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Queensland Government  
Department of State Development, Trade and Innovation  
Pharmaceuticals and Nutraceuticals Sectoral Development Unit



# Queensland Industry Profile: Pharmaceuticals Nutraceuticals / Complementary Medicines Medical Devices

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## Key Statistics

This report is an update of the Queensland pharmaceutical industry profile across the three sub-sectors of pharmaceuticals, nutraceuticals / complementary medicines and medical devices. The study was commissioned to update the data gathered in the Queensland Department of State Development and Innovation's 2004 report entitled Queensland Pharmaceutical Industry Profile: Springboard for Opportunities, prepared in conjunction with PricewaterhouseCoopers.

### Key Trend Data – Australia

Measure	1997	2005	Compound Annual Growth
Australian GDP	\$624.1 billion	\$830.4 billion	3.6%
Pharmaceutical Industry Gross Product	\$5.25 billion (~0.85% of GDP)	\$9.65 billion (~1.16% of GDP)	7.9%
Industry Revenue	\$19.02 billion	\$36.65 billion	8.5%
Industry Employment	97,578	125,901	3.2%
Australian Pharmaceutical Exports	\$1.36 billion	\$3.55 billion	12.8%
Australian Pharmaceutical Imports	\$3.77 billion	\$10.79 billion	14.1%

### Key Trend Data – Queensland

Measure	1997	2005	Compound Annual Growth
Queensland Pharmaceutical Exports	\$39.3 million (~2.9% of Aus)	\$218.5 million (~6.16% of Aus)	23.9%
Queensland Pharmaceutical Imports	\$85.7 million (~2.28% of Aus)	\$306.9 million (~2.84% of Aus)	17.3%

### Snapshot of the Pharmaceutical Industry 2005

- The Gross Product of the Pharmaceutical Industry was \$9.65 billion, representing 1.16 percent of Australia's Gross Domestic Product (GDP)
- The retail and wholesale segment collectively generated 49 percent of the Pharmaceutical Industry Gross Product, while the manufacturing categories generated 31 percent and scientific research 20 percent.

#### Revenue

- The Australian Pharmaceutical Industry generated over \$36 billion in revenues
- The combined retail and wholesale segments generated the greatest proportion of the total revenue of the Australian Pharmaceutical Industry at 66 percent, while the manufacturing segment generated 25 percent and scientific research 9 percent.

#### Employment

- The Australian Pharmaceutical Industry employed almost 126,000 people with 64 percent of these employed in the combined retail and wholesale segments. The second largest employer was the scientific research segment at 18 percent. No state-based data was available on employment in the segments examined.

#### Number of Establishments

- The Pharmaceutical, Cosmetic and Toiletry Retailing segment included ~11,000 establishments (72 percent of all establishments in Australia). The Medical and Surgical Equipment Manufacturing segment represented the second largest grouping with almost 2000 establishments (13 percent of the total).
- Almost 19 percent of all Australian Pharmaceutical establishments were located in Queensland in 2005.

### **Exports**

- The Australian Pharmaceutical Manufacturing Industry exported goods to the value of \$3.55 billion with \$219 million (6.2 percent) of this amount attributed to Queensland.
- Queensland's top three export destinations by value were the USA, Ireland and New Zealand. The highest annual growth in imports over the past five years was recorded for New Zealand (152 percent per annum).

### **Imports**

- Pharmaceutical Manufacturing imports into Queensland were valued at \$307 million representing 2.8 percent of total imports into Australia of \$10.79 billion.
- Queensland's top three import sources by country were the USA, Denmark and France. The highest annual growth in imports over the past five years was recorded from Canada (94 percent per annum) and Singapore (86 percent per annum).

## **Industry Consultation: Key Points**

### **Survey Methodology**

- 90 companies operating across a range of segments in the Queensland Pharmaceutical Industry were selected to participate in the survey.
- 56 companies responded to the survey online and via telephone representing a 62% overall response rate.

### **Industry Breakdown**

- 33 percent of the respondent companies were in the complementary and alternative medicines segment; 27 percent in the pharmaceutical segment and 11 percent in medical devices.
- 29 percent identified themselves as belonging to other industry segments including education, bio-discovery and cosmaceuticals.
- 11 percent of respondents were listed on the ASX.

### **Revenue and Expenditure**

- Almost 50 percent of surveyed companies had a turnover less than \$1 million in the 2005 financial year with a further 31 percent generating revenues of between \$1 million and \$5 million and 13 percent reporting turnover in excess of \$20 million.
- 47 percent of companies reported revenue growth in excess of 10 percent year on year in 2005 and the majority (94 percent) forecast revenue growth in the coming 12 months.
- Over half of all respondents reported a capital expenditure budget of less than \$250,000 in 2005.
- Around 43 percent of respondents reported an R&D expenditure budget of up to 10 percent of total company revenue. 34 percent allocated greater than 10 percent of revenues to R&D while almost 23 percent reported no R&D expenditure budget.

### **Employment**

- Over 70 percent (37) of respondents employed less than 20 full time equivalent (FTE) people.
- Respondent companies employed a total of 4,459 FTEs and expected to employ a further 706 people in the next three years growing the total number of employees by 15.8 percent to 5,165.
- Over 50 percent of respondent companies spent less than \$500,000 on wages in 2005.

### **Opportunities & Barriers to Growth**

- Respondent companies identified the following factors as significant barriers to the growth of the industry: access to capital, the cost of regulatory compliance, access to skilled staff, local and international competition and access to international markets.
- Collaborative training between industry and educational institutions was identified as the area of opportunity in which there is the greatest role for government support.
- Regulatory issues impacted on most businesses through increased compliance costs and the challenges of dealing with multiple international regulatory bodies.

## Methodology and Data Sources

### Definition of the Industry

For the purposes of this report the pharmaceutical industry is defined as including three sub-sectors:

- (a) pharmaceuticals;
- (b) nutraceuticals / complementary and alternative medicines; and
- (c) medical devices.

These are the three sub-sectors that fall under the DSDTI's Pharmaceuticals and Nutraceuticals Sectoral Development Unit.

From a statistical data point of view this report examines the industry at an aggregate level of manufacturing, scientific research, wholesaling and retailing matching the format data on the industry that has traditionally been collected. Statistics used in this report are based on Australian and New Zealand Standard Industrial Classifications (ANZSIC) codes. ANZSIC codes are industry groupings that were developed for use in Australia and New Zealand for the production and analysis of industry statistics.

ANZSIC codes categorise industries into four levels including Divisions (the broadest level), Subdivisions, Groups and Classes (the finest level). The pharmaceutical industry as a whole does not fall into one of the top level Divisional ANZSIC groupings. As such, the industry statistics presented in this report are based on classes (4 digit ANZSIC codes). The six ANZSIC codes shown in the Table below were selected as a proxy for the industry.

When the pharmaceutical industry is referred to this means the combined data from the six ANZSIC codes. The Total Industry Gross Product is the combined gross product data for the six ANZSIC codes.

Industry	ANZSIC
Scientific research	L7810
Medicinal and pharmaceutical product manufacturing	C2543
Medical and surgical equipment manufacturing	C2832
Cosmetic and toiletry preparation manufacturing	C2546
Pharmaceutical and toiletry wholesaling	F4796
Pharmaceutical, cosmetic and toiletry retailing	G5251

It is important to note that the data does not capture the entirety of the industry since the typical definition of the industry does not align with the ANZSIC codes. For the same reason the data for each ANZSIC code will include some activities that are not related to the industry or the relevant sub sector.

The report presents eight year historical trend data on the industry (1997-2005). The growth of the industry as a whole (as defined by the six ANZSIC codes) could only be calculated for the eight years to 2005 since data for two of the codes was not collected in 1995 or 1996.

The data for the industry update was sourced from industry reports, an industry survey, the Australian Bureau of Statistics and other secondary sources.

### Primary Data

A total of 90 industry members drawn from a DSDTI database were asked to participate in the survey and 56 responded. The survey was offered on-line and data was aggregated with no identifiers to the participants. The 31 questions that comprised the survey are reproduced in the Appendices.

### Secondary Data – Information Sources

Key data sources included the Australian Bureau of Statistics (ABS) and IBISWorld industry reports.

IBISWorld is a research organisation that provides commercial information for a large range of industries. IBISWorld's data is categorised according to ANZSIC industry classifications. As IBISWorld compiles information based on analyst research and estimations in addition to ABS data it

usually represents more up-to-date data than is available through the ABS which compiles statistics on an irregular/longer cycle basis. All data from IBISWorld is for the financial year – where the data is for 2004/05 the annotation or label is noted as '2005'. All industry forecasts contained in this document were sourced from IBISWorld and have been included only for completeness.

Data was sourced from the following IBISWorld reports:

- L7810 – Scientific Research in Australia, published 23 December 2005
- C2546 – Cosmetic and Toiletry Preparation Manufacturing in Australia, published 31 March 2006
- F4797 - Pharmaceuticals Wholesaling in Australia, published 1 June 2006
- F4796 - Pharmaceutical and Toiletry Wholesaling in Australia, published 31 March 2006
- G5251 - Pharmaceutical, Cosmetic and Toiletry Retailing in Australia, published 31 March 2006
- C2543 - Medicinal and Pharmaceutical Product Manufacturing in Australia, published 4 May 2006
- C2832- Medical and Surgical Equipment Manufacturing in Australia, published 3 April 2006
- Business Environment Report – Real GDP, March quarter 2006

ABS data was used to provide a state level profile of the pharmaceutical industry in Australia. The ABS is Australia's official statistical organisation. Data was sourced from the following ABS reports:

- ABS, Manufacturing Survey by 4 digit ANZSIC by all states in Australia, 1999/2000
- ABS, International Trade Imports - Imports by 4 digit ANZSIC by Country of Origin by State of Destination by Quantity and Value (FOB<sup>1</sup>); 1995-2005
- ABS, International Trade Exports - Exports by 4 digit ANZSIC by State of Origin by Country of Destination by Quantity and Value (FOB); 1995-2005
- ABS, 2001 Census of Population and Housing, Number of Persons by 4 digit ANZSIC by all states and Australia

## Profile of Industry from Secondary Data

According to the research organisation IBISWorld the Australian pharmaceutical industry in its entirety employs some 30,000 people and annual revenues are in the order of \$12 billion. Australia is currently the world's 18<sup>th</sup> largest (human use) pharmaceuticals market based on sales (representing 1 percent of global sales) and the fourth largest in Asia.

## Contribution to the Economy

### Australian Pharmaceutical Industry: Total Industry Gross Product

Figure 1 shows the contribution to Industry Gross Product by ANZSIC Code. The Australian Pharmaceutical Industry generated \$9.66 billion in Industry Gross Product in 2005. The retail and wholesale segment collectively generated 49 percent of gross product, while the manufacturing categories generated 31 percent.

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<sup>1</sup> Free on Board (FOB) Value refers to the value of goods including all production and other costs incurred up until the goods are placed on board the international carrier for export. Free on board values exclude international insurance and transport costs. They include the value of the outside packaging in which the product is wrapped, but do not include the value of the international freight containers used for transporting the goods. ([www.abs.gov.au](http://www.abs.gov.au))

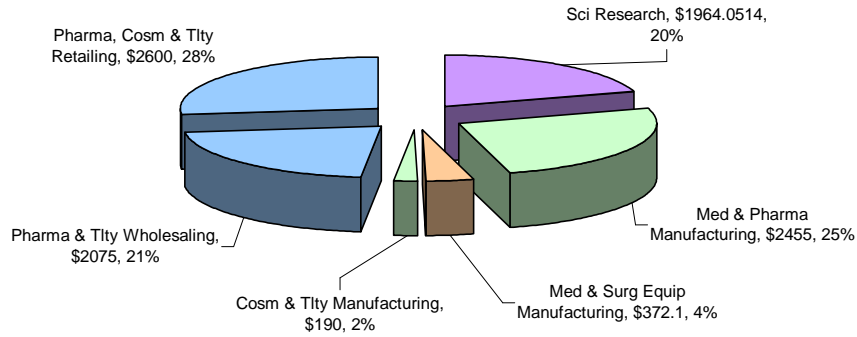


Figure 1; Pharmaceutical Industry Gross Product by ANZSIC Industry Segment 2005 (\$m)<sup>2</sup>

Based on the combined total of the six ANZSIC industry codes (\$9.66 billion), the Australian Pharmaceutical Industry represented 1.16 percent of Australia's Gross Domestic Product (GDP) of ~\$830.4 billion in 2005. While the industry as defined by this measure is relatively small compared to GDP the growth in the Industry Gross Product over the eight years from 1997 to 2005 has been significant (see Figure 2). The industry grew by 7.9 percent per annum compared to a 3.6 percent per annum for GDP (see Table 1).

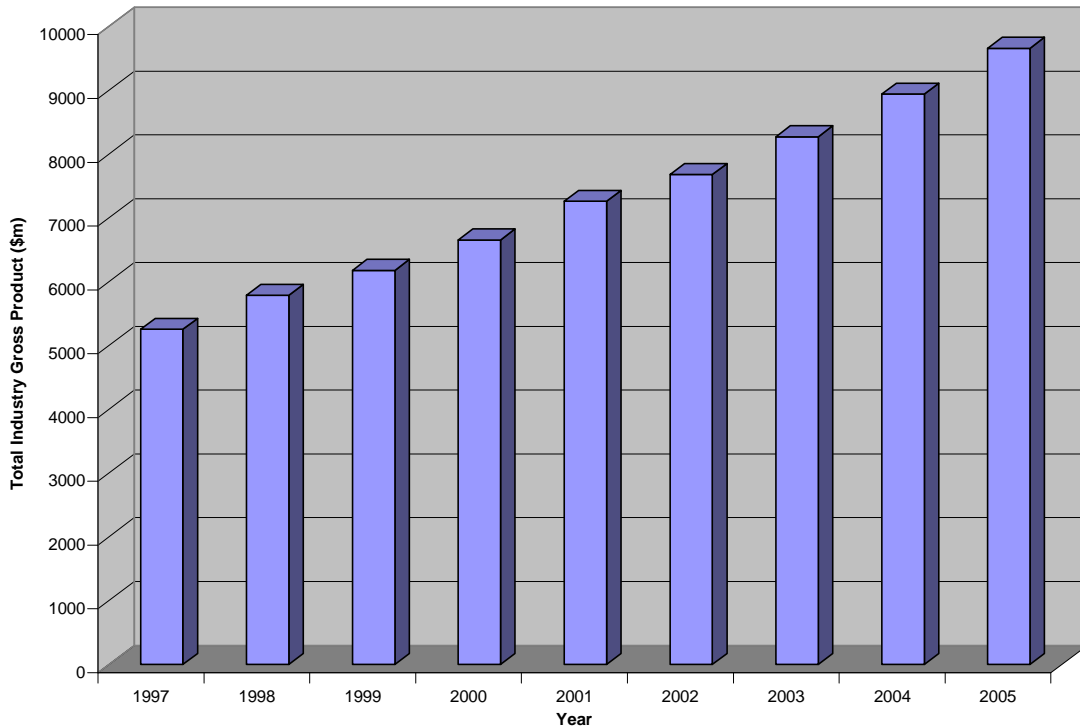


Figure 2; Australian Pharmaceutical Industry: Total Industry Gross Product (\$m) 1997-2005

Figure 3 plots the Gross Product for each ANZSIC code for the ten years to 2005 (note unavailable data in 1995 and 1996 for two segments). In broad terms the Retailing and the Medicinal and Pharmaceutical Product Manufacturing segments have had an increasing contribution to GDP at around the same rate since 2000. The Pharmaceutical and Toiletry Wholesaling and Scientific Research categories have tracked a similar growth rate. The equipment manufacturing and the Cosmetic and Toiletry manufacturing have each grown at a smaller rate and off a significantly smaller base.

