Patenting
Edmonton

The number of patents per calendar year generated by inventors in Edmonton tripled between 1975 and 1997 from roughly 40 patents per year to 120 patents per year (see Figure 1). Patenting rates peaked during the dot-com boom at nearly 160 per year before levelling-off more recently.

The industrial mix of patents also changed between 1975 and 2007. There is a high level of diversity within the Edmonton patent portfolio, the combination of special purpose machinery (16.7%), pharmaceuticals (11.5%), and measuring instruments (5.2%) accounted for out a third of patents between 1998 and 2007. This is up from less than one quarter between 1978 and 1987.

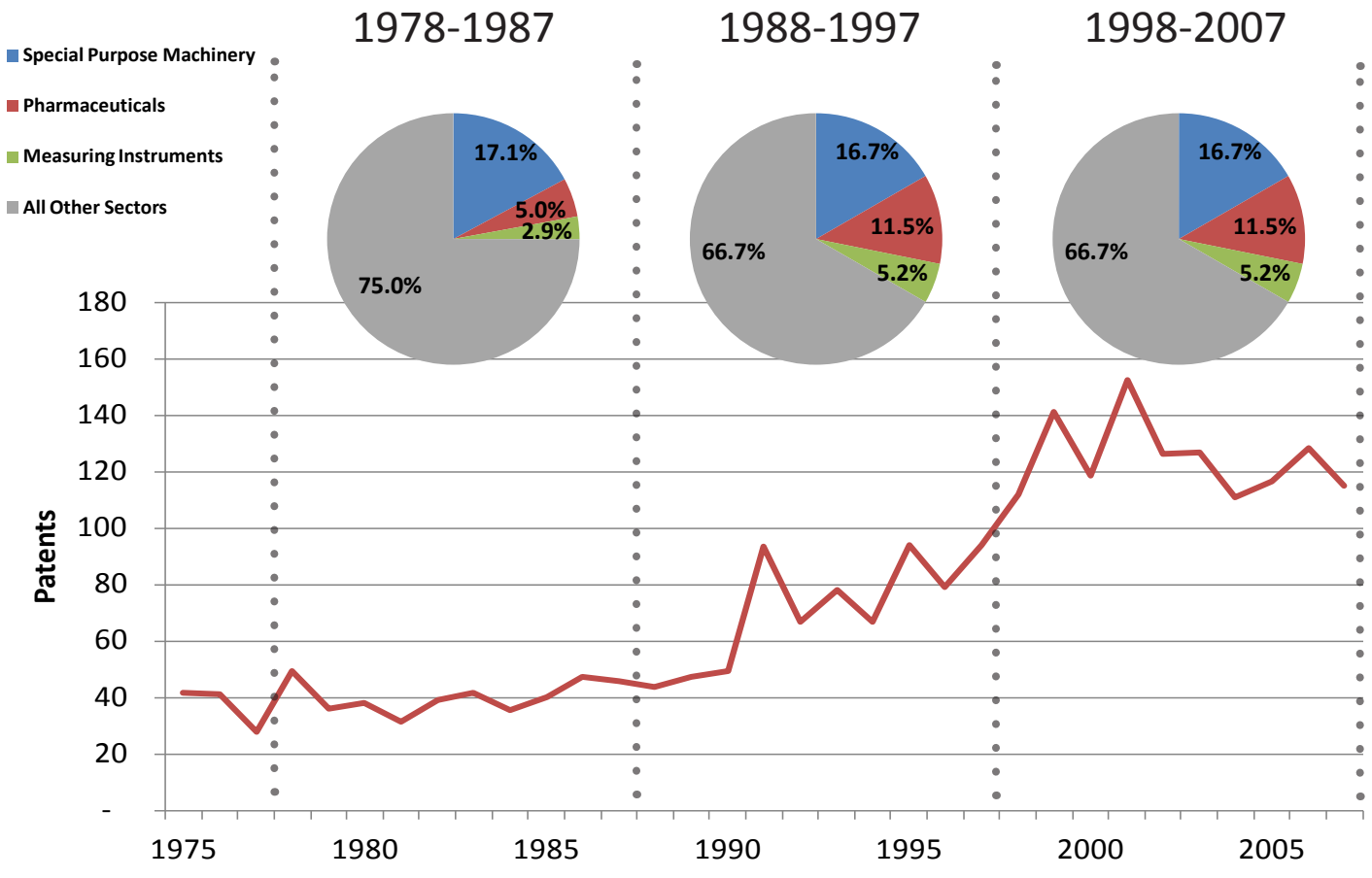
The variety of technologies that were patented in Edmonton over the past 35 years are reflected in the top patenting enterprises (see Table 1). The University of Alberta (74) and the Alberta Research Council (66) were the most prolific generators of patents between 1998 and 2007. This suggests that Edmonton may have a larger issue with the commercialization of locally generated IP rather than the production of new science and technology.

