



INTERNATIONAL TELECOMMUNICATION UNION
Telecommunication Development Bureau
Telecommunication Statistics and Data Unit

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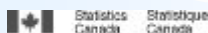
Source: Heidi Ertl
Statistics Canada

Title: Research and analysis of telecommunications/ICT statistics (PowerPoint presentation)

Research and analysis of telecommunications/ICT statistics

**Presentation to ITU World Telecommunication/ICT
Indicators Meeting**

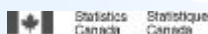
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Heidi Ertl, Statistics Canada

Objectives

- **Overview of Connectedness program**
 - **Telecommunications**
 - **ICT**
- **Use of statistics for analysis**
- **Products and future work**



Telecommunications statistics

- **Measure financial and operating performance of the telecommunications services industry**
- **The Canadian telecommunications services industry in 2001**
 - 96 thousand persons employed
 - \$32.8 billion in operating revenues
 - \$24.2 billion to GDP
 - \$7.7 billion worth of capital expenditures

Telecommunications statistics

- **Annual Survey of Telecommunications**
 - redesigned in 1997
 - census of Canadian telecom service providers (NAICS 5133)
 - provincial aggregations for selected indicators
- **Quarterly Survey of Telecommunications**
 - previously a monthly survey
 - 1999 first year of quarterly data
 - survey only the largest wireline/wireless companies
 - selection of key indicators from the annual, no provincial

Telecommunications statistics

- Variables

- detailed operating revenues
- detailed operating expenses
- balance sheet
- capital expenditures
- employment
- international trade in telecommunications services
- network infrastructure
- traffic statistics

Telecommunications statistics

- Data users include

- System of National Accounts
- CRTC (national regulator)
- other government departments (Industry Canada)
- industry players and analysts
- international organizations (ITU, OECD)
- policy makers
- media

- Value of data

- established statistical infrastructure (NAICS, ICT sector)
- national and international comparability
- leading benchmark data for policy makers

ICT statistics

- Convergence and advances in technology
- Increased need for data on telecommunications and other information and communications technologies
- Focus of policy makers broadens to ICT
- Increased role for statistical agencies to provide data and indicators to see progress in area of ICT

ICT statistics

- Measure ICT sector (supply)
 - Telecommunications, Cable, Computer services & ISPs, Manufacturing
- Measure access and use of ICTs (demand)
 - Household Internet Use Survey (HIUS)
 - Survey of Electronic Commerce and Technology (SECT)
 - National Survey of IT occupations
 - Second International Technology in Education Survey (SITES)
 - General Social Survey (GSS)
 - Survey of Household Spending (SHS)
 - Aboriginal Peoples Survey (APS)

Telecommunications statistics - Research and analysis

- Important policy issue
 - effectiveness of deregulation for the telecommunications services industry
- Statistics Canada's telecommunications statistics are used to contribute analytical insight to this discussion
 - *The state of telecommunications services in Canada*

Telecommunications statistics - Research and analysis

- Changing environment in the industry
 - new regulatory environment (monopoly \rightarrow competition)
 - technological change
 - new entrants, market consolidation
- Indicators of concentration (HHIs) were constructed to examine impacts of regulatory decisions in the industry

Indicators of concentration

- **Hirfindahl-Hirschman Index (HHI)**
 - sum of the squares of the market shares (op. rev)
 - emphasizes the impact of a company with a large market share
 - lower HHIs indicate a lower intensity of concentration
 - monopoly: $HHI = 1$
 - unconcentrated market: $HHI < 0.1$
 - high concentration: $HHI > 0.18$



Statistics
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Statistique
Canada