<sup>2</sup> IBISWorld Reports

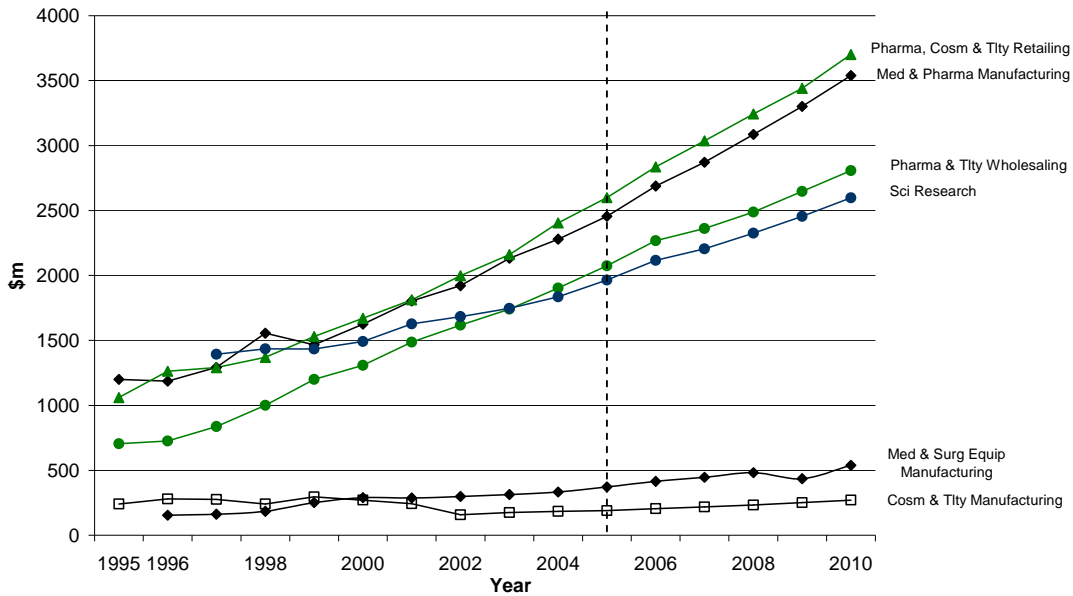


Figure 3; Pharmaceutical Industry Contribution to GDP by ANZSIC Industry Segment (\$m) 1995-2010<sup>3</sup>

### Australian Pharmaceutical Industry: Compound Annual Growth

Table 1 shows the historical and forecast compound annual growth rates (CAGR) of the ANZSIC industry segments over the period 1997-2010. The compound annual growth of the total Industry since 1997 was over twice that of GDP (7.9 percent versus 3.6 percent respectively). The forecast five-year growth rate for Gross Product (2005 to 2010) is expected to be 6.9 percent per annum compared to 3.4 percent for GDP.

Wholesaling, Retailing and Medical and Surgical Manufacturing have been the out-performers. For the next five years IBISWorld forecast a collective smoothing out of growth to 2010 with the growth in each of these segments softening. Cosmetic and Toiletry Manufacturing showed a negative growth rate (-4.6 percent) off a low base, but this is forecast to turnaround to 7.3 percent.

Table 1: Historical & Forecast Industry Gross Product Compound Annual Growth Rate by ANZSIC Industry Segment 1997-2010<sup>4</sup>

ANZSIC Industry Segment	Historical 8 year Industry Product CAGR 1997-2005	Forecast 5 Year Industry Product CAGR 2005-2010
Cosmetic and Toiletry Preparation Manufacturing	-4.6%	7.3%
Medical & Surgical Equipment Manufacturing	10.9%	7.7%
Medicinal and Pharmaceutical Product Manufacturing	8.4%	7.6%
Pharmaceutical & Toiletry Wholesaling in Australia	12.0%	6.2%
Pharmaceutical, Cosmetic & Toiletry Retailing in Australia	9.2%	7.3%
Scientific Research	4.4%	5.7%
Australian Pharmaceutical Industry	7.9%	6.9%
GDP Australia	3.6%	3.4%

<sup>3</sup> IBISWorld Reports

<sup>4</sup> IBISWorld Reports

## Change in Gross Product since the 2004 DSDTI Industry Report

For reference, Table 2 illustrates the increase in Gross Product across each ANZSIC segment since the previous scoping study (which used 2003 data). The Gross Product rose across each ANZSIC code by a greater amount than the 6.4 percent rise in GDP over the same period. The total Pharmaceutical Industry Gross Product rose by 16.8 percent.

Table 2: Pharmaceutical Industry Gross Product snapshot 2003 vs. 2005 (\$m)<sup>5</sup>

ANZSIC Industry Segment	Gross Product 2005 (\$m)	Increase since the previous report (2003 data)
Cosmetic and Toiletry Preparation Manufacturing	\$190	8.5%
Medical & Surgical Equipment Manufacturing	\$372	18.8%
Medicinal and Pharmaceutical Product Manufacturing	\$2,455	15.1%
Pharmaceutical & Toiletry Wholesaling in Australia	\$2,075	19.2%
Pharmaceutical, Cosmetic & Toiletry Retailing in Australia	\$2,600	20.3%
Scientific Research	\$1,964	12.4%
Total Industry Gross Product	\$9,656	16.8%
Gross Domestic Product	\$830,399	6.4%

## Pharmaceutical Manufacturing Industry Contribution by GSP

Figure 4 shows the Gross State Product across the three manufacturing segments. The data was sourced from the ABS Manufacturing Survey which covers only the three Australian states shown. This same data was reproduced in the previous DSDTI Industry Report and has not been updated by the ABS since 1999/2000. The Gross Product for each state across the three segments was NSW: \$1.09 billion; Victoria \$751 million; and Queensland: \$115 million.

### Contribution to Queensland Gross State Product (GSP)

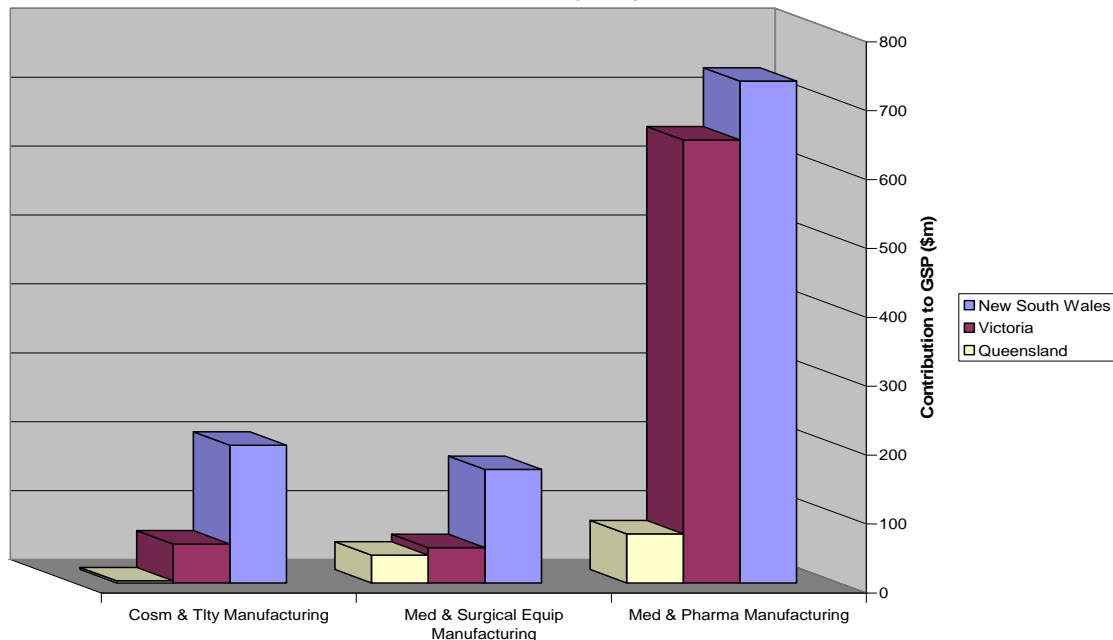


Figure 4; Pharmaceutical Manufacturing Industry Contribution to GSP by ANZSIC Industry Segment by State (\$m), 1999/2000<sup>6</sup>

<sup>5</sup> IBISWorld Reports

<sup>6</sup> ABS Manufacturing Survey 1999/2000

## Industry Revenue

### Industry Revenue by ANZSIC Code

Pharmaceutical industry revenue in 2005 was recorded as \$36.65 billion. Figure 5 shows that the wholesale and retail components of the pharmaceutical industry generated 66 percent (\$24.5 billion) of total industry revenue followed by the manufacturing components at 25 percent (\$8.8 billion) and Scientific Research at 9 percent (\$3.4 billion).

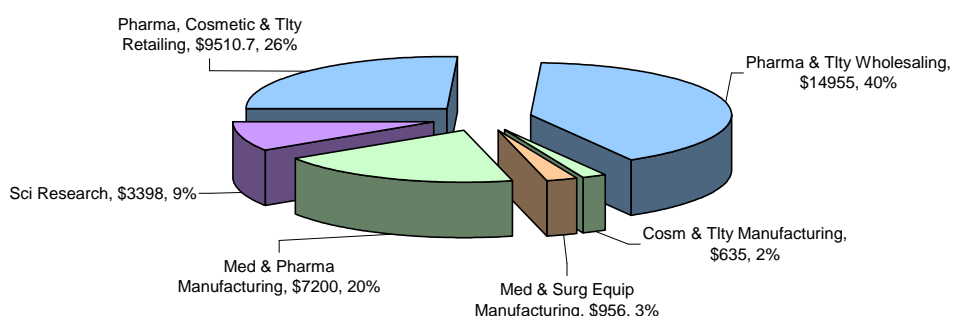


Figure 5; Pharmaceutical Industry Revenue by ANZSIC Industry Segment (\$m) 2005<sup>7</sup>

Table 3 shows the historical and forecast growth for revenue across the six ANZSIC segments and the industry as a whole. The Cosmetic and Toiletry Preparation Manufacturing segment showed negative annual growth (-5.2 percent) over the last eight years. Scientific Research showed annual growth of 4.6 percent. The remaining four segments showed annual growth rates ranging from 7.4 percent to 11.0 percent compared to GDP growth of 3.6 percent over the same period.

Table 3: Historical & Forecast Industry Revenue Compound Annual Growth Rate by ANZSIC Industry Segment 1995-2010<sup>8</sup>

ANZSIC Industry Segment	Historical 8 Year Industry Revenue - CAGR 1995-2005	Forecast 5 Year Industry Revenue - CAGR 2005-2010
Cosmetic and Toiletry Preparation Manufacturing	-5.2%	6.8%
Medical and Surgical Equipment Manufacturing	9.3%	6.0%
Medicinal and Pharmaceutical Product Manufacturing	7.4%	6.9%
Pharmaceutical and Toiletry Wholesaling	11.0%	6.3%
Pharmaceutical, Cosmetic and Toiletry Retailing	9.3%	8.5%
Scientific Research	4.6%	5.9%
Australian Pharmaceutical Industry	8.5%	7.0%
GDP Australia	3.6%	3.4%

<sup>7</sup> IBISWorld Reports

<sup>8</sup> IBISWorld Reports

## Industry Revenue by State (\$m) 1999/2000

Figure 6 shows the revenue across the three manufacturing segments for NSW, Victoria and Queensland. The data was sourced from the ABS Manufacturing Survey which covers only the three Australian states shown. This same data was reproduced in the previous DSDTI Industry Report and has not been updated by the ABS since 1999/2000. NSW dominated all segments at that time. The Total Revenue for each state across the three segments was NSW: \$3.84 billion; Victoria \$2.34 billion; and Queensland: \$376 million.

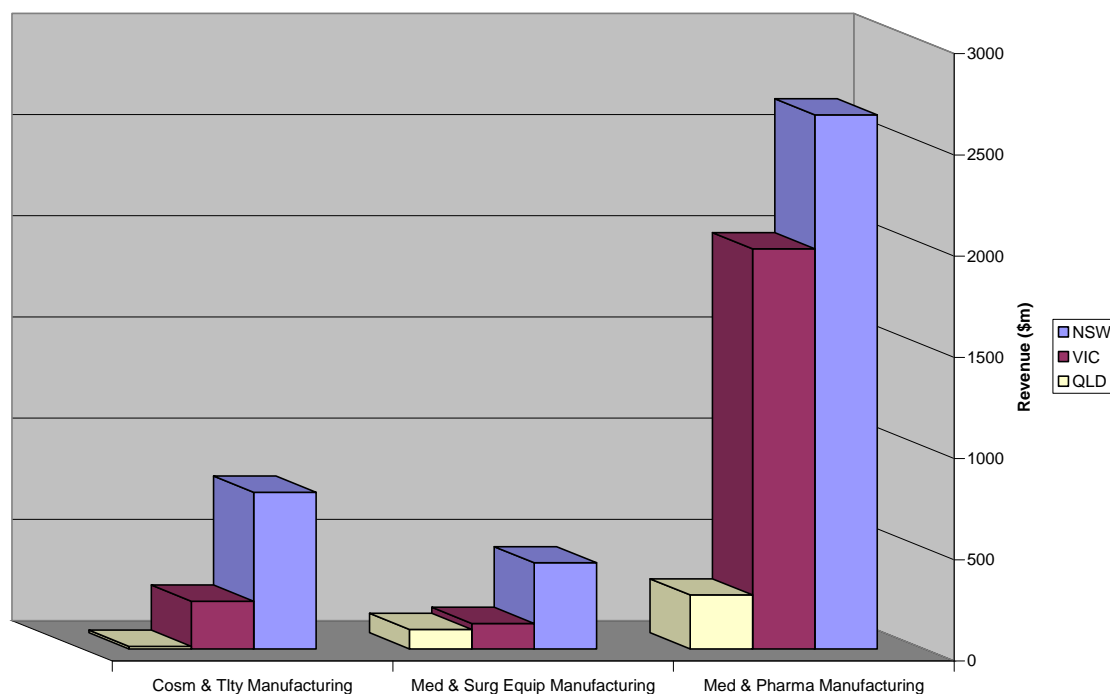


Figure 6; Pharmaceutical Industry Revenue by ANZSIC Industry Segment by State (\$m) 1999/2000<sup>9</sup>

## Contribution to Employment

### Australian Pharmaceutical Industry Employment 2005

Figure 7 shows Pharmaceutical Industry Employment in 2005 for each ANZSIC code. Total industry employment across the six codes was almost 126,000 people. The Retailing segment which includes thousands of retail pharmacies is the largest employer in the industry (62,150 people). The manufacturing segments collectively employed 23,556 (or 19 percent of the total).

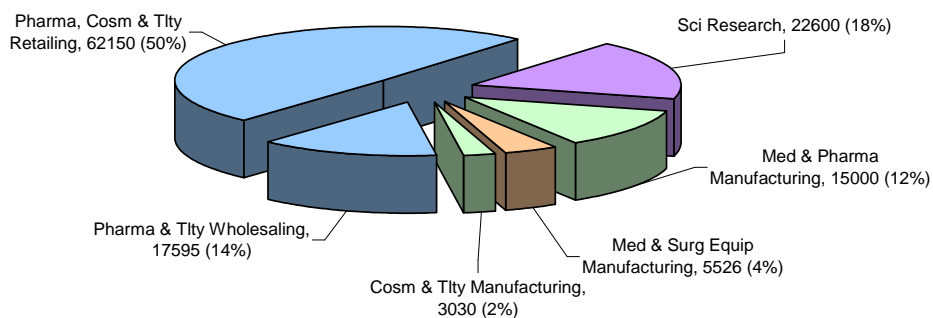


Figure 7; Australian Pharmaceutical Industry Employment by ANZSIC Industry Segment, 2005<sup>10</sup>

<sup>9</sup> ABS Manufacturing Survey 1999/2000

## Australian Pharmaceutical Industry Employment Trend Data

The historical data for employment showed that Retailing and Wholesaling represented the highest growth segments at 5.2 percent and 3.3 percent per annum respectively compared to a rate of 3.2 percent overall for the industry (Table 4). Cosmetic and Toiletry Preparation Manufacturing employment fell by over 2.7 percent per year over the period.

