

Executive Whiteboard Session on the topic of indicators of global competitiveness for the knowledge economy

An Overview of OECD Work on Information and Communications
Technology Indicators

Presented by Fred Gault, Statistics Canada

Prepared by Daniel April with the help of the WPIIS Secretariat

Presentation

- ICT indicator work at the OECD
 - Developing standards
 - Gathering and publishing statistics
 - Impact analysis
- Partnership on Measuring ICT for Development
- The upcoming ministerial meeting on the Internet economy
- Some facts and figures
- Challenges for the statistical system



Developing standards

A necessary first step towards internationally comparable ICT indicators.

Developing standards, indicators and methodology

- The OECD plays a central role by providing a forum for statisticians and policy makers to share knowledge and resources.
- In 1997, the Working Party on Indicators for the Information Society (**WPIIS**) was created “to establish a set of definitions and methodologies to facilitate the compilation of internationally comparable data for measuring various aspects of the information society, the information economy and e-commerce”. But the WPIIS is not the only contributor.

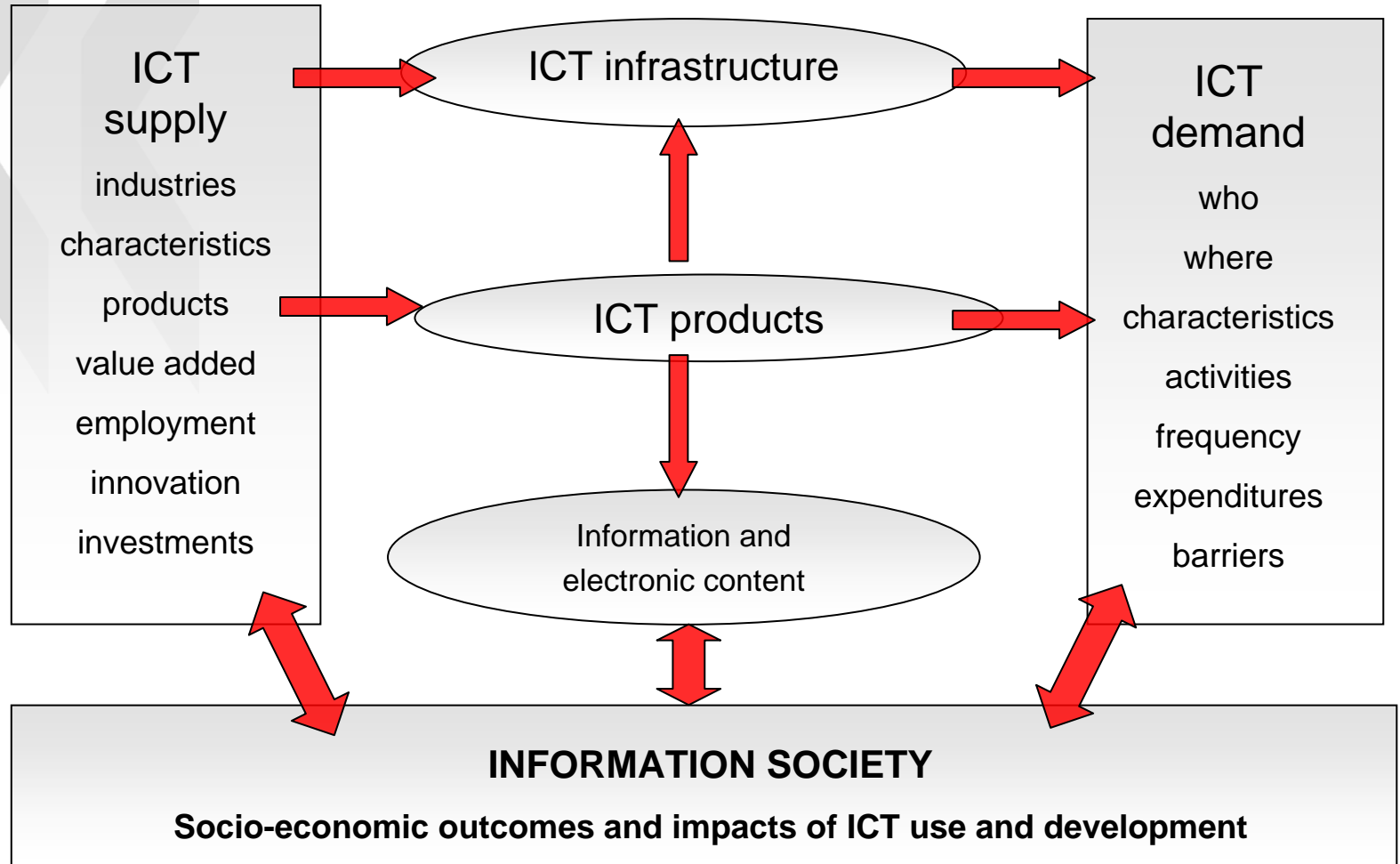
Developing standards, indicators and methodology

- Other Working Parties engage in the development of ICT related indicators even if their mandate is not primarily statistical. For instance, the **CISP** has a long history of developing and producing indicators to inform telecommunication and broadcasting policy. This includes market, network, investment, employment, productivity and tariffs indicators. The group is also leading an effort to develop a portal devoted to broadband indicators.

The main contributions of WPIIS

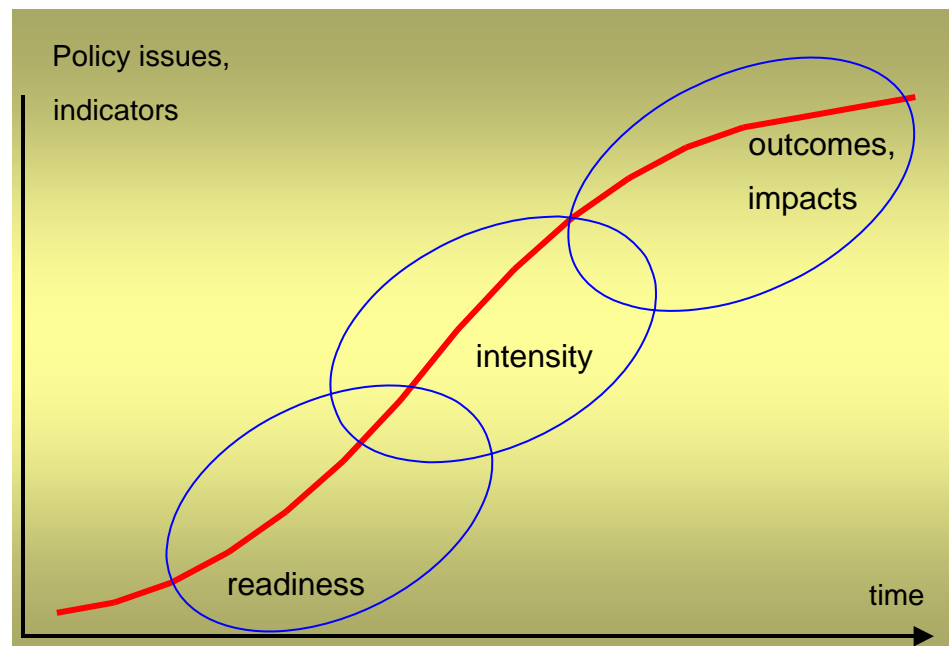
- A general approach to information society indicator development
- Standards for industry related statistics
 - The ICT sector definition (recently revised)
 - The media and content sector definition (new)
- Standards for product related statistics
 - ICT goods (in revision)
 - ICT services (in revision)
- Definitions of E-commerce
- Model surveys
 - ICT use by households and individuals
 - ICT use by businesses
- The Guide to Measuring the Information Society

A general framework to organize indicators



An approach for indicator development

- **Evolution of technologies
policy needs
indicators**
- **Benchmarking indicators
measure progress
over time
across countries**



- **Increased international coordination**
definitions, classifications, and standards; interpretability and comparability; core indicators; capacity building

Standards for industry related statistics

- Industry statistics and associated classifications are core elements of the statistical system. Our understanding of growth, wealth creation, structural changes, use of labour and capital and investment in knowledge is very much dependent on those statistics.
- In the mid 90s, there was a persistent demand for industry statistics for the so-called ICT sector, but no definition of the ICT sector.
- That was the first task of the Working Party on Indicators for the Information Society (WPIIS).

The ICT sector definition

- The first definition was adopted in 1998 and was based on the International Standard Industrial Classification (ISIC) of the day. The definition was arrived at by choosing industries within ISIC that met the following criteria:
 - For manufacturing industries, the products (goods) of a candidate industry must fulfill the function of information processing and communication including transmission and display **OR** use electronic processing to detect, measure and/or record physical phenomena or control a physical process.
 - For services industries, the products (services) of a candidate industry must be intended to enable the function of information processing and communication by electronic means.

The definition was implemented at the international level by:

- Developing concordances with national industrial classifications
- Publishing indicators in OECD flagship publications. For example:
 - Size and growth of the ICT sector
 - Contribution of the ICT sector to employment and output in the total economy
 - R&D expenditures by the ICT sector
 - ICT sector trade
 - Activity of foreign affiliates in the ICT sector
- By embedding the definition as an alternate analytical aggregation into the ISIC in 2002 to promote broad usage of the concept.

The definition has been used in Canada to publish similar indicators in various vehicles, for example:

- In ***Canada's Journey to an Information Society***, a compendium of statistics and analysis (STC).
<http://www.statcan.ca/english/freepub/56-508-XIE/pdf/56-508-XIE2003001.pdf>
- In the ***Quarterly Monitor of the Canadian ICT Sector***, a portal dedicated to current statistics on the ICT sector (IC).
http://strategis.ic.gc.ca/epic/internet/inict-tic.nsf/en/h_it06100e.html
- For special analytical aggregates in various statistical programs including the ***Monthly gross domestic product by industry*** (produced by the System of National Accounts).

