic prosperity of Victoria and a source of employment for Victorians.

Innovation is critical to developing new sources of growth through creation of new businesses, new jobs and increased productivity. The medical technologies and pharmaceuticals sector provides Victoria with a springboard for innovation-based opportunities.

Since the release of the Victorian Government's *Medical Technologies and Pharmaceuticals Sector Strategy*, we have provided key support to industry and manufacturing through the Future Industries Fund. This has included funding for BioCurate and the Medicines Manufacturing Innovation Centre to accelerate the development and commercialisation of new medicines, and further boost Victoria's pharmaceutical manufacturing capability. It has also included provision of grants to a range of Victorian medtech and pharmaceutical manufacturers such as Medical Developments International, Komipharm and DorsaVi. We have also commissioned the first comprehensive analysis of this important sector, culminating in this report.

Australia is one of the world's leading locations for the development and manufacture of medical technologies, biotechnologies and pharmaceuticals.

Victoria is at the epicentre of this dynamic sector, employing more than 23,000 people, and generating over \$12.7 billion in revenue. The sector contributes over \$1.35 billion in exports to the Victorian economy, a figure which has doubled since 2011.

Melbourne has a reputation as the leading hub for Australia's medical technologies industry. The biomedical engineering expertise in the State builds on a long tradition in automotive, aerospace and general manufacturing expertise and is enhanced by significant capabilities in advanced, additive and bio-manufacturing.

With global health care spending projected to grow by over four per cent per year, there is an urgent need for new technologies, goods and services that will improve patient care. This is an enormous and continued economic opportunity for Victoria.

This State of the Sector report demonstrates that the sector's economic impact is significant and positive. This publication provides us with a better understanding of how the sector is growing and will enable the Victorian Government and the sector to measure our efforts and better understand where we need to direct our energy. Continuing to grow the medical technologies and pharmaceuticals sector will create rewarding, high value, secure jobs for Victorians and help us play a key role in improving health and wellbeing worldwide.



Wade Noonan
Minister for Industry
and Employment



Jill Hennessy
Minister for Health



Philip Dalidakis
Minister for Small Business,
Innovation and Trade



Introduction

This report brings together four sources of data:

- an analysis of the economic impact of the medtech and pharmaceuticals sector on the Victoria economy, conducted by the Centre for Transformative Innovation (CTI) at Swinburne University, utilising BLADE data¹;
- annual survey data, compiled by Blake Industry and Market Analysis Pty. Ltd.;
- market capitalisation information, sourced from the ASX; and
- export commodity trade data, sourced from the IHS Global Trade Atlas.

This publication provides a summary of the results of these reports, together with proprietary government department data as appropriate. Notes on the methodology can be found at the end of this report.

¹ Determining the economic impact of the sector is made possible by the Australian Bureau of Statistics Business Longitudinal Data Environment (BLADE). This database is the only comprehensive data of financial operations of every business in Australia and is based on annual business tax file records and survey data. The measure of economic impact, total value added, is calculated by aggregating across all firms in the sector

Key findings



In 2013-14, the Sector generated \$12.7 billion in revenue and employed 23,000 people.

The following table provides a summary of the sector metrics:

Table 1. Summary of sector metrics

Sector revenue	\$12.7 billion
Sector-value added	\$2.2 billion
Exports	\$1.35 billion ²
Percentage of Victoria's total state exports	3.5 per cent
Total capital investment	\$276 million
Number of employees	23,000 employees (18,000 FTE)
Average wage of employees	\$74,000 /employee

Source: Centre for Transformative Innovation

Describing and defining the sector

For the purposes of this report the sector is defined as firms engaged in the following activities:

1. **Pharmaceutical manufacturing and development**
2. **Life science and biotechnology manufacturing and development**
3. **Medical technology manufacturing and development**
4. **Vitamins, supplements and topical product manufacturing and development**
5. **Service providers – contract research organisations, clinical trial providers, etc.**

The sector can be defined as firms that are interconnected and that have shared success factors, supporting industries, infrastructure or labour markets. A representative sector supply chain is depicted in blue in Figure 1.