Table 1 - Top 10 Patenting Enterprises 1998-2007

Enterprise	Patents
University of Alberta	74
Alberta Research Council	66
Halliburton	36
Isotechnika	24
Synsorb Biotech	24
Westaim Technologies	17
Telecom. Research Laboratories	16
Stream-Flo Industries	14
Medicure International	13
Schlumberger Technology	11

Data notes:
- Source: USPTO
- All data has been cleaned and geocoded by Prof. Dieter Kogler University College Dublin
- Patents counts are proportional to number of inventors

Figure 1 - Number of patents by year and key industries



Inventor Connections

Edmonton

An analysis of patents that involved collaboration between inventors based in Edmonton and inventors elsewhere show that the majority of these relationships exist with people in the other major cities in Canada. Specifically, connections to Calgary (see Figure 2) are by far the most common with 210 instances of a Calgary-based inventor collaborating with an inventor in Edmonton. Connections with Toronto (91) and Ottawa-Gatineau (88) are also quite strong.

Most instances of international collaboration occur with US-based inventors. The top five US states (see Figure 3) are California (142), Texas (133), New Jersey (57), Michigan (34), and Massachusetts (23).

Beyond the United States (628) the top countries for inventor collaboration with Edmonton are Israel (158), Japan (52), Great Britain (42), and Germany (31) (see Figure 4).