For more detailed information:

- On the current OECD definition of the ICT sector, see chapter 4 and annex 1B of the **Guide to Measuring the Information Society**

http://www.oecd.org/document/22/0,3343,en_2649_37441_34508886_1_1_1_37441,00.html

- On the Canadian version of the definition based on the North American Industry Classification System (NAICS), visit **Statistics Canada's web site** at

<http://www.statcan.ca/english/Subjects/Standard/spec-aggreg/ict-2002/ict02-menu.htm>

Definitions must be revisited from time to time

- The project to revise the ISIC presented an opportunity for the OECD to help modernize an important international standard and revisit its own definition.
- The result is an updated ISIC, the adoption of a narrower definition of the ICT sector and the integration of a content and media sector into the measurement model.
- The definitions are agreed by OECD countries (declassified) and will become alternate aggregations in ISIC 4

However

- It will take a few years for these definitions to be implemented, the time necessary for ISIC 4 and its derived national classifications to become more widely used.

From a broad to a narrow definition of the ICT sector

- The concept of a manufacturing industry producing products that “use electronic processing to detect, measure and/or record physical phenomena or control a physical process” lost its significance over time and became increasingly more difficult to apply.
- As a result, a narrower concept was adopted. “The products of a candidate manufacturing industry must be intended to primarily fulfill the function of electronic information processing and communication (including transmission, recording, storage and display). This includes also the production of electronic components.”
- The criterion to include service industries was unchanged.

The content and media sector

- It was agreed early on at WPIIS that the information economy was not limited to the ICT sector. Producers of content, among others, are key players.
- It was however difficult to agree on a definition for a content and media sector, in part because of the lack of consistent treatment of such industries in national industrial classifications and national statistical systems.
- The introduction of an “information sector” in ISIC 4 and in a few national industrial classifications changed the perspective and led to the recent adoption of a definition by WPIIS

The content sector comprises

- The group of economic activities that are primarily engaged in the publishing and/or the electronic distribution of content products

Where

- A content product corresponds to an organized message intended for human beings published in mass communication media
- The value of such products to the consumer does not lie in its tangible qualities but in its information, educational, cultural or entertainment content.



For more detailed information:

- On the revised ICT sector definition and the new content and media sector definition, visit the OECD web site at:

<http://www.oecd.org/dataoecd/49/17/38217340.pdf>

Standards for product related statistics

- Product statistics and associated classifications are also core elements of the statistical system. The measurement of consumption, domestic production, market size, prices, investments and international trade all potentially make use of product (goods or services) classifications.
- As was the case for industry statistics, there was a persistent demand for ICT commodity statistics, especially for international trade, but no statistical definition.
- The OECD through its Working Party on Indicators for the Information Society (WPIIS) took on the challenge.

ICT goods

- In 2002, WPIIS agreed on a definition expressed in terms of the Harmonized System (HS 2002) of the World Custom Organization. Consistent with the approach adopted previously for the sector definition, the ICT goods definition was arrived at by choosing products within the HS that met the following criteria:
 - the product must fulfill the function of information processing and communication including transmission and display **OR** use electronic processing to detect, measure and/or record physical phenomena or control a physical process

The definition was implemented

- Almost exclusively to benchmark international trade in ICT goods. About 100 countries used the HS to classify merchandise trade making it possible to do international benchmarking.
- The product classifications used to measure domestic production, consumption, prices and investment are not broadly standardized from country to country making it difficult to do international benchmarking.

ICT services

- The WPIIS agreed to a classification of **ICT services** in 2006. It is defined in terms of the United Nations Central Product Classification (CPC), Version 2.
- The ICT services definition was arrived at by choosing products within the CPC that are “intended to enable the function of information processing and communication by electronic means”.

The ICT services classification has not yet been implemented

- It will be much more difficult to gather consistent service product data across countries than it has been to collect consistent industry data. Industry data tend to be more readily available.
- Having an agreed product classification will help understand the magnitude of the data gap. That, in itself, is a step forward for the statistical system.
- For Canada, it will be a matter of converting NAPCS data to the CPC, where NAPCS data are available, since the CPC is not part of our product data collection system.

For more detailed information:

- On the current definition of ICT goods, see chapter 2 and annex 1A of the **Guide to Measuring the Information Society**

http://www.oecd.org/document/22/0,3343,en_2649_37441_34508886_1_1_1_37441,00.html

- On the definitions of ICT services, visit the OECD web site at:

www.oecd.org/dataoecd/39/25/38226951.pdf

- Both definitions are being re-assessed by an expert group. Revisions expected by the end of 2007.

E-commerce

- The 1998 Ottawa OECD ministerial on E-commerce produced a plan of action that called, among other things, for the OECD “to improve its ability to measure the structure and volume of e-commerce”.
- The first step was to develop and adopt a definition (or definitions), a task undertaken by WPIIS.

The definition of E-commerce

- At its 2000 meeting, the WPIS adopted two definitions of electronic commerce. Both emphasized the method of ordering rather than the method of payment, or the channel of delivery.
- **Narrow definition:** Sales or purchases conducted over the Internet.
- **Broad definition:** Sales or purchases over any computer-mediated networks.

OECD definitions of e-commerce transactions and interpretation guidelines

E-commerce transactions	OECD definitions	Guidelines for the Interpretation of the Definitions (WPIIS proposal April 2001)
BROAD definition	An electronic transaction is the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over computer-mediated networks . The goods and services are ordered over those networks, but the payment and the ultimate delivery of the good or service may be conducted on or off-line.	Include: orders received or placed on any online application used in automated transactions such as Internet applications, EDI, Minitel or interactive telephone systems.
NARROW definition	An Internet transaction is the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over the Internet . The goods and services are ordered over the Internet, but the payment and the ultimate delivery of the good or service may be conducted on or off-line.	Include: orders received or placed on any Internet application used in automated transactions such as Web pages, Extranets and other applications that run over the Internet, such as EDI over the Internet, Minitel over the Internet, or over any other Web enabled application regardless of how the Web is accessed (e.g. through a mobile or a TV set, etc.) Exclude: orders received or placed by telephone, facsimile, or conventional e-mail.

These definitions are now broadly used within and outside the OECD

- They are embedded in the OECD model surveys of ICT use by household and individuals and ICT use by businesses **as well as** in national surveys derived from the OECD models.
- Canada has chosen the narrow definition, mostly to reflect the domestic policy interest in Internet applications.
- Since 1999, the Survey of Electronic Commerce and Technology (SECT) has produced estimates of
 - B-to-B and B-to-C e-commerce
 - e-commerce sales by sector
 - E-commerce by residence of customers (domestic and foreign).
- The latest statistics are for 2006.

Model surveys

- In order to improve harmonisation between countries' ICT use surveys, the OECD has developed two model surveys:
 - The model survey of business use of ICT was first released in 2001.
 - The model survey of household and individual use of ICT was first released in 2002.
- Both model surveys have since been updated and new versions were released at the end of 2005.



The role of model surveys

- Model surveys are essentially a menu at the disposal of countries that launch their own surveys. Generally, individual countries have not implemented the surveys in their entirety, but the goal of improving harmonization has been achieved.
- Though the OECD cannot enforce the use of the model surveys, it has identified a set of core questions which have been used by many countries.

ICT access and use by households and individuals

- This model survey includes two sections.
- The first section is concerned with household **access** to ICTs (connectivity). The topics covered are:
 - Access to computers and the Internet
 - Type of Internet access (device, technology)
 - Barriers
- The second section deals with **use** of ICT by individuals. The topics covered are.
 - Use of computer, the Internet
 - Place of access and frequency of use
 - Activities on the Internet (including e-commerce, e-government, downloading, etc.)
 - Barriers
 - Mobile phone use

ICT access and use by households and individuals

- In addition to suggested questions, the model survey includes:
 - General advice on minimizing sampling and non-sampling error and collection techniques
 - Recommendations on statistical units, survey frequency and reference period/date, survey scope and coverage for individuals and households, classificatory variables.

Implementation in Canada

- Selected questions (same or equivalent) from the OECD model survey are implemented in the **Survey of Household Spending** (household connectivity) and the **Canadian Internet Use Survey** (location, type and frequency of use).
- The launch of the CIUS in 2005 has improved comparability of Canadian data with data from other countries. Prior to 2005 (1997 to 2003) , the Household Internet Use Survey provided only a few comparable indicators. The second cycle (2007) is underway.
- The CIUS covers additional topics of particular policy interest in Canada.

Canadian Internet Use Survey (CIUS)

● HIUS Content

- General use
- Location of use
- Frequency, hours
- Connections
- Specific uses
- E-commerce
- Non-user

● New Modules (2005)

- Government on-line
- Medical / Health use
- Education
- + – Social cohesion
- Language of use
- Privacy and security
- Ethnic origin

Canadian Internet Use Survey (CIUS)

- Key indicators
 - access to ICTs (Internet, computer, cell phone, cable, t.v.)
 - use of the Internet
 - connection type
 - location of use (home, work, school, library other)
 - type of use (email, general browsing, electronic banking)
 - frequency of use
 - barriers to use
 - electronic commerce
- By socio-economic characteristic
 - income, gender, education, age, geographical location, family type



ICT use by businesses ...

- This model survey includes two main sections.
- The first section is concerned with general information on the use of ICT. The topics covered are:
 - use of computers
 - use of the Internet and other network technologies
 - Internet access technologies used
 - IT security – measures in place and experiences



ICT use by businesses ...

- The second section is concerned with how businesses use ICTs in their operations. The topics covered are:
 - Internet commerce (including benefits and barriers)
 - Web site functionality
 - Use of Internet for dealing with government
 - Use of Internet for business processes
 - Use of other computer networks for e-commerce
 - Integration of e-commerce with other internal and external systems



Implementation in Canada

- Selected questions (same or equivalent) from the OECD model survey are implemented in the **Survey of Electronic Commerce and Technology (SECT)**.
- The survey was first conducted in 1999 (pilot) and the latest data are for the 2006 reference year. The 2007 cycle is underway.
- In addition to core ICT related questions, SECT also includes a module to cover new topics that change from year-to-year.

