Patenting
Ottawa-Gatineau

The number of patents per calendar year generated by inventors in the Waterloo Region increased by nearly a factor of five between 1975 and 1997 from roughly 100 to 500 patents per year (see Figure 1). Most of this growth occurred in the last decade and after the dot-com bust.

The industrial mix of patents also changed significantly between 1975 and 2007 as the knowledge economy became more specialized. The combination of telecoms (42.1%) and computers (18.1%%) accounted for 3 out of every 5 patents between 1998 and 2007. This is up from one third from 1978-1987.

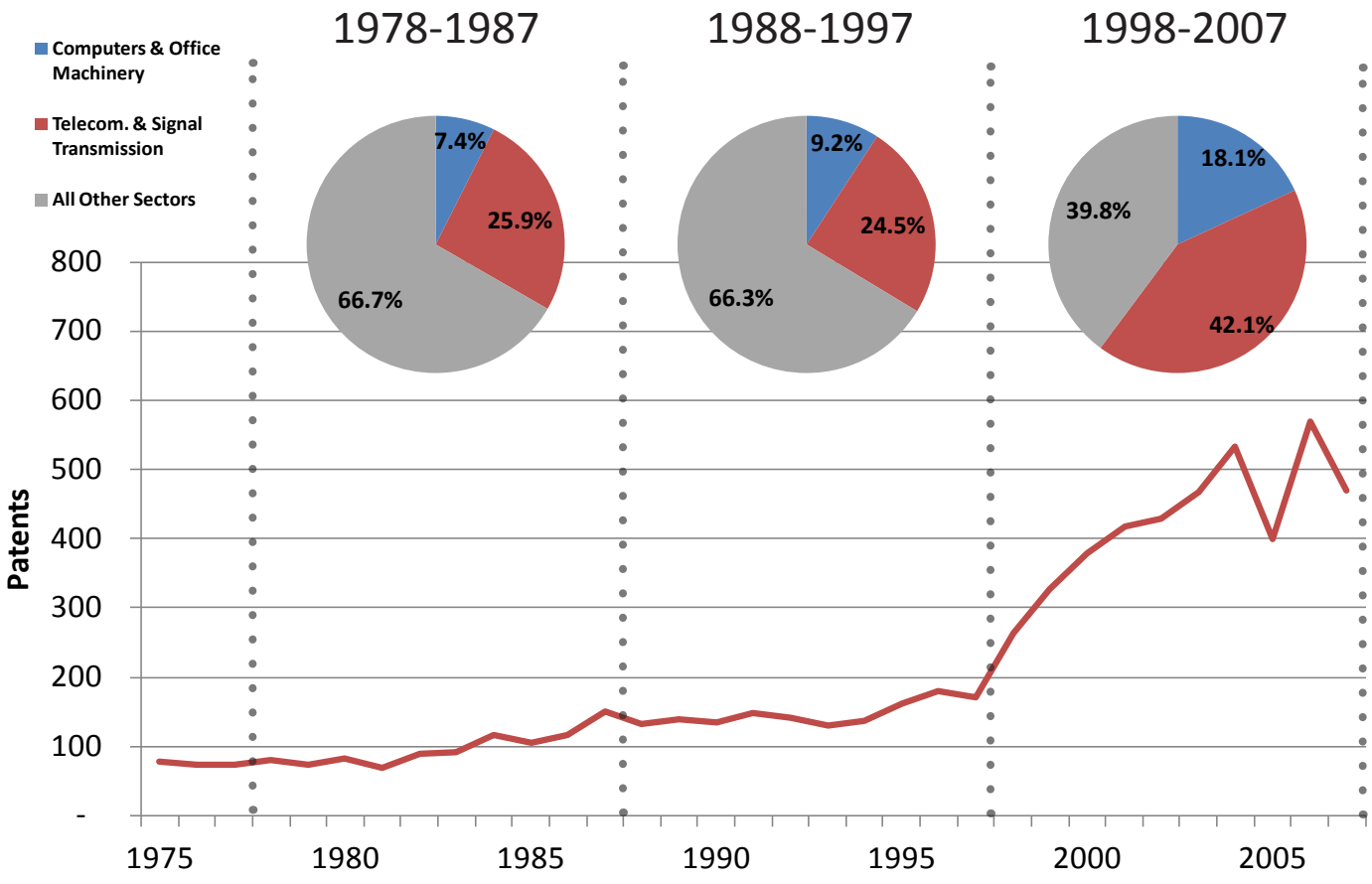
Both the high number and high growth in patents in computers and telecommunications in the Ottawa-Gatineau is largely due to Nortel Networks which registered 1,447 patents between 1998 and 2007 (see Table 1). As Nortel is now operating under bankruptcy protection this activity has fallen off dramatically. Other significant organizations generating new science and technology in the Ottawa-Gatineau region include Alcatel Lucent (211), the NRC (166), Mitel (151), Mosaid Technologies (141), and JDS Uniphase (141).