Figure 2 - Top ten Canadian city-regions by number of co-inventors, 1975-2007

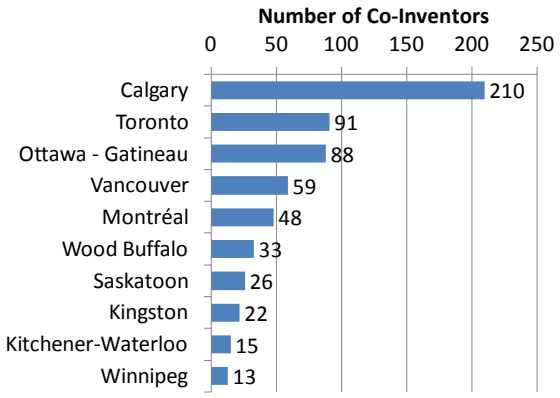


Figure 3 - Top five US states by number of co-inventors, 1975-2007

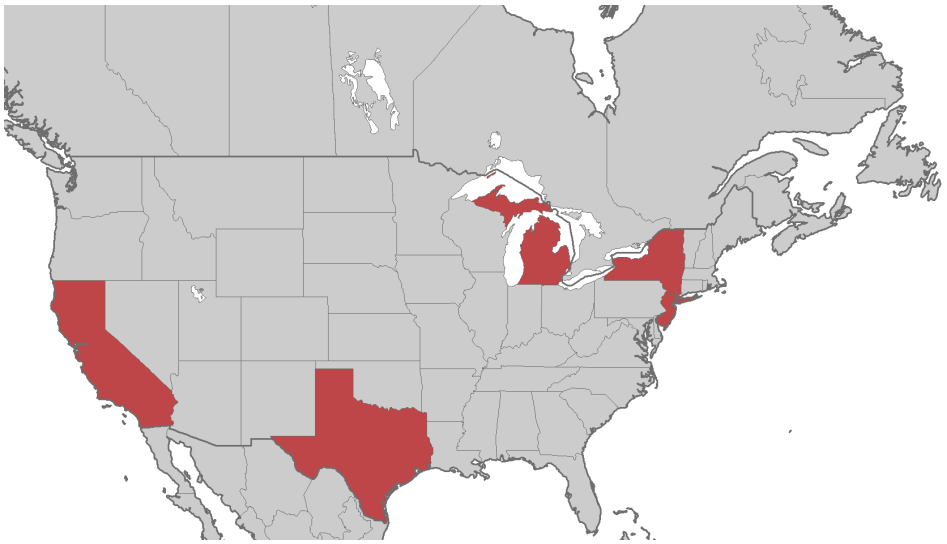
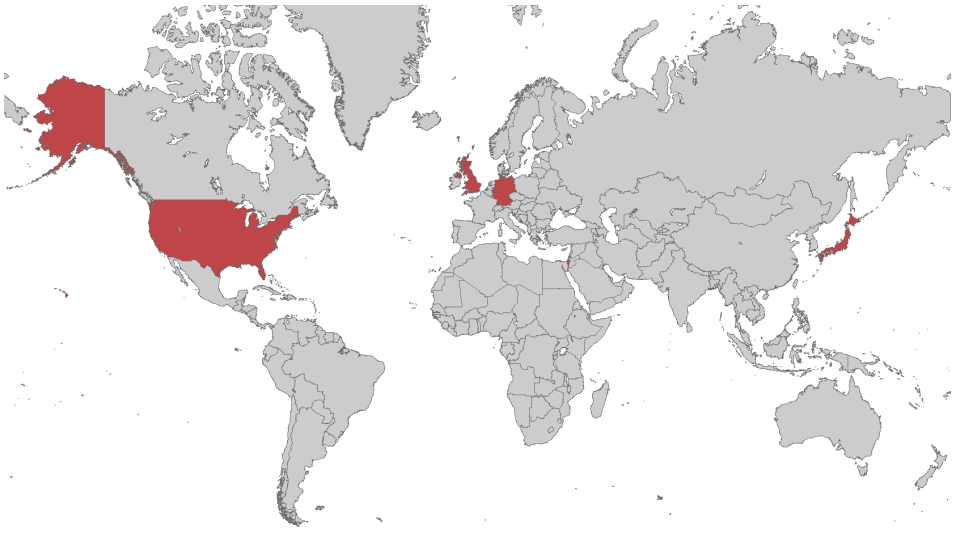


Figure 4 - Top five countries by number of co-inventors, 1975-2007



Data notes:
- Source: USPTO
- All data has been cleaned and geocoded by Prof. Dieter Kogler University College Dublin
- Each co-inventor counts as one and is not dependent on the total number of co-inventors on each patent

Business Expenditure on R&D
Edmonton

Business spending on R&D in Edmonton averaged around $150 million between 2005 and 2009 with a high of over $200 million in 2007 (see Figure 5). Expenditures per R&D employee decreased slightly from roughly $80,000 to just below $70,000 over the same time period.

There were nearly 450 business in Edmonton reporting significant R&D activity in 2008 (see Figure 6). This was up by over 100 firms over a four year period. R&D spending per firm declined moderately from just under $500,000 in 2005 to roughly $300,000 in 2008.