Survey of Electronic Commerce and Technology

- Key indicators

- business use of E-mail, Internet, Web site
- employee access to PC, E-mail, Internet
- buying and selling on-line (with or without on-line payment)
- value of sales over the Internet (with or without on-line payment)
- % sales B2B, % sales B2C
- perceived benefits of conducting business over the Internet
- e-Business practices
- open-source software
- barriers to buying, selling on-line

- Available by sector and firm size (employment)

The OECD Guide to Measuring the Information Society

- Purpose


- to document work of the OECD (WPIIS) and others in developing statistical standards for measuring the Information Society

- Objectives

- facilitate harmonisation of practices and thus, international comparability, identify strengths and weaknesses, track progress
- assist newly participating countries to start or further develop measurement programs

- Scope

- compilation of concepts, definitions, classifications and methods of Information Society measurement and analysis



Gathering relevant data from various sources,
publishing indicators, fostering impact analysis
and outreach activities

Important contributions of the OECD to our
understanding of the Information Society

Gathering data and publishing indicators

- The OECD collects information from members states NSIs and other sources and publishes ICT related indicators through a number of flagship publications:
- **Communication Outlook** - Provides an extensive range of indicators for different types of communications networks and compares performance indicators such as revenue, investment, employment and prices for services throughout the OECD area.
 - <http://www.oecd.org/sti/telecom/outlook>
- **Information Technology Outlook** - Describes recent market dynamics and trends in industries supplying IT goods and services and offers an overview of the globalization of the ICT sector and the rise of ICT-enabled international sourcing.
 - <http://www.oecd.org/sti/ito>

Gathering data and publishing indicators

- **OECD Science, Technology and Industry Scoreboard** - The *STI Scoreboard* explores the growing interaction between knowledge and globalization at the centre of the ongoing transformation of OECD economies and provides a comprehensive picture of countries' performance in the areas of science, technology, globalization and industry.
 - www.oecd.org/sti/scoreboard
- **OECD Key ICT Indicators** - A portal presenting 15 ICT indicators drawn from various publications and databases produced by the OECD's Directorate for Science, Technology and Industry. They are updated annually on a rolling basis, as data become available.
 - www.oecd.org/sti/ICTindicators

Impact analysis

- The OECD, Eurostat and some of its member states have begun studying the economic and social impacts of ICTs.
- It is proving to be a challenging task and much remains to be done in terms of conducting standard studies across countries.
- This is an area where the OECD can play a significant role as it did for indicator development, but success depends to a large extent on the participation of member states.
- The following slides provide a few examples of findings to date.

Some examples of economic impacts from macroeconomic and firm level studies

- ICT investment accounted for between 0.3 and 0.9 % points of per capita GDP growth in OECD countries between 1995 and 2002.
- ICT manufacturing's contribution to labour productivity growth has increased over that period. ICT services industries played a smaller role.
- Firm level results for the UK show that the productivity effects of ICT investments are substantially higher where employees are broadband-enabled.

Some examples of social impacts

- ICTs are affecting where people work and what they do.
 - In 2004, between 20% – 30% of employees in OECD countries were either ICT specialists or ICT users.
 - In 2005, 2.1m people in the UK (7% of the workforce) worked mainly from home, or used home as a base.
- ICTs are changing how people spend
 - In Canada, average household spending on ICTs increased from 4.2% to 4.5% of spending between 1997 and 2003 despite falling ICT costs.

Some examples of social impacts

- ICTs influence the performance of students (2003 PISA)
 - The math performance of students without access to computers at home was significantly below that of those with home access and, in most countries, a performance advantage persisted even after accounting for different socio-economic backgrounds.
- Some of the predicted impacts of ICT have not materialized (Statistics Canada, 2006)
 - Physical mail continues to grow despite increased communication by ICTs.
 - Traditional retail continues to grow despite E-tailing. In fact E-tailing is still very small despite considerable growth.

For more detailed information on impacts of broadband

- See **Joint WPIIS/WPIE workshop** on the Economic and Social Impacts of Broadband Communications: from ICT Measurement to Policy Implications
 - http://www.oecd.org/document/48/0,3343,en_2649_34449_386977_12_1_1_1_1,00.html
- The workshop reviewed studies of the impacts of broadband roll-out and use:
 - on economic performance at aggregate level and in the business sector
 - on the geographical distribution of economic activity and employment, on content producers and users, and on households.
- It covered recent and ongoing analysis for a wide range of OECD countries.

Partnership on Measuring ICT for Development

- The OECD also promotes international comparability of indicators through its outreach activities. The Partnership on Measuring ICT for Development is a good example.
- Partners
 - OECD, ITU, UNCTAD, UIS, four UN Regional Commissions (UNECLAC, UNESCWA, UNESCAP and UNECA), the UN ICT Task Force, Eurostat and the World Bank
- Objectives
 - Core ICT indicators
 - Capacity building in developing countries
 - International database on ICT indicators
- See www.itu.int/ITUD/ict/partnership/ for more information.



The upcoming OECD ministerial on the Future of the Internet Economy

A new direction for policy and indicator
development?

Context for OECD Ministerial Meeting - Future of the Internet Economy, Seoul, June 2008

- In 1998, as the Internet was emerging in mainstream activity, the OECD convened a Ministerial Conference on E-Commerce in Ottawa. That meeting established policies in areas such as privacy, security, taxation and consumer policy, that have been instrumental in nurturing online activity.
- Ten years later, the online world is at another critical juncture. Major changes in Internet use will affect how the Internet Economy develops: previously distinct networks are converging, we rely on the Internet for commercial and social activity more than ever, and the integrity of the network is tested daily by severe and sophisticated attacks.

Purpose for OECD Ministerial Meeting - Future of the Internet Economy, Seoul, June 2008

- At this point, policies need to be carefully crafted and coordinated across policy domains, borders and various stakeholder communities to ensure that societies seize the innovation and growth opportunities of the Internet economy.
- The Ministerial represents an ideal opportunity for stakeholders to consider social, economic and technological trends shaping the development of the Internet Economy, and to discuss policies that can provide an enabling environment for the future.
- The 1998 ministerial meeting triggered indicator development work to support policy analysis, debate and monitoring. The upcoming ministerial will probably do the same.

Proposed for inclusion in the ministerial declaration

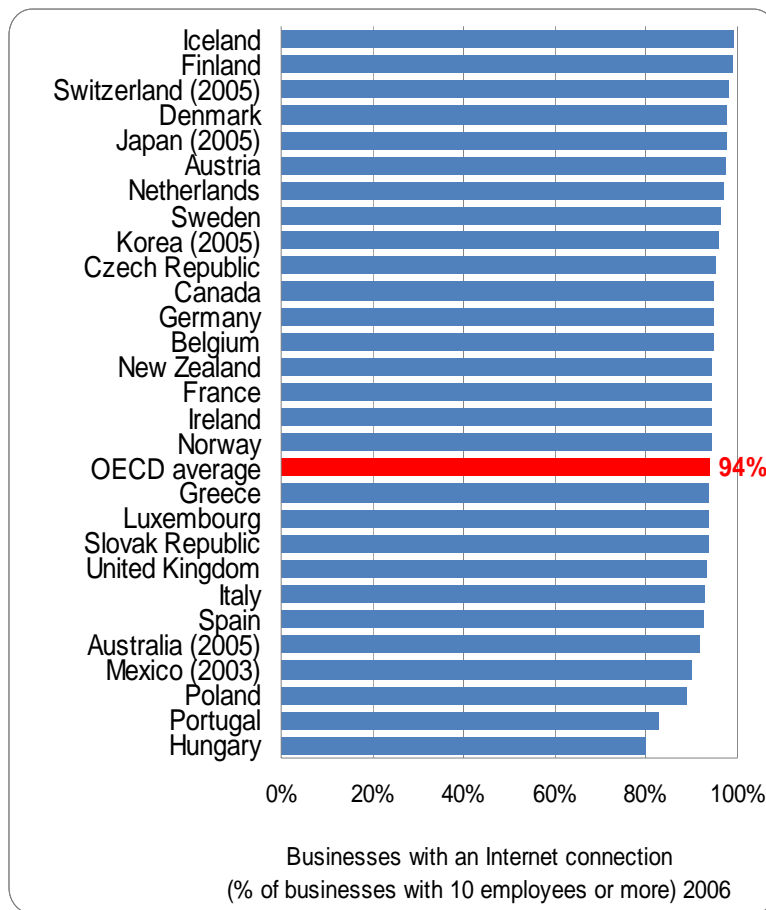
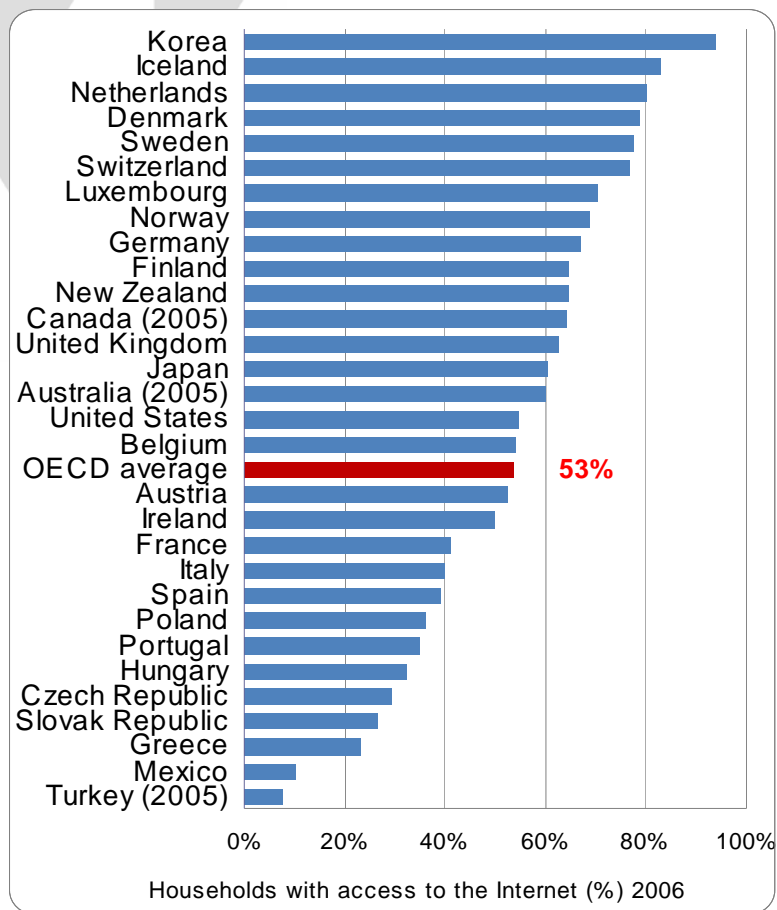
- We recognize the need for reliable evidence to support policy debates, policy formulation and effective practices in a fast evolving Internet economy. In particular, we need to maintain and develop indicators and analysis to:
 - measure the changing nature of the use of the Internet by our citizens, businesses and institutions;
 - improve our understanding of issues related to Internet use barriers, including issues of confidence;
 - improve our understanding of differences in digital access and digital use among citizens and businesses;
 - improve our ability to assess the impact of the Internet on economic performances, notably on productivity and innovation opportunities;
 - improve our ability to assess the impact of the Internet on social well being - particularly via improved access to education, health and government services.



