Patenting
Québec

The number of patents per calendar year generated by inventors in the Québec region increased by nearly a factor of 7 between 1975 and 1997 from roughly 10 patents per year to 70 patents per year (see Figure 1). Most of this growth occurred after 1995.

The industrial mix of patents also changed significantly between 1975 and 2007. While there is a significant level of diversity within the Québec regional economy, the combination of pharmaceuticals (16.2%), optical instruments (8.6%), and measuring instruments (7.5%%) accounted for about a third of all patents between 1998 and 2007. This is three times the proportion of the period between 1978 and 1987.

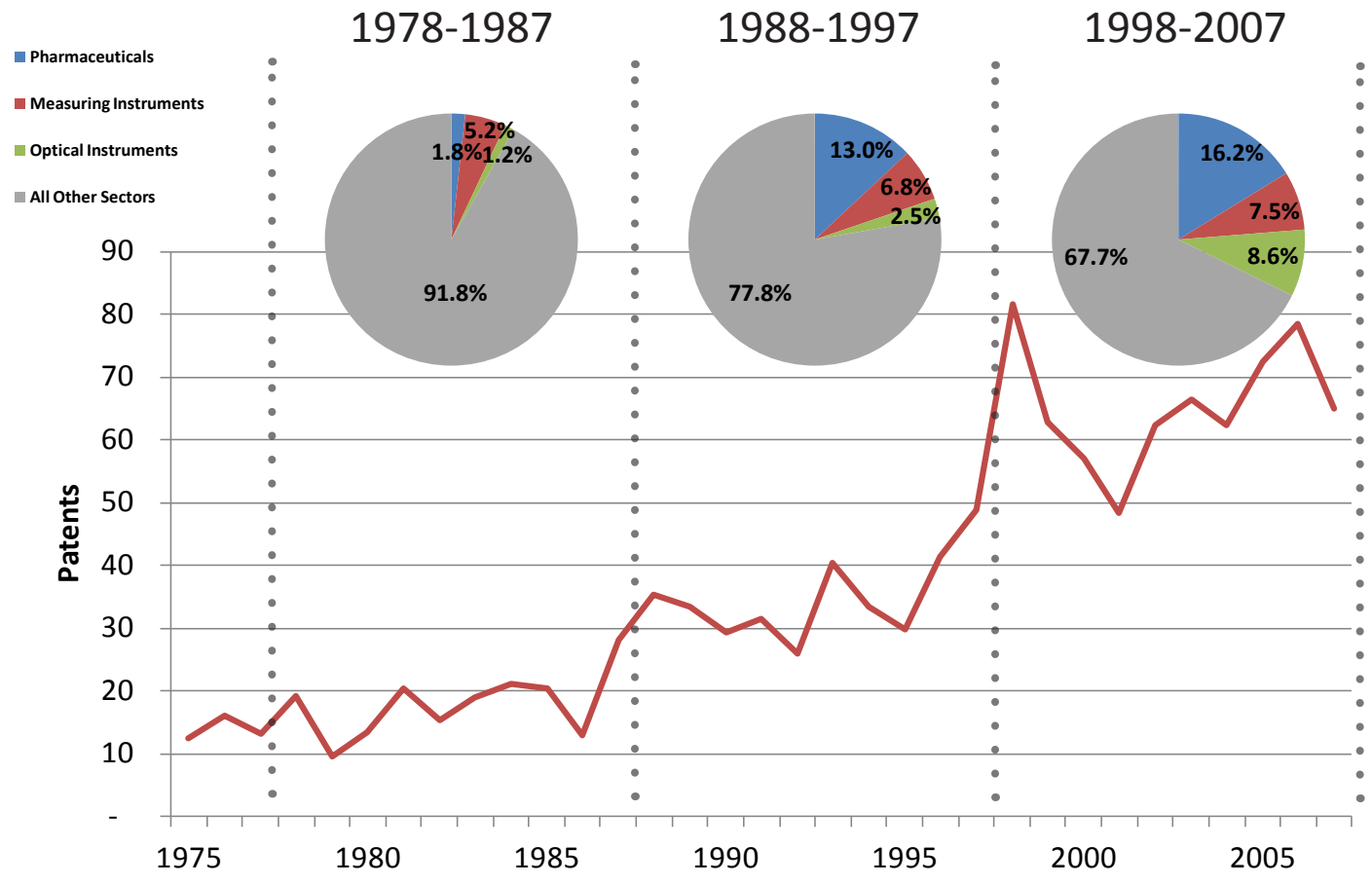
These industries are reflected in the top patenting enterprises in the Québec region (see Table 1). The Universite Laval is the most prolific generator of patents with 66 patents between 1998 and 2007 Followed by Insitut National d'Optique.