Figure 5 - Business enterprise R&D (BERD) 2005-2009 (constant dollars)

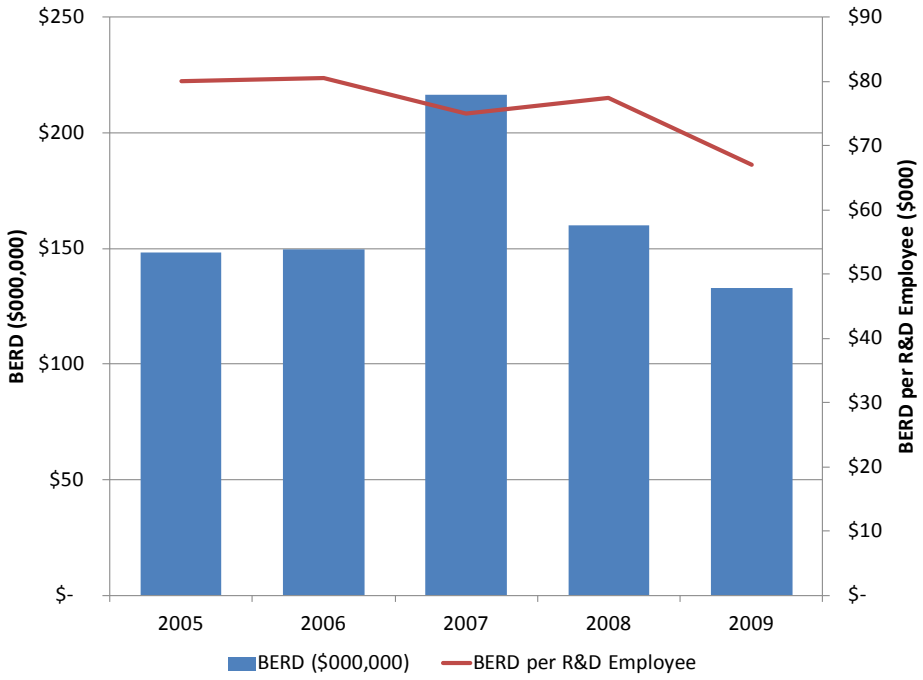
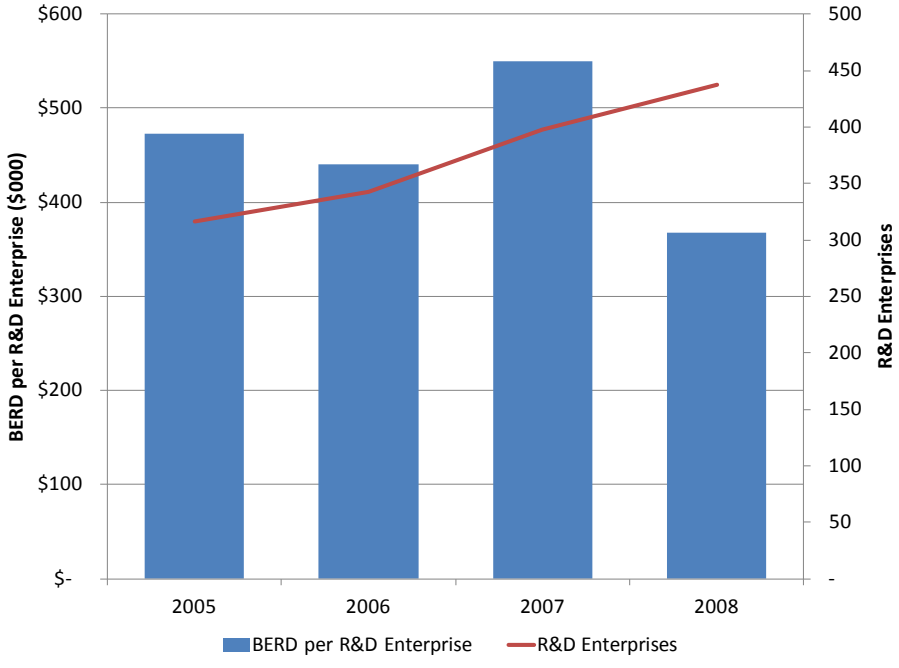


