

Residential Wireline Telecommunications Services in Canada:

Primary Exchange Services and Broadband 2015

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Abstract

This report is a survey and compilation of the data available that documents aspects of residential telecommunications services in Canada. The two residential telecommunication services are local telephony (primary exchange services) and high speed internet access (broadband). The data compiled documents performance measures, including prices, output, and quality, and metrics relevant to assessing competition.

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0. Introduction

This report is a survey and compilation of the data available on residential telecommunications services in Canada. The data compiled is for local telephony (primary exchange services) and high speed internet access (broadband). The data compiled documents performance measures, including prices, output, and quality, and metrics relevant to assessing competition, and updates sources to those available as of October 2014. The report considers residential primary access services (voice) first and then broadband services. The focus of the report and data collection is on access dependent service provided by a wired network. A final section documents wireless broadband subscriptions in Canada and the extent of wireless only households, i.e., households which do not have wired primary exchange services.

1. Residential Primary Exchange Services

1.1. Residential Primary Exchange Services Pricing

This section collects information about the history of prices of residential Primary exchange services, both domestically and internationally. Data from price basket analyses and measures of average revenue per line are assembled here. The tables and figures include:

- Table 1.1.1 includes data on the price of different baskets of voice services for Canada, from 2008-2014. This data is sourced from Wall Communications and includes three levels of service, converted into constant (real) dollars.
- Table 1.1.2 includes an international price basket comparison of voice services, from 2008-2014. This data is sourced from Wall Communications and includes prices for three levels of service, reported in Canadian dollars at purchasing power parity (PPP).
- Table 1.1.3 includes average monthly revenues per line in Canada, for a variety of service provider types, from 2009-2013. This data is sourced from the CRTC, and is converted to constant (real) dollars.
- Table 1.1.4 includes price basket price data for telecommunications bundles, including combinations of wireline voice, wireless voice, broadband Internet, and digital TV, from 2008-2014. This data is sourced from Wall Communications and is converted into constant (real) dollars).

Table 1.1.1 Canadian voice services basket prices in constant dollars

CDN\$(2002) /month	2008	2009	2010	2011	2012	2013	2014
Level 1	27.07	26.04	26.75	26.75	27.47	28.77	31.18
Level 2	41.99	43.74	44.15	41.56	42.50	45.41	43.48
Level 3	52.83	53.79	52.19	50.24	49.74	50.10	48.22

Note:

Level 1: 400 Total Minutes (22 Long Distance Minutes), No Features

Level 2: 1000 Total Minutes (110 Long Distance Minutes), Voice Mail and Caller ID

Level 3: 1600 Total Minutes (264 Long Distance Minutes), Voice Mail, Caller ID, and Additional Calling Features

Sources:

- Wall Communications Inc. *Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions 2014 Update*, 31 March 2014, Table A3.1. Prepared for the Canadian Radio-television and Telecommunications Commission and Industry Canada. Available online at <http://www.crtc.gc.ca/eng/publications/reports/rp140714.pdf>.
- Canadian Consumer Price Index values from Statistics Canada, Table 326-0020, 2011 basket, average value for all items.

Table 1.1.2 International voice services price comparisons

CDN\$(PPP) /month	Canada	Australia	France	Germany	Italy	Japan	U.K.	U.S.
Level 1								
2008	30.88	43.35	28.73	-	-	-	32.32	37.82
2009	29.80	45.20	31.24	-	-	-	35.24	39.45
2010	31.16	44.45	31.53	-	-	27.23	35.32	39.75
2011	32.06	45.86	37.86	-	-	29.55	34.35	44.84
2012	33.42	46.57	32.34	-	-	29.84	28.22	46.84
2013	35.33	46.30	33.53	-	-	30.45	31.68	45.88
2014	38.99	46.80	35.10	36.55	41.04	31.61	33.28	43.13
Level 2								
2008	47.91	84.09	52.84	-	-	-	45.71	67.63
2009	50.05	87.22	56.10	-	-	-	49.68	71.15
2010	51.42	86.10	55.63	-	-	53.30	47.74	69.13
2011	49.81	73.02	54.83	-	-	59.33	46.18	74.37
2012	51.71	75.55	53.29	-	-	60.00	39.57	74.75
2013	55.77	77.05	51.93	-	-	61.70	42.35	70.85
2014	54.37	67.13	49.72	57.46	51.02	65.36	42.81	66.61
Level 3								
2008	60.27	94.21	61.74	-	-	-	61.99	79.05
2009	61.55	96.32	67.35	-	-	-	68.51	81.66
2010	60.78	94.98	64.65	-	-	82.95	66.03	77.58
2011	60.22	81.77	68.20	-	-	91.61	60.86	79.59
2012	60.52	89.81	64.76	-	-	92.65	55.60	79.21
2013	61.53	96.00	55.03	-	-	97.17	61.35	76.08
2014	60.29	74.54	52.39	60.89	67.85	101.90	56.48	71.88

Note:

Level 1: 400 Total Minutes (22 Long Distance Minutes), No Features

Level 2: 1000 Total Minutes (110 Long Distance Minutes), Voice Mail and Caller ID

Level 3: 1600 Total Minutes (264 Long Distance Minutes), Voice Mail, Caller ID, and Additional Calling Features

Source:

Wall Communications Inc. *Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions 2014 Update*, 31 March 2014, Table A3.1. Prepared for the Canadian Radio-television and Telecommunications Commission and Industry Canada. Available online at <http://www.crtc.gc.ca/eng/publications/reports/rp140714.pdf>.

Table 1.1.3 Local and access retail monthly revenues (constant \$), per line

(2002\$/month)	2009	2010	2011	2012	2013
Incumbent TSPs (excluding out-of-territory)	28.13	28.26	27.74	27.48	27.20
Non-incumbent, alternative TSPs (excluding cable BDUs)	22.21	20.35	20.97	18.82	18.50
Cable BDUs	25.24	24.31	22.31	21.52	21.98
Total residential	27.19	26.80	25.68	24.96	24.86

Sources:

- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2014*, Table 5.2.7. Available online at <http://www.crtc.gc.ca/eng/publications/reports/PolicyMonitoring/2014/cmr.pdf>.
- Canadian Consumer Price Index values from Statistics Canada, Table 326-0020, 2011 basket, average value for all items.

Table 1.1.4 Bundle prices in constant dollars

CDN\$ (2002) /month	2008	2009	2010	2011	2012	2013	2014
Bundle 1	128.81	122.22	114.91	111.38	115.45	113.30	115.21
Bundle 2	105.12	106.99	101.67	102.51	105.56	109.26	109.98
Bundle 3	158.92	150.90	143.40	140.01	143.59	143.95	145.40

Bundle 1: Wireline Voice, Broadband, Wireless

Bundle 2: Wireline Voice, Broadband, Basic Digital TV

Bundle 3: Wireline Voice, Broadband, Wireless, Basic Digital TV

Each service included in the bundles is Level 2:

Wireline Voice Level 2: 1000 Total Minutes (110 Long Distance Minutes), Voice Mail, and Caller ID

Broadband Level 2:

2008-2011: 1.5-9 Mbps, 15 GB/month

2012-2013: 4-15 Mbps, 20 GB/month

2014: 4-15 Mbps, 30 GB/month

Wireless Level 2: 450 Total Minutes, 300 SMS, Voice Mail, and Caller ID.

Sources:

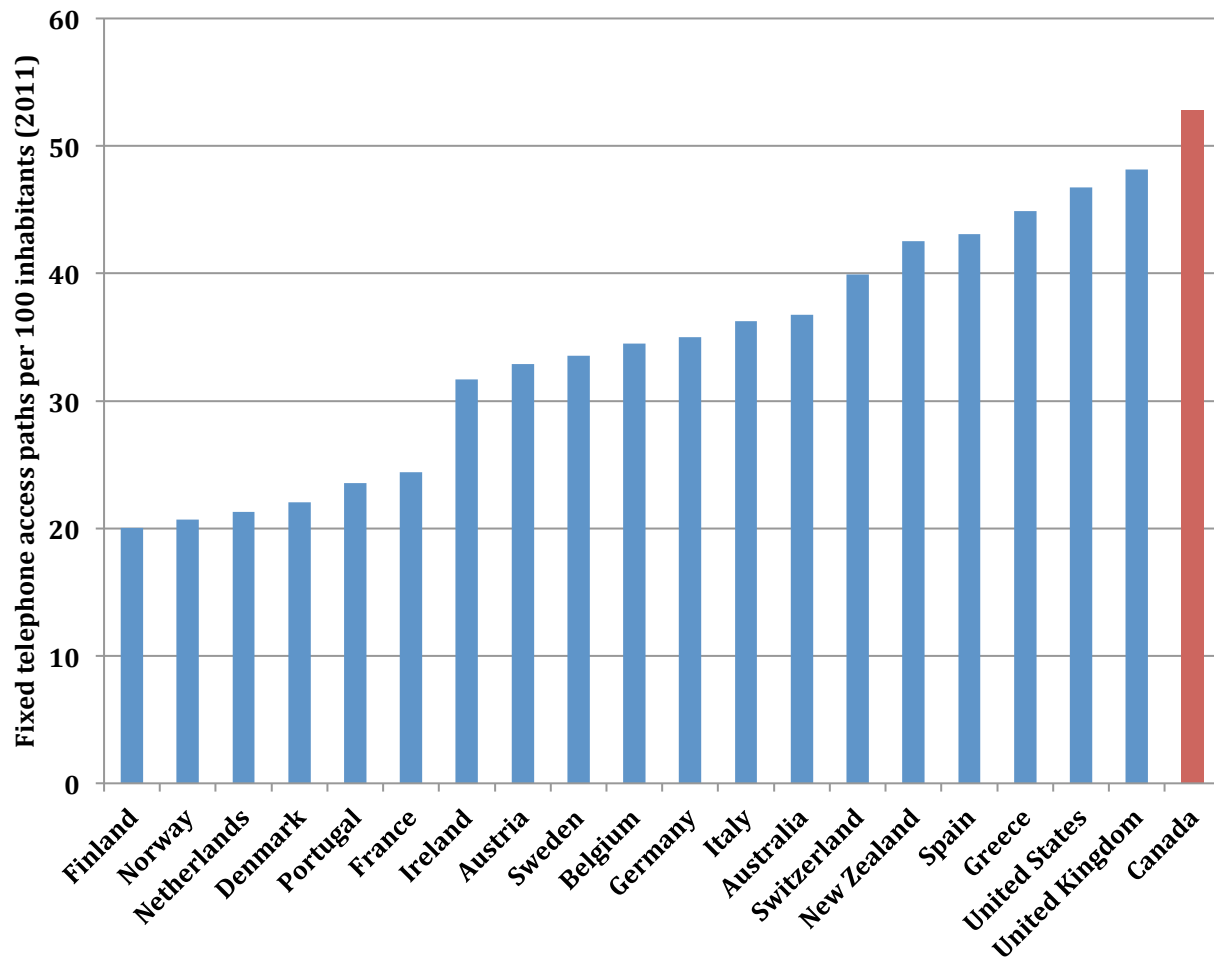
- Wall Communications Inc. *Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions 2014 Update*, 31 March 2014, Table A3.5. Prepared for the Canadian Radio-television and Telecommunications Commission and Industry Canada. Available online at <http://www.crtc.gc.ca/eng/publications/reports/rp140714.pdf>.
- Canadian Consumer Price Index values from Statistics Canada, Table 326-0020, 2011 basket, average value for all items.