Table 1 - Top 10 Patenting Enterprises 1998-2007

Enterprise	Patents
Universite Laval	66
Institut National d'Optique	44
Endorecherche	35
Federal Government of Canada	19
Steris	19
Exfo	15
Teraxion	14
CRIQ	8
Stryker	7
Forintek	6

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
Québec

An analysis of patents that involved collaboration between inventors based in the Québec region and inventors elsewhere show that the majority of these relationships exist with nearby cities. Specifically, connections to Montréal (see Figure 2) are by far the most common with 235 instances of a Montréal-based inventor collaborating with an inventor in the Québec region. Connections with Ottawa-Gatineau (66) and Saguenay (37) are also quite strong.

Most instances of international collaboration occur with US-based inventors. The top five US states (see Figure 3) are California (52), New York (31), New Mexico (27), Massachusetts (26), and Pennsylvania (18).

Beyond the United States (279) the top countries for inventor collaboration with the Waterloo Region are France (32), China (11), Japan (11) and Great Britain (7) (see Figure 4).

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

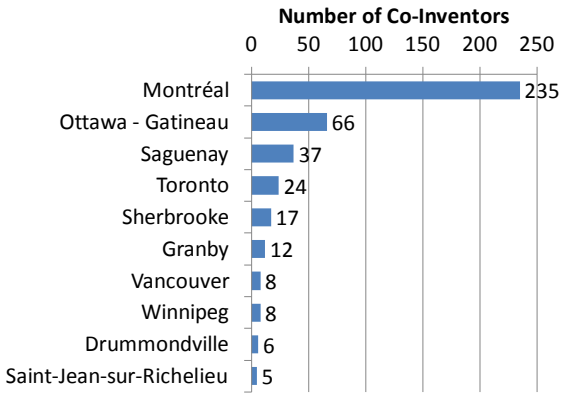


Figure 3 - Top five US states by number of co-inventors, 1975-2007

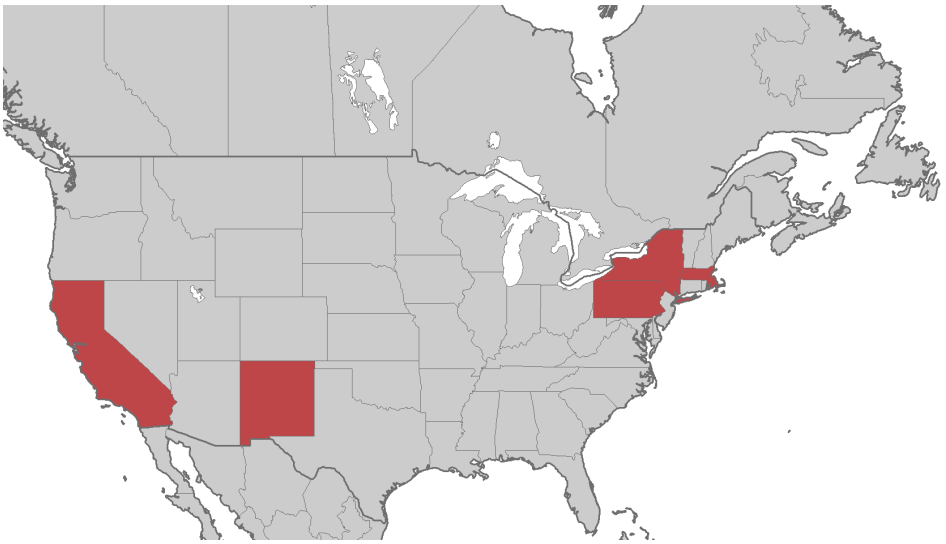
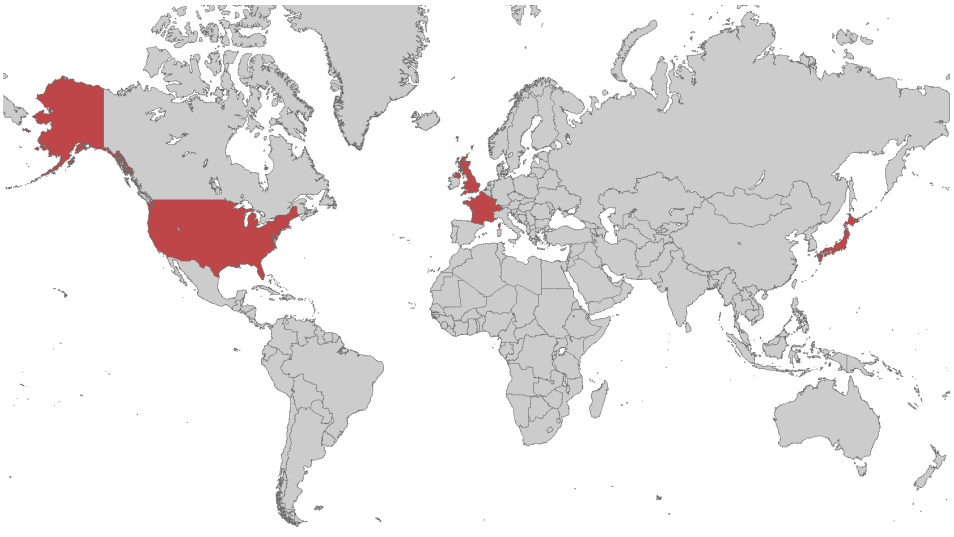


Figure 4 - Top five countries by number of co-inventors, 1975-2007



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
Québec

Business spending on R&D in the Québec region increased steadily between 2005 and 2009 from just over $200 million to $300 million (see Figure 5). Expenditures per R&D employee increased from roughly $60,000 to a little more than $70,000 over the same time period.

There were almost 600 business in the Waterloo Region reporting significant R&D activity in 2008 (see Figure 6). This was up slightly over a four year period. R&D spending per firm also showed consistent growth from just under $400,000 in 2005 to just over $500,000 in 2008.