Figure 6 - BERD per R&D enterprise 2005-2008 (constant dollars)



Data notes:
- Source: Statistics Canada via The Impact Group
- Exact figures cannot be disclosed for proprietary reasons
- Dollar amounts have been standardized to constant 2008 or 2009 dollars by Local IDEAs
- The figures represent the most recent data available

Post-Secondary Research Funding
Edmonton

Research funding to public institutions such as universities and research hospitals increased steadily from 1999 through 2008 in Edmonton from $250 million to just over $500,000.

Private individuals, not-for-profit organizations, the Natural Sciences and Engineering Research Council, and Medical and Health Research each accounting for 9-10% of total funding (see Figure 8). General government funding from all three levels represented nearly half of the total amount of research funding in 2008.

Figure 7 - Public research funding 1999-2008 (constant dollars)

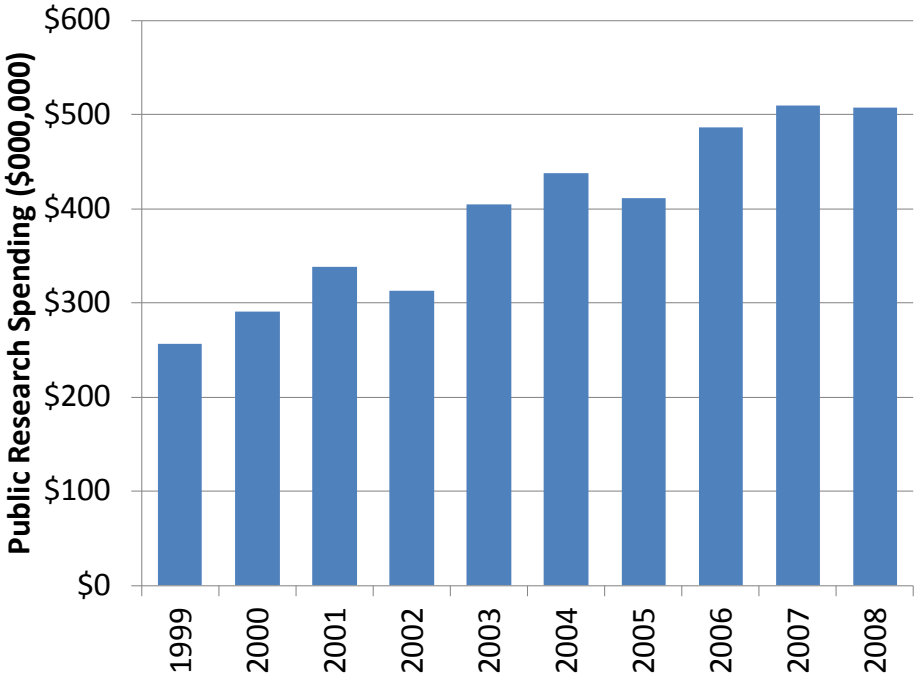
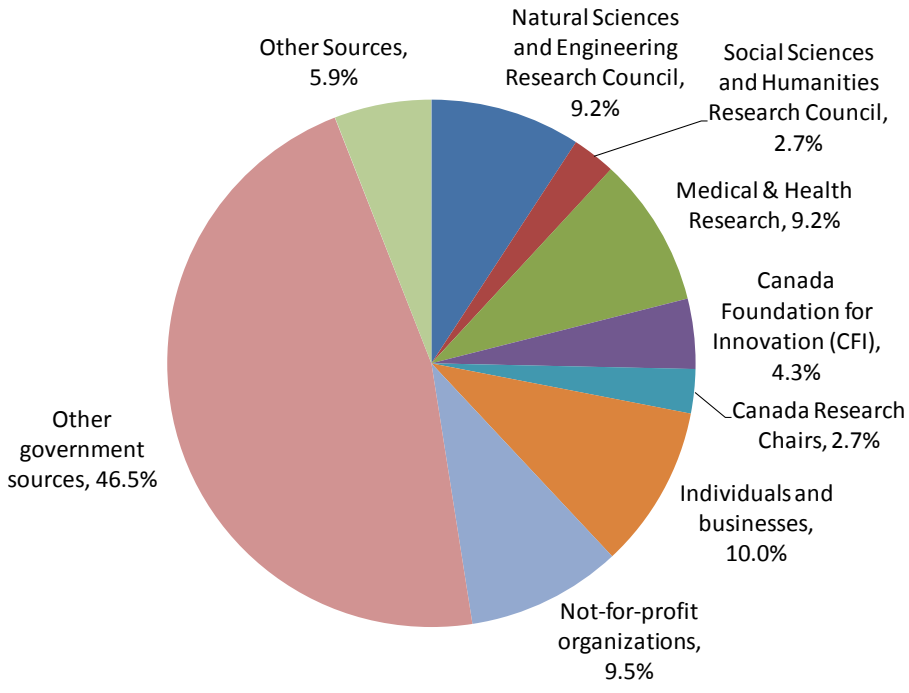