Table 4: Historical Pharmaceutical Employment Compound Annual Growth Rate (CAGR) by ANZSIC Industry Segment 1997-2005<sup>11</sup>

ANZSIC Industry Segment	Historical Eight Year Employment Trend – CAGR 1997-2005
Cosmetic and Toiletry Preparation Manufacturing	-2.7%
Medical and Surgical Equipment Manufacturing	2.5%
Medicinal and Pharmaceutical Product Manufacturing	3.0%
Pharmaceutical and Toiletry Wholesaling	3.3%
Pharmaceutical, Cosmetic and Toiletry Retailing	5.2%
Scientific Research	0.04%
Australian Pharmaceutical Industry	3.2%

## Australian Pharmaceutical Industry Establishments

### Pharmaceutical Industry Establishments 2005

Figure 8 shows that over 70 percent of all Australian pharmaceutical industry establishments fell within the Pharmaceutical, Cosmetics & Toiletry Retailing segment in 2005.

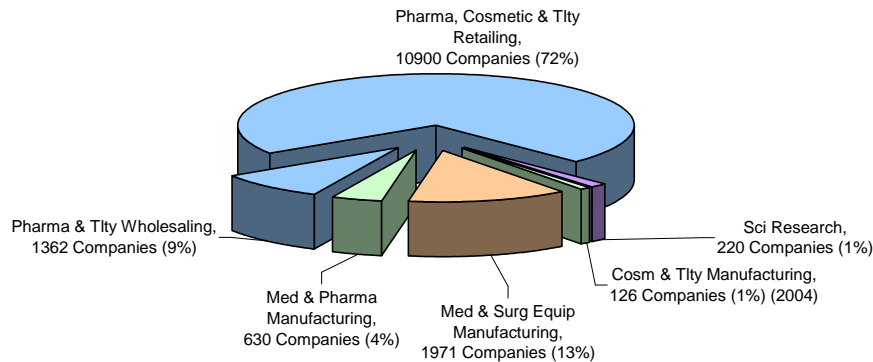


Figure 8; Australian Pharmaceutical Establishments by ANZSIC Industry Segment, 2005<sup>12</sup>

<sup>10</sup> IBISWorld Reports

<sup>11</sup> IBISWorld Reports

<sup>12</sup> IBISWorld Reports; Data for the year 2005 was unavailable for the Cosmetic and Toiletry Manufacturing Sector, 2004 data for this sector was used in the Figure.

Data across all states for 2005 (Figure 9) showed that ~19 percent (2,828) of all pharmaceutical industry establishments were located in Queensland in 2004/05. NSW and Victoria collectively held 60 percent of all establishments.

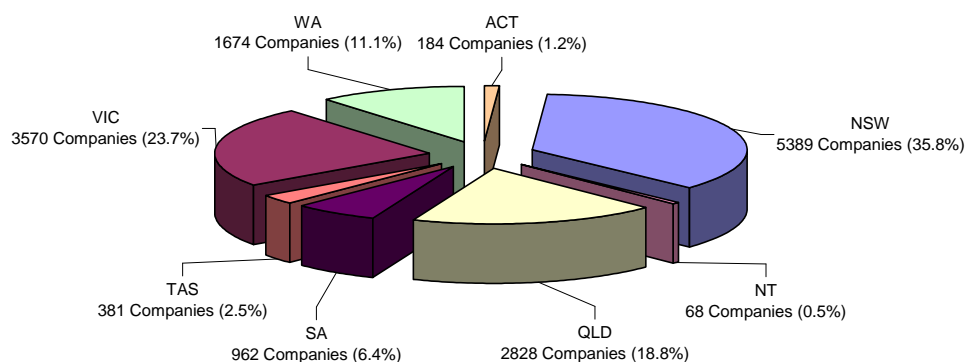


Figure 9; Number of Pharmaceutical Industry Establishments by State 2004/2005<sup>13</sup>

The ANZSIC segment specific data for the top four states (Figure 10) showed that across all segments<sup>14</sup> NSW had the highest number of establishments followed by Victoria, Queensland and Western Australia.

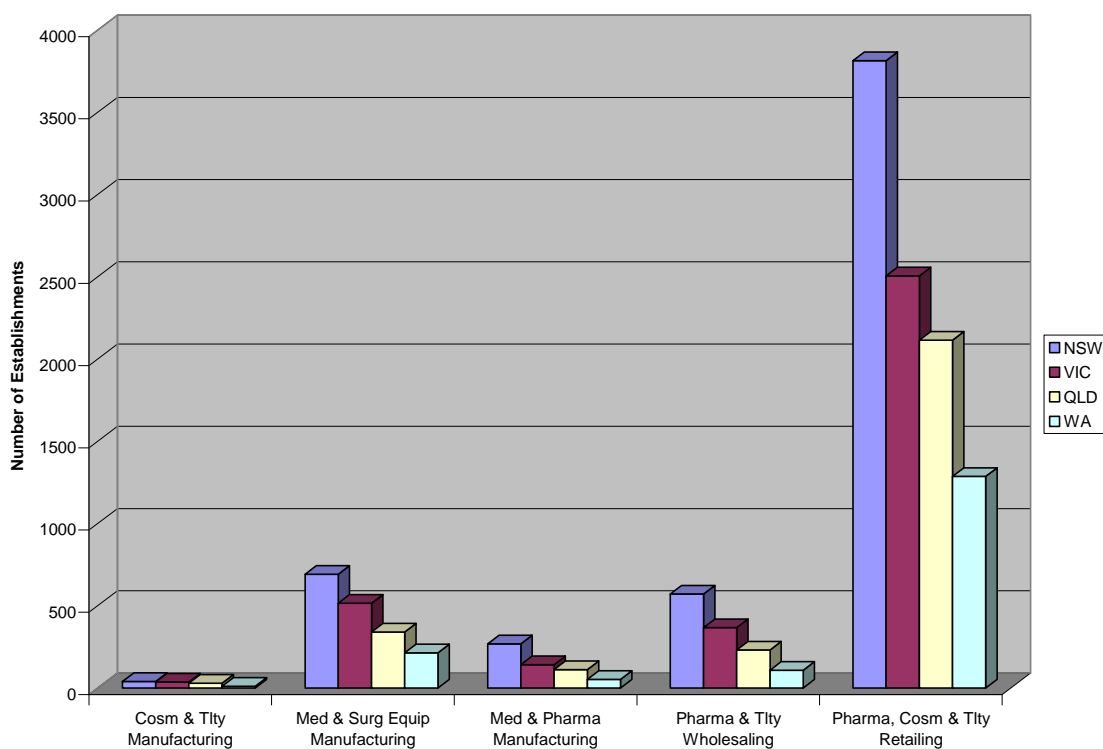


Figure 10; Pharmaceutical Industry Establishments by ANZSIC Industry Segment by State 2004/2005<sup>15</sup>

<sup>13</sup> IBISWorld Reports

<sup>14</sup> Note: State based data was not available for the Scientific Research segment

<sup>15</sup> IBISWorld Reports

## Pharmaceutical Industry Establishments Trend Data

While some data was not available from IBISWorld there was significant growth in the Medicinal and Pharmaceutical Product Manufacturing and the Medical and Surgical Equipment Manufacturing segments with 16 percent and 11.5 percent growth per annum respectively (see Table 5).

Table 5: Historical Pharmaceutical Establishment Compound Annual Growth Rate (CAGR) by ANZSIC Industry Segment 1997-2005<sup>16</sup>

ANZSIC Industry Segment	Historical Eight Year Trend on Number of Establishments – CAGR 1997-2005
Cosmetic and Toiletry Preparation Manufacturing	2.5%*
Medical and Surgical Equipment Manufacturing	11.5%
Medicinal and Pharmaceutical Product Manufacturing	16.0%
Pharmaceutical and Toiletry Wholesaling	-0.9%
Pharmaceutical, Cosmetic and Toiletry Retailing	4.8%**
Scientific Research	0.6%

\* Establishment data for the Cosmetic and Toiletry Preparation Manufacturing segment for the year 2005 was unavailable. 2004 Establishment data was used to calculate a seven-year CAGR.

\*\* Establishment data for the Pharmaceutical, Cosmetic and Toiletry Retailing segment for the year 1997 was unavailable. 1999 Establishment data was used to calculate a six-year CAGR.

## Average Revenue per Establishment 2004/2005

Aside from the Scientific Research segment which includes activities outside the Pharmaceutical industry, companies within the Medicinal and Pharmaceutical Product Manufacturing segment and the Pharmaceutical and Toiletry Wholesaling segments generated the greatest revenue per establishment of all the industry segments at \$11.4 million and \$11 million respectively (see Figure 11). With a high number of establishments the retailing segment average revenue was \$870K.

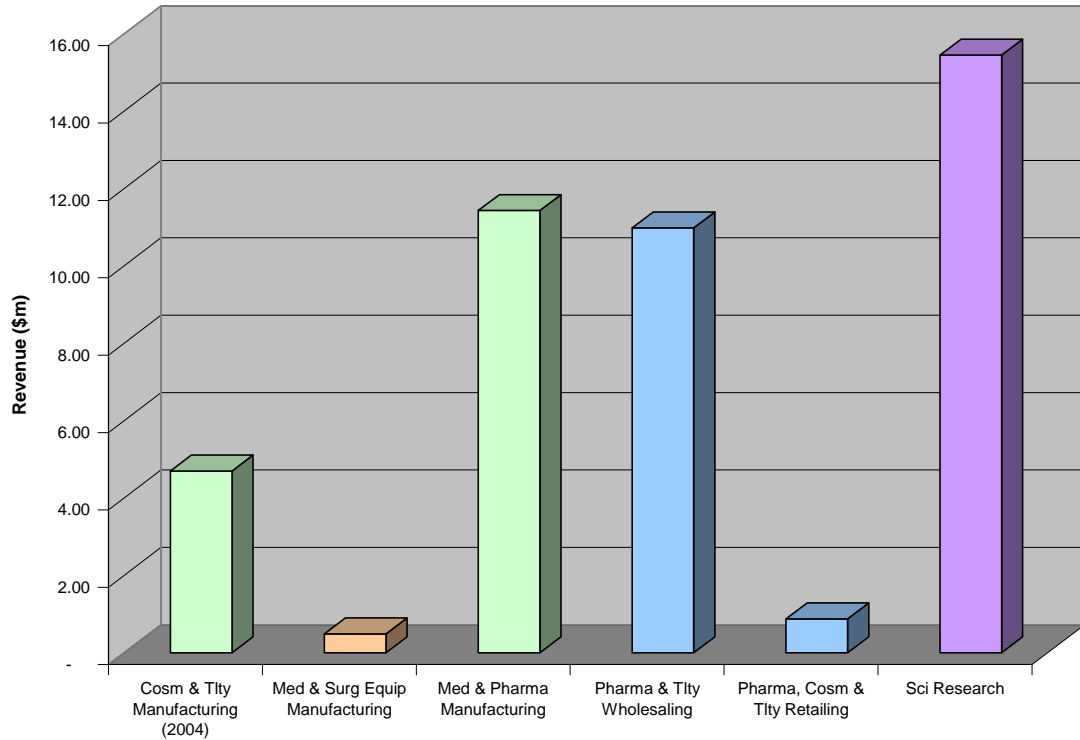


Figure 11; Average revenue per establishment (\$m) 2004/2005<sup>17, 18</sup>

<sup>16</sup> IBISWorld Reports

<sup>17</sup> IBISWorld Reports

## Exports

Note: Re-Exports were excluded from the relevant charts in this section. The ABS defines re-exports as 'goods originally imported, which are exported in either the same condition in which they were imported, or after undergoing repair or minor alterations which leave them essentially unchanged'. Re-exports are not considered to be Australian production or manufacture. The value of Australian Pharmaceutical Manufacturing Re-Exports was \$1.79 billion in 2005.

### Total Australian Pharmaceutical Exports

Figure 12 shows that exports from the Medicinal and Pharmaceutical Product Manufacturing segment far exceeded the other two manufacturing segments in 2005 with \$2.46 billion out of a total \$3.55 billion.

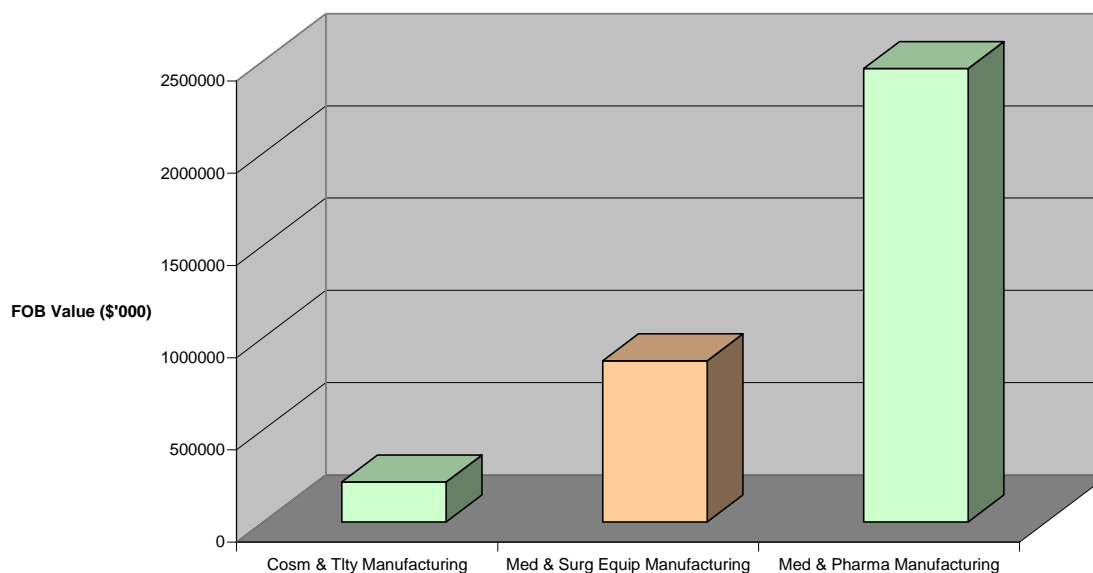


Figure 12; Total Australian Pharmaceutical Manufacturing Exports by ANZSIC Industry Segment (\$'000) 2005 (Total \$3.55 Billion)<sup>19</sup>

### Queensland versus Australian Pharmaceutical Exports

The Australian export data is also presented in a Table 6 against the percentage of exports attributed to Queensland. Figure 13 shows that Queensland exports as a proportion of total Australian pharmaceutical exports have risen over the last decade across each of the three manufacturing categories:

- Cosmetic and Toiletry Preparation segment rose from 3.0 percent to 6.7 percent.
- Medical and Surgical Equipment segment rose from 5.7 percent to 8.6 percent.
- Medicinal and Pharmaceutical Product segment rose from 2.9 percent to 5.2 percent.

Table 6: Australian and Queensland Pharmaceutical Manufacturing Exports by ANZSIC Industry Segment (\$'000) 2005

ANZSIC Industry Segment	Value of Australian Exports	Proportion of Exports Attributed to Queensland
Cosmetic and Toiletry Preparation Manufacturing	\$216.4 million	\$14 million (6.7%)
Medical and Surgical Equipment Manufacturing	\$874.2 million	\$76 million (8.6%)
Medicinal and Pharmaceutical Product Manufacturing	\$2,457 million	\$129 million (5.2%)
Total	\$3,548 million	\$219 million (6.2%)

<sup>18</sup> 2005 data is unavailable for the Cosmetic and Toiletry Manufacturing sector. 2004 data has been used in Figure 12 for this sector.