Indicators of concentration

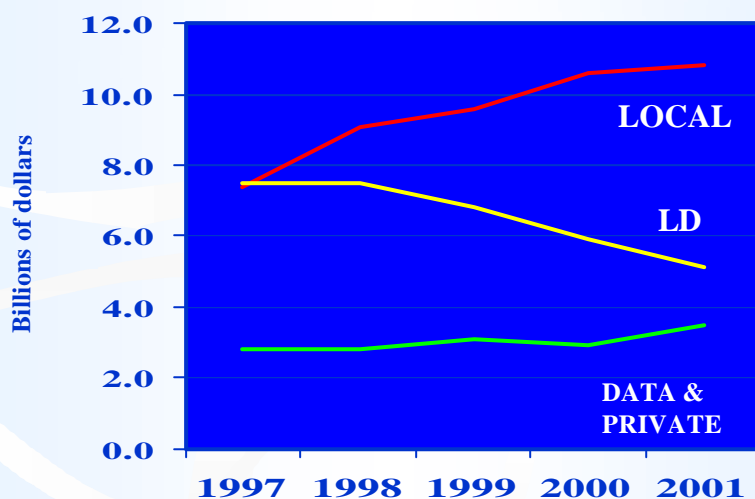
- **HHIs constructed for selected product groups**
 - local
 - long distance
 - data and private line services
- **for 13 geographical areas**
 - Canadian provinces and territories
 - national indicators where possible
- **for wireline and wireless technologies**
 - assumption of separate technology markets



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Trends in telecommunications services



Statistics Canada / Statistique Canada

Source: Statistics Canada

Local wireline services

Provincial markets

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NF	YK	NW	NU
1997	0.995	0.998	1.000	1.000	0.981	0.979	1.000	0.999	1.000	1.000	1.000	1.000	...
1998	0.991	0.980	0.997	0.995	0.992	0.996	0.997	0.997	0.998	0.996	1.000	1.000	...
1999	0.992	0.992	1.000	0.981	0.975	0.937	0.979	0.979	1.000	1.000	1.000	1.000	1.000
	1997/99												
% chg	-0.3	-0.6	0.0	-1.9	-0.6	-4.3	-2.1	-2.0	0.0	0.0	0.0	0.0	...

Statistics Canada / Statistique Canada

Source: Statistics Canada

Local wireless (mobile) services

Provincial markets

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NF	YK	NW	NU
1997	0.528	0.639	0.771	0.571	0.633	0.675	0.653	0.665	0.854	0.781	1.000	1.000	
1998	0.495	0.625	0.808	0.591	0.402	0.467	0.698	0.648	0.918	0.849	1.000	1.000	...
1999	0.433	0.581	0.794	0.579	0.359	0.356	0.694	0.647	0.925	0.861	1.000	1.000	1.000
	1997/99												
% chg	-18.0	-9.1	3.0	1.4	-43.3	-47.3	6.3	-2.7	8.3	10.2	0.0	0.0	...

Local wireless services

National market

CANADA	HHI
1997	0.520
1998	0.478
1999	0.423
2000	0.342
2001	0.412
% chg	-20.8

LD wireline services

Provincial markets

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NF	YK	NW	NU
1997	0.489	0.763	0.801	0.576	0.601	0.659	0.750	0.672	0.792	0.594	1.000	1.000	
1998	0.591	0.626	0.736	0.554	0.550	0.441	0.743	0.629	0.713	0.609	1.000	1.000	...
1999	0.765	0.827	0.922	0.717	0.600	0.427	0.770	0.706	0.832	0.896	1.000	1.000	1.000
1997/99													
% chg	56.4	8.4	15.1	24.5	-0.2	-35.2	2.7	5.1	5.1	50.8	0.0	0.0	...

Data and private line services

Provincial markets

Data services

	BC	AB	SK	MB	ON	QC	NS	YK	NW	NU
1998	0.299	0.397	0.533	0.787	0.622	0.510	0.754	1.000	1.000	..
1999	0.321	0.501	0.982	0.811	0.590	0.498	0.928	1.000	1.000	1.000
1998/99										
% chg	7.4	26.2	84.2	3.0	-5.1	-2.4	23.1	0.0	0.0	..

Private line services

	BC	SK	MB	ON	QC	NS	YK	NU
1998	0.713	0.910	0.804	0.594	0.538	0.416	1.000	..
1999	0.684	0.979	0.810	0.568	0.591	0.585	1.000	1.000
1998/99								
% chg	-4.1	7.6	0.7	-4.4	9.9	40.6	0.0	..