1.2 Residential Primary Exchange Services Output

This section collects measures on the level of output in Canadian residential Primary exchange services. Information on penetration is presented here. Tables and figures include:

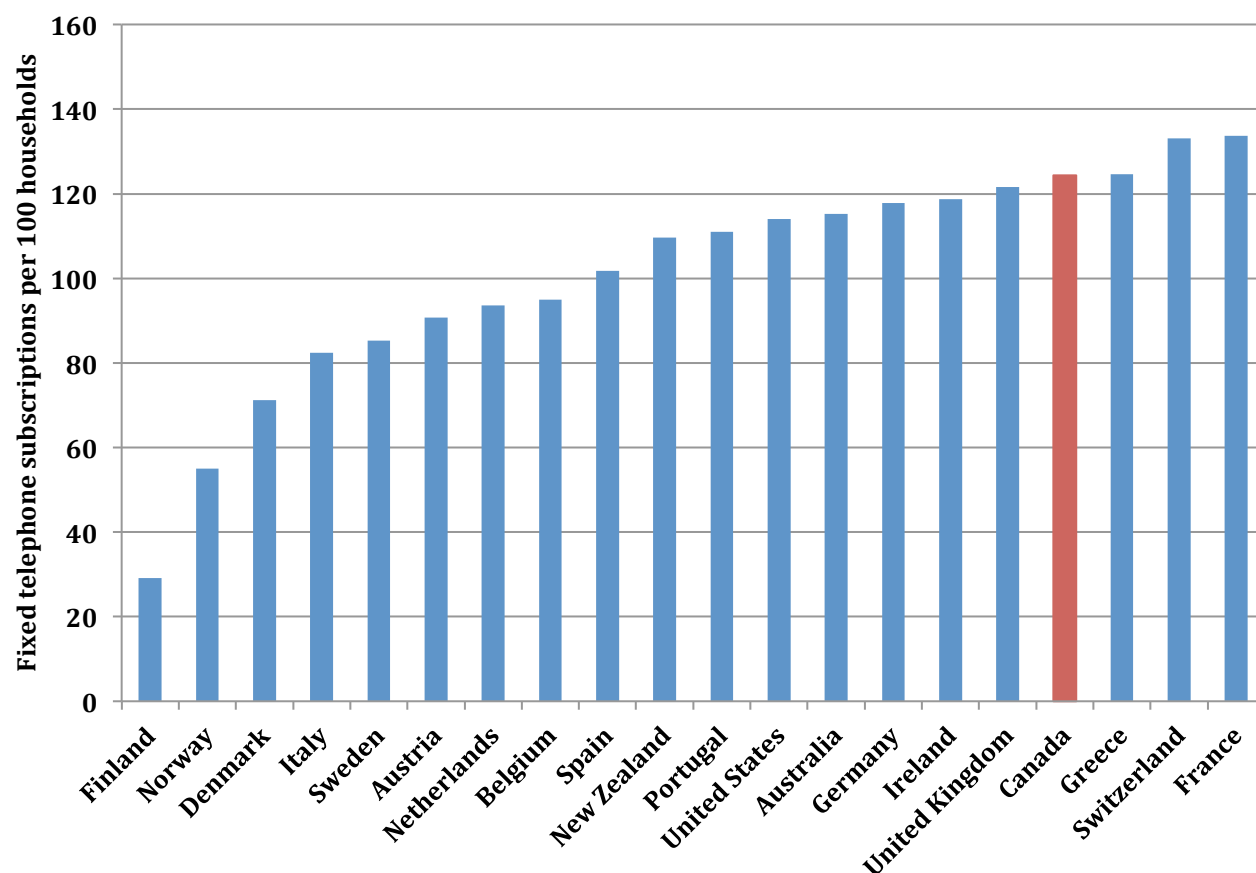
- Figure 1.2.1 is an international comparison of fixed telephone access paths, per 100 inhabitants, for 2011. This data is sourced from the OECD.
- Figure 1.2.2 is a measure of fixed telephone subscriptions, per 100 households, for 2013. The telephone penetration data is sourced from the ITU, whereas the household information is sourced from a variety of statistical agencies.

Figure 1.2.1 Fixed telephone access paths per 100 inhabitants (2011)



Source: Organization for Economic Co-Operation and Development, *OECD Communications Outlook 2013*, 11 July 2013, Tables 4.4, online at <http://www.oecd.org/sti/broadband/communications-outlook.htm>

Figure 1.2.2 Fixed telephone subscriptions per 100 households (2013)



Sources:

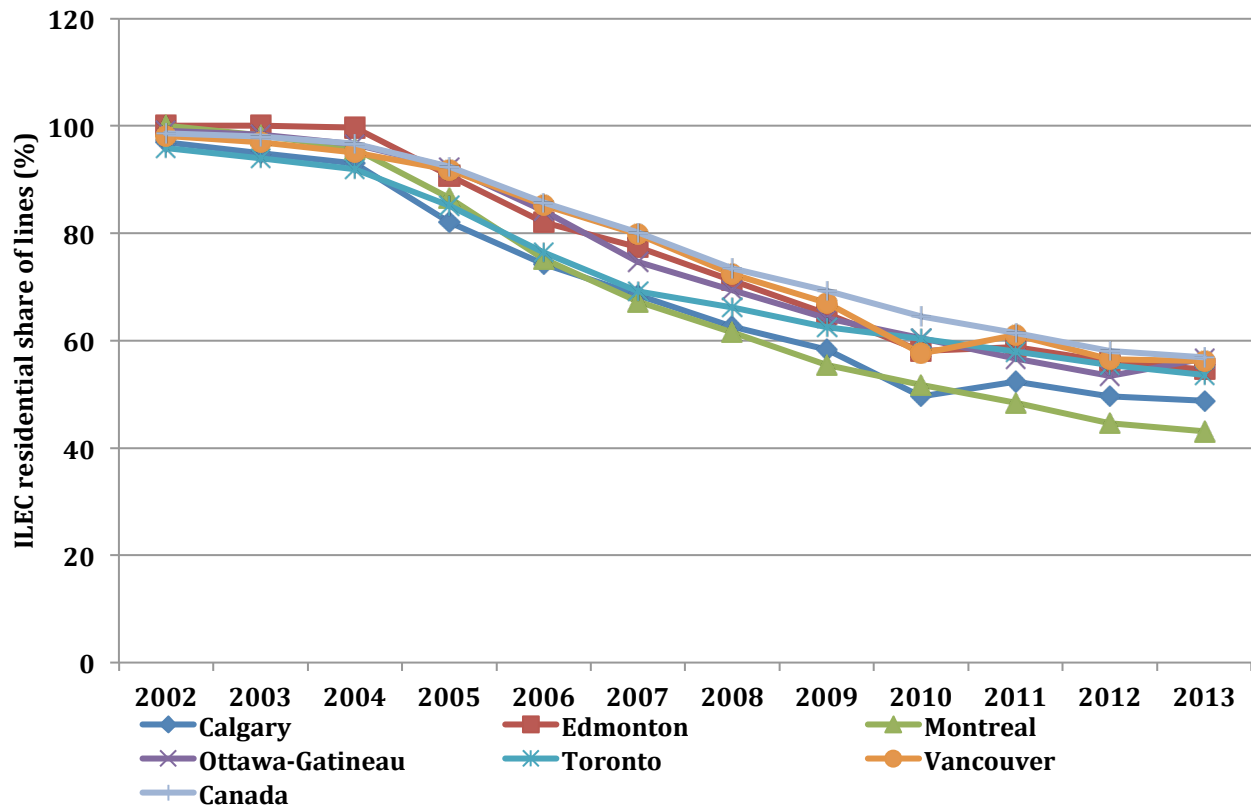
- ITU, *Fixed Telephone Subscriptions*. Available online at: http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2014/Fixed_tel_2000-2013.xls
- Appendix 4.2

1.3. Residential Primary Exchange Services Competition

This selection collects information that is relevant to assessing competition in residential Primary exchange services. Information about subscription shares is presented here, along with information about the roles of different types of service providers, including:

- Figure 1.3.1 presents the trend in share for the incumbent local exchange carrier in a variety of large urban areas, as well as for Canada as a whole, for 2002-2013. Shares are based on number of lines and the data is sourced from the CRTC.
- Table 1.3.1 collects data on incumbent local exchange carrier share, based on lines for Canada, for 2002-2013. This data is sourced from the CRTC.
- Table 1.3.2 presents residential local line counts and shares for Canada, by type of service provider, for 2002-2013. This data is sourced from the CRTC.
- Table 1.3.3 presents information about the shares of alternative local service providers, by facility type, for 2004-2013. Alternative service providers are categorized based on whether they own facilities, resell services, or lease unbundled local loops, with data collected from the CRTC.

Figure 1.3.1 ILEC residential local share of lines



Sources:

- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, November 2004, Table 4.3.5.
- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, October 2005, Table 4.3.6.
- Canadian Radio-television and Telecommunications Commission, *Telecommunications Monitoring Report: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, July 2007, Table 4.2.5 and Table 4.2.7.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2008*, Table 5.2.4 and Table 5.2.6.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2009*, Table 5.2.4 and Table 5.2.6.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2010*, Table 5.2.5 and Table 5.2.9.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2011*, Table 5.2.5 and Table 5.2.9.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2012*, Table 5.2.4 and Table 5.2.8.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 5.2.6 and Table 5.2.11.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2014*, Table 5.2.5 and Table 5.2.10.

Table 1.3.1 ILEC share of residential local lines

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
ILEC Share	98.6%	98.0%	96.7%	92.4%	85.7%	80.1%	73.4%	69.3%	64.5%	61.4%	58.1%	56.9%

Sources:

- Canadian Radio-television and Telecommunications Commission, *Telecommunications Monitoring Report: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services, July 2007*, Table 4.2.7.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2008*, Table 5.2.4.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2009*, Table 5.2.4.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2010*, Table 5.2.5.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2011*, Table 5.2.5.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2012*, Table 5.2.4.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 5.2.6.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2014*, Table 5.2.5.

Table 1.3.2 Total residential lines (000s) and shares

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Incumbents	12,729	12,627	12,463	11,924	11,104	10,356	9,541	8,818	8,142	7,543	6,942	6,389
	98.6%	98.0%	96.7%	92.4%	85.7%	80.1%	73.4%	69.3%	64.5%	61.4%	58.1%	56.9%
Incumbents (out-of-territory)	0	1	10	13	21	26	27	28	27	34	33	53
	0.0%	0.0%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.5%
Competitors (All)	184	258	418	963								
	1.4%	2.0%	3.2%	7.5%								
Competitors (Cable)					1,590	2,313	2,917	3,425	3,947	4,061	4,258	4,314
					12.3%	17.9%	22.5%	26.9%	31.3%	33.1%	35.6%	38.4%
Competitors (Non Cable)					235	231	505	452	510	646	723	482
					1.8%	1.8%	3.9%	3.6%	4.0%	5.3%	6.0%	4.3%
Total	12,913	12,886	12,891	12,900	12,950	12,926	12,990	12,723	12,626	12,284	11,956	11,238

Sources:

- Canadian Radio-television and Telecommunications Commission, *Telecommunications Monitoring Report: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services, July 2007*, Table 4.2.7.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2008*, Table 5.2.4.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2009*, Table 5.2.4.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2010*, Table 5.2.5.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2011*, Table 5.2.5.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2012*, Table 5.2.4.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 5.2.6.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2014*, Table 5.2.5.

Table 1.3.3 Share of alternative residential TSP, by type of facility (%)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Owned	20	46	71	80	87	94	96	98	98	98.1
Unbundled	80	40	19	16	10	3	1	0	0	1.3
Resold	0	14	10	4	3	3	3	2	2	0.6

Sources:

- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, October 2005, Figure 4.3.3.
- Canadian Radio-television and Telecommunications Commission, *Telecommunications Monitoring Report: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, July 2006, Figure 4.2.5.
- Canadian Radio-television and Telecommunications Commission, *Telecommunications Monitoring Report: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, July 2007, Figure 4.2.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2008*, Figure 5.2.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2009*, Figure 5.2.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2010*, Figure 5.2.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report*, July 2011, Figure 5.2.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2012*, Figure 5.2.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Figure 5.2.4.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2014*, Figure 5.2.5.

2. Residential Broadband

2.1 Residential Broadband Pricing

This section gathers information about how broadband Internet pricing has changed over time in Canada, as well as how it compares internationally. Data from studies that use price basket analysis are presented in several ways, along with values of average revenue per subscription.

Tables and figures include:

- Table 2.1.1 presents price basket data for Canadian broadband service from 2008-2014, sourced from Wall Communications and converted into constant (real) dollars. Basket prices for four levels of services are presented, although it is important to note that service levels are increased mid-series, starting in 2012.
- Table 2.1.2 includes international price basket data for broadband Internet service from 2008-2014. This data is sourced from Wall Communications and includes prices for four levels of service, reported in Canadian dollars at purchasing power parity (PPP).
- Table 2.1.3 normalizes the data on Canadian broadband service prices (Table 2.1.1), using the top of the basket level download speed. This yields a time series of price per Mbps, by service level, for 2008-2014.
- Table 2.1.4 normalizes the data on Canadian broadband service prices (Table 2.1.1), using the bottom of the basket level download speed. This yields a time series of price per Mbps, by service level, for 2008-2014.
- Table 2.1.5 presents a time-series of weighted service cost per Mbps for broadband Internet service, from 2006-2013. This is based on average revenue per user data, based on connection speed tiers, sourced from the CRTC. Each yearly value is calculated by normalizing the revenue data by the bottom of the tier speed, and weighting using the distribution of subscriptions in each speed tier.

Table 2.1.1 Canadian broadband Internet price in constant dollars

CDN\$ (2002)	2008	2009	2010	2011	2012	2013	2014
Level 1	28.82	27.07	26.99	29.08	32.36	31.68	39.99
Level 2	40.83	41.30	40.87	41.54	44.64	41.69	44.07
Level 3	60.25	52.50	53.13	52.93	55.84	53.07	54.86
Level 4	-	-	-	64.83	77.58	67.48	69.15

Level 1:

2008-2011: Up to 1.5 Mbps, 2 GB/month

2012-2013: Up to 3 Mbps, 5 GB/month

2014: Up to 3 Mbps, 7.5 GB/month

Level 2:

2008-2011: 1.5-9 Mbps, 15 GB/month

2012-2013: 4-15 Mbps, 20 GB/month

2014: 4-15 Mbps, 30 GB/month

Level 3:

2008-2011: 10-19 Mbps, 30 GB/month

2012-2013: 16-40 Mbps, 50 GB/month

2014: 16-40 Mbps, 75 GB/month

Level 4:

2011: Above 20 Mbps, 50 GB/month

2012-2013: Above 40 Mbps, 75 GB/month

2014: Above 40 Mbps, 120 GB/month

Sources:

- Wall Communications Inc. *Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions 2014 Update*, Table A3.3. Prepared for the Canadian Radio-television and Telecommunications Commission and Industry Canada. Available online at <http://www.crtc.gc.ca/eng/publications/reports/rp140714.pdf>.
- Canadian Consumer Price Index values from Statistics Canada, Table 326-0020, 2011 basket, average value for all items.