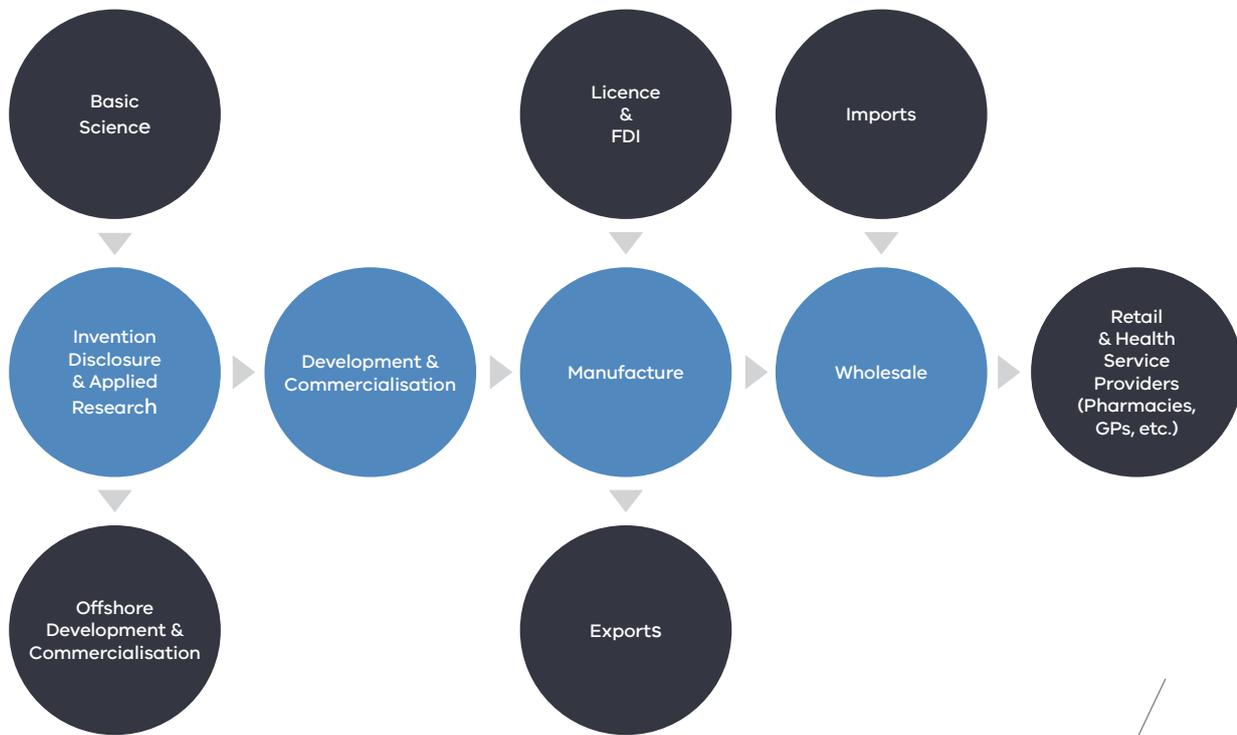
Firms active in the sector in Victoria may be involved in activities from basic science through to wholesale trade. Firms in the sector perform activities across a range of industry sectors defined in the Australian and New Zealand Standard Industry Classifications or ANZSIC codes.³ Please note that relevant activity undertaken in universities and hospitals was excluded from the analysis.⁴

2 Statistic from the IHI Global Trade Atlas

3 It is not possible to directly use industry level statistics on economic activity collected by the ABS. This is because the sector comprises incomplete parts of several ANZSICs. To measure the impact of the Sector on the Victorian economy, a comprehensive list of relevant active firms was developed.

4 The main reason for excluding universities and hospitals is that it is not possible to separately identify sector relevant activities from the main activities of these organisations (education and health care) which are not part of the sector.

Figure 1. Representative sector supply chain⁵



⁵ Size of circles are not indicative of the relative size of the sectoral component