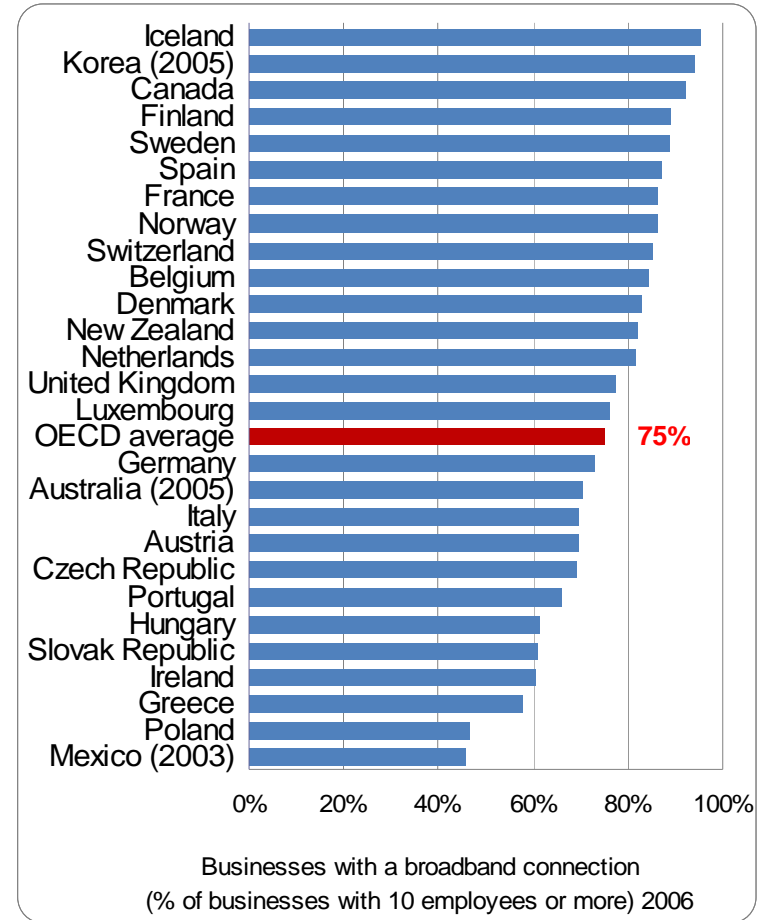
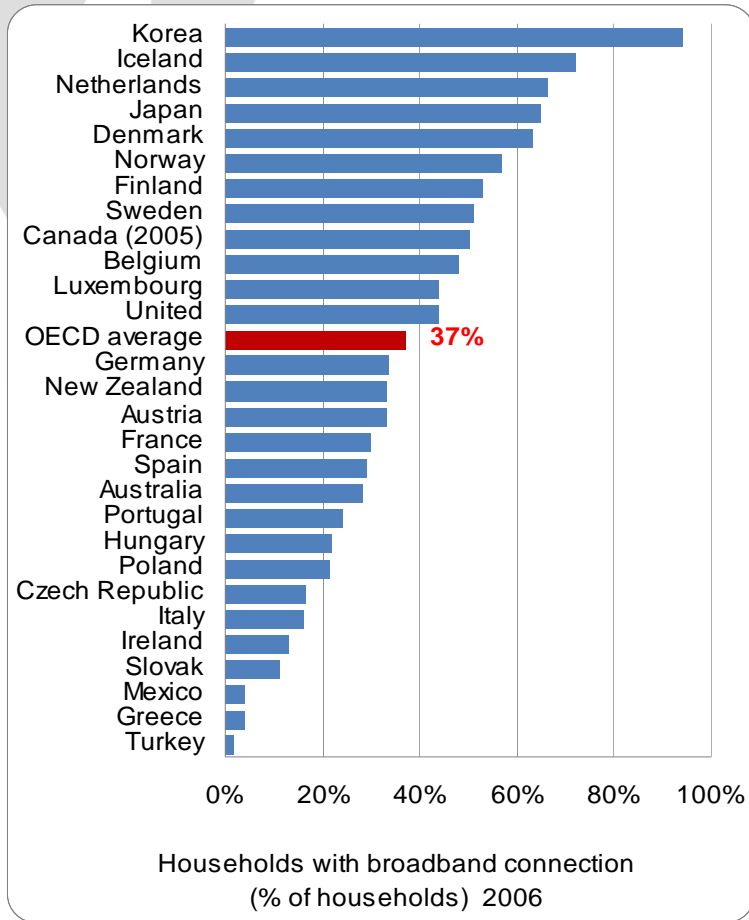
A few facts on Internet connectivity, Internet use and ICT impacts

Canada within the OECD

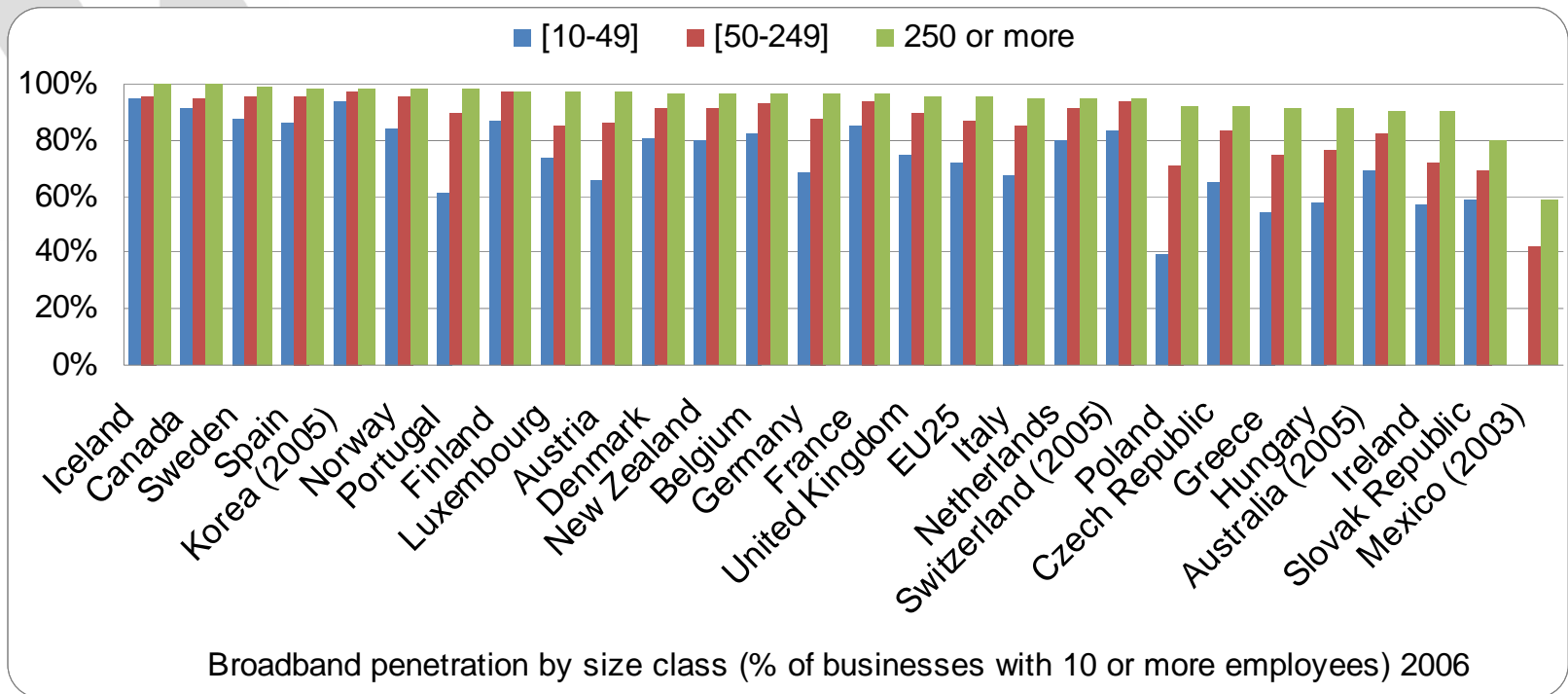
In OECD countries, over half of households and more than 90% of businesses with more than 10 employees are connected to the Internet. Canada is above the OECD average in both cases.