Table 2.1.2 International broadband Internet price comparisons

CDN\$(PPP)/month	Canada	Australia	France	Germany	Italy	Japan	U.S.	U.K.
Broadband Level 1								
2008	32.88	42.79	42.23	-	-	-	33.77	29.93
2009	30.98	41.31	44.87	-	-	-	40.19	-
2010	31.44	34.91	-	-	-	39.73	39.61	-
2011	34.85	29.84	28.33	-	-	43.13	51.06	-
2012	39.37	-	-	-	-	50.48	57.24	-
2013	38.91	-	-	-	-	45.55	52.38	-
2014	50.00	-	-	-	-	56.55	62.53	-
Broadband Level 2								
2008	46.58	62.56	45.82	-	-	-	55.97	44.05
2009	47.26	63.76	48.69	-	-	-	57.92	30.22
2010	47.60	52.01	44.03	-	-	49.55	58.97	40.57
2011	49.79	56.74	47.41	-	-	53.79	65.14	40.72
2012	54.31	59.81	46.97	-	-	55.70	78.84	30.50
2013	51.20	58.15	-	-	-	52.53	81.42	32.85
2014	55.10	50.67	-	26.09	52.26	60.65	72.91	30.22
Broadband Level 3								
2008	68.74	76.47	49.41	-	-	-	67.40	52.72
2009	60.08	77.98	47.73	-	-	-	70.41	35.93
2010	61.88	74.32	57.45	-	-	72.15	75.26	46.24
2011	63.44	59.72	66.37	-	-	54.52	79.60	40.09
2012	67.94	61.69	46.07	-	-	59.37	97.00	40.88
2013	65.18	57.10	49.34	-	-	61.52	99.10	43.01
2014	68.60	67.44	51.15	38.30	52.92	63.88	79.76	46.89
Broadband Level 4								
2011	77.71	67.19	49.79	-	-	59.76	95.07	50.07
2012	94.39	82.25	62.36	-	-	62.65	160.97	58.66
2013	82.88	72.69	54.58	-	-	64.89	123.27	53.31
2014	86.46	70.33	55.98	58.52	61.79	67.73	103.17	47.76

Level 1:

2008-2011: Up to 1.5 Mbps, 2 GB/month

2012-2013: Up to 3 Mbps, 5 GB/month

2014: Up to 3 Mbps, 7.5 GB/month

Level 2:

2008-2011: 1.5-9 Mbps, 15 GB/month

2012-2013: 4-15 Mbps, 20 GB/month

2014: 4-15 Mbps, 30 GB/month

Level 3:

2008-2011: 10-19 Mbps, 30 GB/month

2012-2013: 16-40 Mbps, 50 GB/month

2014: 16-40 Mbps, 75 GB/month

Level 4:

2011: Above 20 Mbps, 50 GB/month

2012-2013: Above 40 Mbps, 75 GB/month

2014: Above 40 Mbps, 120 GB/month

Sources:

- Wall Communications Inc. *Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions 2014 Update*, Table A3.3. Prepared for the Canadian Radio-television and Telecommunications Commission and Industry Canada. Available online at <http://www.crtc.gc.ca/eng/publications/reports/rp140714.pdf>.
- Canadian Consumer Price Index values from Statistics Canada, Table 326-0020, 2011 basket, average value for all items.

Table 2.1.3 Broadband Internet price in constant dollars, normalized by top of range

CDN\$ (2002) per Mbps	2008	2009	2010	2011	2012	2013	2014
Level 1	19.21	18.05	18.00	19.38	10.79	10.56	13.33
Level 2	4.54	4.59	4.54	4.62	2.98	2.78	2.94
Level 3	3.17	2.76	2.80	2.79	1.40	1.33	1.37

Level 1:

2008-2011: Up to 1.5 Mbps, 2 GB/month

2012-2013: Up to 3 Mbps, 5 GB/month

2014: Up to 3 Mbps, 7.5 GB/month

Level 2:

2008-2011: 1.5-9 Mbps, 15 GB/month

2012-2013: 4-15 Mbps, 20 GB/month

2014: 4-15 Mbps, 30 GB/month

Level 3:

2008-2011: 10-19 Mbps, 30 GB/month

2012-2013: 16-40 Mbps, 50 GB/month

2014: 16-40 Mbps, 75 GB/month

Sources:

- Wall Communications Inc. *Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions 2014 Update*, Table A3.3. Prepared for the Canadian Radio-television and Telecommunications Commission and Industry Canada. Available online at <http://www.crtc.gc.ca/eng/publications/reports/rp140714.pdf>.
- Canadian Consumer Price Index values from Statistics Canada, Table 326-0020, 2011 basket, average value for all items.

Table 2.1.4 Broadband Internet price in constant dollars, normalized by bottom of range

CDN\$ (2002) per Mbps	2008	2009	2010	2011	2012	2013	2014
Level 2	27.22	27.53	27.25	27.69	11.16	10.42	11.02
Level 3	6.02	5.25	5.31	5.29	3.49	3.32	3.43
Level 4	-	-	-	3.24	1.94	1.69	1.73

Level 2:

2008-2011: 1.5-9 Mbps, 15 GB/month

2012-2013: 4-15 Mbps, 20 GB/month

2014: 4-15 Mbps, 30 GB/month

Level 3:

2008-2011: 10-19 Mbps, 30 GB/month

2012-2013: 16-40 Mbps, 50 GB/month

2014: 16-40 Mbps, 75 GB/month

Level 4:

2011: Above 20 Mbps, 50 GB/month

2012-2013: Above 40 Mbps, 75 GB/month

2014: Above 40 Mbps, 120 GB/month

Sources:

- Wall Communications Inc. *Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions 2014 Update*, Table A3.3. Prepared for the Canadian Radio-television and Telecommunications Commission and Industry Canada. Available online at <http://www.crtc.gc.ca/eng/publications/reports/rp140714.pdf>.
- Canadian Consumer Price Index values from Statistics Canada, Table 326-0020, 2011 basket, average value for all items.

Table 2.1.5 Average monthly revenue per user (constant \$) of broadband per Mbps

CDN\$ (2002) per Mbps	2006	2007	2008	2009	2010	2011	2012	2013
Average	9.65	9.31	10.11	9.75	9.32	8.83	8.35	5.72

Note: Constant dollar average revenues per user per month values, normalized by the bottom of the speed tier value, weighted by the subscriber share of the speed tiers. For 2010-2012, the fastest speed tier (16 Mbps and higher) is subdivided into two tiers, which are used for the weightings in these years.

Sources:

- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report*, July 2011, Table 5.3.3.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2012*, Table 5.3.3.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 5.3.4.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2013*, Table 2.1.4.
- Canadian Consumer Price Index values from Statistics Canada, Table 326-0020, 2011 basket, average value for all items.

2.2. Residential Broadband Output

This section collects metrics on the level of output in Canadian residential broadband Internet services. Information about broadband penetration, availability, and Internet usage is presented here. Information about service quality is also collected, including measures of connection speed. Tables and figures include:

- Table 2.2.1 compiles information on the availability of Internet services, included wired connections and wireless alternatives, as well as IPTV. Data is presented for 2008-2013 and is sourced from the CRTC.
- Table 2.2.2 indicates the share (based on subscriptions) of different types of broadcasting distribution undertakings, from 2008-2013, and is sourced from the CRTC.
- Figure 2.2.1 presents a time-series of the total number of dial-up and high-speed Internet connections in Canada, from 1998-2013, with data sourced from the CRTC. The CRTC defines “high-speed” service as a service with a connection speed (upload or download) of at least 128 Kbps.¹
- Figure 2.2.2 compares the number of fixed broadband connections per 100 households internationally, for both 2008 and 2014. Broadband penetration data per inhabitant is sourced from the OECD, and is converted using the average household size for each country. The OECD defines “broadband” service as a service with a connection speed (download) of at least 256 Kbps.²
- Figure 2.2.3 contains a time-series of the share of Canadian households with Internet connection speeds greater than 1.5 Mbps and greater than 5 Mbps, from 2007-2013. Data is sourced from the CRTC.
- Figure 2.2.4 presents an international comparison of the share of households with broadband Internet access, for both 2007 and 2011 (or latest available). This data is sourced from the OECD.
- Figure 2.2.5 compares the average connection speed across countries, for 2008 and 2014. This data is sourced from Akamai.
- Figure 2.2.6 presents an international comparison of the share of connections with speed greater than 4 Mbps, for 2014. This data is sourced from Akamai.

¹ Canadian Radio-television and Telecommunications Commission, *Data Collection – Telecommunications Glossary*, online at <http://www.crtc.gc.ca/dcs/eng/glossaryT.htm#g>.

² Organization for Economic Co-Operation and Development, *OECD Broadband Methodology*, online at <http://www.oecd.org/sti/broadband/broadband-methodology.htm>.

- Figure 2.2.7 compares the share of connections with speed greater than 5 Mbps across countries, for 2008 and 2011. This data is sourced from Akamai.
- Figure 2.2.8 compares the average monthly Internet usage per Internet user across countries for 2013. This data is sourced from Cisco.
- Table 2.2.3 presents a time-series of the share of broadband connections in Canada, by speed tier, from 2006-2013, using data sourced from the CRTC.
- Table 2.2.4 presents that average weekly time spent online by Anglophone and Francophone Internet users, from 1999-2012. This data is sourced from the CRTC.

Table 2.2.1 Canadian Internet service availability

% households	2008	2009	2010	2011	2012	2013
DSL	84	85	85	86	87	82
Cable	80	80	81	82	82	82
Fibre	-	-	-	-	-	14
Fixed wireless	80	81	82	86	50	63
HSPA+	-	-	96	99	99	99
LTE	-	-	-	45	72	81
IPTV	10	21	22	34	45	56

Sources:

- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 6.1.3.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2014*, Figure 5.3.15 and Table 5.3.11.

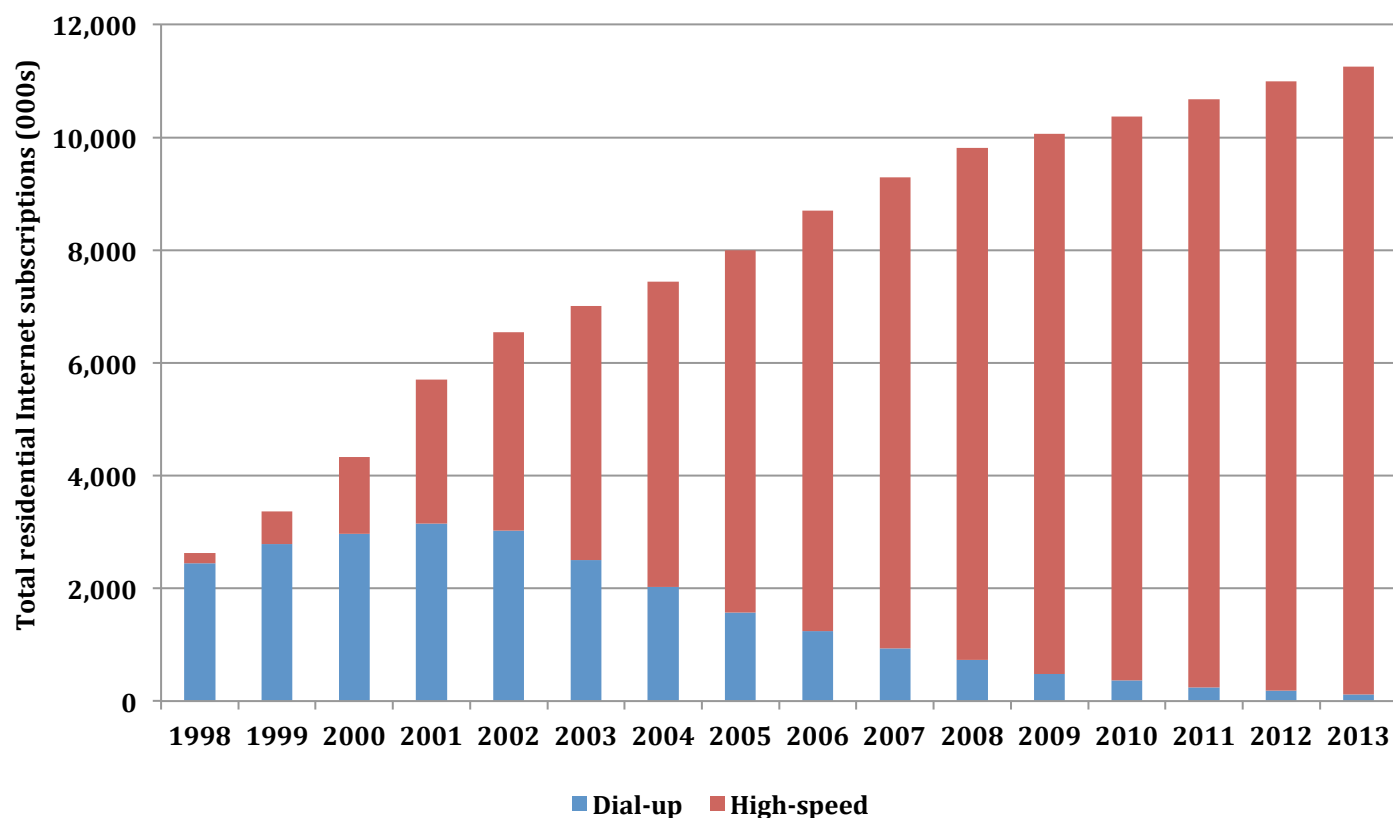
Table 2.2.2 Broadcasting subscriber distribution

(thousands)	2008	2009	2010	2011	2012	2013
Cable	7,691.7	7,782.7	7,874.4	7,858.3	7,682.2	7,430.6
<i>Share</i>	70.1%	69.5%	68.3%	66.6%	64.4%	62.3%
IPTV	225.0	311.4	419.6	657.3	1,002.5	1,385.1
<i>Share</i>	2.1%	2.8%	3.6%	5.6%	8.4%	11.6%
DTH & MDS	2,699.5	2,760.9	2,862.1	2,877.4	2,825.7	2,691.2
<i>Share</i>	24.6%	24.7%	24.8%	24.4%	23.7%	22.6%
Non-reporting BDUs	350.2	345.1	369.7	412.7	412.4	412.4
<i>Share</i>	3.2%	3.1%	3.2%	3.5%	3.5%	3.5%
Total	10,966.4	11,200.1	11,525.8	11,805.7	11,922.8	11,919.3

Sources:

- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 4.4.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2014*, Table 4.3.2.