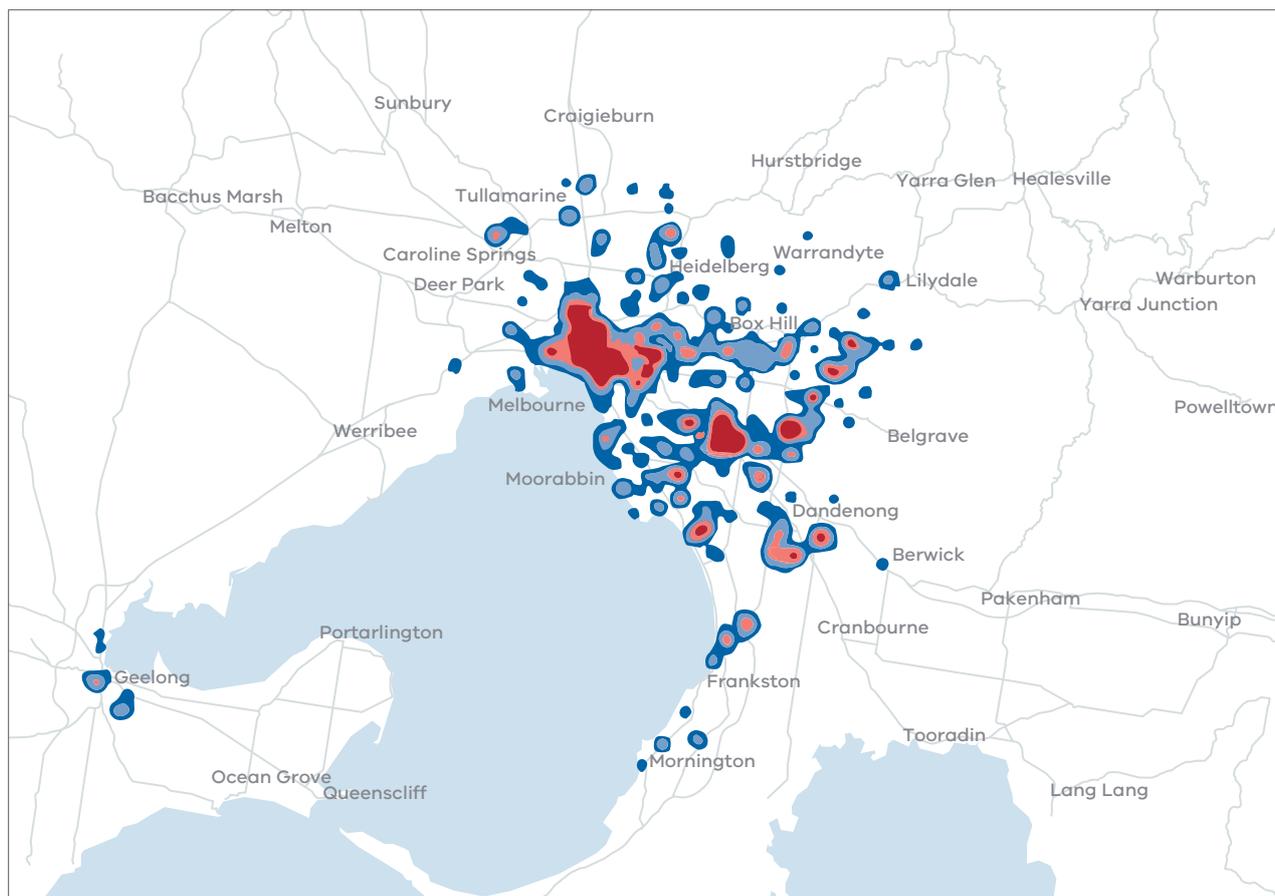


Size and location of the sector

The medical technologies and pharmaceuticals sector is largely located in the Melbourne Metropolitan area – 84 per cent of total businesses. There are a large numbers of businesses in the East, South East and CBD, with growing numbers in the West. While the sector is located primarily in greater Melbourne, there are some firms that are located in regional areas, mainly Geelong.

Notably, there are geographical clusters of medical technologies and pharmaceuticals sector firms. These clusters are around the inner metropolitan region, the Clayton and Monash University precinct, the Ringwood/Bayswater area, and the Dandenong/Mulgrave manufacturing precinct, see Figure 2.

Figure 2. Key medtech and pharmaceutical business locations



Source: DEDTJR, Commercial-in-Confidence

The economic impact of the sector

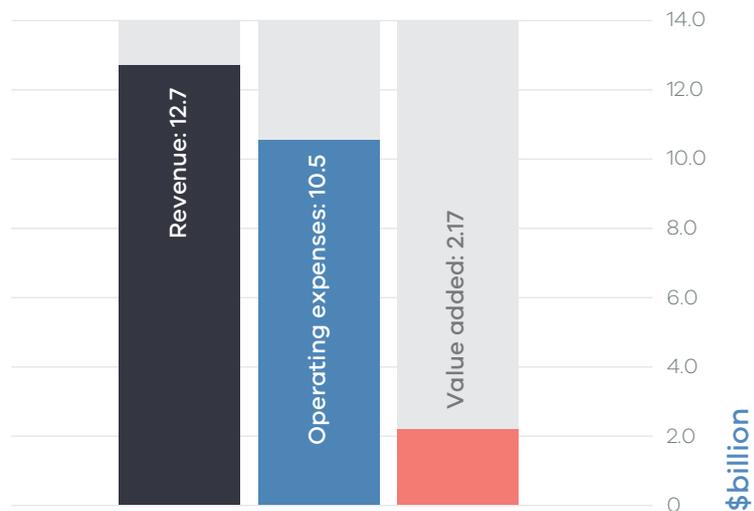
Direct impact/revenue

Revenue, operating expenses and value-added for financial years 2013-14 are depicted in Figure 3. These show sector revenue of around \$12.7 billion, with an average salary of \$74,000 per annum. Operating expenses of \$10.5 billion were reported, resulting in total value add to the Victorian economy of nearly \$2.2 billion.⁶

Revenue

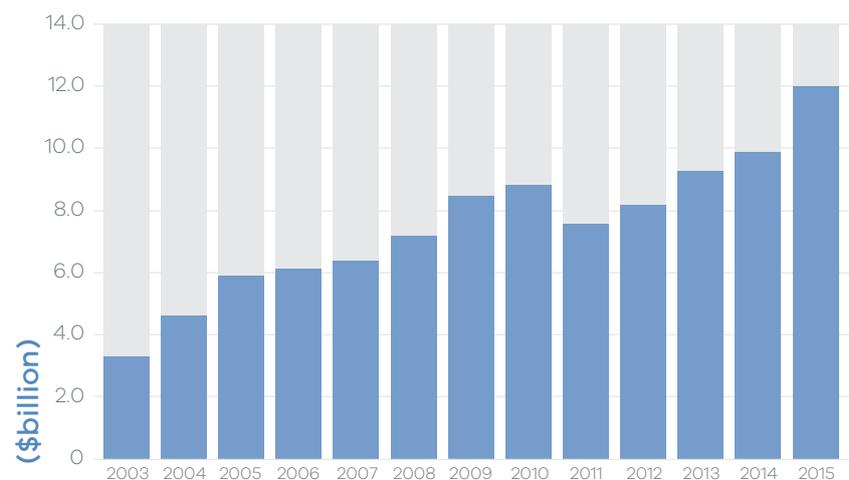
According to Blake, revenue from Victorian companies increased 20.7 per cent in 2015, to approximately \$12 billion, see Figure 4. This is broadly consistent with the findings from the Centre for Transformative Innovation.