Table 1 - Top 10 Patenting Enterprises 1998-2007

Enterprise	Patents
Nortel Networks	1,447
Alcatel Lucent	211
National Research Council	166
Mitel	151
Mosaid Technologies	141
JDS Uniphase	141
Tropic Networks	65
Entrust Technologies	57
Dew Engineering and Development	54
Logicvision	38

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

Ottawa-Gatineau

An analysis of patents that involved collaboration between inventors based in Ottawa-Gatineau and inventors elsewhere show that the many of these relationships exist with nearby cities. Specifically, connections to Montréal (see Figure 2) are the most common with 419 instances of a Montréal-based inventor collaborating with an inventor in Ottawa-Gatineau. Connections with Toronto (319) are also numerous.

Most instances of international collaboration occur with US-based inventors. The top five US states (see Figure 3) are California (343), Texas (197), Massachusetts (139), New Jersey (113), and New York (109).

Beyond the United States (1,450) the top countries for inventor collaboration with Ottawa-Gatineau are Great Britain (295), Japan (88), France (85), and Germany (76) (see Figure 4).

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

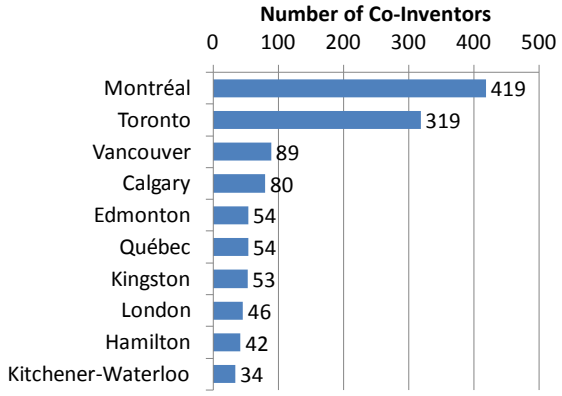


Figure 3 - Top five US states by number of co-inventors, 1975-2007

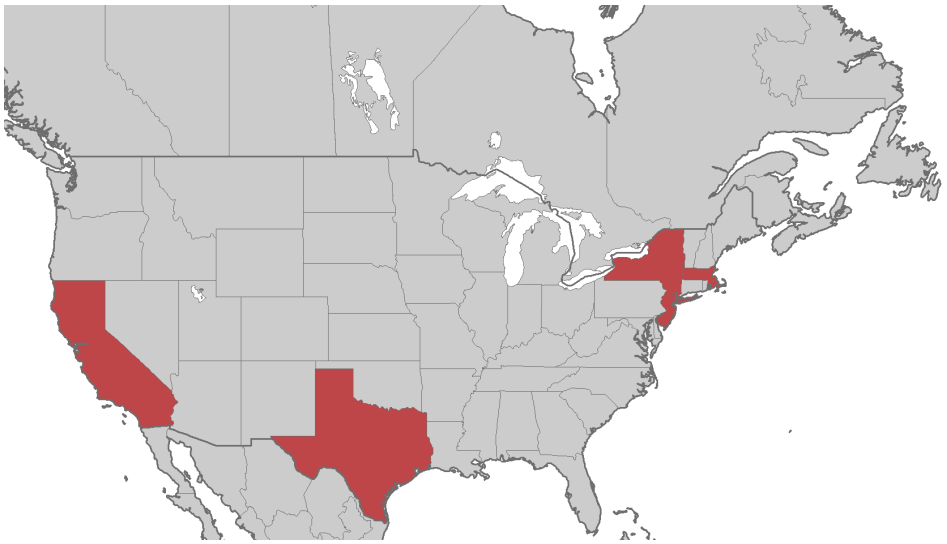
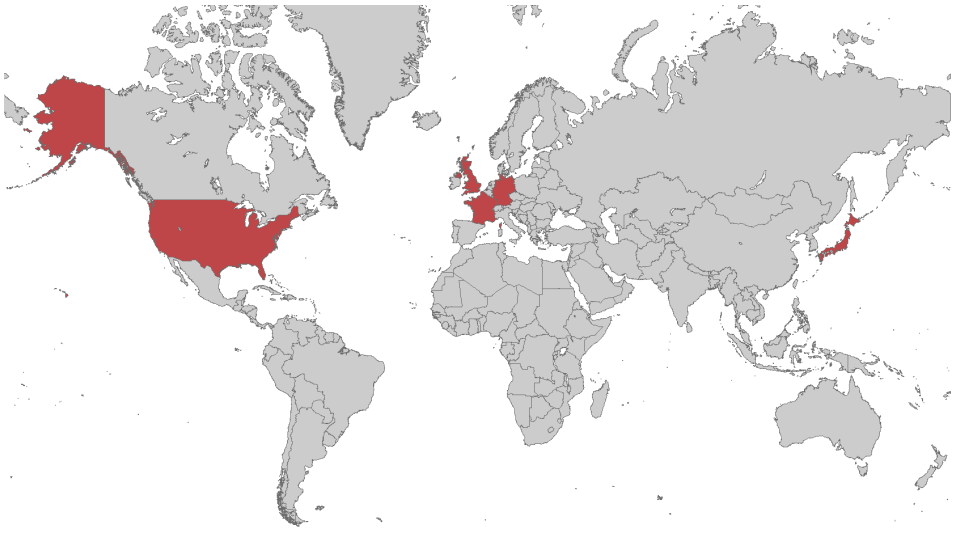