<sup>19</sup> Australian Bureau of Statistics International Trade Exports - Exports by 4 digit ANZSIC by State of Origin by Country of Destination by Quantity and Value (FOB) 1995-2005

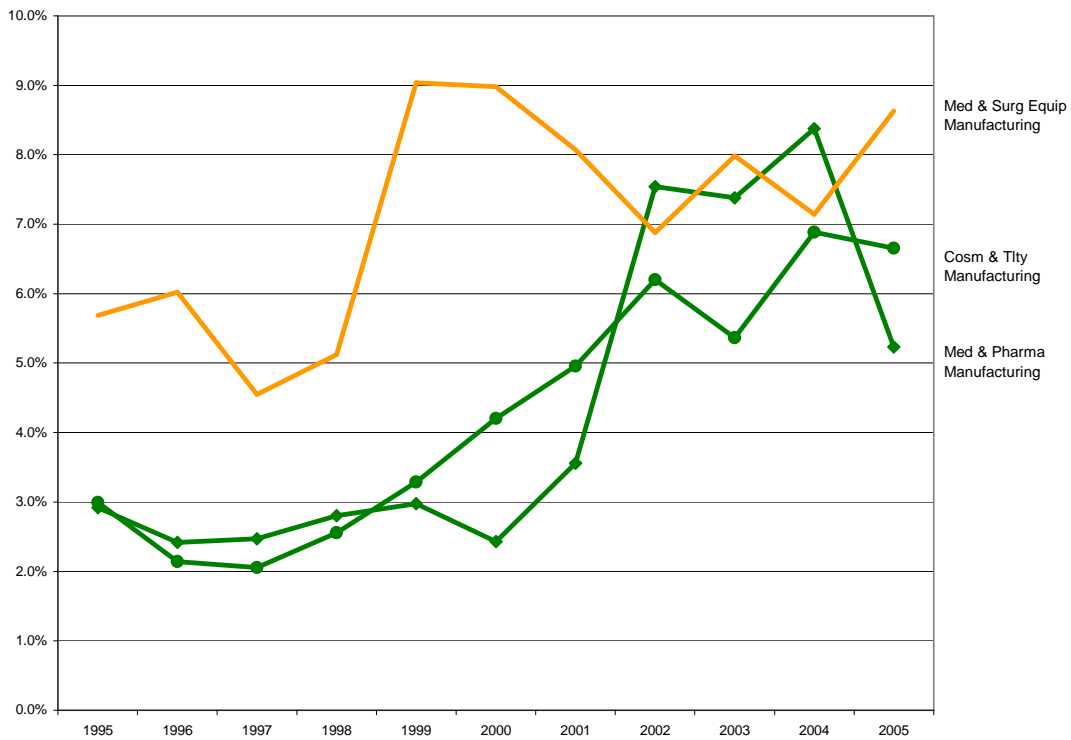


Figure 13; Queensland Pharmaceutical Manufacturing Exports as a Proportion of Total Australian Pharmaceutical Manufacturing Exports by ANZSIC Industry Segment, 1995-2005<sup>20</sup>

### Queensland Pharmaceutical Industry Export Trend

Figure 14 plots the trend data for exports across the three Manufacturing segments in Queensland. Since 1995 the growth in the combined exports across all segments has been strong at 19.6 percent per year compared to 13.0 percent overall for Australia (see Table 7). The year 2005 represented an increase of 60 percent in exports from the Medical and Surgical Equipment segment and a 22 percent decrease for the Medicinal and Pharmaceutical Product segment.

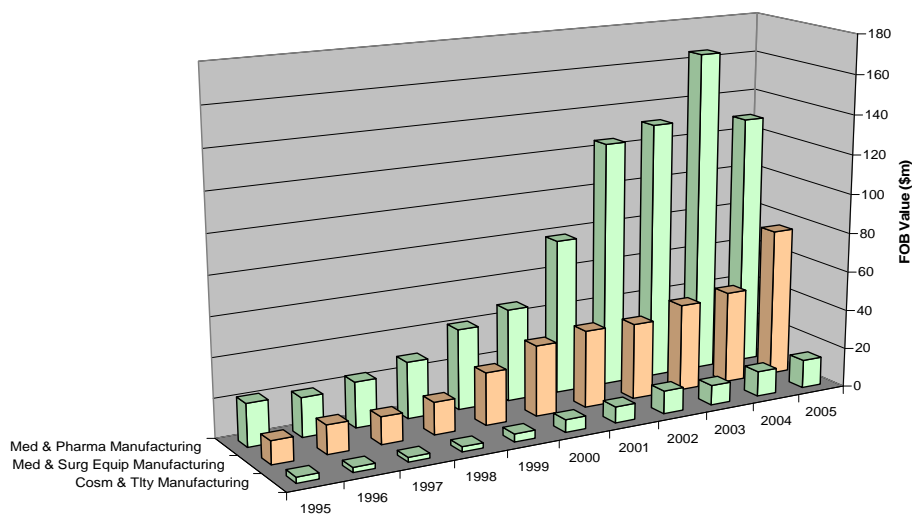


Figure 14; Queensland Pharmaceutical Manufacturing Exports by ANZSIC Industry Segment (\$m) 1995-2005<sup>21</sup>

<sup>20</sup> Australian Bureau of Statistics International Trade Exports - Exports by 4 digit ANZSIC by State of Origin by Country of Destination by Quantity and Value (FOB) 1995-2005

Table 7: Queensland and Australian Pharmaceutical Manufacturing Exports Compound Annual Growth 1995-2005<sup>22</sup>

ANZSIC Industry Segment	Historical 10 year Pharmaceutical Manufacturing Exports FOB Value CAGR 1995-2005
Cosmetic and Toiletry Preparation Manufacturing	17.0%
Medical and Surgical Equipment Manufacturing	20.4%
Medicinal and Pharmaceutical Product Manufacturing	19.5%
Total Queensland Pharmaceutical Manufacturing	19.6%
Total Australian Pharmaceutical Manufacturing	13.0%

## Pharmaceutical Exports by State

Note: Given the integrated nature of Australia's distribution systems and the multi-state operations of many of the pharmaceutical companies, a state breakdown of imports and exports may be of little value for drawing conclusions on state-based industry activity. For example, goods produced in Queensland may be recorded as an export from Victoria if those goods were first transported internally. For this reason, no commentary is provided on this data and any reference to trade by state should be viewed with that significant qualification in mind.

Figure 15 shows that NSW leads the country in exports with \$2 billion (or 58 percent) of the total \$3.55 billion.

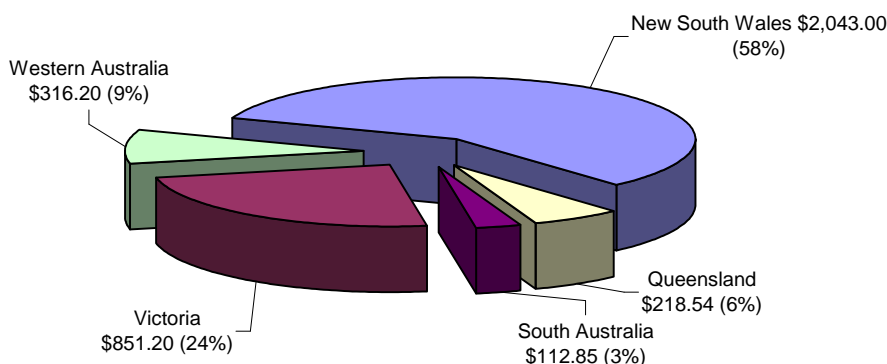


Figure 15 Australian Pharmaceutical Manufacturing exports by State (\$m) 2005<sup>23</sup>

Medicinal and Pharmaceutical Product Manufacturing is the largest export segment across all states (see Table 8). On a state by state basis, Queensland exports are relatively strong in the Medical and Surgical Equipment Manufacturing segment.

Table 8: Australian Pharmaceutical Manufacturing Exports by ANZSIC Industry Segment by State (\$m) 2005<sup>24</sup>

ANZSIC Industry Segment	NSW	VIC	WA	QLD	SA
Cosmetic and Toiletry Preparation Manufacturing	\$129.7	\$48.5	\$2.5	\$14.4	\$21.1
Medical and Surgical Equipment Manufacturing	\$664.6	\$90.3	\$7.0	\$75.5	\$36.0
Medicinal and Pharmaceutical Product Manufacturing	\$1,248.7	\$712.4	\$306.6	\$128.7	\$55.8
Total (\$3.55 billion)	\$2,043.0	\$851.2	\$316.2	\$218.5	\$112.9

<sup>21</sup> Australian Bureau of Statistics International Trade Exports - Exports by 4 digit ANZSIC by State of Origin by Country of Destination by Quantity and Value (FOB) 1995-2005

<sup>22</sup> Australian Bureau of Statistics International Trade Exports - Exports by 4 digit ANZSIC by State of Origin by Country of Destination by Quantity and Value (FOB) 1995-2005

<sup>23</sup> Australian Bureau of Statistics International Trade Exports - Exports by 4 digit ANZSIC by State of Origin by Country of Destination by Quantity and Value (FOB) 1995-2005

<sup>24</sup> Australian Bureau of Statistics International Trade Exports - Exports by 4 digit ANZSIC by State of Origin by Country of Destination by Quantity and Value (FOB) 1995-2005

## Queensland Top Ten Export Destinations

The USA, Ireland, New Zealand, Canada and Denmark were the top five export destinations by dollar amount (Figure 16). Across the top ten the greatest annual growth rate in export volumes from 2000 to 2005 were recorded for New Zealand (152 percent), Sweden (58 percent), Denmark (46 percent), Ireland (39 percent) and India (37 percent).

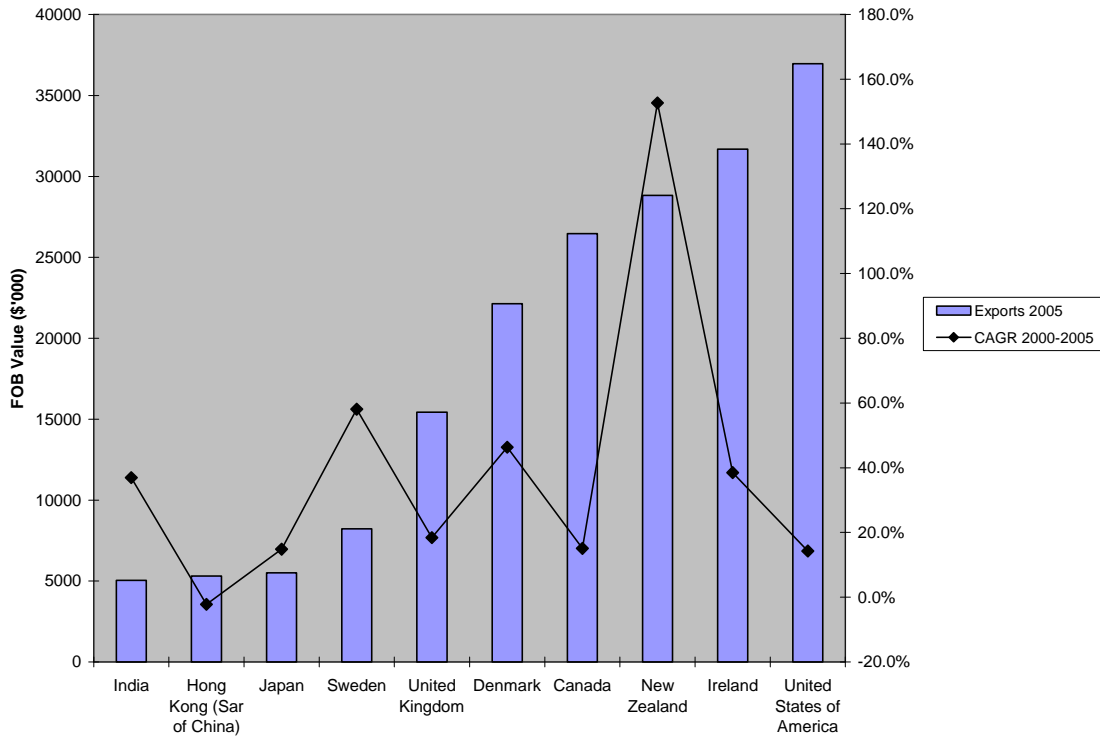


Figure 16; Queensland Top Ten Countries of Destination for Pharmaceutical Manufacturing Exports FOB Value (\$'000) 2005 and Five Year Historical CAGR<sup>25</sup>

<sup>25</sup> Australian Bureau of Statistics International Trade Exports - Exports by 4 digit ANZSIC by State of Origin by Country of Destination by Quantity and Value (FOB) 1995-2005

## Imports

### Total Australian Pharmaceutical Imports

Figure 17 shows that imports from the Medicinal and Pharmaceutical Product Manufacturing segment far exceeded the other two manufacturing segments in 2005 with \$7.66 billion (or 71 percent out of a total \$10.79 billion).

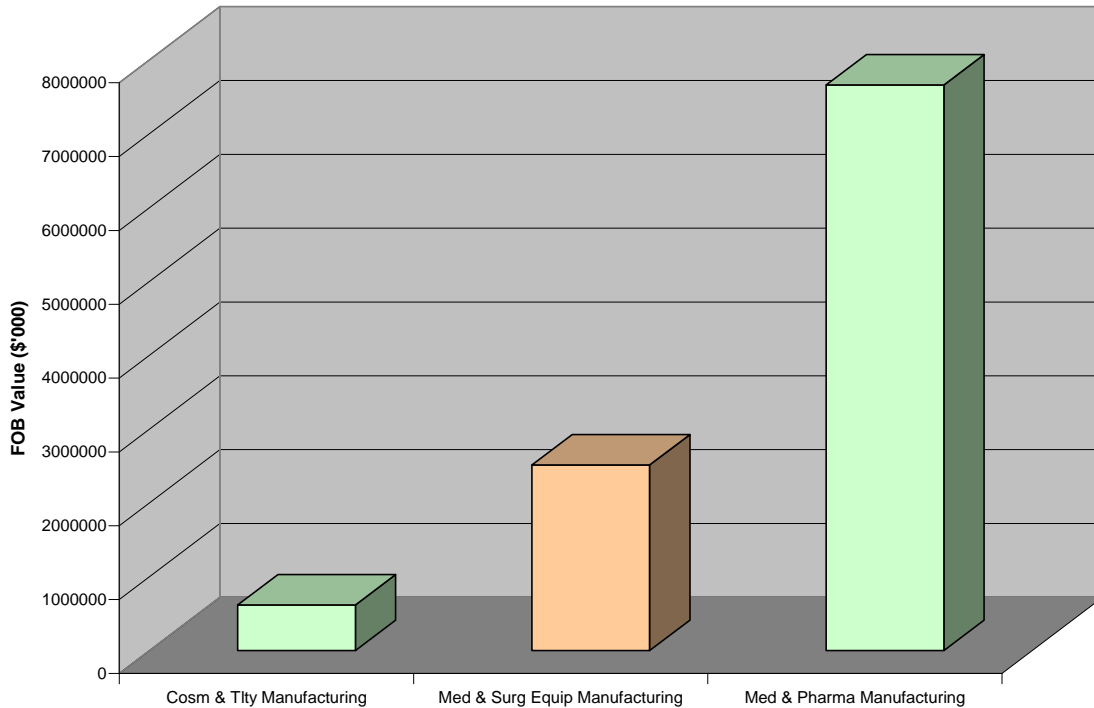


Figure 17; Australian Pharmaceutical Manufacturing Imports by ANZSIC Industry Segment (\$'000) 2005, (Total \$10.79 Billion)

### Queensland versus Australian Pharmaceutical Imports

The Australian import data is also presented in a Table 9 against the percentage of imports attributed to Queensland. Figure 18 shows that Queensland imports as a proportion of total Australian pharmaceutical exports have risen over the last decade across each of the three manufacturing categories:

- Cosmetic and Toiletry Preparation segment rose from 1.6 percent in 1995 to 5.2 percent.
- Medical and Surgical Equipment segment rose from 3.1 percent in 1995 to 5.7 percent.
- Medicinal and Pharmaceutical Product segment remained stable since 1995 at 1.7 percent.