Figure 3. Key economic aggregates for the sector (2013-14)



Source: Centre for Transformative Innovation

Figure 4. Total revenue generated by Victorian companies (2015)



Source: Blake Industry & Market Analysis

⁶ Value added is equal to turnover net of intermediate inputs. This is consistent with the approach for calculating GDP or Gross State Product (GSP).

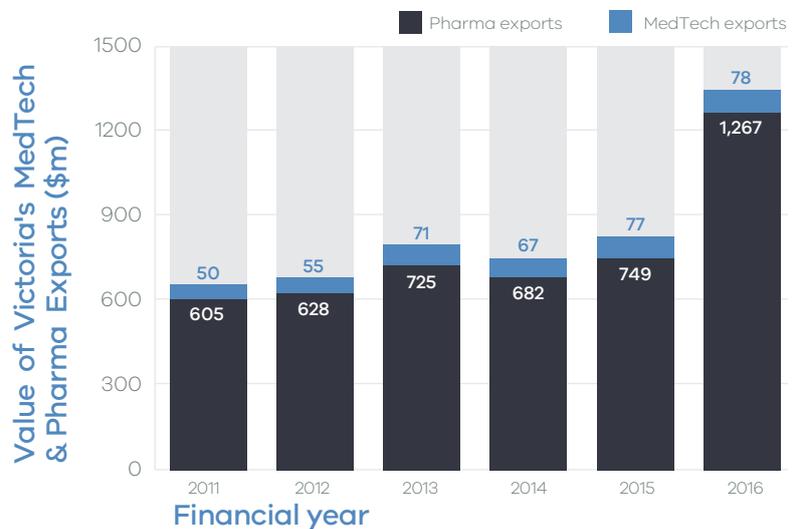
Exports

The sector contributed over \$1.35 billion in exports over 2013-14. This is a measure of goods exports only, not licensing, services, IP etc. (Centre for Transformative Innovation). This accounted for just over 3.5 per cent of a Victorian total of \$24 billion over the same period.

EXPORT DATA (LONGITUDINAL, AND BY MARKET)

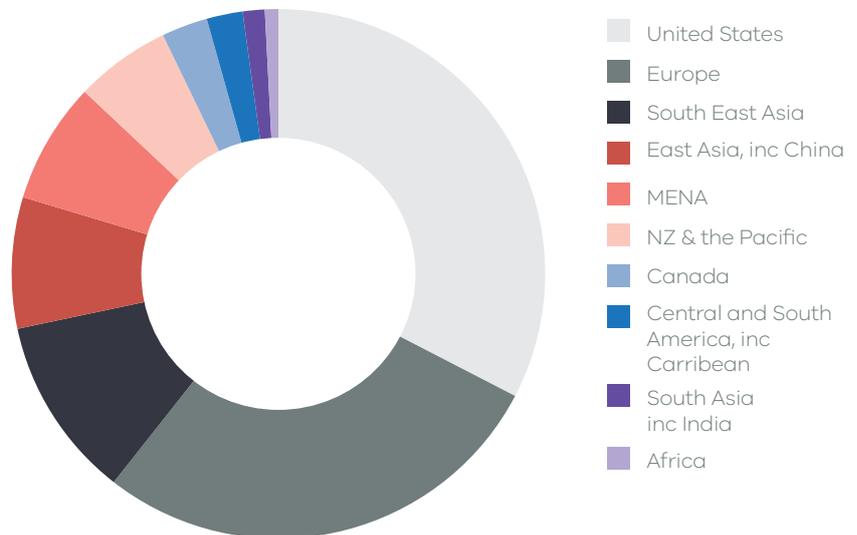
2016 figures indicate that there has been a significant improvement in export figures, driven mainly by growth in pharma sales see Figure 5. The majority of exports go to the USA and Europe. See Figure 6.

Figure 5. Sector export data (goods exports only, 2016)



Source: IHS Global Trade Atlas: Global Import/Export Commodity Trade Data, 2016

Figure 6. Annual average exports by market 2011-2016



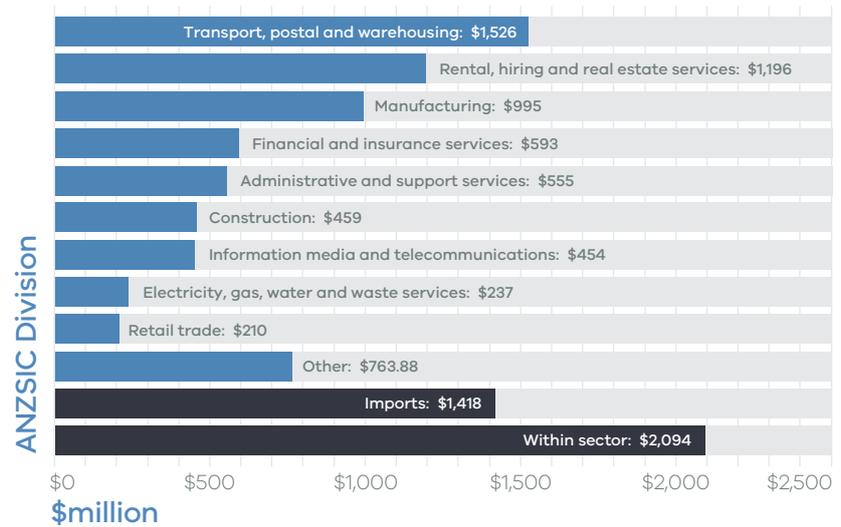
Source: IHS Global Trade Atlas: Global Import/Export Commodity Trade Data, 2016

Supply chain effects

The sector also contributes to aggregate demand in sectors that supply intermediate inputs. The CTI Report estimates that the Sector contributes \$6.9 billion in upstream demand to other sectors in the Victorian economy.