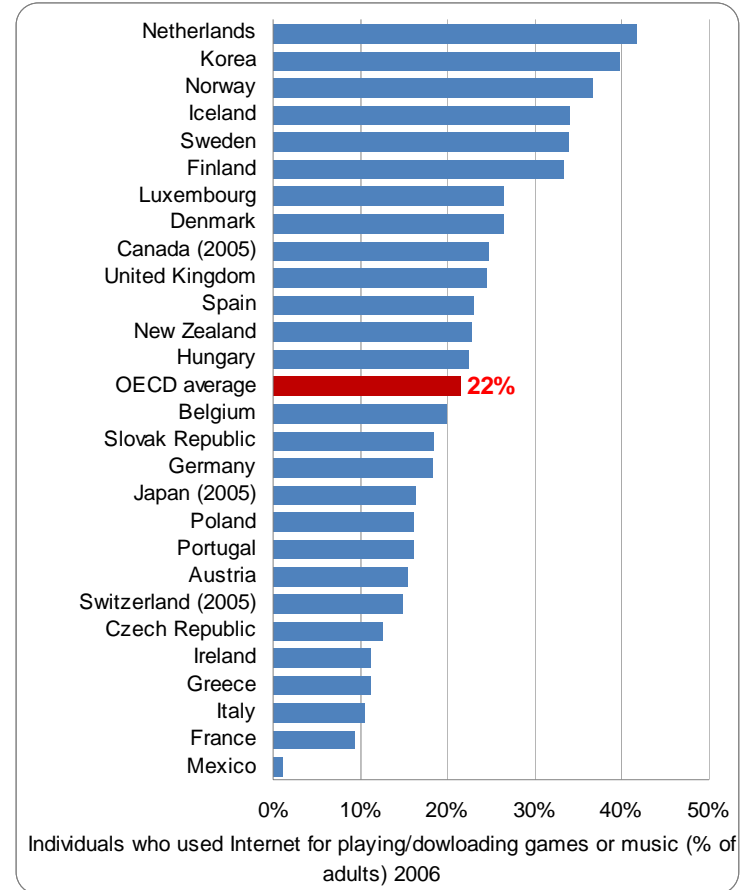
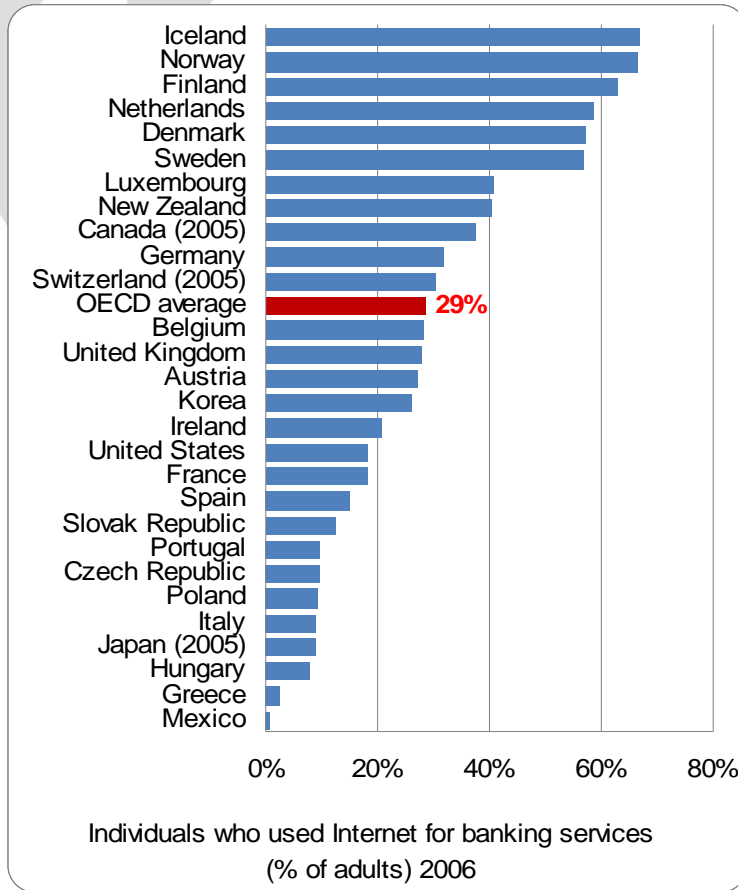
And more households and businesses are adopting broadband.



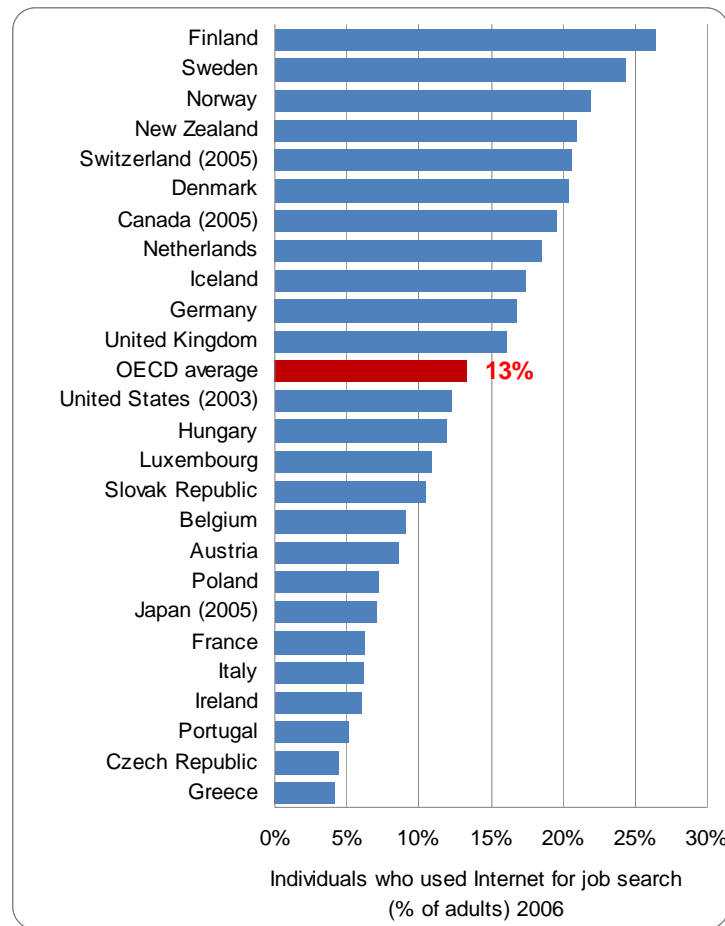
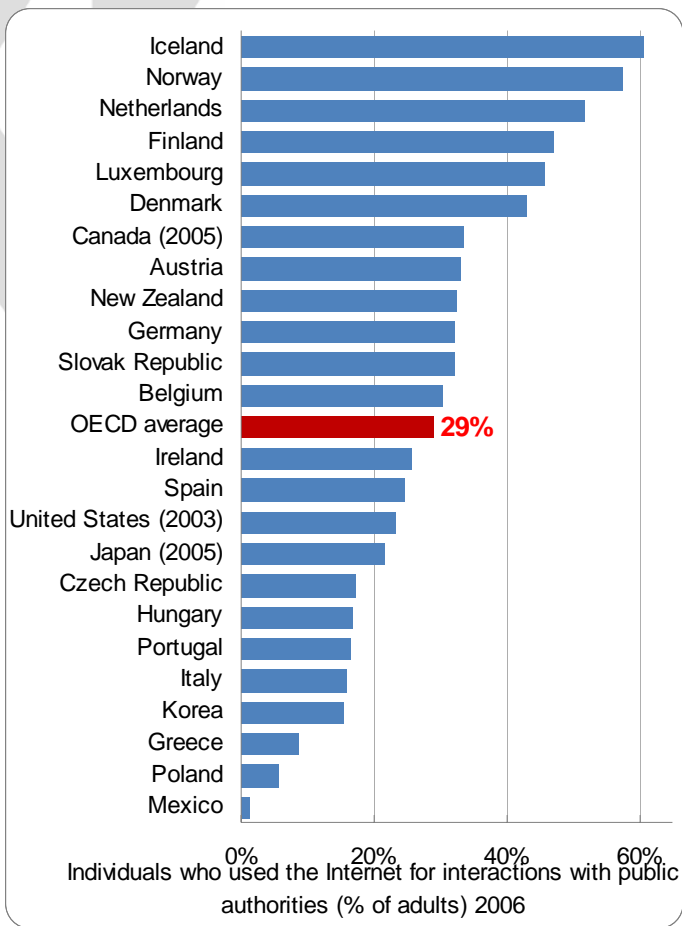
Across the OECD, the adoption of broadband tends to vary significantly by firm size. The gap in Canada is smaller than in most countries.



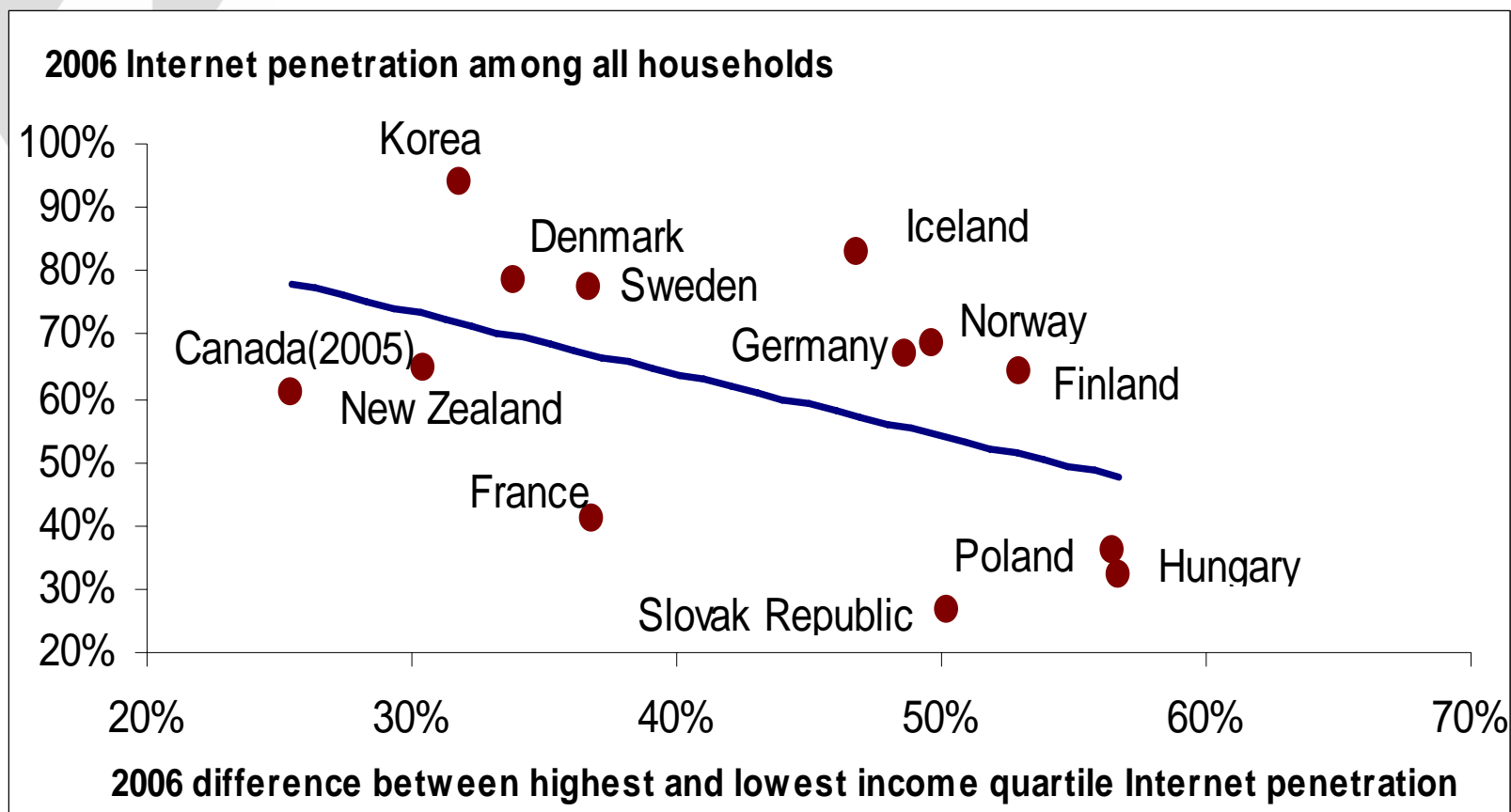
The uses of the Internet by households are changing. At first e-mailing, now banking, downloading content