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

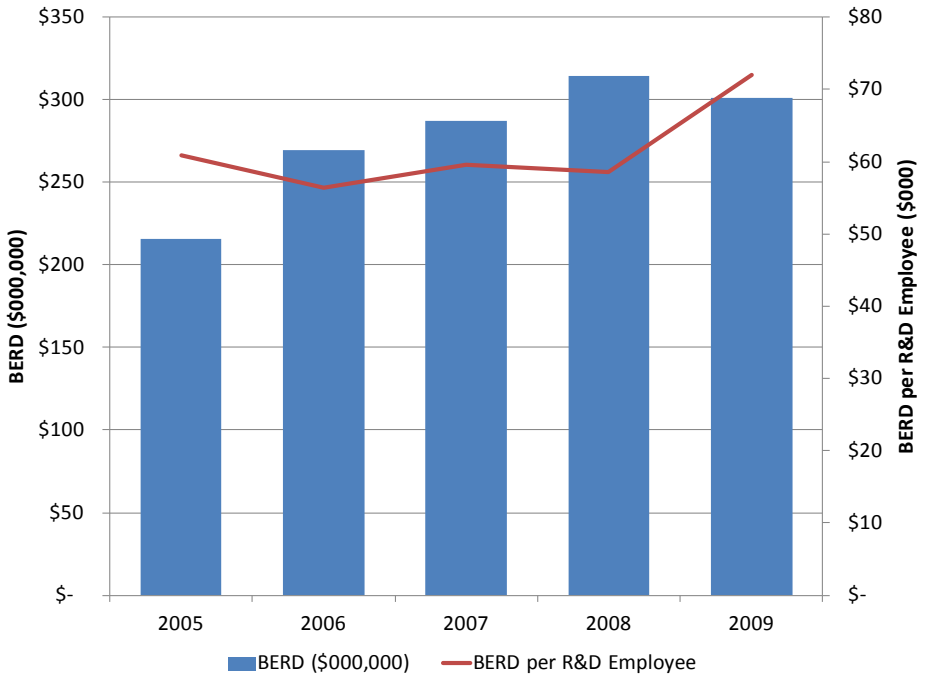
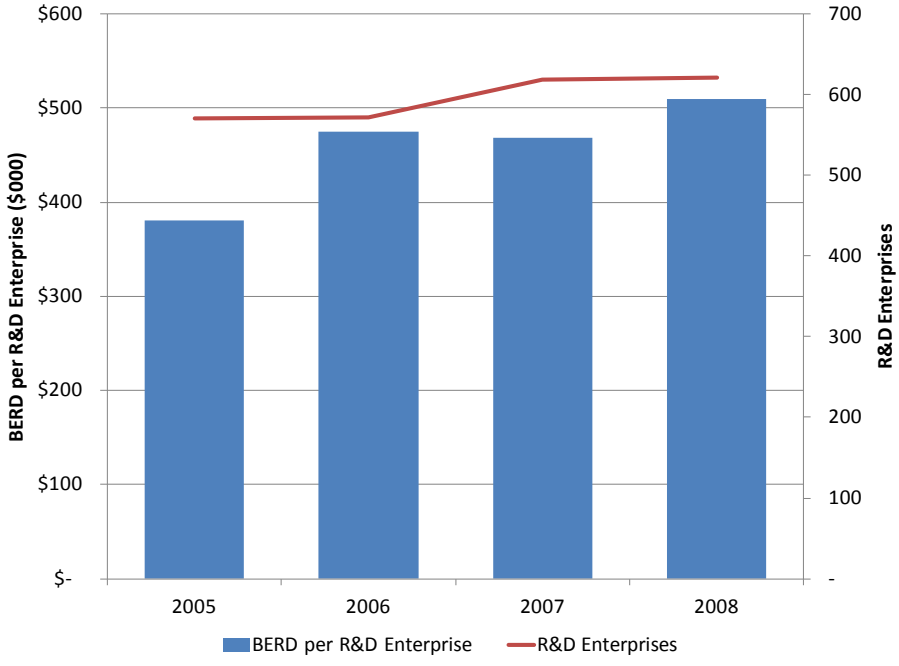


Figure 6 - BERD per R&D enterprise 2005-2008 (constant dollars)



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
Québec

Research funding to public institutions such as universities and research hospitals increased steadily from 1999 through 2008 in the Québec region to a level of $350 million per year (see Figure 7). 2002 and 2003 were the most bountiful years for public research funding with nearly $400 million in spending.

General research funding from government accounted for 27.6% of all funding in 2008 (see Figure 8).The Natural Sciences and Engineering Research Council (13.6%) and Medical & Health research (11.2%) were the largest specific sources of funding.