The detailed breakdown of the distribution of sources of intermediate inputs is presented in Figure 7. Supplying industries are aggregated to the ANZSIC Division level. Transport, Postal and Warehousing is the largest supplying industry group to the sector, supplying nearly \$1.5 billion of intermediate inputs. Rental, Hiring and Real Estate Services (\$1.2 billion) and Manufacturing (\$0.99 billion) are the next largest contributors.⁷

Figure 7. Supply chain analysis.



Source: Centre for Transformative Innovation

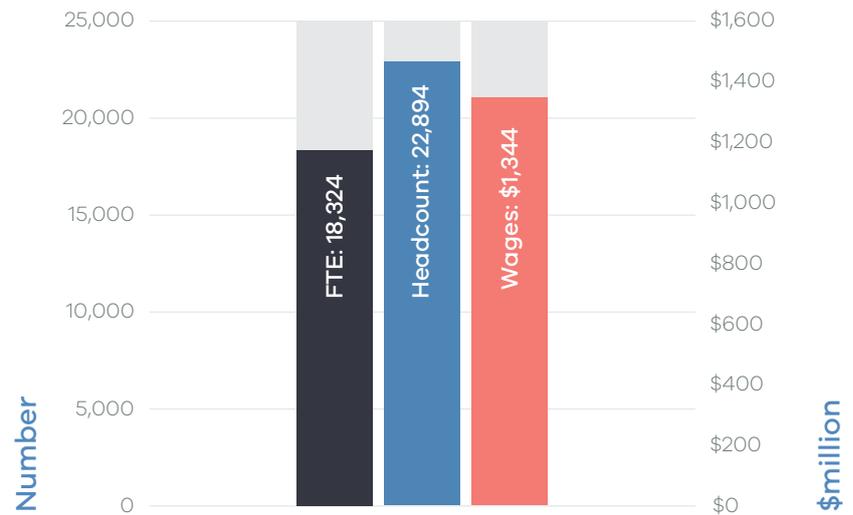
⁷ Nearly one fifth of the sectors' operating expenditure falls under the category *Within Sector*. This group captures the expenditure on intermediate inputs by the sector from within the sector. Inputs purchased by other firms in the Sector will be reflected in the supplying firm turnover. Therefore, this economic impact has already been captured in the value added measure.



Wages and employment

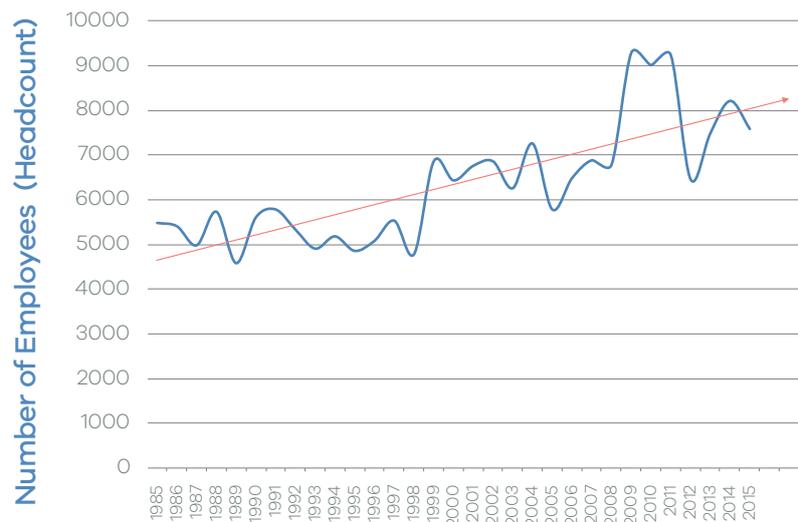
Total sector employment is just under 23,000 individuals, with just over 18,000 full time equivalent (FTE) positions (Figure 8). Firms in the sector paid \$1.34 billion in remuneration in the year 2013-14. Manufacturing employment in the sector has also steadily increased over time, see Figure 9.

Figure 8. Wages and employment in the sector (2013-14)



Source: Centre for Transformative Innovation

Figure 9. Manufacturing employment trends in the sector (2016)



Source: DEDTJR, drawing on ABS data

Employment ranges for Victorian companies in the sector

Employment ranges for the surveyed Victorian companies in the sector are summarised in Table 2.⁸

Capitalisation and listing of the sector

The aggregate capitalisation of listed Victorian companies in 2015 was \$43.9 billion, having risen sharply since 2011, see Figure 10. Note that the key driver of change was CSL, which increased in market value by \$5 billion to \$40.1 billion from 2006 to 2015. NB: At 26 April 2017, the aggregate capitalisation was approximately \$55.2 billion.