Figure 2.2.1 Total Canadian residential Internet subscriptions

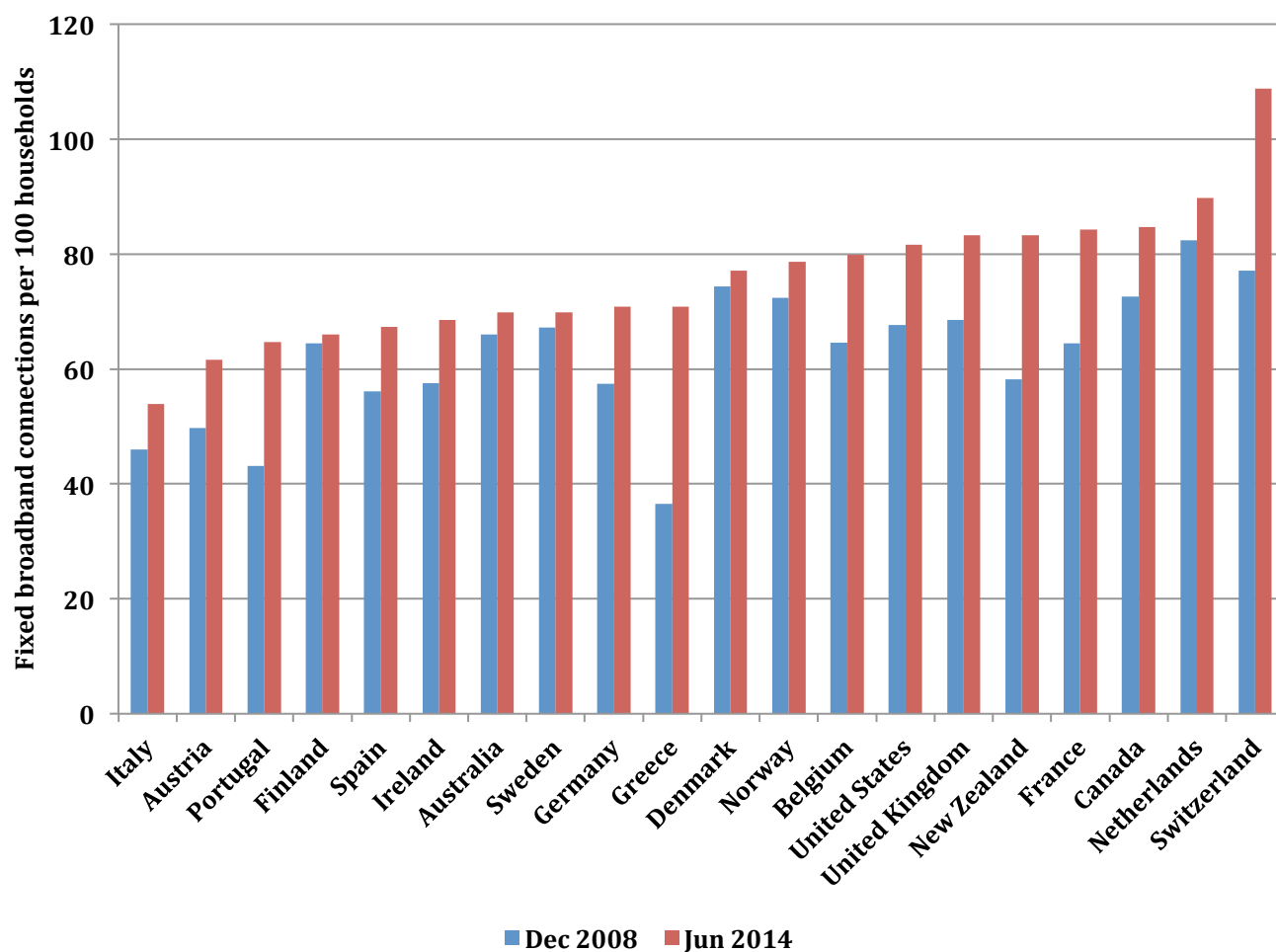


Sources:

- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, November 2003, Table 4.27.
- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, November 2004, Table 4.4.6.
- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, October 2005, Table 4.4.8.
- Canadian Radio-television and Telecommunications Commission, *Telecommunications Monitoring Report: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, July 2006, Table 4.4.9.
- Canadian Radio-television and Telecommunications Commission, *Telecommunications Monitoring Report: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, July 2007, Table 4.4.7.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2008*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2009*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2010*, Table 5.3.2.

- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2011*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2012*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2014*, Table 5.3.4.

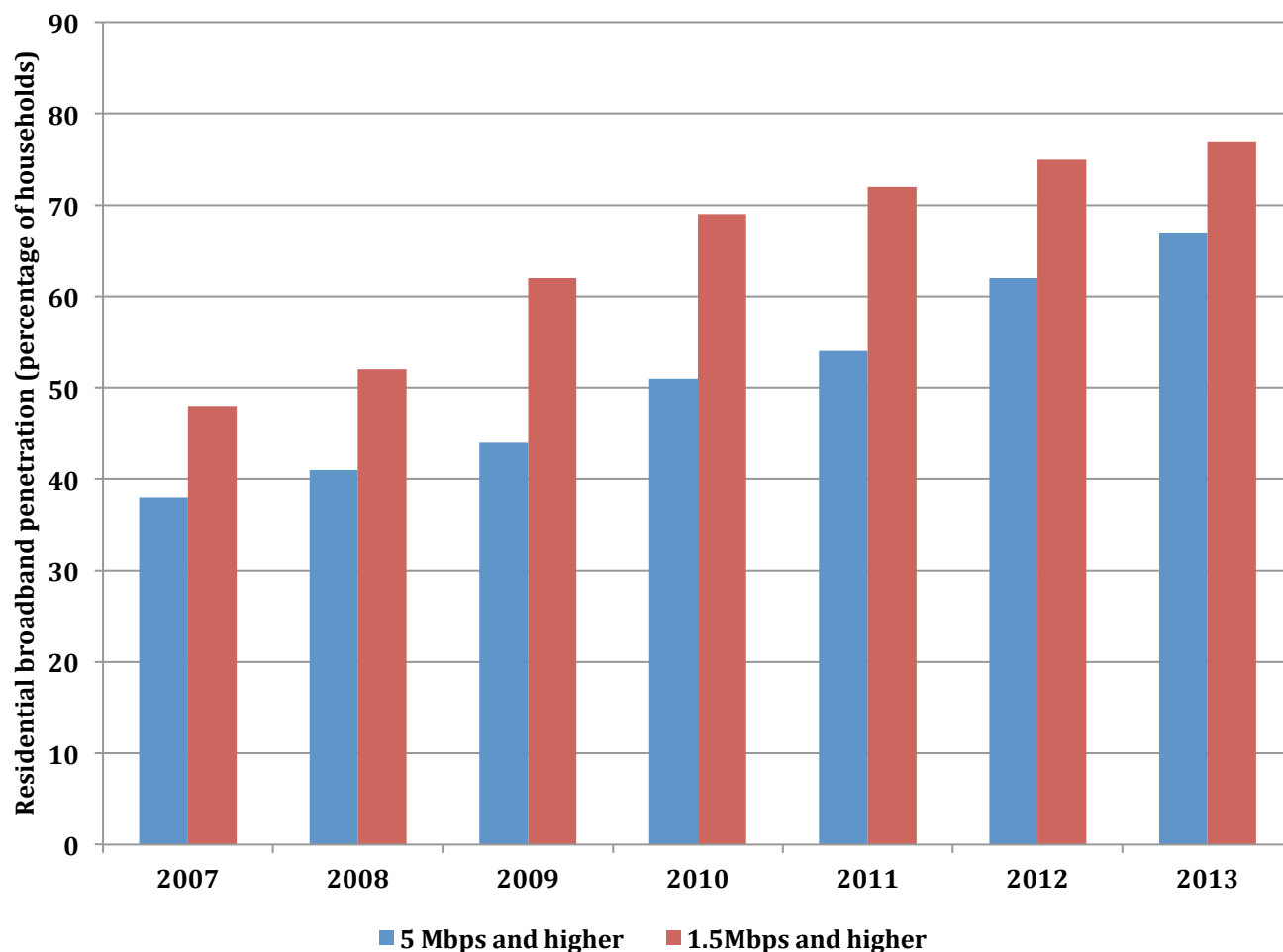
Figure 2.2.2 Fixed broadband household penetration



Sources:

- Organization for Economic Co-Operation and Development, *OECD Communications Outlook 2013*, 11 July 2013, Table 4.11, online at <http://www.oecd.org/sti/broadband/communications-outlook.htm>
- Organization for Economic Co-Operation and Development, *OECD Broadband Portal*, Category 1.2(1), <http://www.oecd.org/sti/broadband/broadbandportal.htm>
- Appendix 4.2

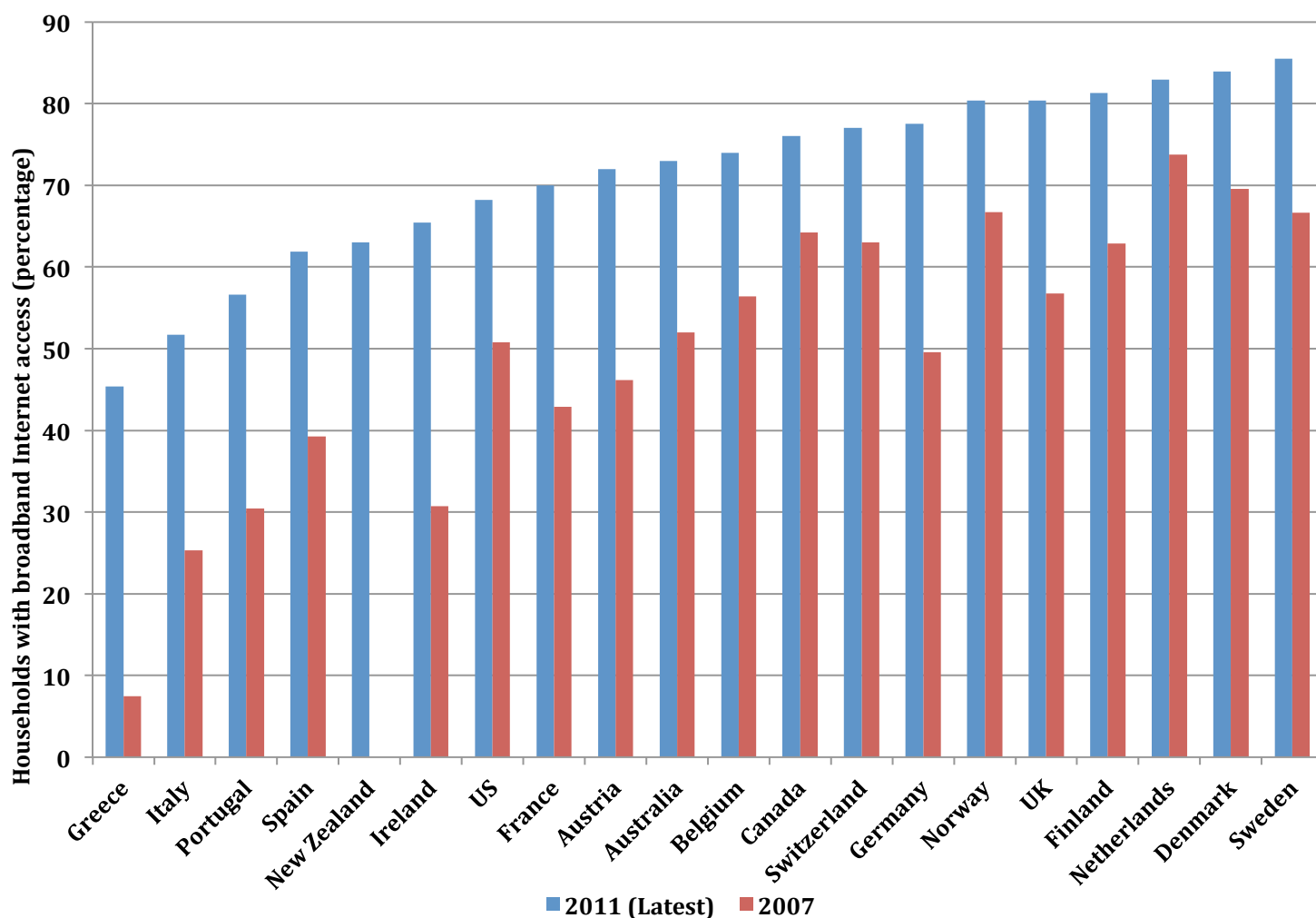
Figure 2.2.3 Canadian residential broadband household penetration



Sources:

- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2009*, page 213.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2010*, page 137.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2011*, page 137.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2012*, page 147.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, page 143.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2014*, Table 5.3.0.