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

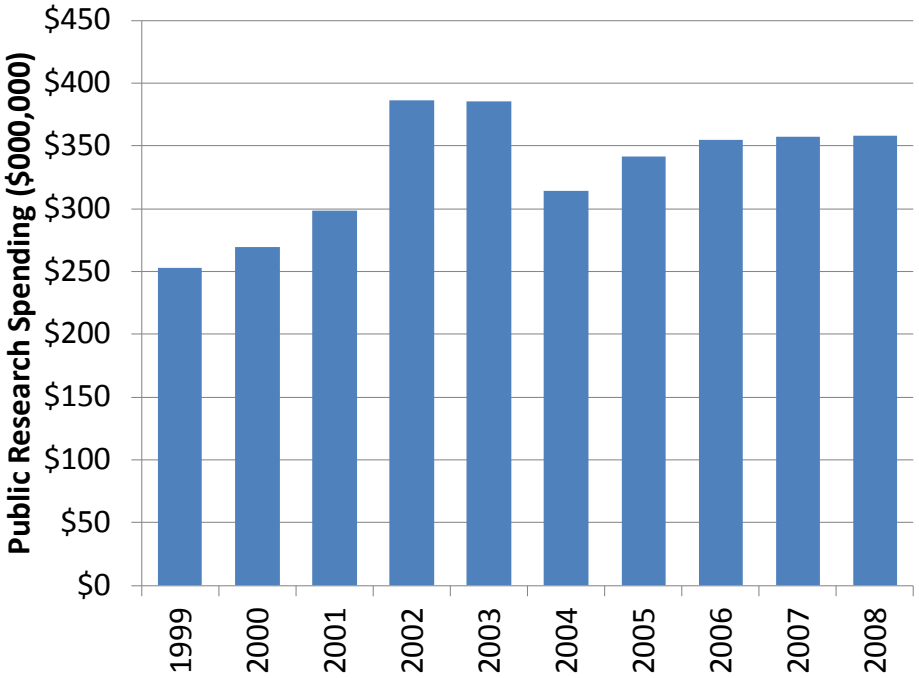
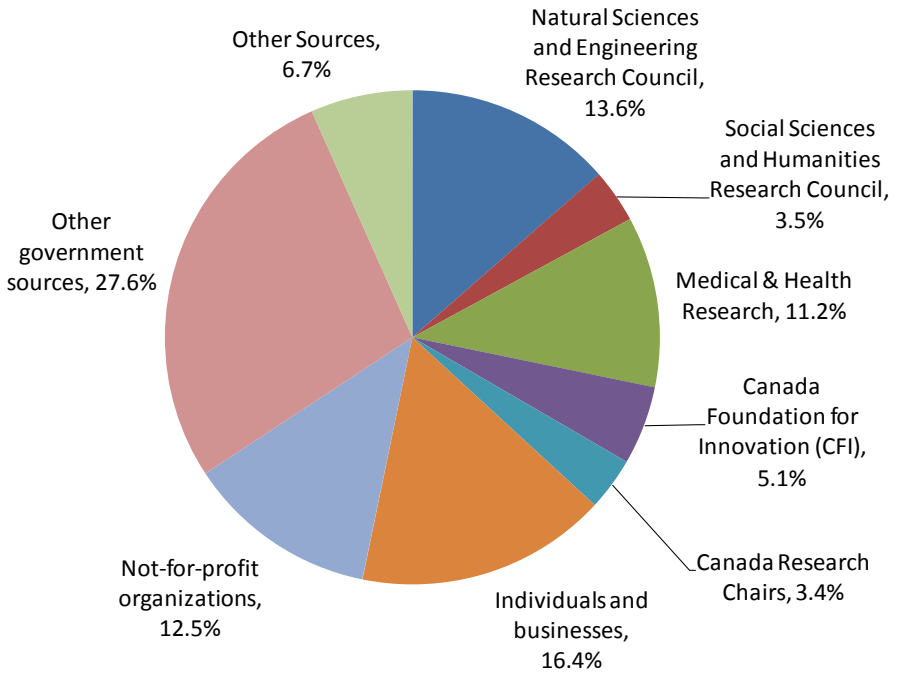


Figure 8 - Share of public research funding by major sources (2008)



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

Venture Capital
Québec

Venture capital activity in the Québec region had its strongest year between 1997 and 200 in 2002 (see Figure 9) when the number of deals reached the mid-50s and the total estimated value was close to $250 million. Since this peak the number of VC deals per year has declined less than 20 while the value has remained under $50 million.

Software and ICT services accounted for 18.7% of all venture capital deals from 1996-2011 (see Figure 10). Bio-pharma (14.1%) and ICT manufacturing (14.8%) were other industries with significant levels of VC deal.