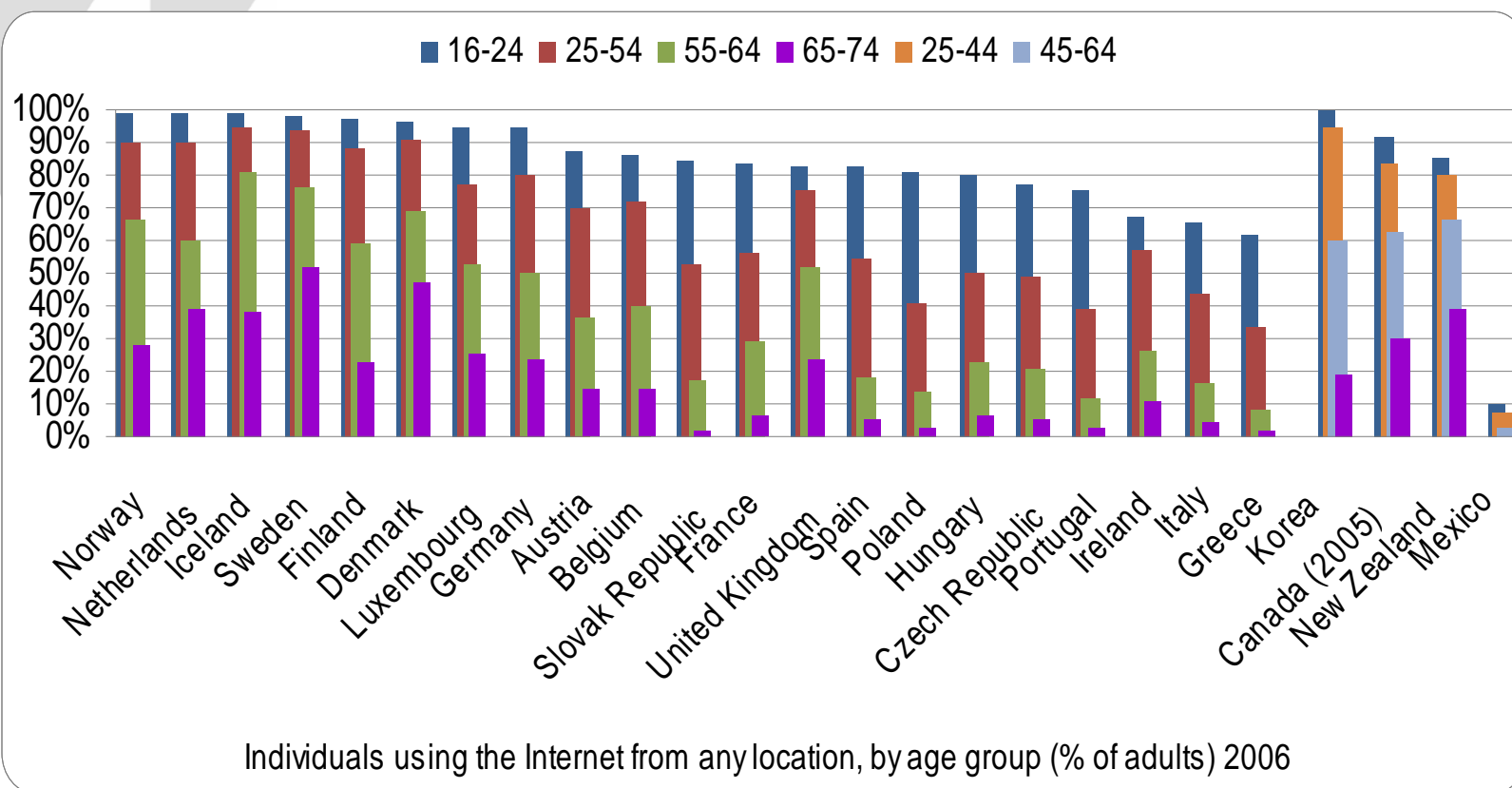
... interacting with governments and looking for work.



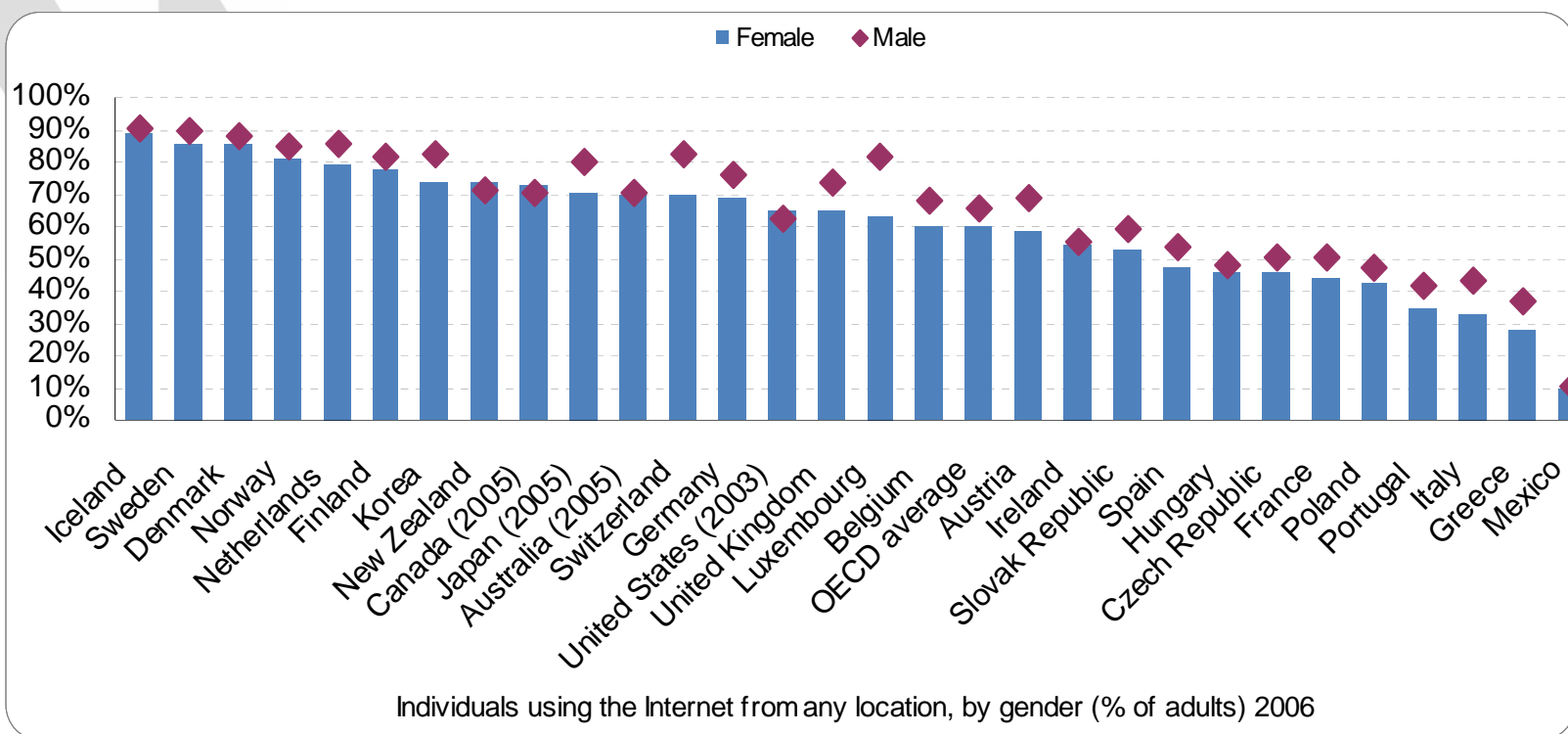
But there still exists a significant divide between high and low-income households, although less so in Canada than elsewhere ...