Figure 2.2.4 Households with broadband access, 2007 and 2011 or latest available

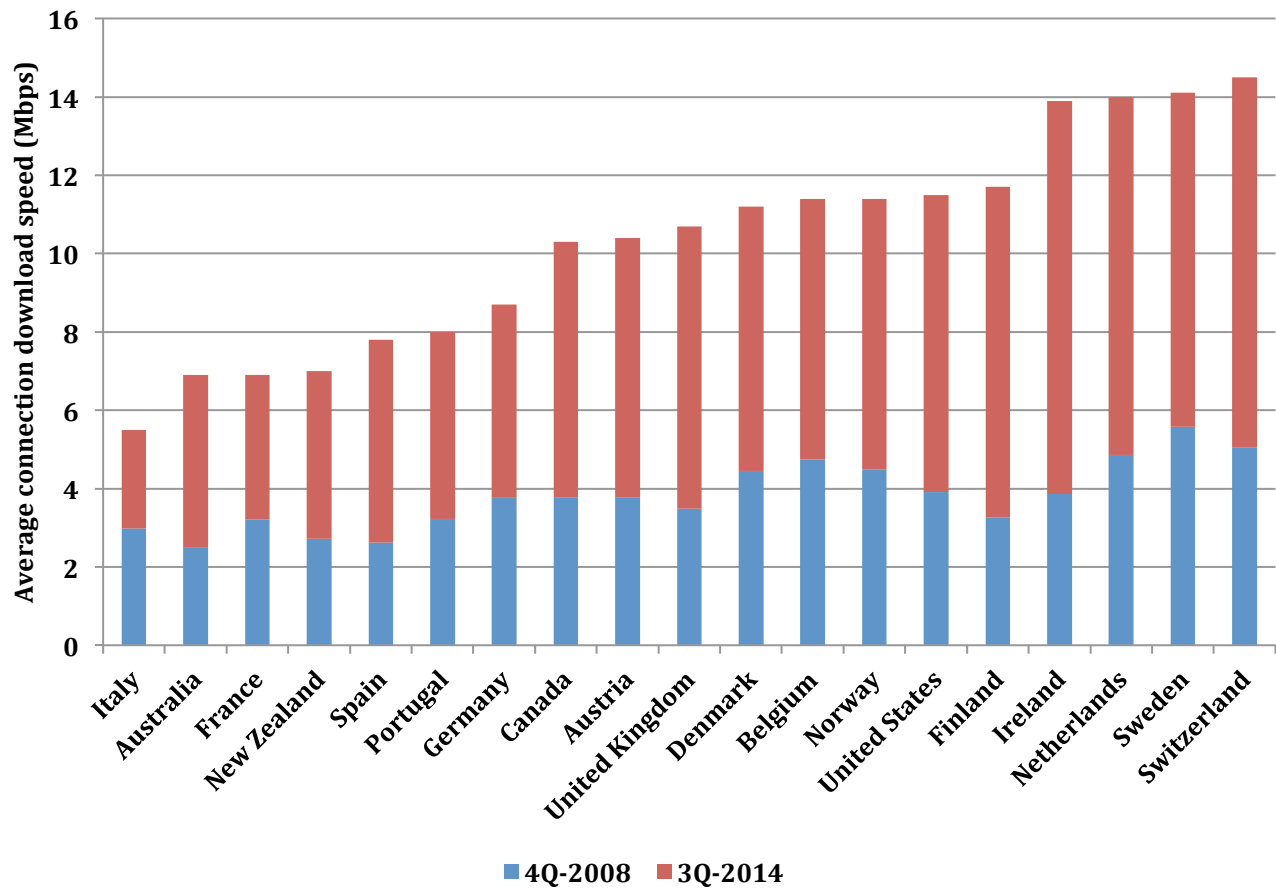


Note: Latest value for Australia is from 2010, New Zealand is from 2009, and the United States is from 2010.

Sources:

- Organization for Economic Co-Operation and Development, *OECD Communications Outlook 2013*, 11 July 2013, Figure 8.22, online at <http://www.oecd.org/sti/broadband/communications-outlook.htm>
- Organization for Economic Co-Operation and Development, *OECD Communications Outlook 2011*, 22 June 2011, Table 8.4, online at <http://www.oecd.org/sti/broadband/communications-outlook.htm>

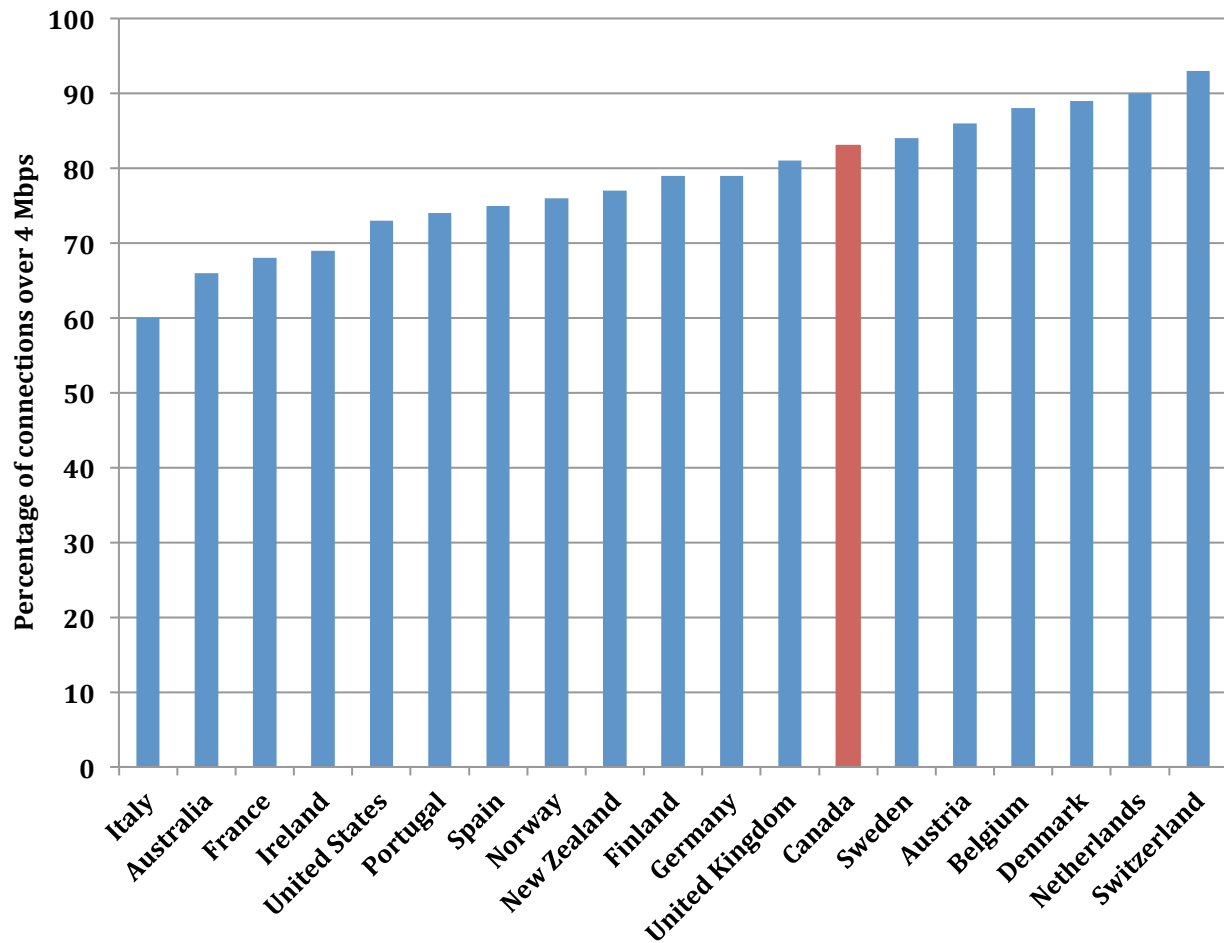
Figure 2.2.5 Average Internet connection download speed



Sources:

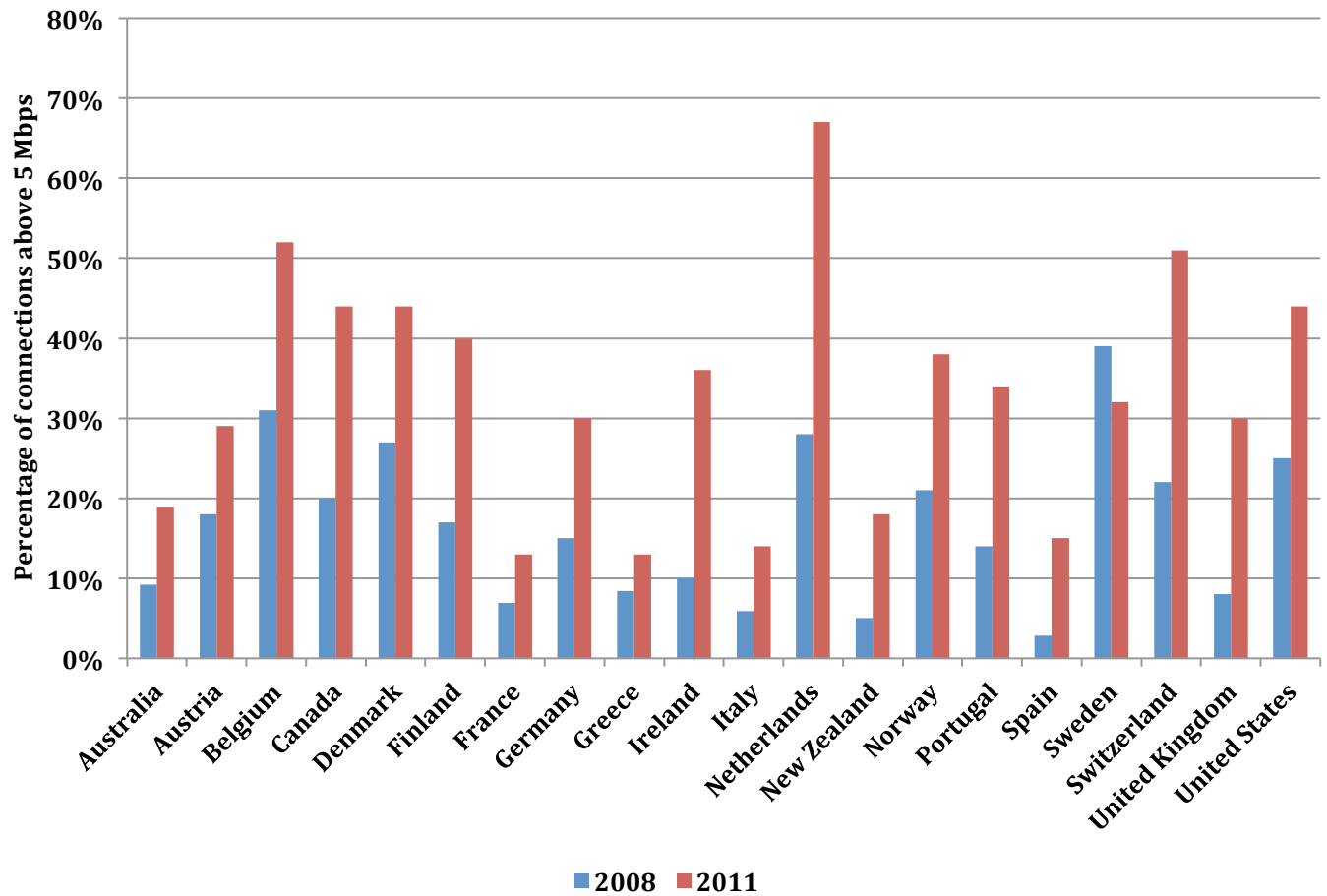
- Akamai, *State of the Internet 3rd Quarter, 2014* (Volume 8, Number 3), Section 11: Appendix.
- Akamai, *State of the Internet 4th Quarter, 2008* (Volume 5, Number 4), Section 6: Appendix.

Figure 2.2.6 Percentage of Internet connections over 4 Mbps (Q3-2014)



Source: Akamai, *State of the Internet 3rd Quarter, 2014 (Volume 8, Number 3)*, Section 11: Appendix.