Table 9: Australian and Queensland Pharmaceutical Manufacturing Imports by ANZSIC Industry Segment (\$'000) 2005

ANZSIC Industry Segment	Value of Australian Imports	Proportion of Imports Attributed to Queensland
Cosmetic and Toiletry Preparation Manufacturing	\$619 million	\$32 million (5.2%)
Medical and Surgical Equipment Manufacturing	\$2.51 billion	\$143 million (5.7%)
Medicinal and Pharmaceutical Product Manufacturing	\$7.66 billion	\$132 million (1.7%)
Total	\$10.79 billion	\$307 million (2.8%)

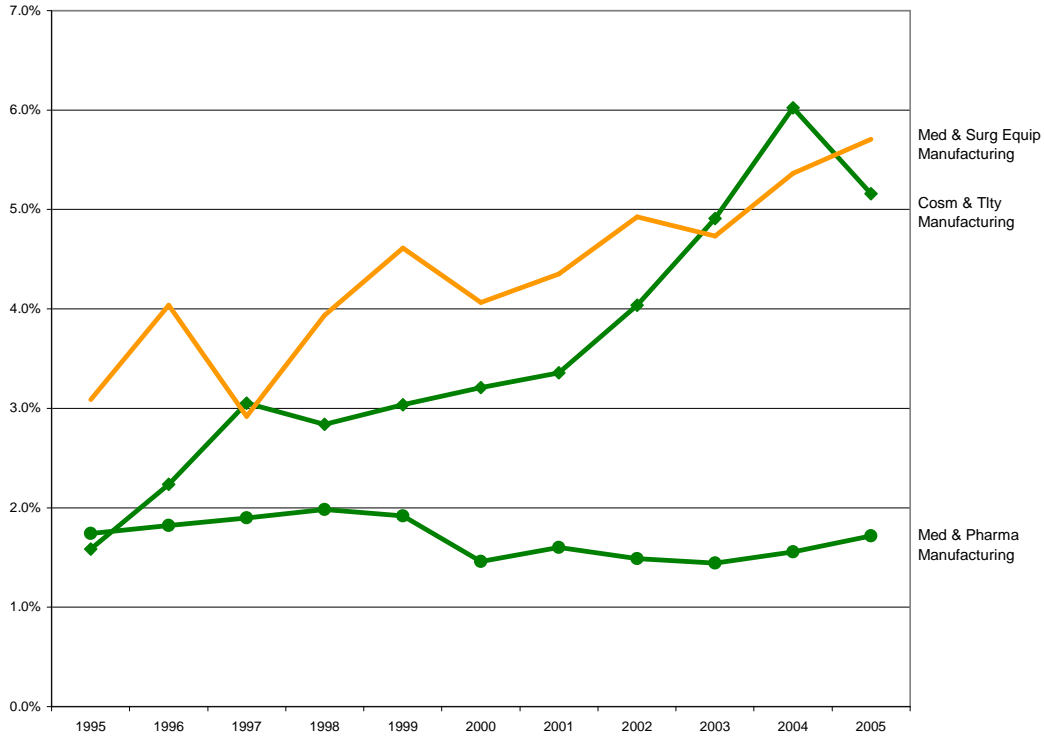


Figure 18; Queensland Pharmaceutical Manufacturing Imports as a Proportion of Total Australian Pharmaceutical Manufacturing Imports by ANZSIC Industry Segment, 1995-2005

### Queensland Pharmaceutical Industry Import Trend

Figure 19 plots the trend data for imports across the three Manufacturing segments in Queensland. Since 1995 the growth in the combined exports across all segments has been 17.1 percent per year compared to 13.7 percent overall for Australia (see Table 10). The year 2005 represented an increase over 2004 of 20 percent in imports in the Medical and Surgical Equipment segment and 21 percent in the Medicinal and Pharmaceutical Product segment.

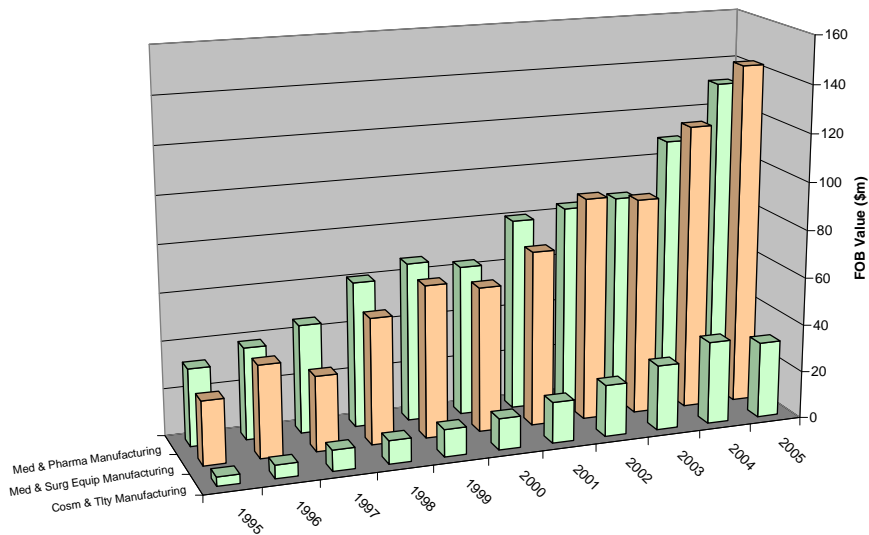


Figure 19; Queensland Pharmaceutical Manufacturing Imports by ANZSIC Industry Segment (\$m) 1995-2005

Table 10: Queensland and Australian Pharmaceutical Manufacturing Exports Compound Annual Growth 1995-2005<sup>26</sup>

ANZSIC Industry Segment	Historical 10 year Pharmaceutical Manufacturing Imports FOB Value CAGR 1995-2005
Cosmetic and Toiletry Preparation Manufacturing	23.6%
Medical and Surgical Equipment Manufacturing	18.3%
Medicinal and Pharmaceutical Product Manufacturing	15.0%
Total Queensland Pharmaceutical Manufacturing Imports	17.1%
Total Australian Pharmaceutical Manufacturing Imports	13.7%

## Pharmaceutical Imports by State

Note: Given the integrated nature of Australia's distribution systems and the multi-state operations of many of the pharmaceutical companies, a state breakdown of imports and exports may be of limited value for drawing conclusions on state-based industry activity. For example, goods produced in Queensland may be recorded as an export from another state if those goods were first transported internally. For this reason, no commentary is provided on this data and any reference to trade by state should be viewed with that qualification in mind.

Figure 20 shows that the majority of pharmaceutical industry goods are imported through NSW with ~\$8 billion (or 74 percent) of the total \$10.79 billion.

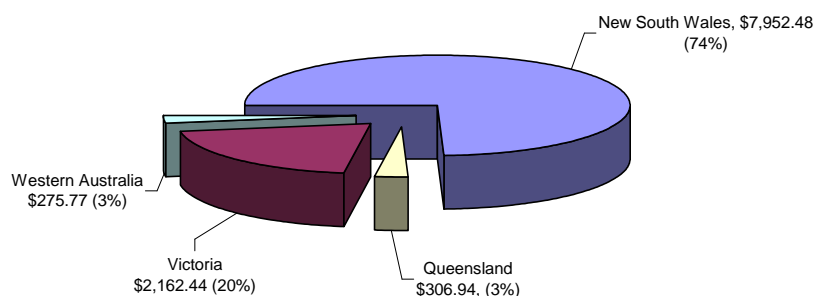


Figure 20; Australian Pharmaceutical Manufacturing Imports by State (\$m) 2005

Medicinal and Pharmaceutical Product Manufacturing is the largest import segment across all states. Relative to NSW and Victoria, Queensland is not a significant importer of Pharmaceutical Products (see Table 11). The state imports 40 percent more than it exports (see illustration in Figure 21) compared to ~300 percent for NSW and ~150 percent for Victoria.

Table 11: Australian Pharmaceutical Manufacturing Imports by ANZSIC Industry Segment by State (\$m) 2005

ANZSIC Industry Segment	NSW	VIC	QLD	WA	SA
Cosmetic and Toiletry Preparation Manufacturing	\$406.4	\$170.1	\$31.9	\$4.6	\$6.0
Medical and Surgical Equipment Manufacturing	\$1,823.4	\$489.0	\$143.4	\$27.7	\$23.4
Medicinal and Pharmaceutical Product Manufacturing	\$5,722.7	\$1,503.4	\$131.6	\$243.4	\$23.7
Total	\$7,952.5	\$2,162.4	\$306.9	\$275.8	\$53.1

<sup>26</sup> Australian Bureau of Statistics International Trade Exports - Exports by 4 digit ANZSIC by State of Origin by Country of Destination by Quantity and Value (FOB) 1995-2005

### Queensland Pharmaceutical Imports vs. Exports

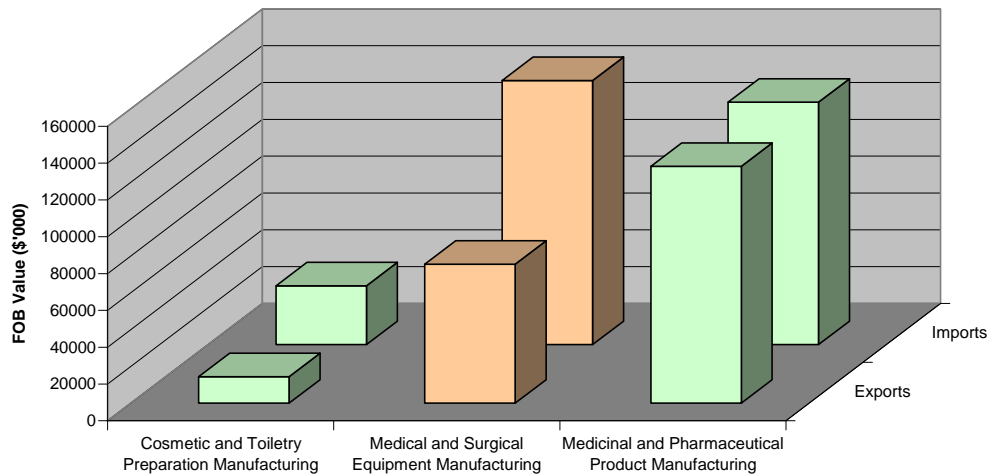


Figure 21; Queensland Pharmaceutical Manufacturing Imports Vs Exports by ANZSIC Industry Segment (\$'000) 2005

### Queensland Top Ten Import Sources

Figure 22 shows that the USA, Denmark, France, Canada and Singapore were the top five import destinations by dollar amount. Across the top ten, the greatest annual growth rate in import volumes from 2000 to 2005 were recorded for Canada (94 percent), Singapore (86 percent) and Denmark (32 percent).

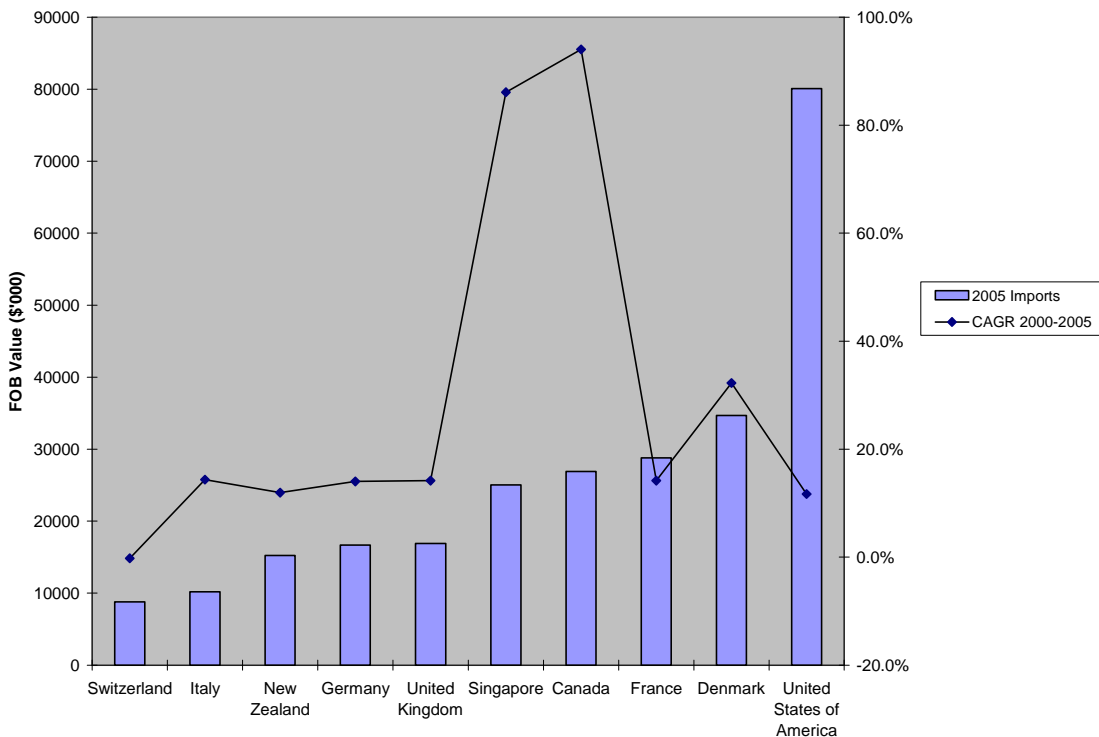


Figure 22; Queensland Top Ten Countries of Origin for Pharmaceutical Manufacturing Imports 2005 and five Year Historical CAGR

## Results of Industry Survey

### Spread of Companies across the Industry Sub-Sectors [56 respondents]

Out of 40 respondents who identified themselves as operating in a single sub sector, 19 were in the CAM sector, 15 in pharmaceuticals and six in medical devices (see Figure 23). Five respondents indicated that they operated across more than one of the three sub sectors shown below. A further 11 companies indicated that they were involved in a range of alternative activities including: education; laboratory services; biodiscovery; poisons; veterinary pharmaceuticals; packaging and/or cosmaceuticals. Six respondents (11 percent) were ASX listed companies.

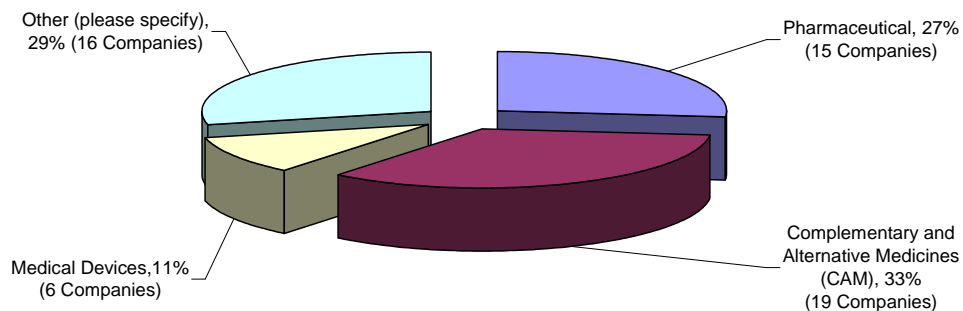


Figure 23: In which industry sub sector does your company operate?

### Year of Inception [54 respondents]

Eighteen companies (33 percent of respondents) commenced operations since 2000. Twenty-nine (54 percent) companies were formed between 1980 and 2000 and eight companies (15 percent) had been operating for at least 26 years.