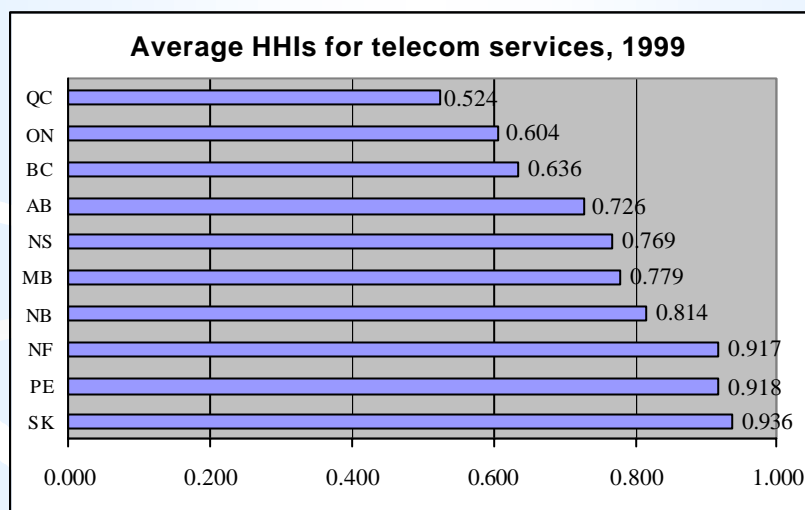
Aggregate analysis

• Markets by product (1999)

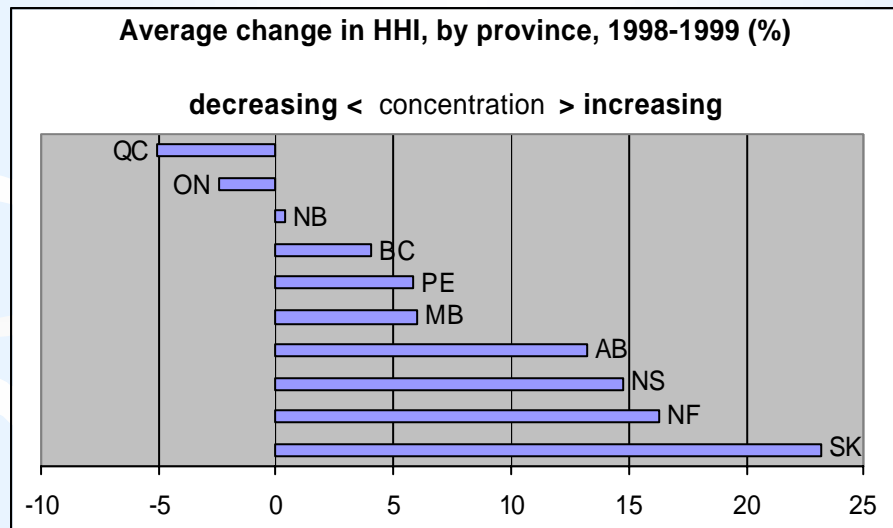
- local mobile is the least concentrated
- local wireline is the most highly concentrated

Rank	Telecommunications service	Provincial ordinal average
1	Local mobile	1.5
2	LD wireline	2.4
3	Private line	2.7
4	Data	2.9
5	Local wireline	4.3

• Markets by product



- Markets by product



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Source: Statistics Canada

Overall findings

- Markets found to be least concentrated in mobile services
- Local wireline services were most concentrated
- Three largest telecom markets (Quebec, Ontario, British Columbia) least concentrated
- Newfoundland, PEI, Saskatchewan highly concentrated
- More work to be done on the impacts and outcomes of the regulatory decisions



Statistics Canada
Statistique Canada

Statistical & analytical products

- Quarterly/Annual Telecommunications Bulletins
- CANSIM - historical time series, selected variables
- Connectedness Series - analytical studies
- Networked Canada - ICT compendium
- Statistical Profile of the ICT sector
- Innovation Analysis Bulletin
- HIUS public-use microdata file
- The Daily
- Special tabulations, client requests

Future work

- Comprehensive **Information Society compendium** is currently under development
- Analytical activities in the areas of
 - Broadband
 - Employment in computer and technology industries