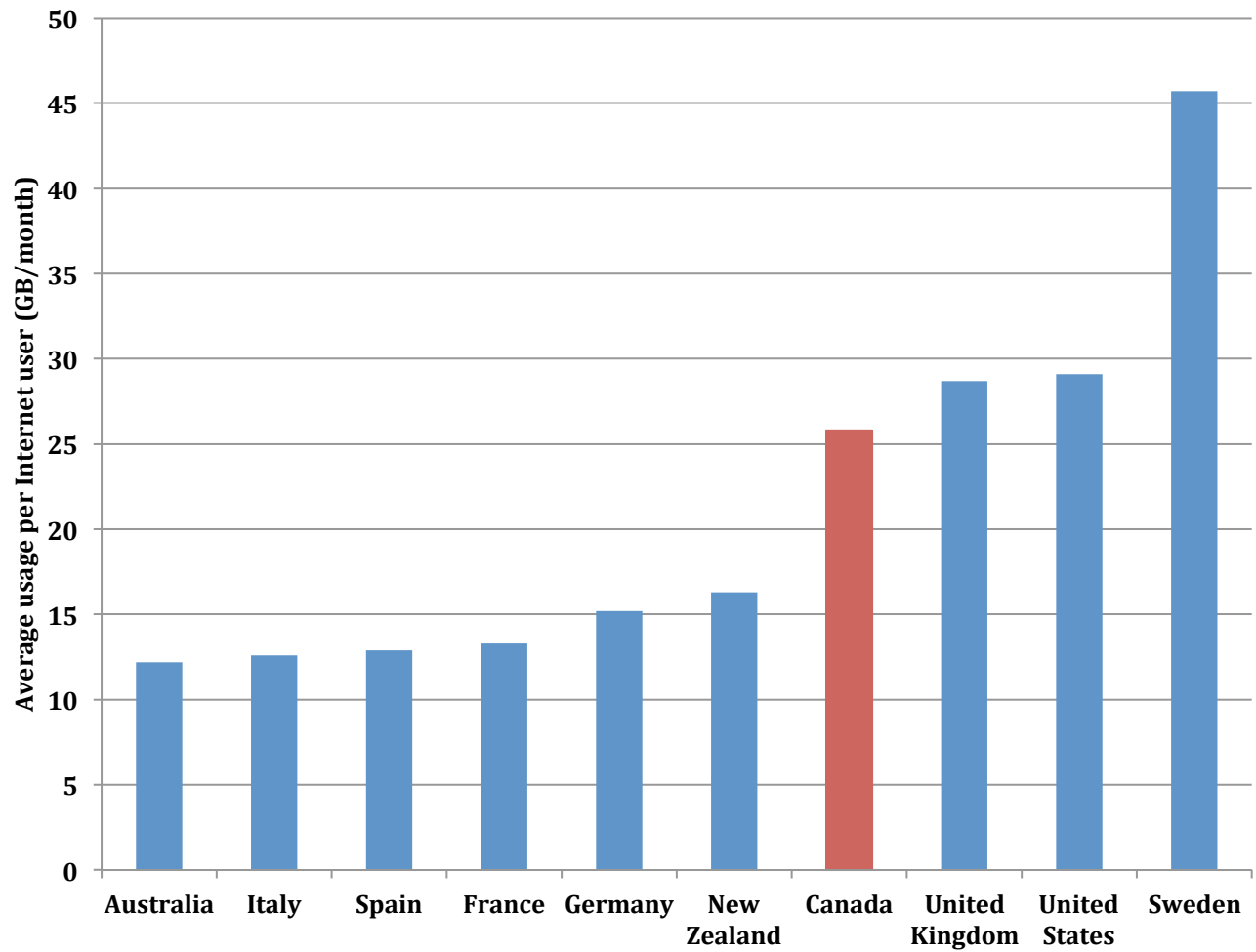
Figure 2.2.7 Percentage of Internet connections over 5 Mbps



Sources:

- Akamai, *State of the Internet 4th Quarter, 2008 (Volume 1, Number 4)*, Section 6: Appendix.
- Akamai, *State of the Internet 4th Quarter, 2011 (Volume 4, Number 4)*, Section 9: Appendix.

Figure 2.2.8 Average monthly data usage per Internet user (2013)



Source: Cisco, *VNI Forecast Highlights*, online at:
http://www.cisco.com/web/solutions/sp/vni/vni_forecast_highlights/index.html

Table 2.2.3 Canadian share of broadband subscriptions, by speed tier

Share of Broadband Connections	2006	2007	2008	2009	2010	2011	2012	2013
1.5 to 4 Mbps	20.1	20.5	22.4	28.3	25.8	25.8	18.8	7.5
5 to 9 Mbps	72.9	70.3	66.0	49.1	48.2	47.8	42.7	33.8
<i>Total 1.5 to 9 Mbps</i>	<i>93.0</i>	<i>90.8</i>	<i>88.4</i>	<i>77.4</i>	<i>74.0</i>	<i>73.7</i>	<i>61.5</i>	<i>41.3</i>
10 to 15 Mbps	6.9	9.1	11.3	21.9	23.9	16.4	10.4	26.4
16 Mbps and higher	0.1	0.1	0.3	0.7	2.1	10.0	28.1	32.3
16 to 49 Mbps	-	-	-	-	1.9	9.7	24.3	27.1
50 Mbps and higher	-	-	-	-	0.2	0.3	3.7	5.1
<i>Total 10 Mbps and higher</i>	<i>7.0</i>	<i>9.2</i>	<i>11.6</i>	<i>22.6</i>	<i>26.0</i>	<i>26.3</i>	<i>38.5</i>	<i>58.7</i>

Sources:

- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report*, July 2011, Table 5.3.3.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2012*, Table 5.3.3.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 5.3.4.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2014*, Table 5.3.10.

Table 2.2.4 Average weekly hours spent online by Canadian Internet users

	1999	2002	2005	2007	2008	2009	2010	2011	2012
Anglophones	5.6	9.3	11.7	13.4	13.8	14.6	17.3	18.2	20.1
Francophones	6.3	7.7	9.1	9.8	11.2	11.9	12.8	13.1	13.0

Source: Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 6.2.3.

2.3. Residential Broadband Competition

This section collects data that are useful in assessing competition in Canadian residential broadband services. Data includes the relative subscription shares of service providers, shares of the technologies used in provision, and the relative shares of cable and ILEC service providers. Information on the extent of capital expenditures is also presented, along with comparisons of wireline capital intensities. Tables and figures include:

- Table 2.3.1 compiles a time series of subscriptions and subscription shares for residential high-speed Internet providers from 1998-2013. This data is sourced from the CRTC.
- Table 2.3.2 delineates the number and shares of residential high-speed Internet subscriptions for non-ILEC and non-cable service providers for 2012, including resellers and other facilities-based providers. This data is based on approximations provided by the CRTC. The CRTC defines resellers as service providers that “essentially rely on facilities-based TSPs to provide them with facilities on a wholesale basis.”³ Aggregated wholesale high-speed Internet service obtained from ILECs is known as aggregated ADSL service, whereas service obtained from cable carriers is known as third-party Internet access (TPIA).⁴
- Figure 2.3.1 presents a time-series of the relative subscription shares of cable and ILEC service providers of residential high-speed Internet subscribers, from 1998-2013. This data is sourced from the CRTC.
- Figure 2.3.2 consists of a time-series of the relative share of year-over-year net adds for cable and ILEC service providers, of residential high-speed Internet subscriptions, from 1999-2013. This data is sourced from the CRTC.
- Figure 2.3.3 compares the number of cable broadband subscriptions per DSL broadband subscription across countries for 2014. This data is sourced from the OECD.
- Table 2.3.3 presents a time-series of total Canadian wireline telecommunications capital expenditure, by type of provider, from 2008-2013. This data is sourced from the CRTC.
- Figure 2.3.4 presents a time-series of average capital intensity for wireline cable and ILEC service providers, for Canada and the United States, from 2005-2013. These capital

³ Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013* at page 143.

⁴ Canadian Radio-television and Telecommunications Commission, *Revised regulatory framework for wholesale services and definition of essential service*, Telecom Decision CRTC 2008-17 at paragraph 83.

intensities are weighted by operating wireline revenues and are sourced from company annual reports.

- Figure 2.3.5 compares a variety of international ILEC wireline capital intensities, from 2000-2013. These capital intensities are calculated using data from company annual reports.
- Figure 2.3.6 presents capital intensity values for a variety of Canadian wireline operations, from 2005-2013. This data is sourced from company annual reports.
- Figure 2.3.7 compares the total wireline investment per access path across countries for 2011. This value is calculated using OECD data on total investment, cellular investment, and counts of access paths.
- Table 2.3.4 collects the latest data available from previous tables and figures for selected countries, presenting measures of broadband price, speed, penetration, and wireline investment.

Table 2.3.1 Residential high-speed Internet subscriptions by type of provider

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
ILEC																
	15	95	398	903	1400	1,859	2268	2676	3095	3405	3584	3673	3762	3874	4014	4172
Share (%)																
	8.2	16.3	29.4	35.3	39.7	41.2	41.9	41.6	41.5	40.7	39.5	38.4	37.6	37.2	37.1	37.5
Cable																
	166	478	943	1624	2055	2532	2933	3467	4041	4573	4990	5358	5642	5839	5925	5931
Share (%)																
	91.2	82.1	69.6	63.5	58.3	56.1	54.2	53.9	54.2	54.7	55.0	56.0	56.4	56.0	54.8	53.3
Other																
	1	9	14	31	71	122	216	286	327	379	503	545	604	712	870	1025
Share (%)																
	0.5	1.5	1.0	1.2	2.0	2.7	4.0	4.4	4.4	4.5	5.5	5.7	6.0	6.8	8.0	9.2
Total																
	182	582	1355	2558	3527	4513	5416	6429	7461	8356	9077	9576	10008	10426	10809	11128

Sources:

- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, November 2003, Table 4.27.
- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, November 2004, Table 4.4.6.
- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, October 2005, Table 4.4.8.
- Canadian Radio-television and Telecommunications Commission, *Telecommunications Monitoring Report: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, July 2006, Table 4.4.9.
- Canadian Radio-television and Telecommunications Commission, *Telecommunications Monitoring Report: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, July 2007, Table 4.4.7.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2008*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2009*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2010*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report*, July 2011, Table 5.3.2.

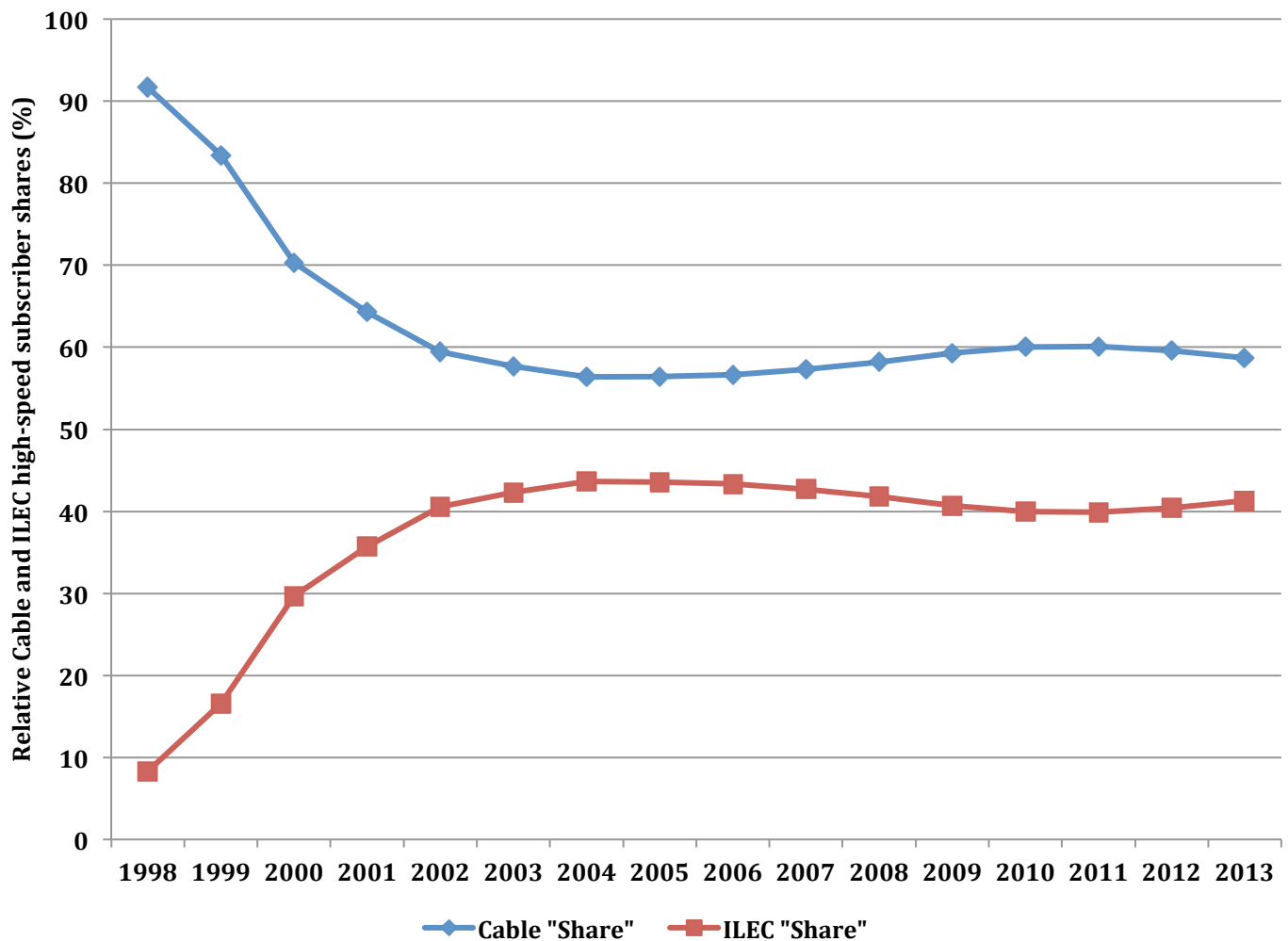
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2012*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2014*, Table 5.3.4.

Table 2.3.2 Other TSP residential high-speed Internet subscriptions (2012)

	Subscribers (000s)	Share of Other Subscriptions	Share of Total Subscriptions
Resellers – DSL	339	39%	3.1%
Resellers – Cable	183	21%	1.7%
Total Resellers	522	60%	4.8%
Fixed Wireless	226	26%	2.1%
Satellite	87	10%	0.8%
DSL/Fibre	35	4%	0.3%
Total Facilities	348	40%	3.2%

Source: Approximations provided by the Canadian Radio-television and Telecommunications Commission.