Figure 4 - Top five countries by number of co-inventors, 1975-2007



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

Ottawa-Gatineau

Business spending on R&D in the Ottawa-Gatineau region declined between 2005 and 2009 from $3 billion to just under $2 billion (see Figure 5). Expenditures per R&D employee decreased from roughly $225,000 to $160,000 over the same time period.

There were close to 1,000 business in Ottawa-Gatineau reporting significant R&D activity in 2008 (see Figure 6). This was down by nearly 200 firms over a four year period. R&D spending per firm decreased slightly to just under $2.5 million in 2008.

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

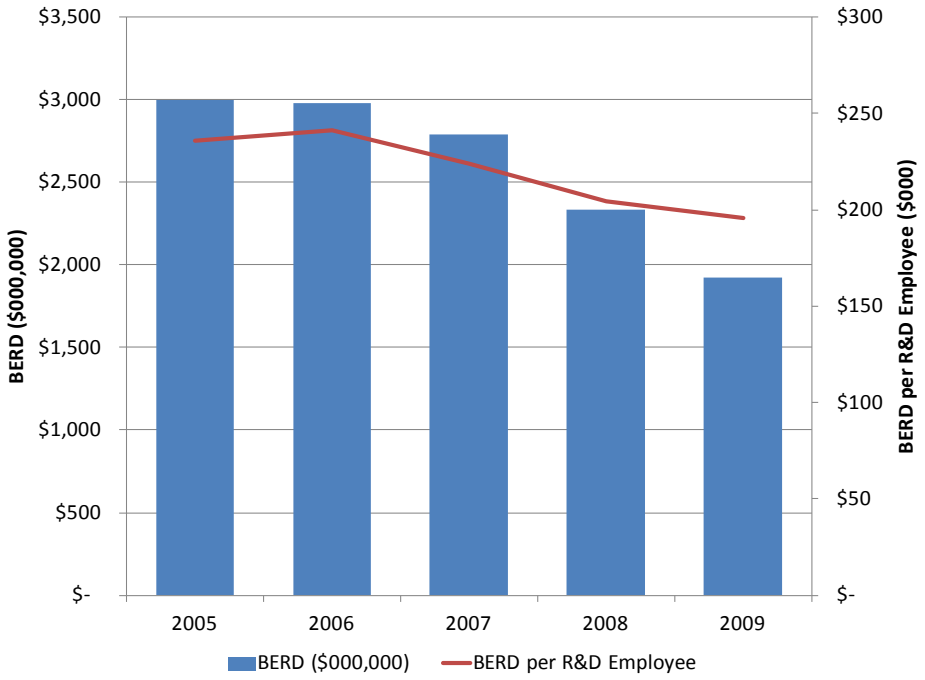
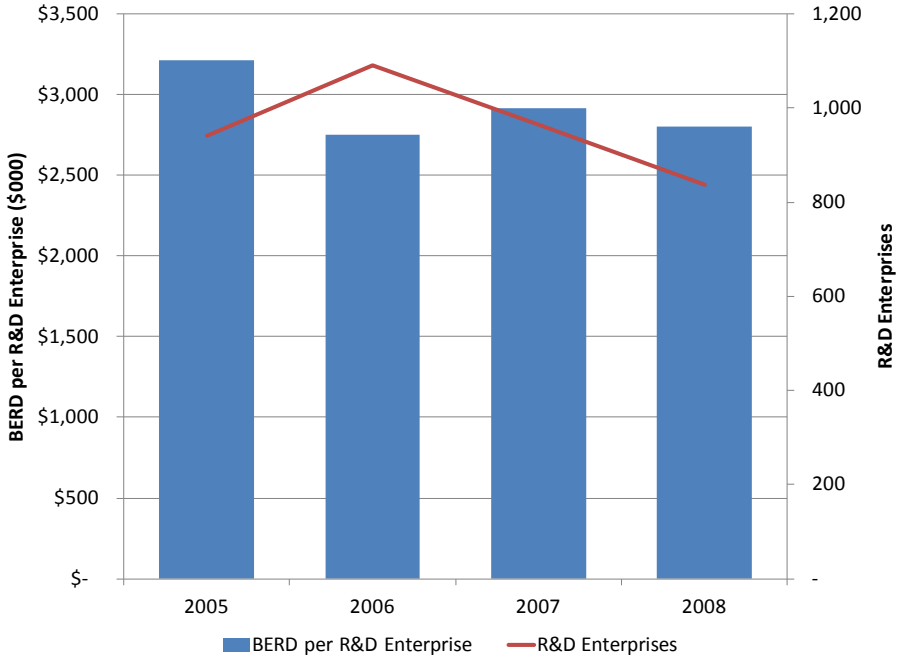