Figure 8 - Share of public research funding by major sources (2008)



Data notes:
- Source: Canadian Association of University Business Officers (CAUBO)
- Dollar amounts have been standardized to constant 2008 dollars by Local IDEAs

Venture Capital
Edmonton

Venture capital activity in Edmonton has fluctuated between 1996 and 2011 from low years of around $10 million in 2006 and 2009 and a peak of $75 million in 2007 (see Figure 9). The number of VC deals were at there highest in 2006 when 10 were reported. Bottom of activity happened in 2009 when only a single deal was recorded.

Software (28.2%) and pharmaceuticals (17.3%) have been the specific industries that have generated the most number of venture capital deals between 1996-2011 (see Figure 10). ICT manufacturing and industrial machinery are additional sectors that attracted a significant proportion of the VC in Edmonton.

Figure 9 - Venture capital deals and estimated total value (constant $)

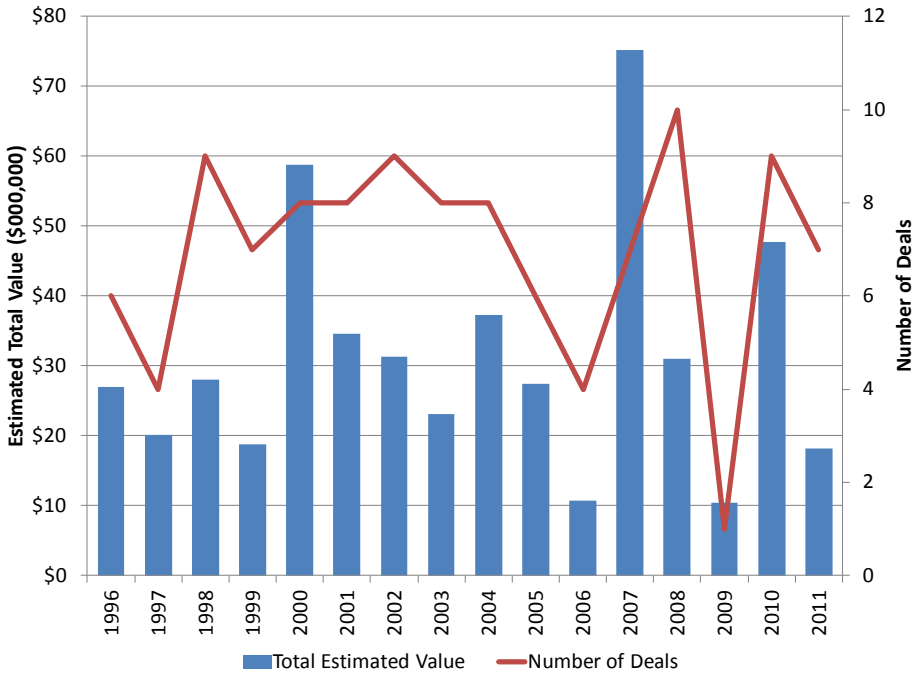
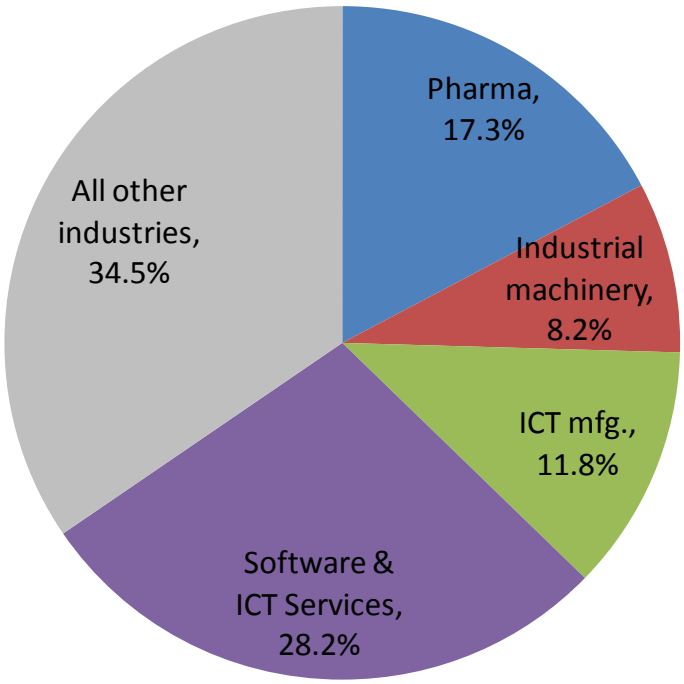


Figure 10 - Share of venture capital deals by industry, 1996-2011



Data notes:
- Source: Thomson-Reuters