Figure 2.3.1 Relative shares of cable and ILEC residential high-speed subscriptions

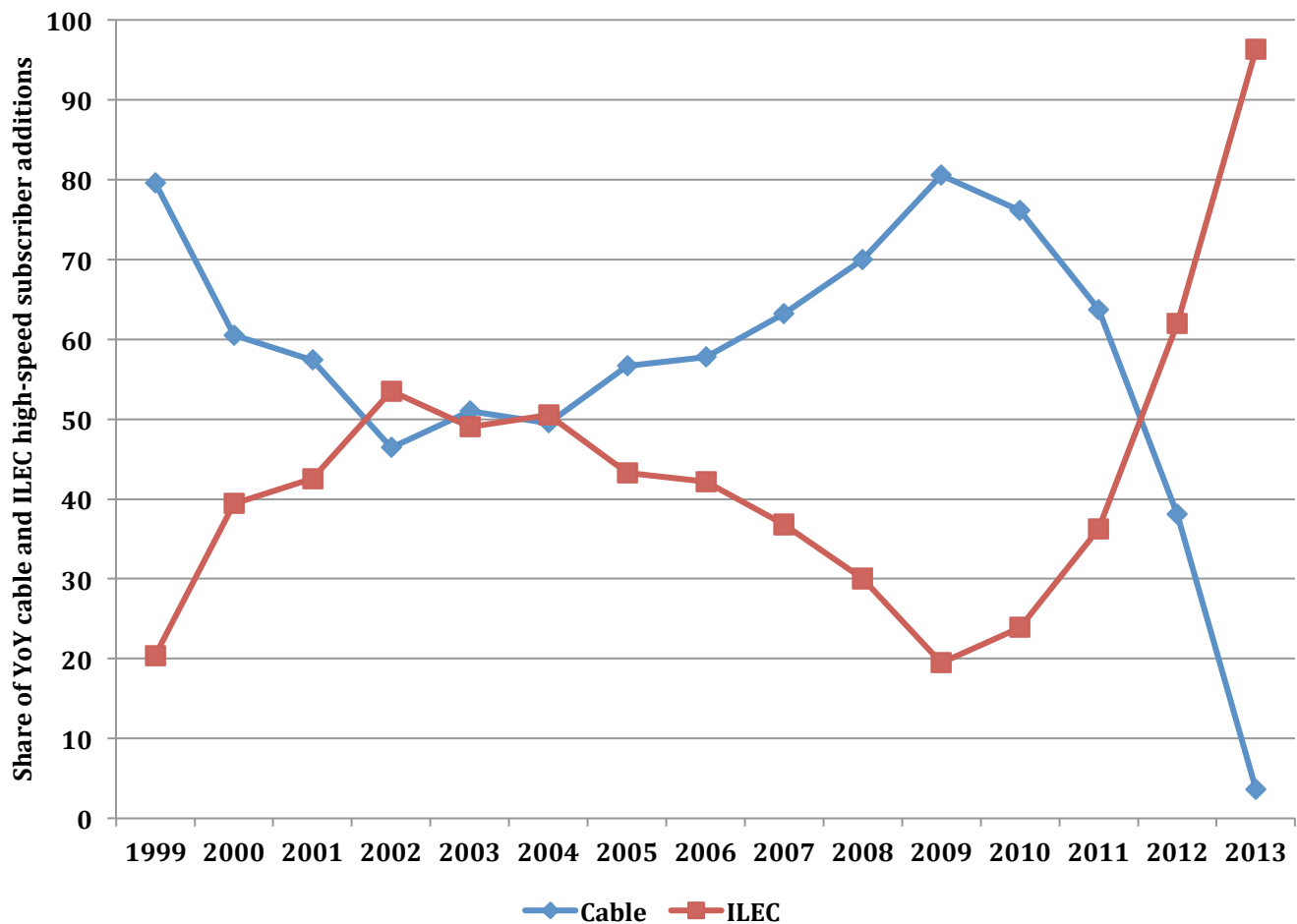


Sources:

- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, November 2003, Table 4.27.
- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, November 2004, Table 4.4.6.
- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, October 2005, Table 4.4.8.
- Canadian Radio-television and Telecommunications Commission, *Telecommunications Monitoring Report: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, July 2006, Table 4.4.9.
- Canadian Radio-television and Telecommunications Commission, *Telecommunications Monitoring Report: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, July 2007, Table 4.4.7.

- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2008*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2009*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2010*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report*, July 2011, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2012*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2014*, Table 5.3.4.

Figure 2.3.2 Share of Year over Year cable and ILEC high-speed Internet subscriptions

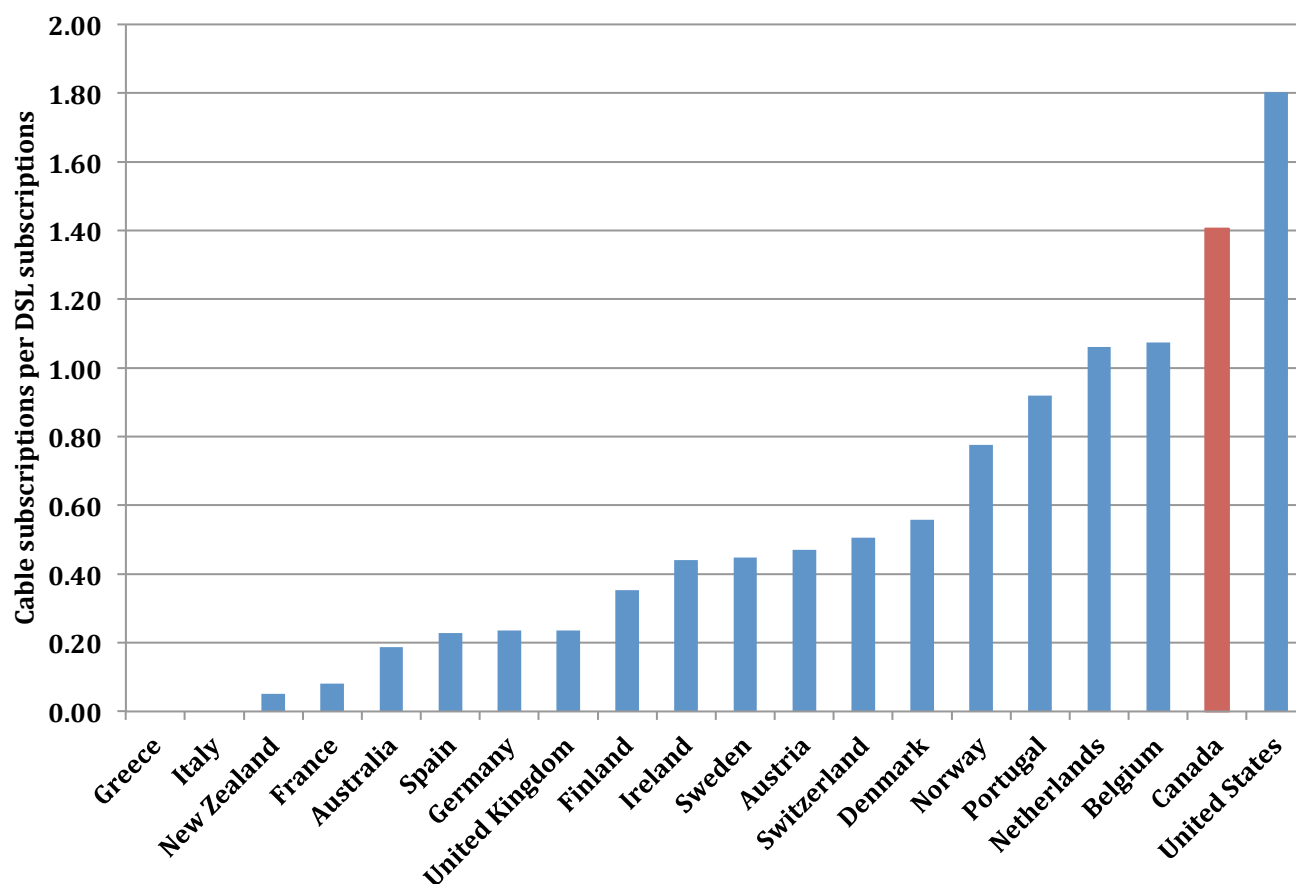


Sources:

- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, November 2003, Table 4.27.
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- Canadian Radio-television and Telecommunications Commission, *Report to the Governor in Council: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, October 2005, Table 4.4.8.
- Canadian Radio-television and Telecommunications Commission, *Telecommunications Monitoring Report: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, July 2006, Table 4.4.9.
- Canadian Radio-television and Telecommunications Commission, *Telecommunications Monitoring Report: Status of Competition in Canadian Telecommunications Markets Deployment/Accessibility of Advanced Telecommunications Infrastructure and Services*, July 2007, Table 4.4.7.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2008*, Table 5.3.2.

- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report 2009*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report July 2010*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report*, July 2011, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2012*, Table 5.3.2.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 5.3.2.

**Figure 2.3.3 Cable broadband subscriptions per DSL broadband subscription
(June 2014)**



Source: Organization for Economic Co-Operation and Development, *OECD Broadband Portal*, Category 1.2(1), <http://www.oecd.org/sti/broadband/oecd broadband portal.htm>

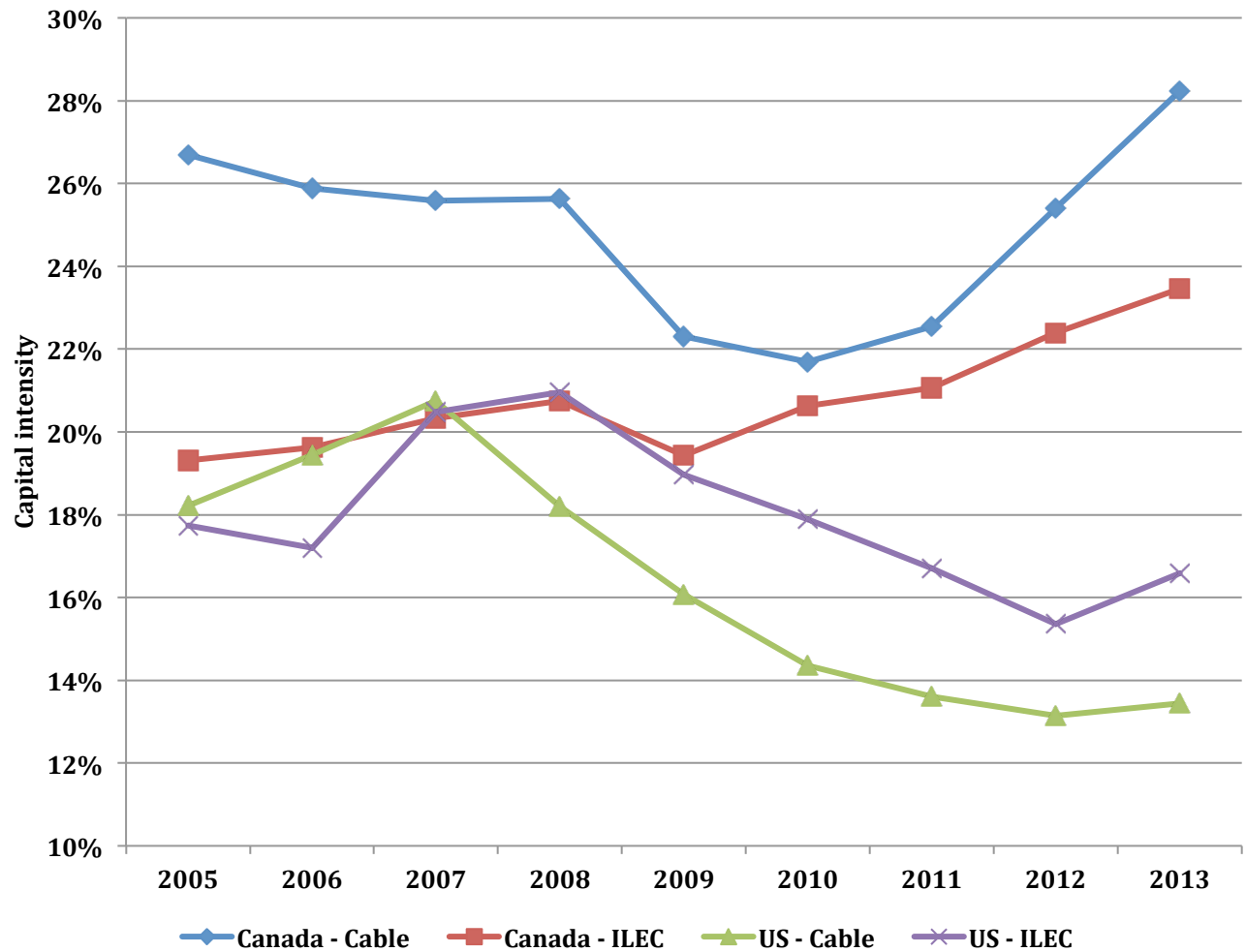
Table 2.3.3 Canadian wireline telecommunications capital expenditures

(billions \$)	2008	2009	2010	2011	2012	2013
Incumbent TSPs	4.1	4.2	4.4	4.6	4.7	4.9
<i>Share (%)</i>	69	74	68	66	67	72
Alternative - Facilities-based	1.7	1.5	2.1	2.4	2.3	1.9
<i>Share (%)</i>	29	26	32	34	33	28
Alternative - Resellers	0.1	0	0	0	0	0
<i>Share (%)</i>	2	0	0	0	0	0
Total Wireline	5.9	5.7	6.5	7	7	6.8

Sources:

- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 5.1.6.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2014*, Table 5.0.4.