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

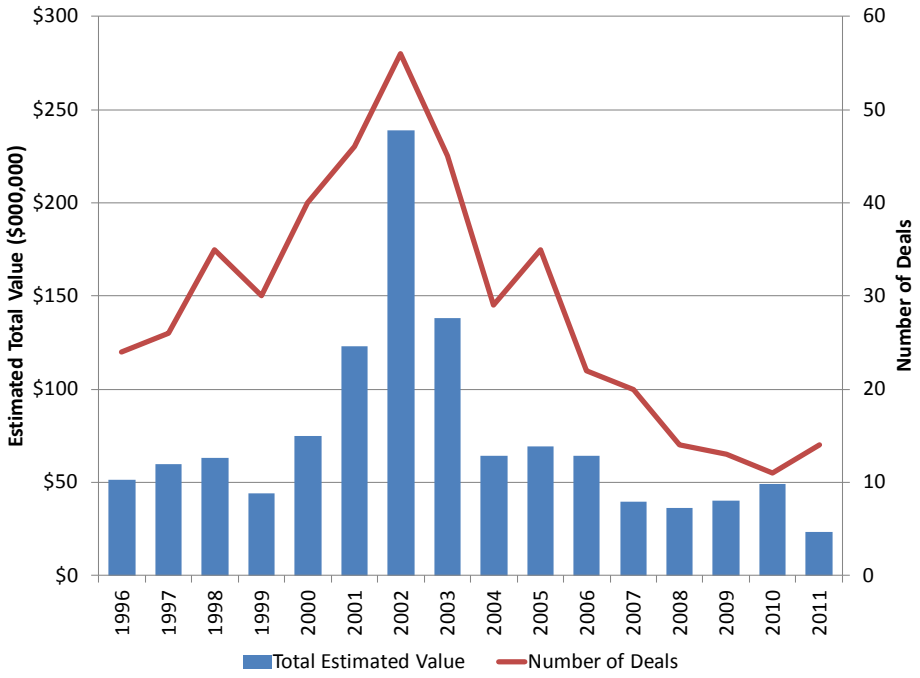
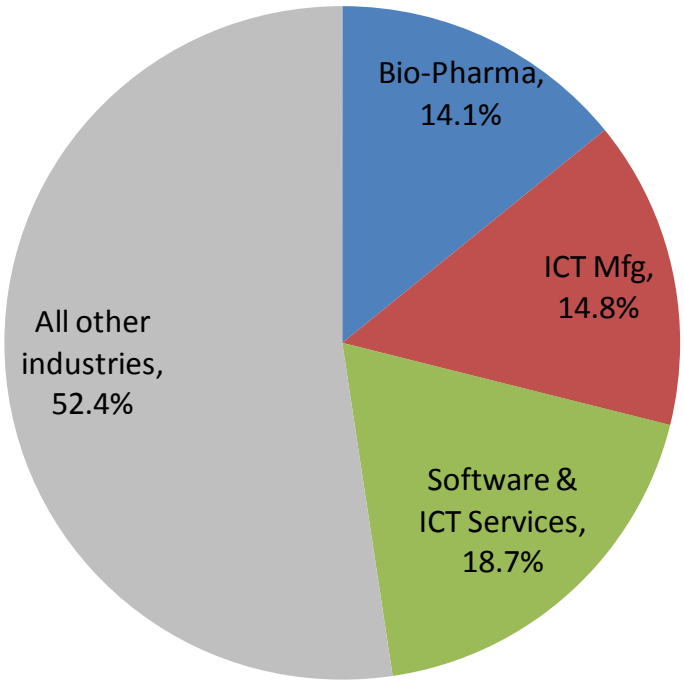


Figure 10 - Share of venture capital deals by industry, 1996-2011



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
Québec

Since 1970 there have been 63 companies started by either local university professors or based on technology produced at a local university. Of these companies 16 have been high growth firms 14 of which remained in the local area with 2 others decamping to other locations (see Figure 11). Roughly one third of these were in either biomedical/pharma industries (23), with 11 in software and 8 in ICT (see Figure 12).

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

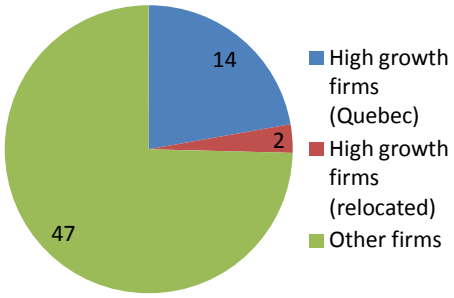
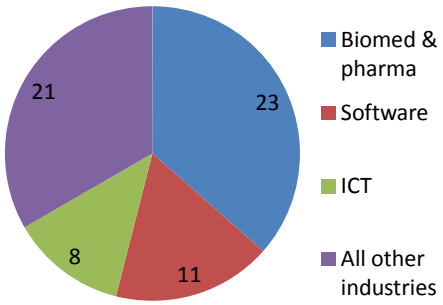


Figure 12 - University spin-off firms by industry



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