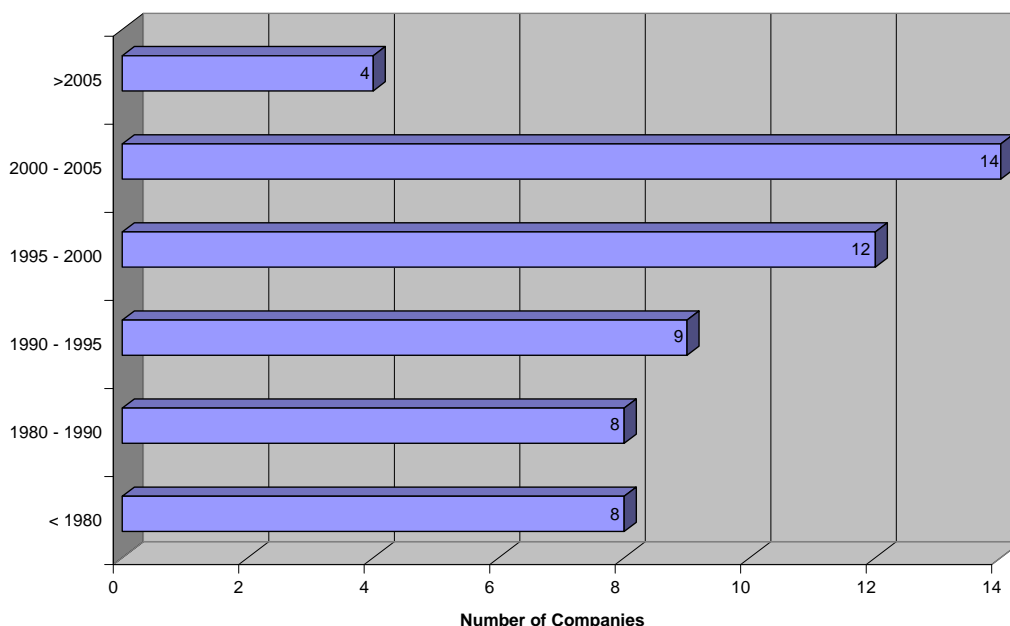


Figure 24: In what year did your company commence operations?

## Value Chain Activities [56 respondents]

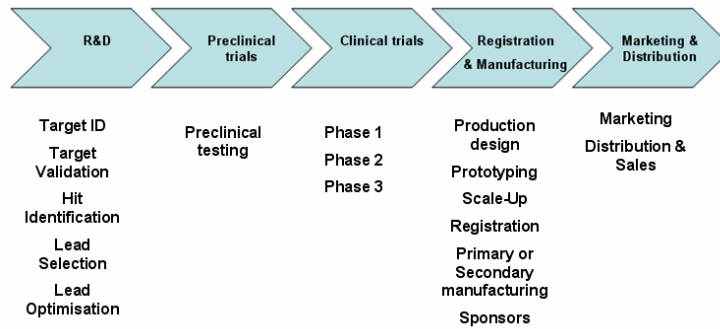


Figure 25: Generic Pharmaceutical Industry Value Chain

Most participants were operating at the latter end of the value chain (see Figure 25) with almost 90 percent of respondents involved in Registration & Manufacturing and over 60 percent in Marketing & Distribution. Half of all respondents undertook R&D and approximately one third of respondents had some involvement in preclinical or clinical trials.

Value Chain Segment	Proportion of Respondents Operating in the Particular Value Chain Element
R&D	54%
Pre-Clinical Trials	32%
Clinical Trials	34%
Registration & Manufacturing	89%
Marketing & Distribution	61%

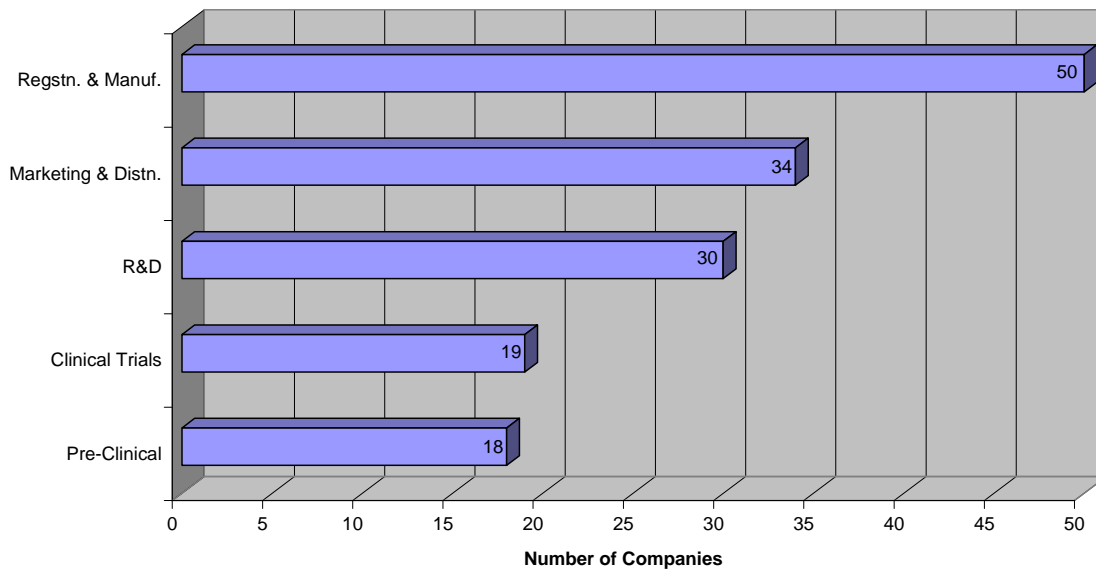


Figure 26: Referring to the value chain diagram across which of the 5 components does your organisation operate? (Nominate one or more as appropriate)

**Turnover [51 respondents]**

Just under half of all respondents had a turnover of less than \$1 million in the year to 30 June 2006. The largest grouping was 16 companies (31 percent) with revenues between \$1 million and \$5 million. Seven companies had revenues greater than \$20 million per annum.

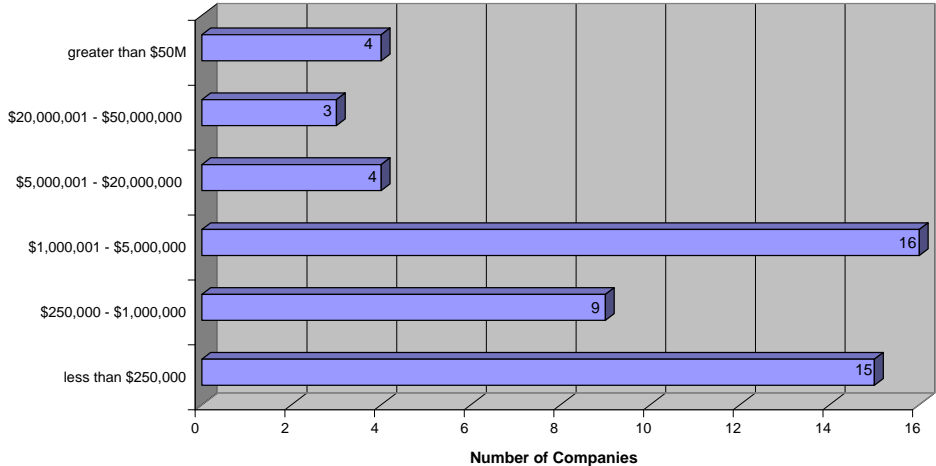


Figure 27: What was your total turnover (in AUD) for the financial year ending 30 June 2006?

**Revenue Growth [51 respondents]**

Over a quarter of the respondents reported revenue growth of greater than 30 percent in the last year. About the same number reported growth of less than 5 percent.

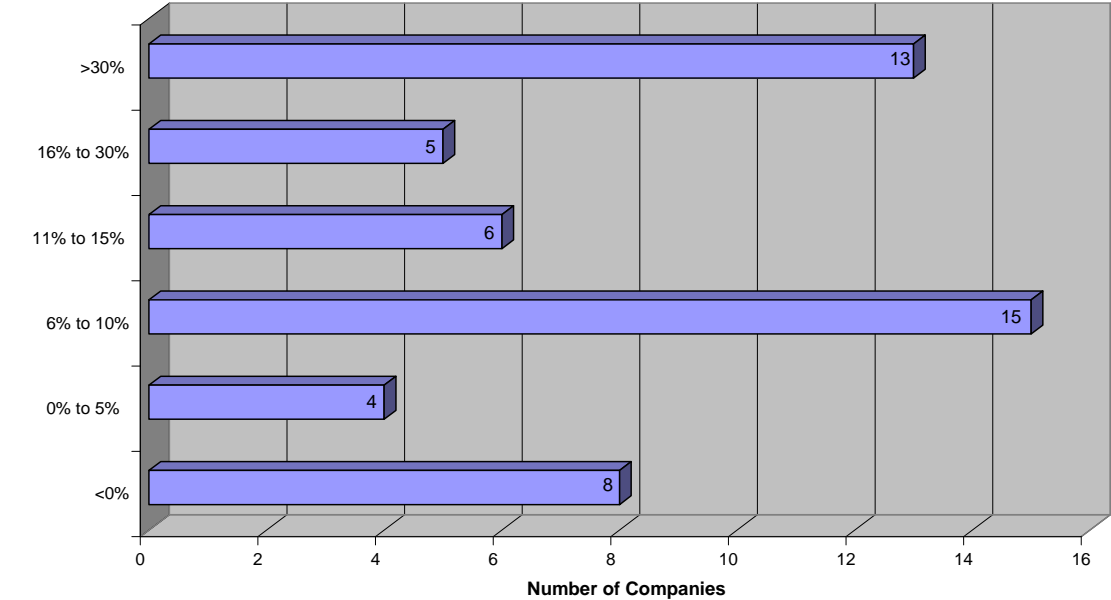


Figure 28: What was your revenue growth from financial year 04/05 to 05/06?

### Capital Expenditure [50 respondents]

Over half of all respondents allocated less than \$250K to capital expenditure (Capex) items whilst 10 percent recorded more than \$5 million in capital expenditure.

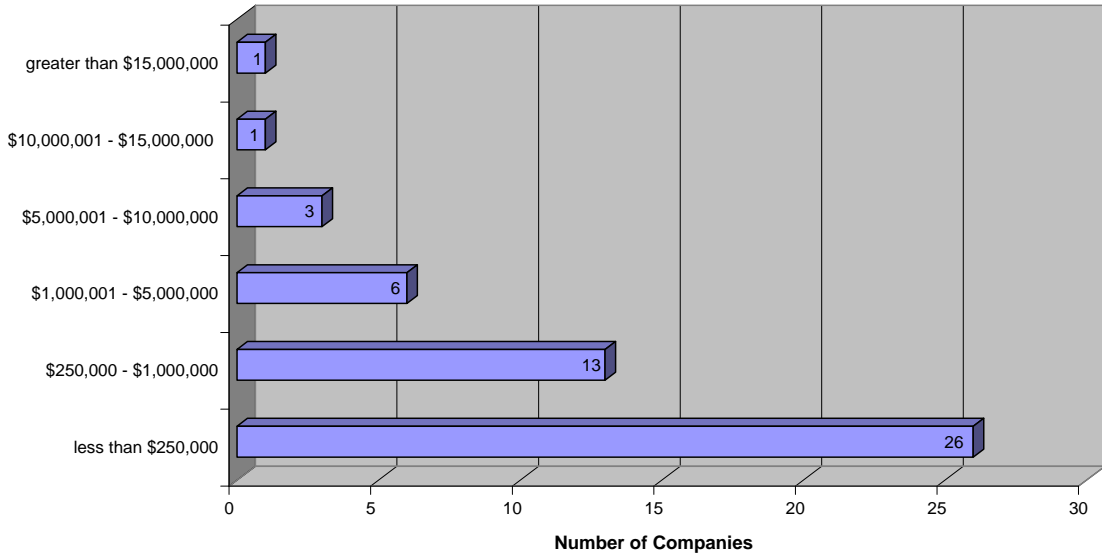


Figure 29: What was your Capital Expenditure budget (\$AUD) for last year?

### Revenue and Capital Expenditure Projections [53 respondents]

Fifty respondents (94 percent) forecast growth in revenue in the coming 12 months and all respondents expected revenue to increase over the next three years. With regard to Capex 70 percent and 80 percent expected this to increase over the next one and three years respectively.

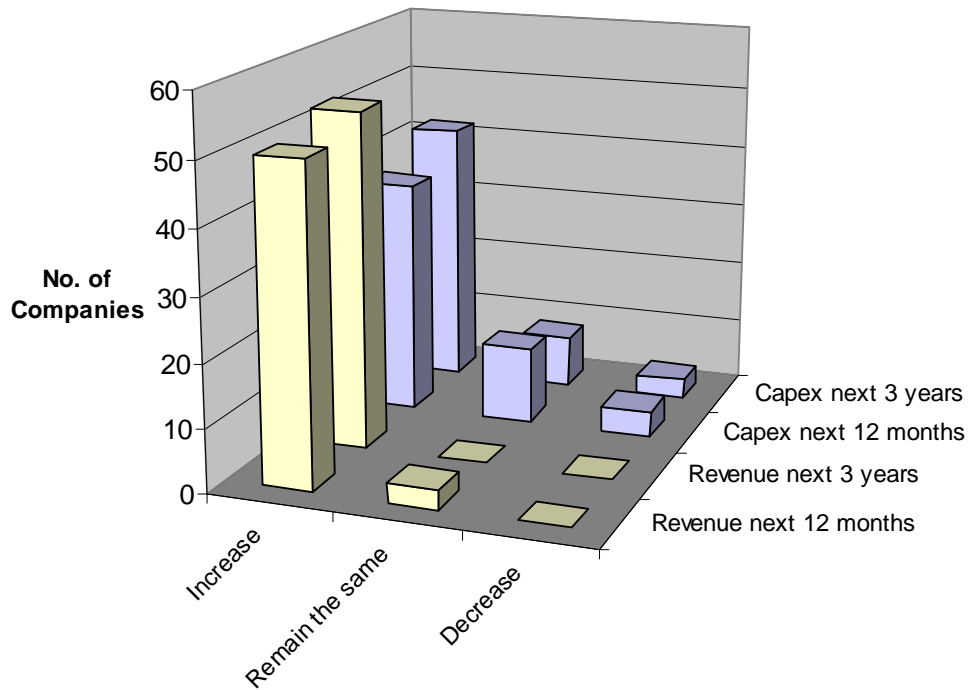


Figure 30: Revenue and Capex Projections

**Revenue from Exports [52 respondents]**

Almost half of the respondents generated less than 5 percent of revenue from exports.

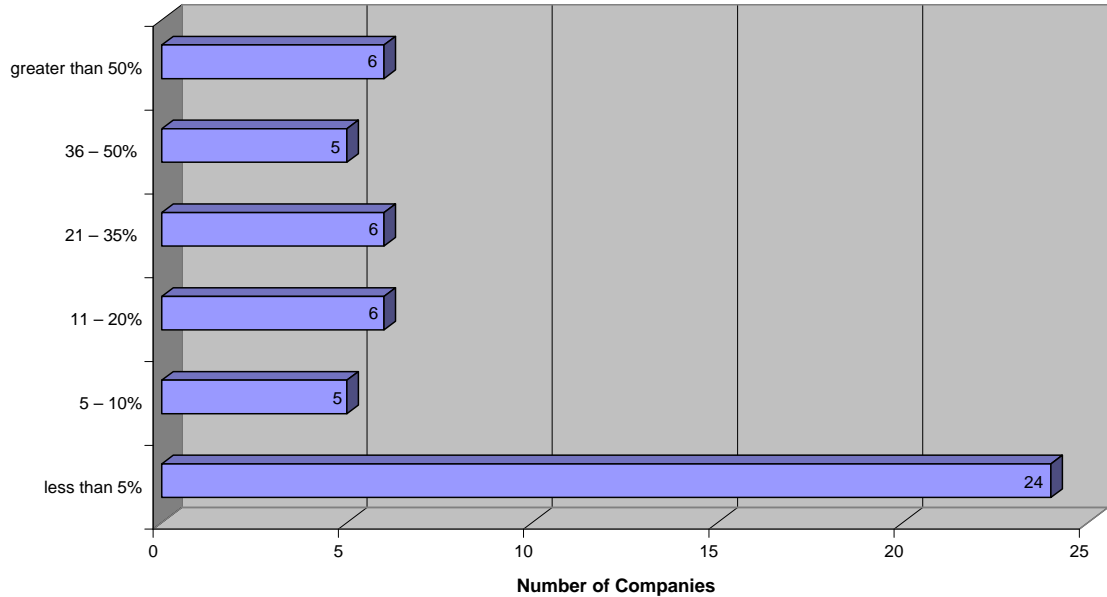


Figure 31: Of last year’s turnover, what percentage was generated from exports?

**Export Destinations [40 respondents]**

The US, New Zealand and the UK represented the top three export markets.