Figure 6 - BERD per R&D enterprise 2005-2008 (constant dollars)



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
Ottawa-Gatineau

Research funding to public institutions such as universities and research hospitals increased steadily from 1999 through 2004 in Ottawa-Gatineau before levelling off at over $300 million per year to 2008. 2007 was the most bountiful year for public research funding with nearly $350 million in spending.

General sources of government funding represented 24.1% of the total in 2008 (see Figure 8). Not-for-profit organizations were the second largest sources of funding accounting for 20.8%. Medical and health research received the most of any specific category at 13.4%.

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

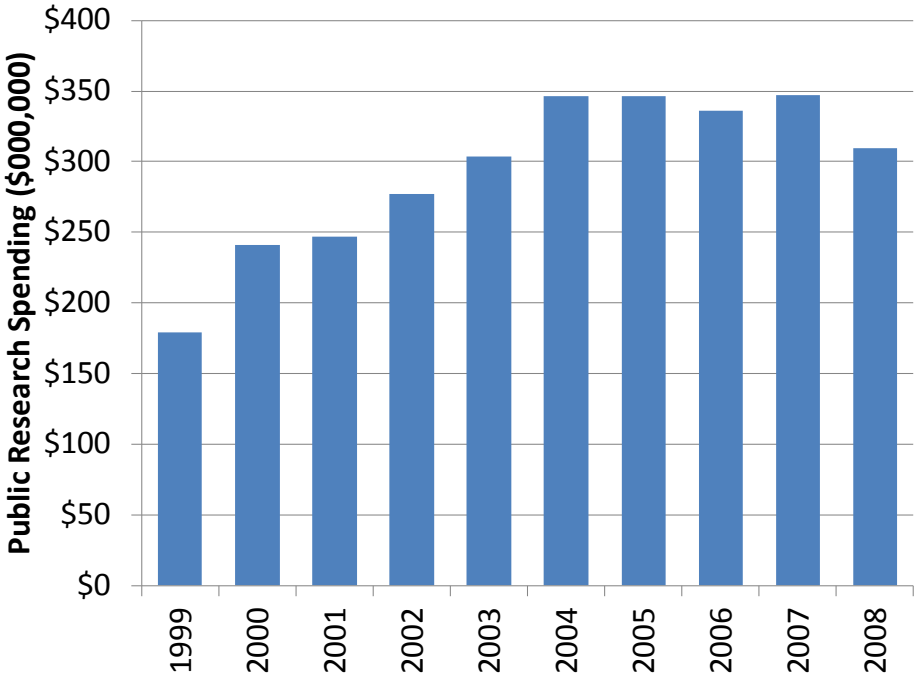
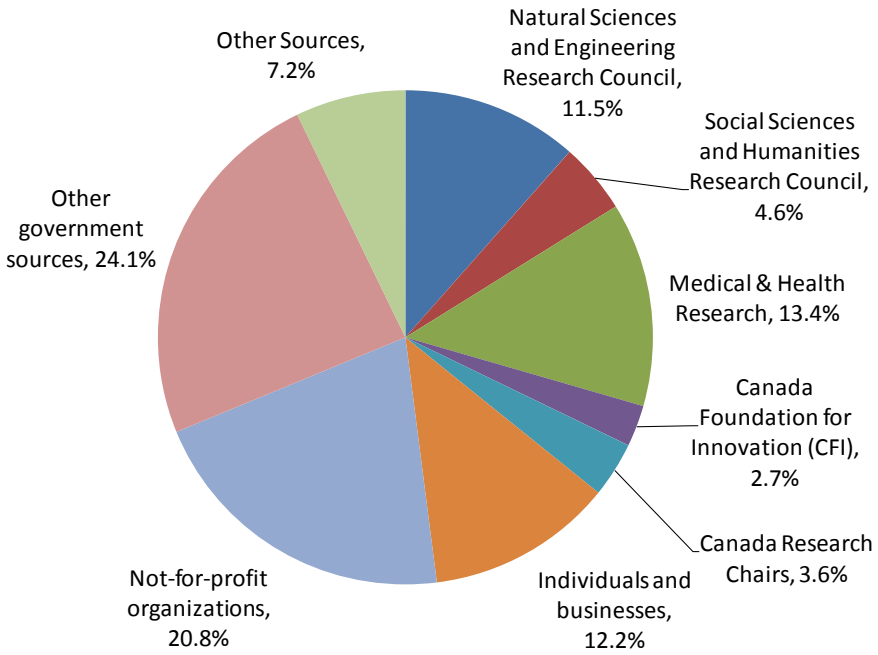