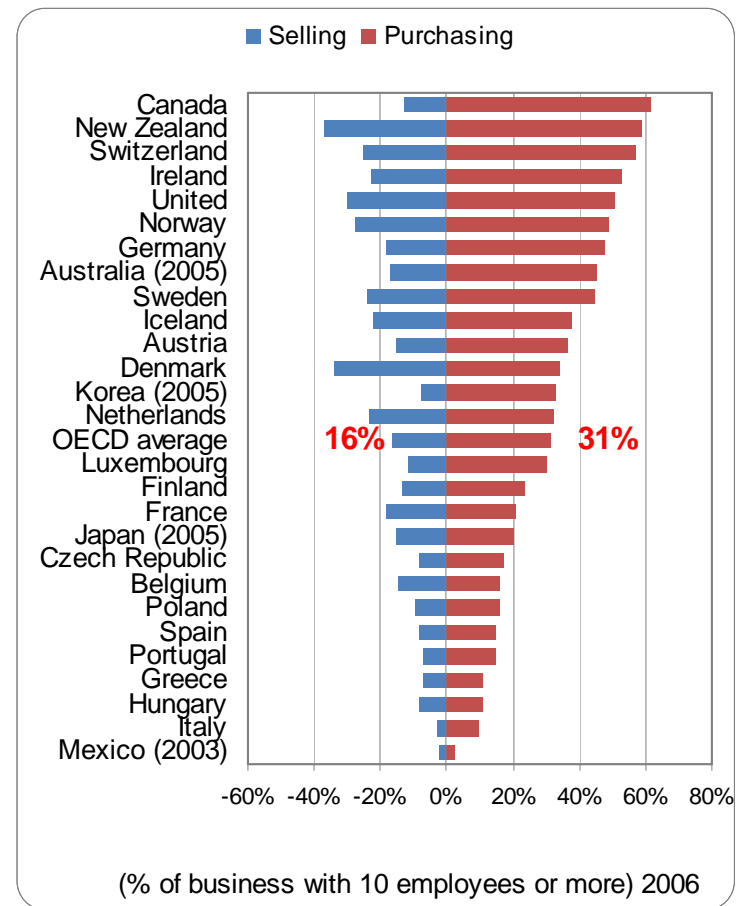
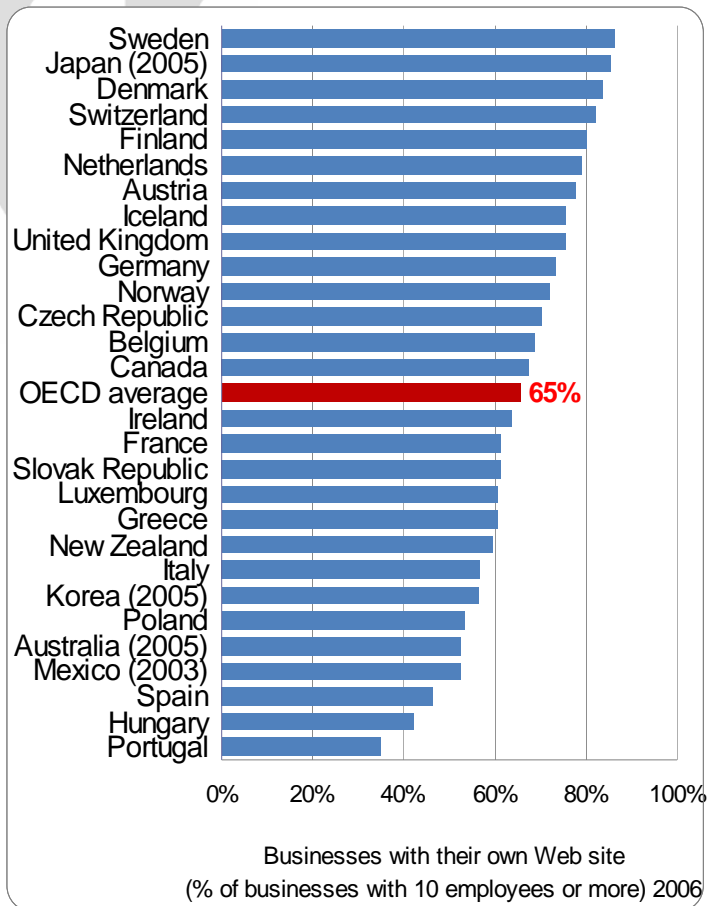
... between older and younger citizens...



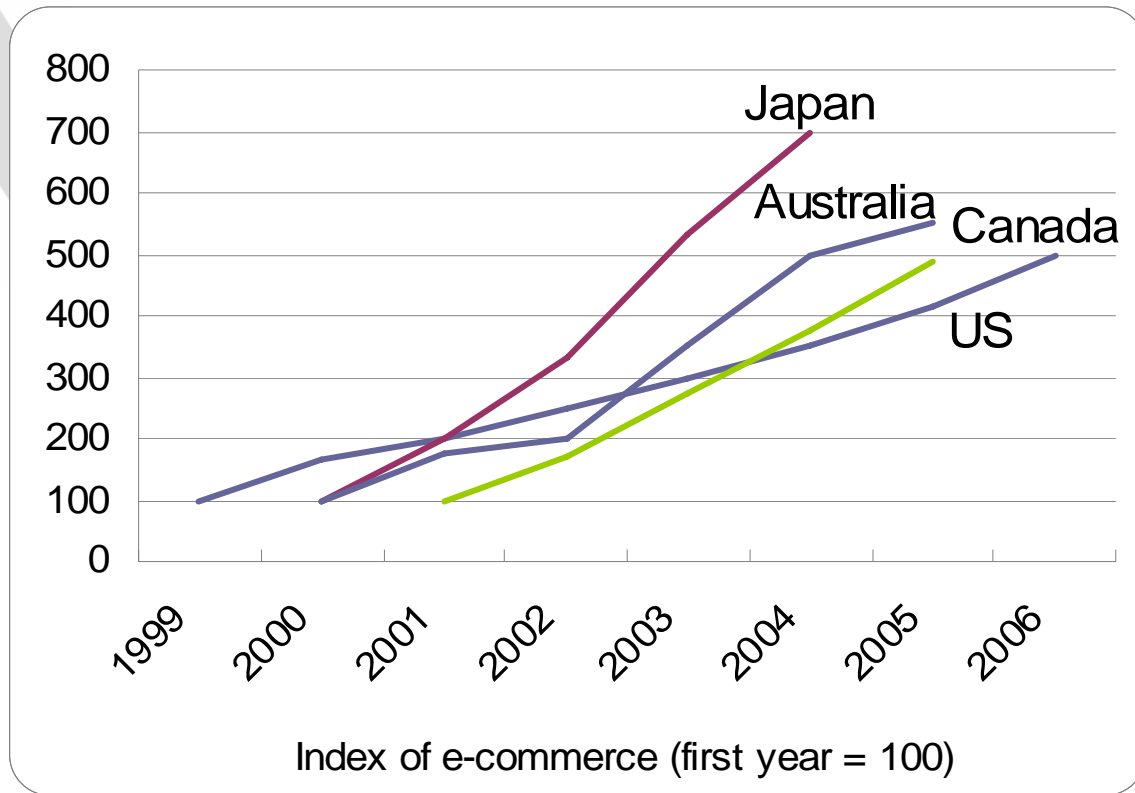
...and between men and women, again less so in Canada than in most countries.



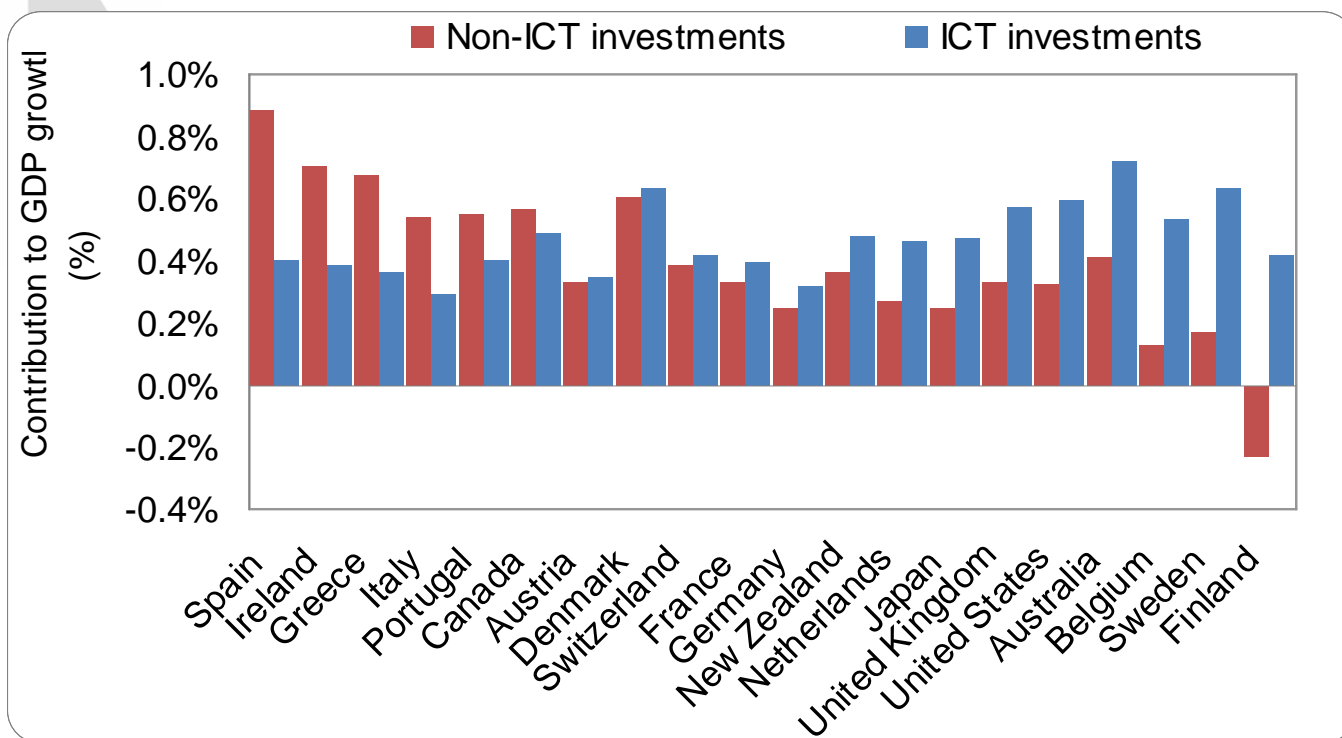
The business use of the Internet is also evolving. In OECD countries, 2/3 of businesses with > 10 employees have their own website and 16% sell on the Internet.



E-commerce remains relatively small but has grown significantly in many OECD countries, including Canada.



For the 1995-2005 period, ICT investments have contributed more to GDP growth than non-ICT investments in several OECD countries. In Canada, the contribution of ICTs was slightly less.





A few additional facts on the Canadian landscape

Ottawa, November 2007

The ICT sector represents an increasingly larger component of our economy.

Table 1c Information and communications technology (ICT) sector	2001	2002	2003	2004	2005	2006
ICT sector contribution to GDP¹						
ICT, manufacturing (\$ millions 1997)	11,069	8,619	9,239	9,516	10,261	10,711
% of total ICT sector	20.6	15.9	16.1	16.0	16.5	16.5
ICT, services (\$ millions 1997)	42,349	44,982	47,522	49,037	51,325	53,513
% of total ICT sector	78.6	82.9	82.7	82.7	82.3	82.3
Total ICT sector (\$ millions 1997)	53,857	54,288	57,482	59,298	62,359	65,029
Total economy GDP (\$ millions 1997)	957,258	982,843	1,002,936	1,034,024	1,062,951	1,091,648
ICT as a % of total economy	5.6	5.5	5.7	5.7	5.9	6.0
Total business sector GDP (\$ millions 1997)	808,810	831,293	847,701	875,777	902,519	927,625
ICT as a % of business sector	6.7	6.5	6.8	6.8	6.9	7.0

The larger the business, the more likely it is to purchase over the Internet (B to B E-commerce). The gap between large and small firms is widening.