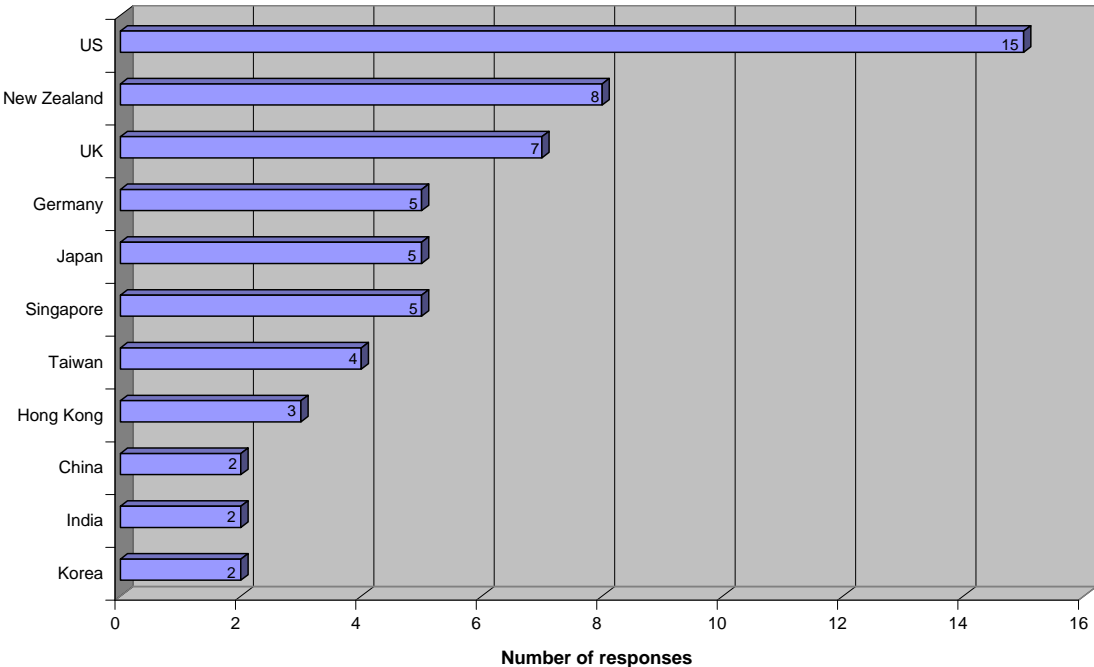


Figure 32: Which countries represent your three largest export markets?

### Employees [40 respondents]

The companies represented in the survey employed a total of 4,459 FTEs and this number was expected to grow by 706 people (15.8 percent) to 5,165 within three years.

Total FTE's	4459	4690	5165
Annual Growth (number of new FTEs)		231	476
Annual Growth (percentage increase)		5.17%	10.14%
Companies stating that number of FTE's would decrease or stay same		15	10

Most of the companies in the industry were small businesses. Over 70 percent (37) of respondents employed less than 20 full time equivalent (FTE) people. Of those respondents the average expected growth in FTE's was 408 percent in 3 years time (representing 433 FTE's).

Of the 37 percent (19) of respondents that employed between 20 and 250 FTE's the expected growth in 3 years time was 20 percent (representing 112 FTE's).

Companies that employed over 500 people forecast an average growth in FTE to 3 years time of 8 percent (representing 130 FTE's).

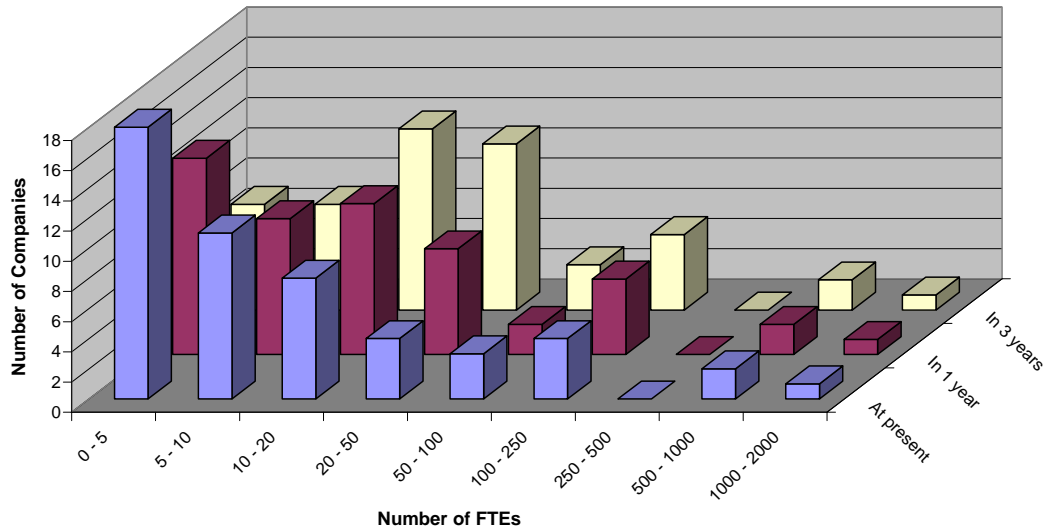


Figure 33: How many full time equivalent staff members do you currently employ / will you employ?

### Expenditure on Wages [43 respondents]

Over half (24) of the respondents spent less than \$500,000 per annum on wages.

Range label	Number of companies	Percentage
<\$100K	10	23%
\$100K - \$500K	14	33%
\$500K - \$1M	6	14%
\$1M - \$10M	10	23%
\$10M - \$100M	3	7%

### Skills Gaps [47 respondents]

A large proportion of respondents selected chemists and production engineers as representing likely skills gaps over the next five years (see Figure 34). Where the responses were weighted based on the number of FTEs currently employed by the respondent company the significance of the perceived skills gap for chemists and production engineers was more pronounced (see Figure 35).

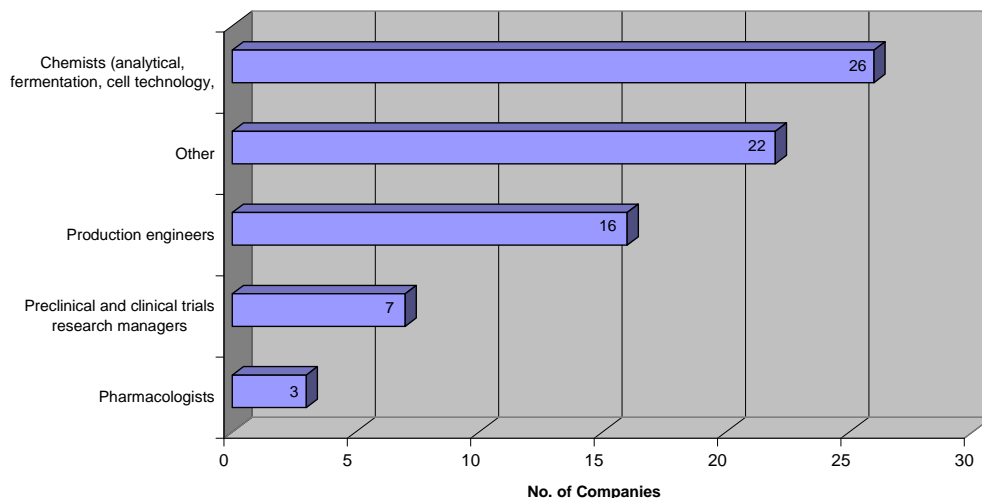


Figure 34: What skills gaps for your company do you anticipate over the next five years?

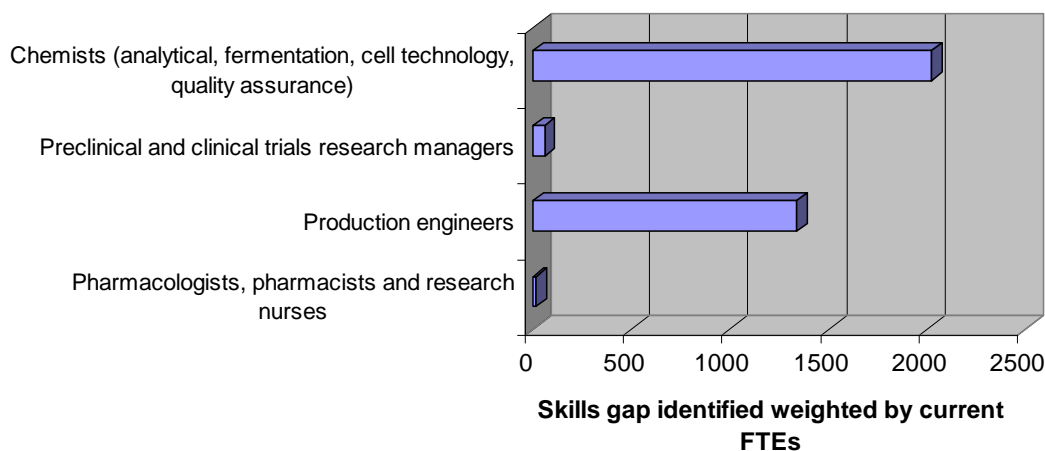


Figure 35: Skills gaps weighted by current FTEs

Skills gaps that were put forward other than the four categories offered in the survey question included the following:

Skills Gap	No. of respondents
Trained (GMP) process operators	4
Sales and marketing	3
Biomedical engineers	3
Regulatory affairs	3
Research Associates (Scientific and Clinical)	3
Process / production managers	2
Medical writers	1
Administrative	1
Distribution	1
Synthetic & medicinal chemists	1

### R&D Expenditure

The comments and charts below relate to the following survey questions:

- What percentage of turnover was spent on R&D for the year to 30 June 2006? [44 respondents]
- Do you expect your company's expenditure on R&D to increase or decrease over the next twelve months? [48 respondents]

- Do you expect your company's expenditure on R&D to increase or decrease over the next three years? [48 respondents]

R&D expenditure for two thirds of respondents amounted to less than 10 percent of turnover whilst six respondents (11 percent) spent more than half of their turnover on R&D (Figure 36). Most companies expected to increase R&D expenditure over the next one and three years (Figure 37). Around half of all respondents outsourced some of their R&D with 20 percent outsourcing the majority (>80 percent) of R&D (Figure 38).

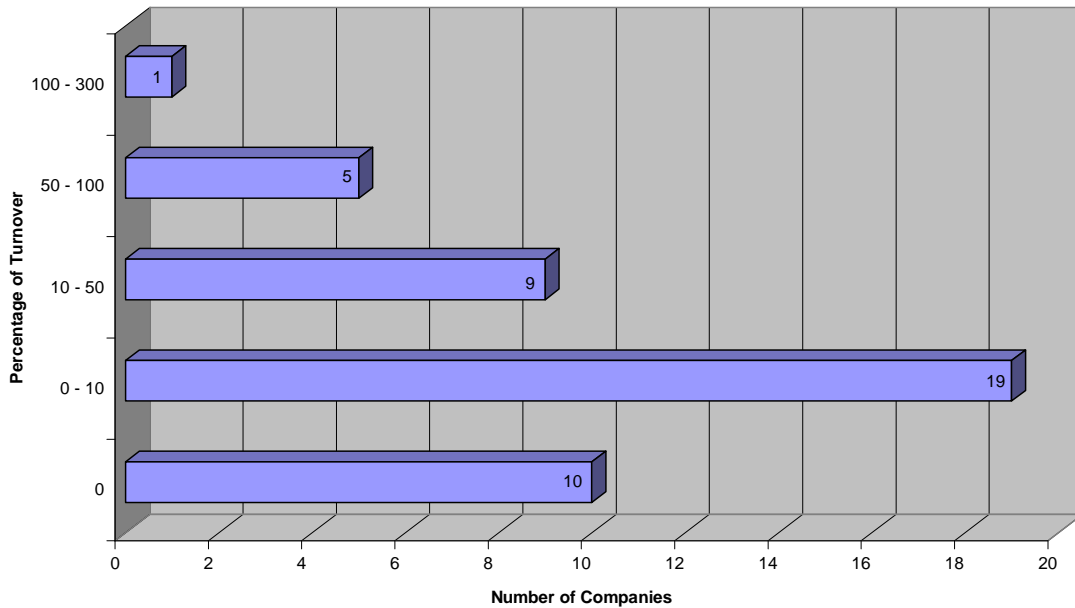


Figure 36: What percentage of turnover was spent on R&D for the year to 30 June 2006?

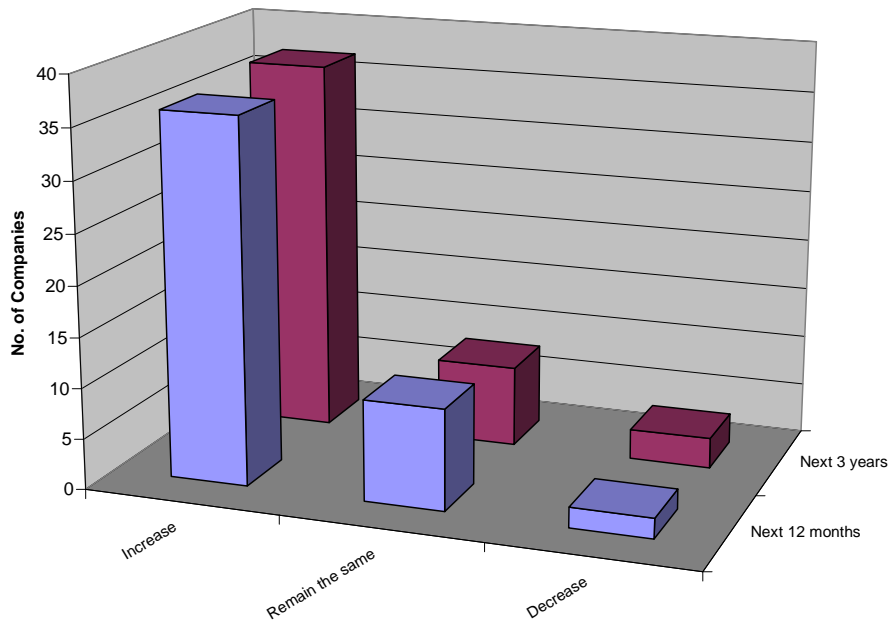


Figure 37: Do you expect your company's expenditure on R&D to increase or decrease over the next 12 months / three years?

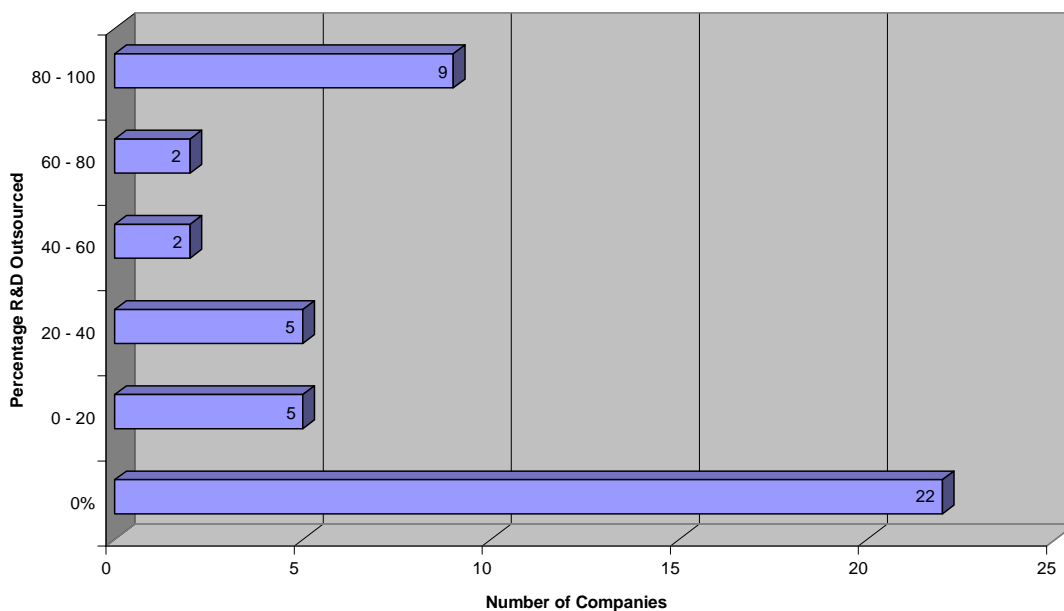


Figure 38: What percentage of R&D is outsourced (to public or private providers)?