- Annual values are estimated due to undisclosed values on certain deals (annual averages are applied)
- Dollar amounts have been standardized to constant 2011 dollars by Local IDEAs

University Spin-Offs
Edmonton

The University of Alberta in Edmonton has a fairly successful track-record of generating spin-off firms from IP generated by its faculty. Since 1970 there have been 101 companies started by either local university professors or based on technology produced at a local university. Of these companies 18 have been high growth firms 16 of which remained in Edmonton with 2 others decamping to other locations (see Figure 11). More than half of these were in biomedical or pharmaceutical industries (61).

Figure 11 - University spin-off firms by growth and location

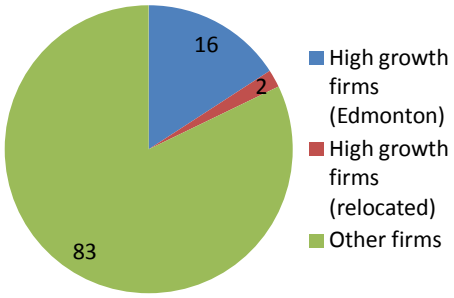
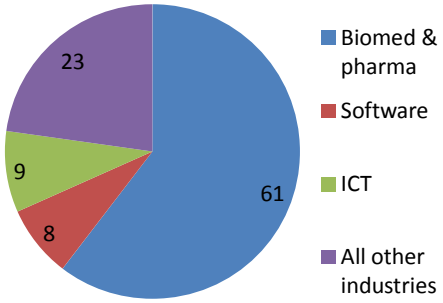


Figure 12 - University spin-off firms by industry



Data notes:
- Source: Denys Cooper USO/USSO database
- Individual firms cannot be disclosed due for reasons of confidentiality
- High growth firms defined as doubling of employees within five years to at least 20 employees or doubling in sales within five years to at least $10 million