Table 2. Company employment ranges for Victorian companies surveyed (2015)

Number of employees	Listed companies	Private companies	Total
<20	16	102	118
20 – 50	8	27	35
50 – 200	8	12	20
200+	4	4	8

Source: Blake Industry & Market Analysis

Figure 10. Aggregate capitalisation of listed Victorian companies



Source: Blake Industry & Market Analysis

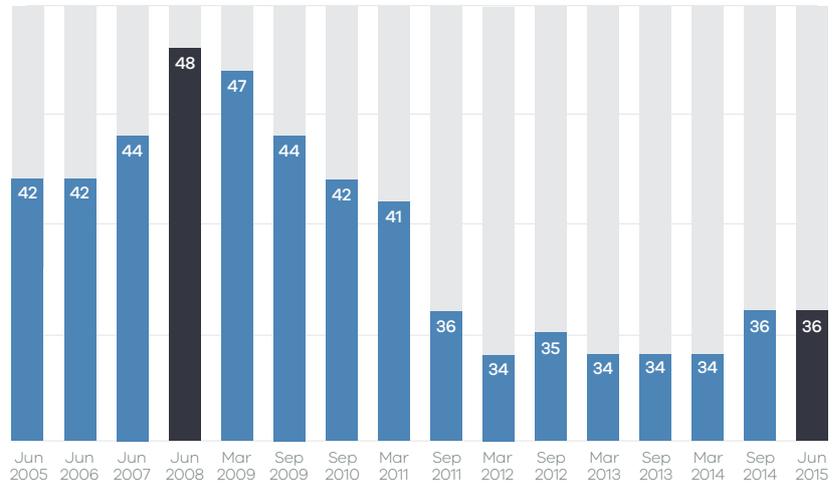
⁸ Blake Industry & Market Analysis Pty Ltd (21 October, 2016), *Medical Technology & Pharmaceutical Sector 2015 Final Annual Report*. Commercial in confidence.

VICTORIAN ASX LISTED COMPANIES AND MARKET CAP

36 listed Victorian companies had a market capitalisation at June 30, 2015 of \$43.9 billion (up from \$39.0 billion in 2014). The number of Victorian life science companies listed on the ASX has fallen since 2008-9 and has remained static since 2011, see Figure 11.

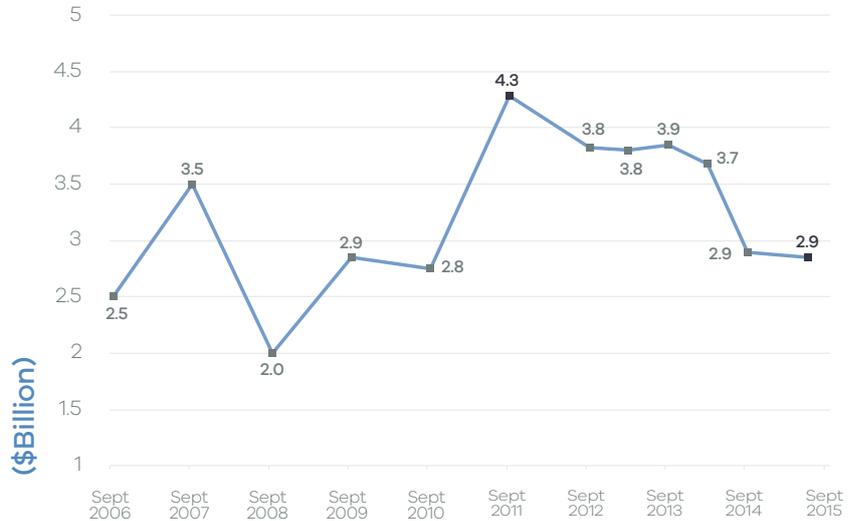
Note that when Sigma Pharmaceuticals Limited and CSL are excluded from the data, market capitalisation has fallen significantly, since 2011, see Figure 12. This is largely as a result of lower investment capital after the Global Financial Crisis.

Figure 11. Number of listed Victorian life science companies (2015)



Source: Blake Industry & Market Analysis

Figure 12. Capitalisation of listed Victorian life science companies excluding Sigma Pharmaceuticals Ltd and CSL (2015)

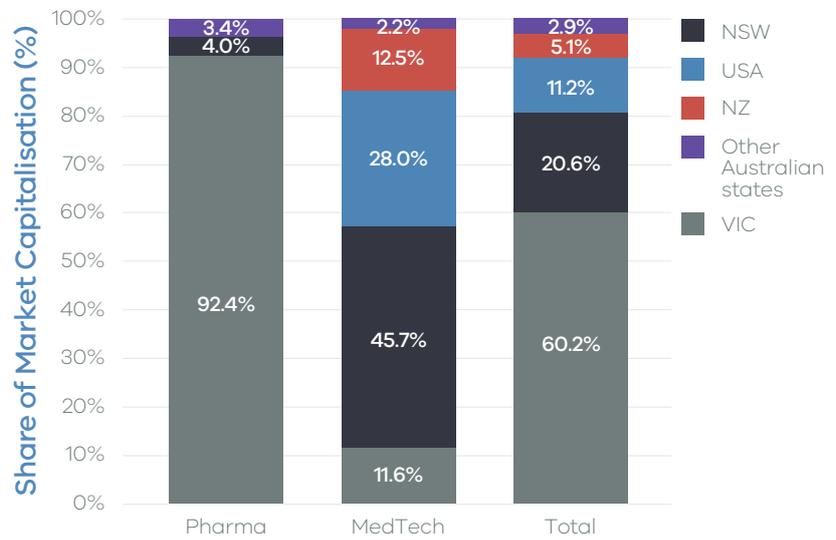


Source: Blake Industry & Market Analysis

SHARE OF ASX MARKET CAPITALISATION BY STATE

Victoria dominates company market capitalisation on the ASX, see Figure 13.