*Proportion of businesses **placing orders** (i.e. making purchases) over the **Internet**
(% of businesses in each of the following size and industry classes)*

	2004	2005	2006
10-49	55.0	59.2	60.0
50-299	61.0	65.3	64.7
300 or more	55.3	70.4	78.4
Total (10 or more)	56.2	60.8	61.6
Manufacturing (ISIC D) businesses with 10 or more employees	66.0	61.2	67.9
Construction (ISIC F) businesses with 10 or more employees	46.5	46.3	65.5
Wholesale trade (ISIC 51) businesses with 10 or more employees	58.8	64.7	66.6
Retail trade (ISIC 52) businesses with 10 or more employees	50.5	57.8	57.6
Hotels and restaurants (ISIC H) businesses with 10 or more employees	36.9	42.5	35.8
Transport, storage and communications (ISIC I) businesses with 10 or more employees	44.3	49.5	49.5
Finance and insurance (ISIC J) businesses with 10 or more employees	63.2	72.4	67.7
Real estate, renting and business services (ISIC K) businesses with 10 or more employees	54.6	61.3	53.8
Total selected industries - businesses with 10 or more employees			

Source: Survey of Electronic Commerce and Technology (SECT) 2006

The same is true for sales over the Internet.

Proportion of businesses receiving orders (i.e. making sales) over the Internet (% of businesses in each of the following size and industry classes)	2004	2005	2006
10-49	11.6	10.6	11.5
50-299	10.3	10.0	14.2
300 or more	11.9	24.3	23.3
Total (10 or more)	11.3	10.7	12.5
Manufacturing (ISIC D) businesses with 10 or more employees	10.6	10.2	11.9
Construction (ISIC F) businesses with 10 or more employees	0.1	1.9	0.6
Wholesale trade (ISIC 51) businesses with 10 or more employees	18.2	17.0	16.0
Retail trade (ISIC 52) businesses with 10 or more employees	12.8	14.3	19.9
Hotels and restaurants (ISIC H) businesses with 10 or more employees	15.7	12.6	8.6
Transport, storage and communications (ISIC I) businesses with 10 or more employees	9.3	6.9	7.0
Finance and insurance (ISIC J) businesses with 10 or more employees	16.5	11.7	6.3
Real estate, renting and business services (ISIC K) businesses with 10 or more employees	13.8	7.8	20.0
Share of Internet sales to households/individuals (%) (% all Internet sales)	25.2	32.6	32.5

Source: Survey of Electronic Commerce and Technology (SECT) 2006

Canadians are avid users of the Internet.

- An estimated 16.8 million adult Canadians (68%) used the Internet for personal non-business reasons in 2005
- Internet use depends on where people live (community size) and on who they are (e.g. age, education and income), as do reasons for use

E-mail and browsing remain the most common uses of the Internet but other applications are gaining ground.

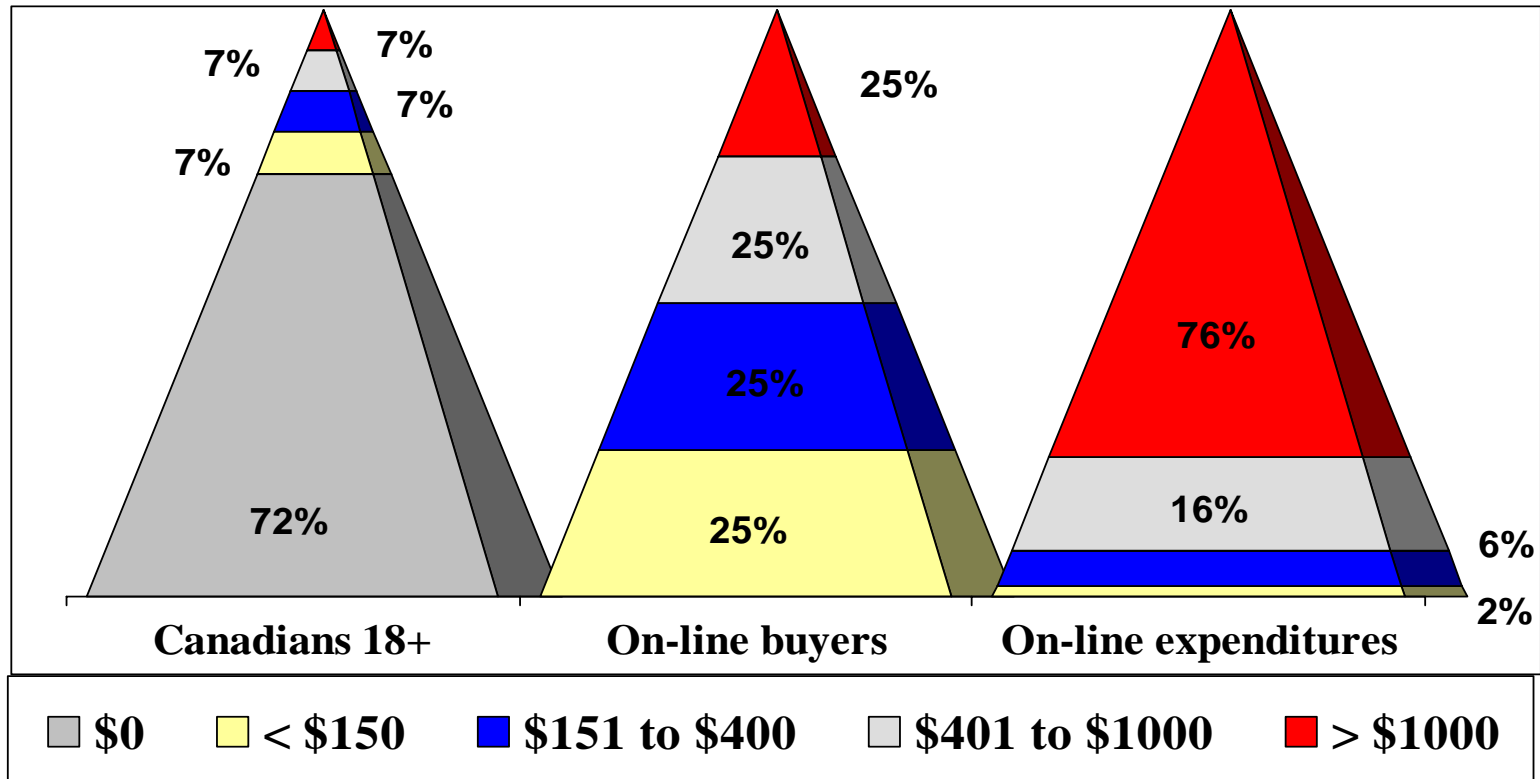
Top 10 reasons for adult home users to go on-line during 2005	
1. E-mail	91%
2. General browsing	84%
3. Weather or road conditions	67%
4. Travel information or arrangements	63%
5. View news or sports	62%
6. Search for health information	58%
7. Electronic banking	58%
8. Window shopping	57%
9. Pay bills	55%
10. Search for information about governments	52%

Source: 2005 Canadian Internet Use Survey

Internet Shopping is gradually becoming mainstream. In 2005,

- 6.9 million (28%) Canadians made ...
- 49.4 million orders worth ...
- \$7.9 billion (up considerably from 2003)
- 75% used credit card or bank card online
- More than half (57%) of online orders were made from Canadian firms, representing almost 63% of total value of online orders.
- Most popular orders: travel services (36% of Internet shoppers); books, magazines & newspapers (35%); other entertainment (25%).

That being said, 7% of Canadian adults are responsible for more than 75% of on-line expenditures.



Source: 2005 CIUS and Mckeown & Underhill, "Canada's top online spenders: Who are they and what are they buying?", *Innovation and Analysis Bulletin* – Vol. 9, no. 1, May 2007.

Internet use remains influenced by a number of socioeconomic factors, but some are not as important as they used to be.

- McKeown, Noce and Czerny (2007) found that 3 important barriers to Internet use remain
 - lower levels of income
 - lower levels of educational attainment and
 - living in a rural location
- However, 2 factors previously found to influence Internet use by adults are no longer significant
 - Presence of children in the household
 - Gender
- The study also found declining rate of Internet use along urban-to-rural gradient, based on both distance and population density.

Rural and Small Town Canada Analysis Bulletin Volume 7, No.3, Cat. No. 21-006-XIE

The Internet is changing social interaction and playing a role in social cohesion.

- “Heavy users” of the Internet spend about 2 hours per day more alone than non-users but many of their on-line activities are social in nature.
- Internet users reported social networks of similar size to non users.
- Among the Internet user community, recent immigrants are more likely (50%) to spend 30+ hours a month on the Internet than established immigrants (29%) or Canadian born citizens (28%). Much of that time is spent communicating with family and friends.
- Among the Internet user community, those who speak a foreign language are more likely (37%) to spend 30+ hours a month on the Internet than those speaking English (29%) or French (26%).
- See *B. Veenhof, Y. Clermont & G. Sciadas, 2005, Connectedness Series no.12*



Challenges for the statistical system

Defining priorities

From developing indicators to impact analysis

Maintaining critical programs

Defining priorities – A challenge for the OECD and National Statistical Institutes

- The demand for new indicators and relevant analysis is growing but the capacity to handle the demand is limited. For example, the WPIIS is looking at indicators related to:
 - Trust in the online environment
 - E-business deployment
 - E-government
 - User Created Content
 - ICT expenditure and investment
- And is being asked to consider other issues such as:
 - Work on measuring economic and social impacts of ICTs
 - Applying revised classifications
 - Contribute to the Ministerial meeting
- Establishing priorities is key to the process

From developing indicators to impact analysis

- The OECD and NSIs have a lot of experience in survey and indicator development, but relatively little expertise in conducting “internationally comparable impact studies”.
- Significant investments are needed to:
 - Agree on impact indicators
 - Develop coherent linked databases
 - Build additional expertise in cross-country firm level studies
- Canada lags behind some of its European counterparts in this domain. For instance, we are not able to participate in an on-going project because we lack the necessary integrated databases.

Maintaining critical information society statistical programs

- Statistics Canada would not be able to
 - participate in international benchmarking through the OECD
 - inform ICT related policy debate and policy monitoring
 - and engage in ICT impact analysis
- Without CIUS and SECT, two core elements of the program for socioeconomic indicators of connectedness
- The two programs are at risk. The 2007 cycles for these two surveys may be the last if PRI funding is not adequately replaced