### R&D Outsourcing [33 respondents]

Around 24 percent of respondents outsourced all of their R&D work. A summary of the reasons for outsourcing are presented in the Table below.

Comment on what key areas of R&D are outsourced and why	No. of Respondents
All	8
None	5
Analytical Lab work	8
Clinical trials	7
Preclinical trials	5
Chemistry	2
Other: All to O/S head office; Product Specifications; Product Development; Biomedical engineering; Biological collections	1

#### A précis of some of the reasons for outsourcing R&D

- Access to skills and resources including equipment; sometimes skill sets required are too broad to be feasible in-house
- Not enough financial capacity to support full time R&D employees in house
- Outsourcing makes sense for us at this stage - no overheads, no staff, ability to choose the best contractors for particular types of R&D
- Some analytical lab work is outsourced in order to access the NATA registration and equipment of the contractor

### What regulatory issues impact on your business? [47 respondents]

The responses from the previous survey (2004) were categorised into five areas and these were offered as choices in the survey question. High cost and complexity appeared to be commonly noted impacts of the regulatory system.

Response	Total
Increased compliance costs	36
Dealing with multiple international regulatory bodies	28
Regulatory system designed for pharmaceuticals and not complementary medicines	23
Slow ethics committee approvals process	13
Patent extension preventing export of generics	6
Other specific comments <ul style="list-style-type: none"> <li>• No protection for IP on natural medicines</li> <li>• Lack of full time in house regulatory affairs person</li> <li>• TGA unable to audit for CE mark</li> <li>• TGA Delays</li> <li>• Keeping up to date with changes</li> <li>• US FDA clearances, file submissions to US, European authorities</li> <li>• Slowness and cost of system</li> </ul>	

### The nature of the impact of regulatory issues [34 respondents]

Many of the comments on the nature of the impact related to increased costs (14 respondents) and increased time to market (8 respondents).

Précis of Specific Comments
<ul style="list-style-type: none"> <li>• Increase in overheads for the business</li> <li>• Time to market is too long</li> <li>• Lack of IP protection for complementary medicines</li> <li>• Difficult to resource certain areas e.g. validation experts</li> <li>• Increased costs result in lower rate of new complementary products being released</li> <li>• Slow regulatory feedback impacts commercial deals</li> <li>• Regulations are not often appropriate for CAM and this creates difficulties with compliance</li> <li>• High capital cost to establish and register a compliant contract analytical/GMP lab</li> <li>• High cost of compliance relative to imports - more products being imported from Asia</li> <li>• Increasing R&amp;D and production costs leads to reduced competitiveness in overseas markets</li> <li>• Complexity of the requirements and documentation make exporting difficult</li> <li>• Inability to export products from Australia while patent extensions still in force has lead to a decrease in R&amp;D activity and short term lack of new products being developed in Australia for export</li> <li>• Potential increase in compliance costs associated with re-registration of products for Trans Tasman joint agency</li> <li>• The time and cost of gaining registration is far too great for small companies</li> <li>• International regulatory bodies are not consistent in their guidelines</li> <li>• Extra staff must be employed to ensure compliance</li> <li>• Ethics committee only meets every 2 months</li> <li>• The critical issue is not the increased compliance costs but the equitable application of the regulatory framework on domestic and international organizations</li> </ul>

## Barriers to future revenue growth [47 respondents]

Access to capital and regulatory compliance were the highest rating perceived barriers to revenue growth.

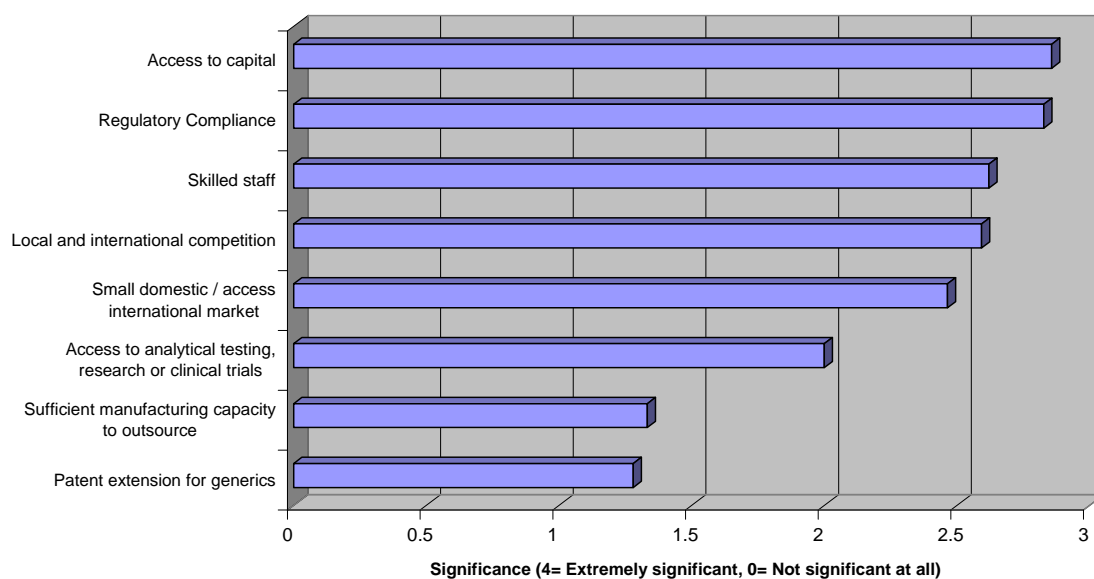


Figure 39: Considering your company please rate how significant these barriers are to future revenue growth?

## Future opportunities for expansion of the industry sub-sectors [46 respondents]

Around half the respondents saw a role for government in collaborative training between industry and educational institutions and skills enhancement through TAFE or University courses. While increased manufacturing capacity was identified as an opportunity by over half of the respondents only 28 percent saw a role for government in creating that opportunity. Other opportunity areas are listed in the table below.

Opportunity category offered in the question	Opportunity	Role for Govt.
Collaborative training between industry and educational institutions	27	23
Increased manufacturing capacity	25	13
Infrastructure such as contract research / manufacturing facilities	23	16
Improved industry representation coordination or networking	23	16
Skills enhancement through TAFE or University courses	19	22
Preclinical and clinical trial services	14	11
Increased foreign investment into Australia	10	10
Access to the Pharmaceutical Partnerships Program (P3) scheme	1	3
Other		
<ul style="list-style-type: none"> <li>Increased communication / liaison between regulatory bodies, industry and consumer regarding regulatory requirements for medical and consumer products</li> <li>Central list of exporters to allow sharing of ideas, distributor leads</li> <li>The structure of the industry could be examined to reduce duplication (e.g. duplicated testing, knowledge bases)</li> </ul>		

### Future collaborations, alliances or partnerships [44 respondents]

Over 70 percent of respondents selected product development and manufacturing as areas in which they would likely collaborate in the future. Around half expected to be undertaking R&D or preclinical/clinical trial work in collaboration with a university or other provider.

Opportunity category offered in the question	Total	Percentage of respondents
With international companies for product development	33	75%
Manufacturing/Outsourcing	31	70%
Research and development with universities	24	55%
Preclinical / clinical trials with universities, hospitals, service providers	22	50%
Technology or IP licensing or development	17	39%

### Why would you consider engaging in collaboration, alliances or partnerships in the areas indicated above? [31 respondents]

Précis of Specific Comments
<ul style="list-style-type: none"><li>• To access areas that the company does not have the resources to address alone</li><li>• To broaden the expertise in product technologies available to the organization; to reduce complexity</li><li>• To remove the duplication of resources that makes both companies collectively less efficient</li><li>• To further the development of our product portfolio in a timely and cost efficient manner;</li><li>• For continuity of work; For the latest information available; To provide competitive advantages</li><li>• To access expert help; Usually universities have the expertise required</li><li>• To commercialize new products</li><li>• To increase shareholder value</li><li>• Our company relies on companies continuing to outsource their clinical trials management. Collaboration, alliances or partnerships are ways of securing a steady stream of work</li><li>• To reduce costs; to save on capital expenditure</li><li>• To get freedom to operate with respect to IP, to create IP barriers</li><li>• To obtain access to international markets (e.g. China / Japan) and global distribution chains</li></ul>

# Copy of Survey Questionnaire

## Pharmaceutical and Nutraceutical Sectoral Development Unit Pharmaceutical Industry Data Update Survey Questions

**Date that Survey was issued: 21 July 2006**

You are invited to participate in a survey being conducted by VenturePro on behalf of the Queensland Department of State Development, Trade and Innovation (DSDTI).

The purpose of the survey is to update and expand on the data upon which a 2004 Pharmaceutical Industry Scoping Study was based. The aim of the overall exercise is to provide a snapshot of the state of the industry as well as indicate trends across the three sub-sectors of pharmaceuticals, complementary and alternative medicines and medical devices.

It is a genuine survey. Raw survey responses will be treated in strict confidence by VenturePro and DSDTI and any commercial data will be included in the final report in aggregated form only. Comments made by respondents may be included in the final report but will not be attributed without the express permission of the respondent.

In recognition of your contribution, you will receive a copy of the consolidated survey results and the final report free of charge with compliments of DSDTI.

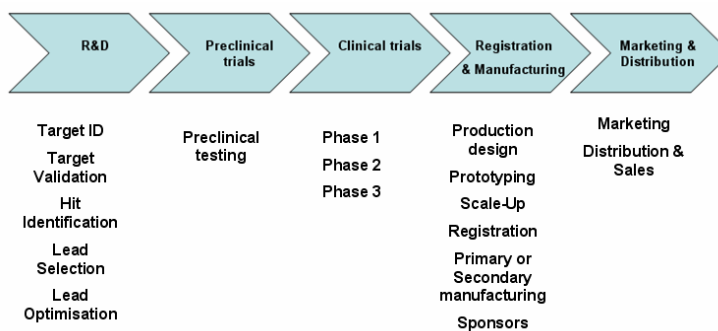
It is important that your input is included in the study, and we would appreciate if you would spare the time to complete it.

The survey should take approximately 15 minutes to complete.

### Introduction

1. Respondent name / Position
2. In which industry sub sector does your company operate?
  - a. Pharmaceutical
  - b. Complementary and Alternative Medicines (CAM)
  - c. Medical Devices
3. Is your company listed on the Australian Stock Exchange (ASX)?
4. In what year did your company commence operations?

### Value Chain Analysis



5. Referring to the value chain diagram, across which of the five components does your organisation operate? (Nominate one or more as appropriate)
  - a. R&D

- b. Pre-Clinical
  - c. Clinical Trials
  - d. Registration & Manufacturing
  - e. Marketing & Distribution
6. Which components or activities within the value chain are of most significance, either as an input to your business or an output of your business?
- a. R&D
  - b. Pre-Clinical
  - c. Clinical Trials
  - d. Registration & Manufacturing
  - e. Marketing & Distribution

### **Financial Performance**

7. What was your estimated total turnover in the year to 30 June 2006?
- a. less than \$250k
  - b. \$250K - \$1,000,000
  - c. \$1,000,001 - \$5,000,000
  - d. \$5,000,001 – \$20,000,000
  - e. \$20,000,001 - \$50, 000,000
  - f. greater than \$50, 000,000
8. What was your revenue growth from Financial year 04/05 to 05/06?
- g. <0%
  - h. 0% to 5%
  - i. 6% to 10%
  - j. 11% to 15%
  - k. 16% to 30%
  - l. >30%
9. What was your Capital Expenditure budget for last year?
- a. less than \$250k
  - b. \$250K - \$1,000,000
  - c. \$1,000,001 - \$5,000,000
  - d. \$5,000,001 – \$10,000,000
  - e. \$10,000,001 - \$15, 000,000
  - f. greater than \$15, 000,000

### **Financial Projections**

10. Do you expect your company's annual revenue to increase or decrease over the next 12 months?
- a. Increase
  - b. Decrease
  - c. Remain the same
11. Do you expect your company's annual revenue to increase or decrease over the next three years?
- a. Increase
  - b. Decrease
  - c. Remain the same
12. Do you expect your company's annual capital expenditure to increase or decrease over the next 12 months?
- a. Increase
  - b. Decrease
  - c. Remain the same

13. Do you expect your company's annual capital expenditure to increase or decrease over the next three years?
- a. Increase
  - b. Decrease
  - c. Remain the same

### **Exports**

14. Of last years turnover what percentage was generated from exports?
- a. less than 5%
  - b. 5 – 10%
  - c. 10 – 20%
  - d. 20 – 35%
  - e. 35 – 50%
  - f. greater than 50%
15. Which countries represent your three largest export markets? (1 = largest)

### **Employment & Skills**

16. How many full-time-equivalent staff members do you currently employ?
17. How many full time staff members do you anticipate to have in your employ in 12 months time?
18. How many full time staff members do you anticipate to have in your employ in three years time?
19. What was your Company's estimated expenditure on wages for the year to 30 June 2006?
20. What skills gaps for your company do you anticipate over the next five years?
- a. Chemists (analytical, fermentation, cell technology, quality assurance)
  - b. Preclinical and clinical trials research managers
  - c. Production engineers
  - d. Pharmacologists, pharmacists and research nurses
  - e. Other (please specify)

### **R&D**

21. What percentage of turnover was spent on R&D for the year to 30 June 2006?
22. Do you expect your company's expenditure on R&D to increase or decrease over the next twelve months?
- a. Increase
  - b. Decrease
  - c. Remain the same
23. Do you expect your company's expenditure on R&D to increase or decrease over the next three years?
- a. Increase
  - b. Decrease
  - c. Remain the same
24. What percentage of R&D was outsourced (to public or private providers)?
25. Please comment on what key areas of R&D your company outsources and why? For example  
All R&D - Preclinical and clinical trials - Analytical lab work

### **Regulatory Impacts**

26. What regulatory issues impact on your business?
- a. Increased compliance costs
  - b. Patent extension preventing export of generics
  - c. Slow ethics committee approvals process
  - d. Dealing with multiple international regulatory bodies
  - e. Regulatory system designed for pharma and not complementary medicines
  - f. Other (please specify)

### **Future Plans**

27. Select three future opportunities that you see for expansion of your industry sub-sector. For those opportunities selected, please note if you also see a role for government in supporting industry in capturing the opportunities.
- a. Increased manufacturing capacity
  - b. Preclinical and clinical trial services
  - c. Infrastructure such as contract research / manufacturing facilities
  - d. Access to the P3 scheme
  - e. Increased foreign investment into Australia
  - f. Skills enhancement through TAFE or University courses
  - g. Collaborative training between industry and educational institutions
  - h. Improved industry representation, coordination or networking
  - i. Other (specify below)
28. Considering your company, please rate how significant these barriers are to future revenue growth? [Likert Scale 1 to 5]
- a. Inability to secure skilled technical and managerial staff
  - b. Increased regulatory compliance costs
  - c. Limited access to capital
  - d. Small size of domestic market/ access to overseas markets
  - e. The effect of patent extension on generics
  - f. Inability to outsource sufficient manufacturing capacity
  - g. Lack of access to analytical testing, research or clinical trial services
  - h. Increased local and international competition
29. Are there other barriers that affect the success of your company? Please comment
30. In what areas might you engage in collaborations, alliances or partnerships in the future?
- a. Manufacturing/Outsourcing
  - b. Preclinical and clinical trials with universities, hospitals and service providers
  - c. Research and development with universities
  - d. Technology or IP licensing or development
  - e. With international companies for product development, marketing, distribution, R&D, production, merger/acquisition or clinical trials
  - f. Other (please specify)
31. Why would you consider engaging in collaboration, alliances or partnerships in the areas indicated above?