Figure 13. Share of ASX market capitalisation by location of registered company offices (June 2016)



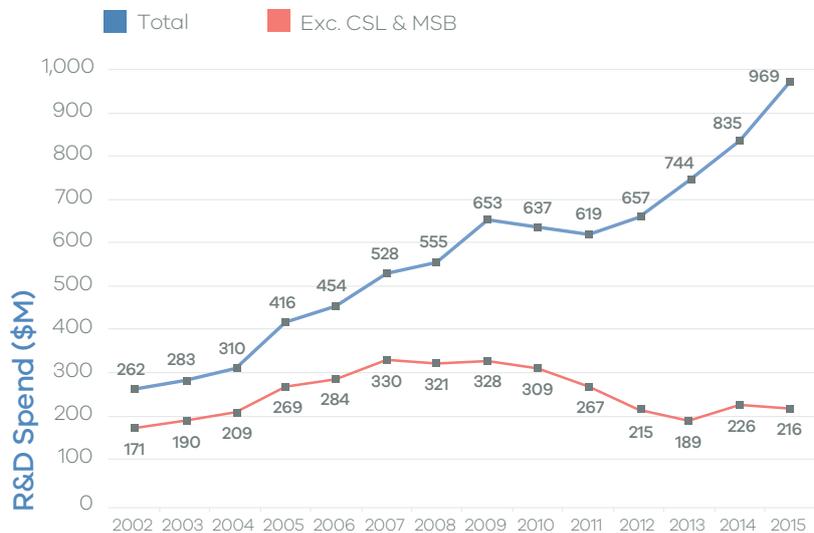
Total research and development (R&D) investment

R&D spending in Victoria, with the notable exception of CSL and Mesoblast Ltd, has fallen since 2010, see Figure 14.

NATIONAL HEALTH & MEDICAL RESEARCH COUNCIL (NHMRC)

Victoria is the leading state in competitive grant outcomes,⁹ see Table 3, with almost 42% of total NHMRC funding in 2016.

Figure 14. Total R&D spending by Victorian companies (2015)



Source: Blake Industry & Market Analysis

Table 3. Outcomes by state and territory for competitive grants awarded in the 2016 application round

State	Applications	Funded	Funded rate	Amount	Percentage of funding
VIC	2,108	421	20.0%	\$329,655,050	41.8%
NSW	1,525	272	17.8%	\$227,547,908	28.9%
QLD	825	131	15.9%	\$111,543,419	14.1%
WA	360	58	16.1%	\$44,095,650	5.6%
SA	493	64	13.0%	\$40,617,469	5.1%
ACT	115	25	21.7%	\$19,731,441	2.5%
NT	33	8	24.2%	\$10,213,405	1.3%
TAS	60	7	11.7%	\$5,016,753	0.6%
Total	5,519	986	17.9%	\$788,421,095	

Source: NHMRC

⁹ nhmrc.gov.au/grants-funding/outcomes-funding-rounds, accessed February 2017.

Pre-clinical and clinical assets in Victoria

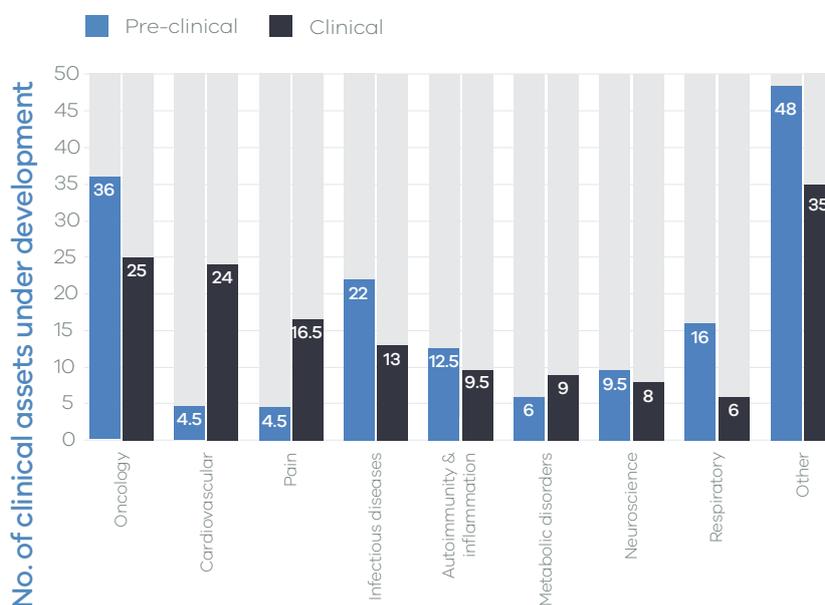
ASSETS BY THERAPEUTIC AREA

Victoria's strengths in therapeutic development lie in the oncology, infection and immunity and cardiovascular disease areas, see Figure 15.¹⁰ Therapeutic areas covered in "other" include endocrinology and regenerative medicine, as well as orphan diseases.