Figure 8 - Share of public research funding by major sources (2008)



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

Venture Capital
Ottawa-Gatineau

Venture capital activity in Ottawa-Gatineau had its strongest years in 2000 and 2001 when the dot-com boom was at its peak (see Figure 9). There were on average 70 VC deals in each of these years for an estimated total amount of almost $1 billion per year. The number of VC deals has declined steadily since to roughly 20 deals per year between 2009 and 2011. The estimated value of all deals has dropped under $100 million.

Software and ICT services accounted for just over half (51.5%) of all venture capital deals between 1996 and 2001 (see Figure 10). ICT manufacturing represented nearly one third (30.3%) of all VC deals.

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

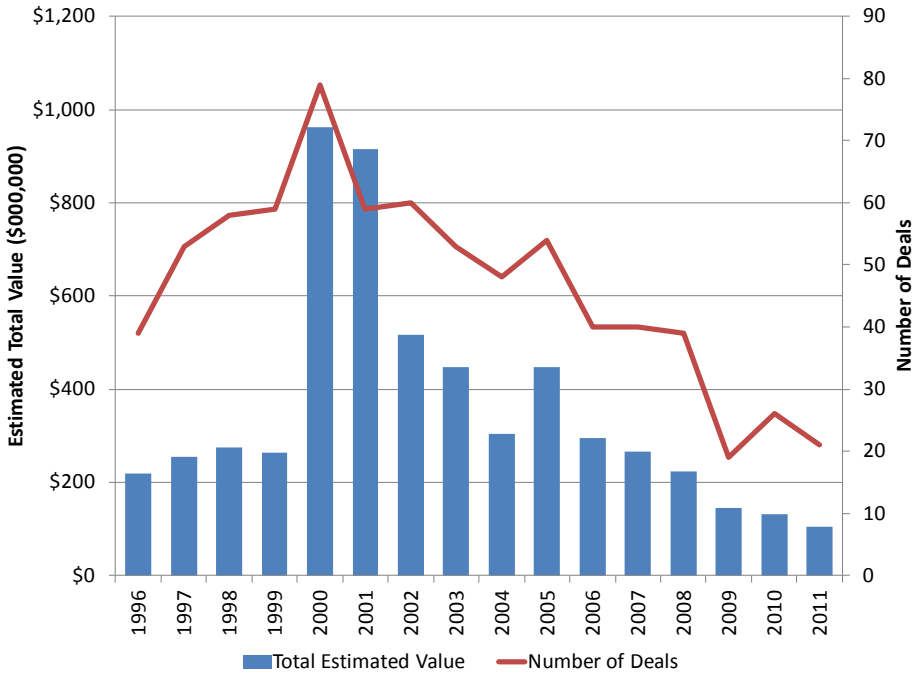
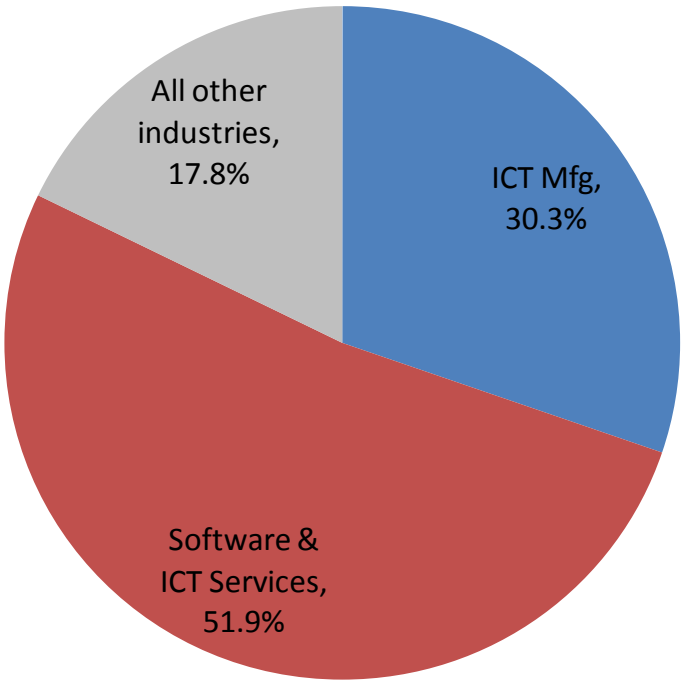