ASSETS: MEDTECH VS DRUG DEVELOPMENT

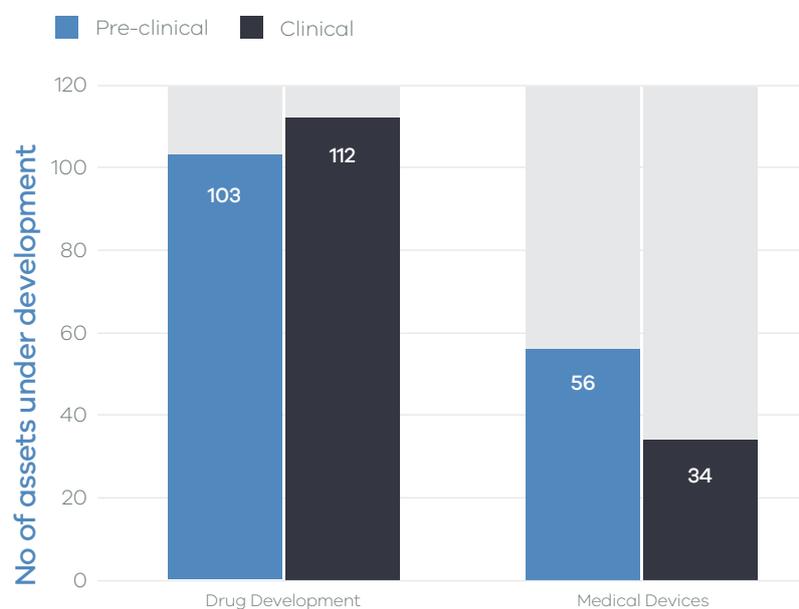
The majority of clinical assets in development are in pharmaceuticals as opposed to medical devices. This is consistent with the relevant size of the sectors, see Figure 16.¹¹

Figure 15. Victorian strengths (June 2016)



Source: DEDTJR, Commercial-in-Confidence

Figure 16. Asset development in Victoria – drugs and medical devices (June 2016)



Source: DEDTJR, Commercial-in-Confidence

10 State Government of Victoria, *Life Sciences Pre-Clinical and Clinical Development Programs*, Melbourne Australia, June 2016 Commercial-in-Confidence.

11 State Government of Victoria, *Life Sciences Pre-Clinical and Clinical Development Programs*, Melbourne Australia, June 2016 Commercial-in-Confidence.

Further information

Further information on the Victorian Government's medtech and pharmaceuticals sector strategy and current support programs for industry is available at business.vic.gov.au/support-for-your-business/future-industries.



Notes on methodology

The variety of sources utilised to produce the report is indicative of the difficulty of assembling the correct set of metrics for assessing the size and economic impact of the sector. In addition, the data sources cover different time points. In 2016, the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) commissioned the Centre for Transformative Innovation (CTI) at Swinburne University to analyse the impact of the medtech and pharmaceuticals sector on the Victorian economy.

The CTI Report¹² utilised a novel new methodology, drawing on de-identified firm-level financial data from Business Activity Statements (BAS) collected by the Australian Taxation Office (ATO) and made available by the Australian Bureau of Statistics (ABS), as the BLADE dataset, the most recent data available for analysis relates to financial year 2013-14.¹³

The sector does not fit one single standard industrial classification. It was therefore not possible to evaluate the complete size of the sector using detailed “off-the-shelf” statistics published by the ABS. To measure the impact of the sector, the CTI identified 651 firms with relevant activities in the sector.¹⁴ The economic impact of the sector was then measured by aggregating the activity of these firms.¹⁵

To enable a more complete picture of the economic impact of the sector on the Victorian economy, DEDJTR also commissioned Blake Industry & Market Analysis Pty Ltd (“Blake”) to furnish a complementary and commercial in confidence report for FY2015¹⁶ using a different methodology and providing a greater focus on the various companies in the sector. Over 200 businesses in the sector were surveyed and additional information was retrieved through publicly available documents, including company reports, news articles and regulatory filings, as well as financial analysis metrics. In addition, export data has been sourced from the IHS Global Trade Atlas.¹⁷

12 Centre for Transformative Innovation (February, 2017), *Economic Impact Analysis – Victorian Medical Technologies & Pharmaceuticals Sector*.

13 Due to a lag in availability, the data is from 2013-14

14 A complete list of the firms included in the analysis is included in Appendix A of the CTI Report.

15 The main caveat to the measured direct impact is that operations in Victoria of firms that are based in other states have not been included. Similarly, no adjustment was made for any possible economic activity outside Victoria by Victorian firms. This means the estimates of economic impact presented are conservative.

16 Blake Industry & Market Analysis Pty Ltd (21 October, 2016), *Medical Technology & Pharmaceutical Sector 2015 Final Annual Report*. Commercial in confidence.

17 IHS Global Trade Atlas: Global Import/Export Commodity Trade Data, 2016.



Imaging and Medical
Beamline, Australian
Synchrotron, Australian
Nuclear Science and
Technology Organisation