Figure 10 - Share of venture capital deals by industry, 1996-2011



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
Ottawa-Gatineau

Since 1970 there have been 58 companies started by either local university professors or based on technology produced at a local university. Of these companies 12 have been high growth firms all of which remained in the Ottawa-Gatineau region (see Figure 11). Biomedical/pharma was the most common industry for spin-offs with 22 while roughly half were in either software (19) or ICT (8) industries.

There have also been a significant number (35) of firms started by university students from Ottawa-Gatineau institutions since 1975. Four of the university student spin-offs have achieved high growth status with all of them remaining locally-based (see Figure 13). Software (14) and ICT (12) firms have accounted for nearly three quarters student spin-offs (see Figure 14).

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

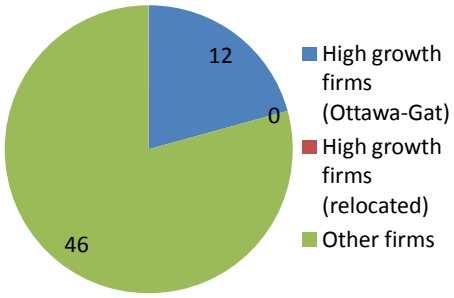


Figure 12 - University spin-off firms by industry

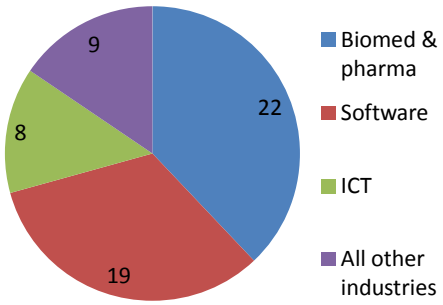


Figure 13 - University student spin-off firms by growth and Location

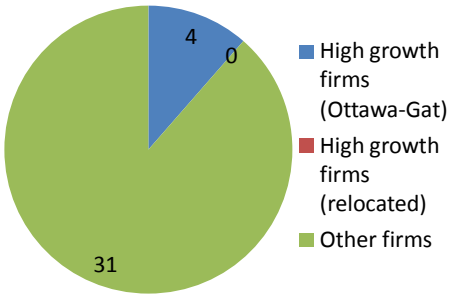
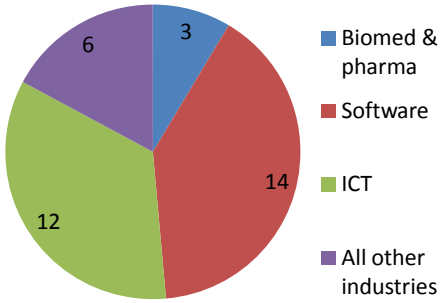


Figure 14 - University student spin-off firms by industry



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