Figure 2.3.4 Capital intensities of Canada and U.S. wireline service providers



Note: Weighted averages using operating revenues for:

Canada – Cable: Cogeco, Rogers and Shaw

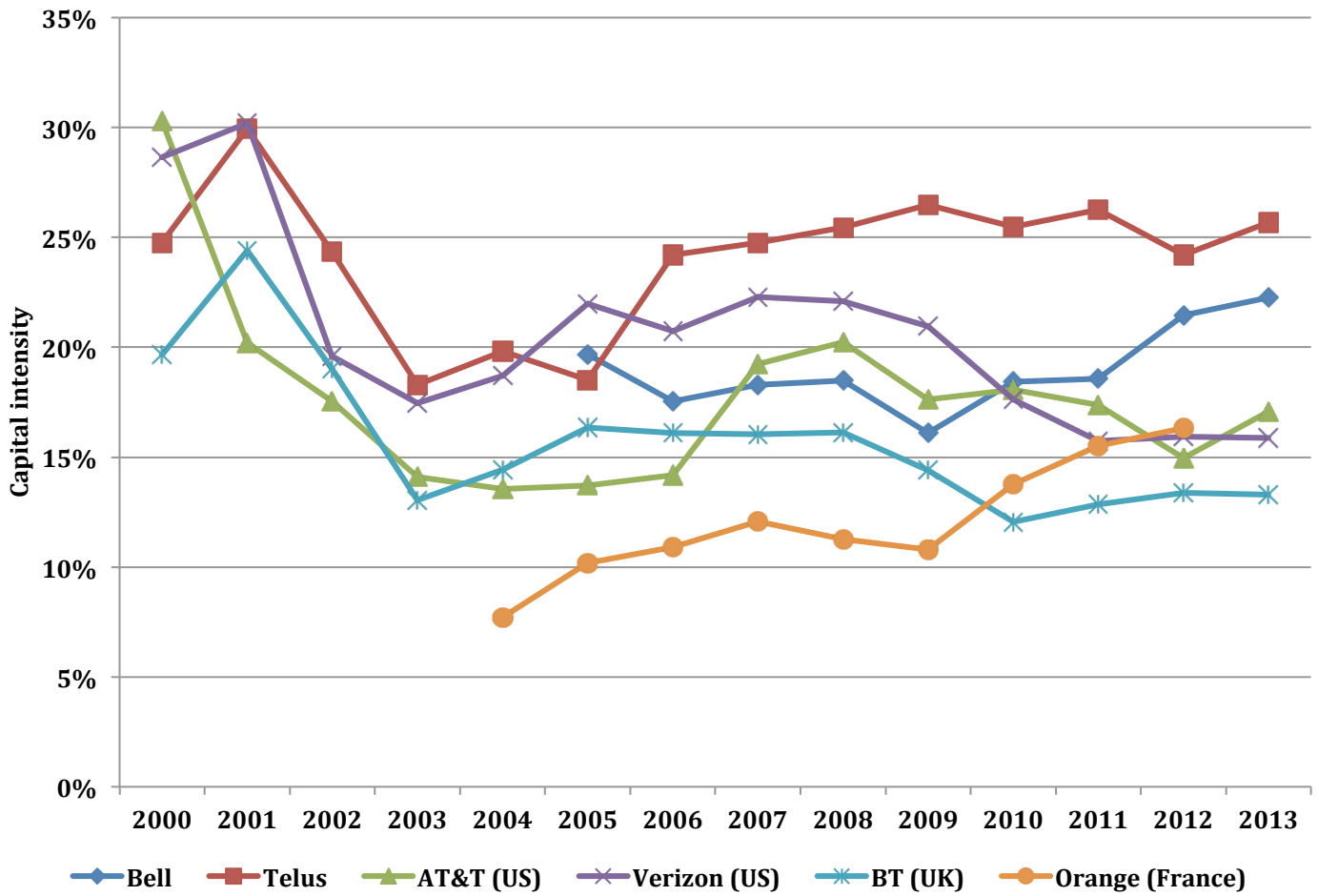
Canada – ILEC: Bell and Telus

US – Cable: Comcast and Time Warner

US – ILEC: AT&T and Verizon

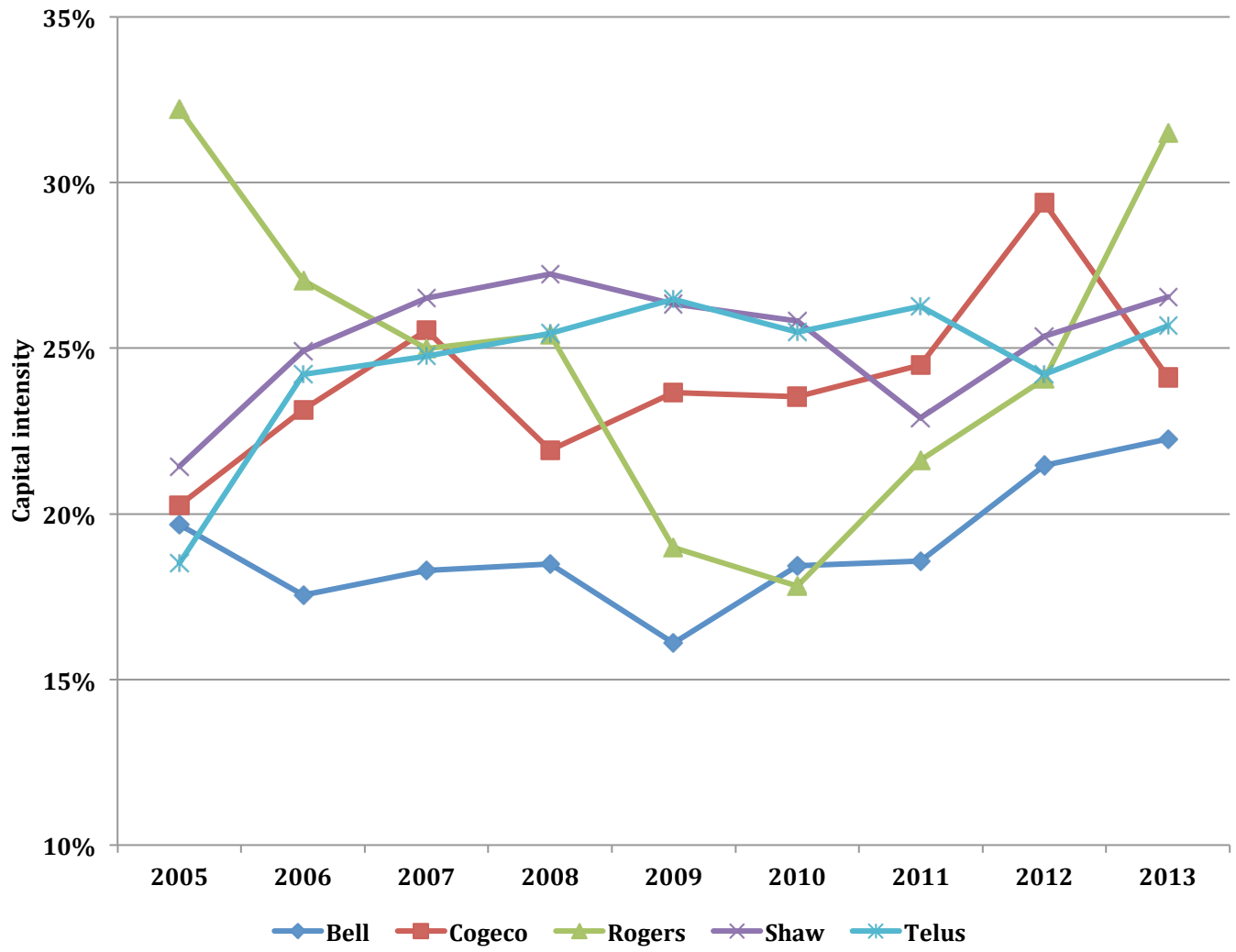
Source: Appendix 4.1

Figure 2.3.5 Capital intensities for international ILECs



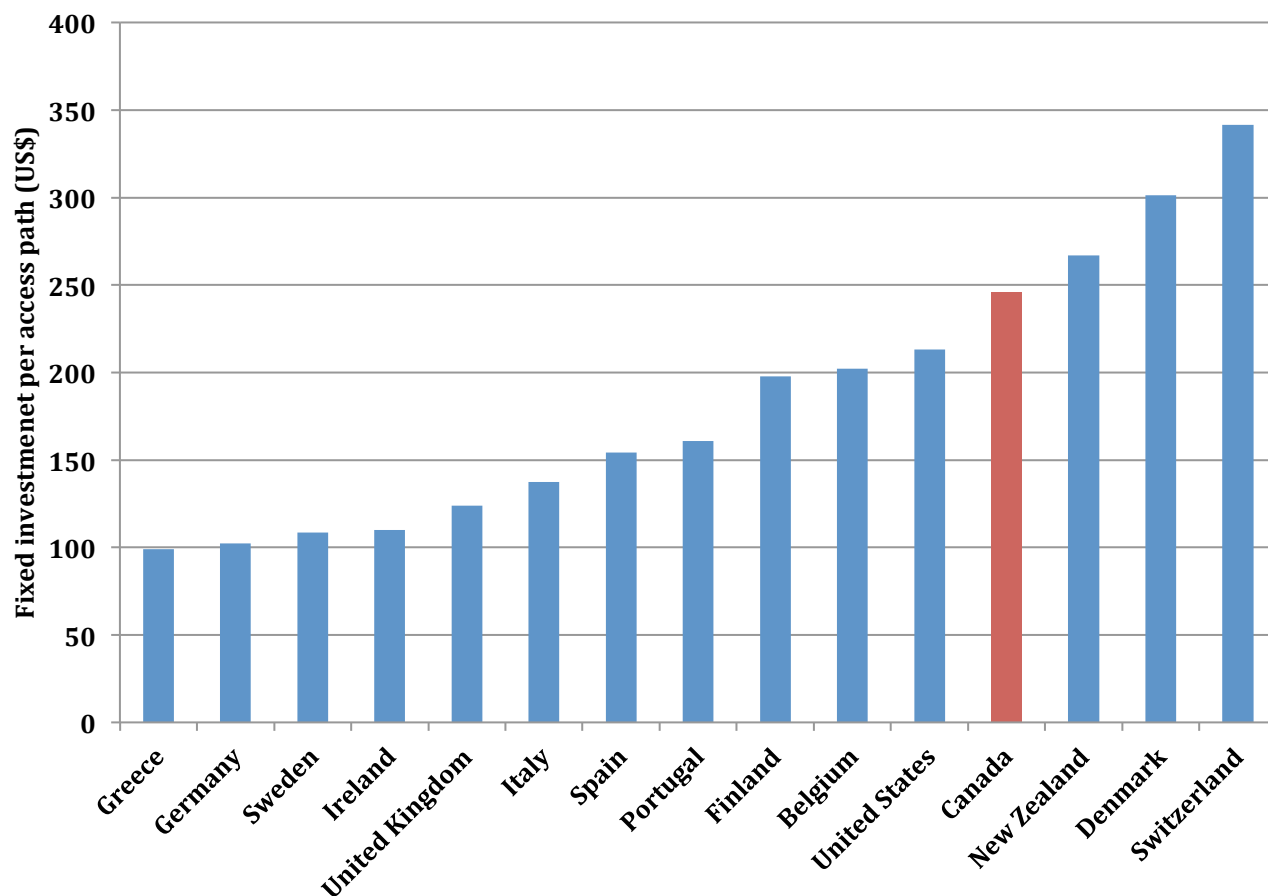
Source: Appendix 4.1

Figure 2.3.6 Capital intensities for Canadian wireline service providers



Source: Appendix 4.1

Figure 2.3.7 Fixed telecommunication investment per access path (2011)



Source: Organization for Economic Co-Operation and Development, *OECD Communications Outlook 2013*, 11 July 2013, Tables 3.9, 4.2, and 4.6, online at <http://www.oecd.org/sti/broadband/communications-outlook.htm>

Table 2.3.4 International broadband price, speed, penetration, and investment (latest)

	Australia	Canada	France	Germany	Italy	UK	US
Wall CDN\$PPP Level 3 (2014)	67.44	68.60	51.15	38.30	52.92	46.89	79.76
Wall CDN\$PPP Level 4 (2014)	70.33	86.46	55.98	58.52	61.79	47.76	103.17
% Above 4 Mbps (2014)	66	83	68	79	60	81	73
Average Connection Speed, Mbps (2014)	6.9	10.3	6.9	8.7	5.5	10.7	11.5
Average Usage per Internet User (2013)	12.2	25.8	13.3	15.2	12.6	28.7	29.1
Fixed Broadband Connections per 100 Households (2014)	69.9	84.7	84.2	70.8	53.9	83.3	81.6
Cable Broadband per DSL Subscription (2014)	0.19	1.41	0.08	0.24	0.00	0.24	1.80
Fixed Telecommunications Investment per Access Path (2011)	*	246.2	*	102.2	137.4	123.9	213.0

* Values are unavailable, as the share of fixed/mobile investment is not reported for these countries.

Sources:

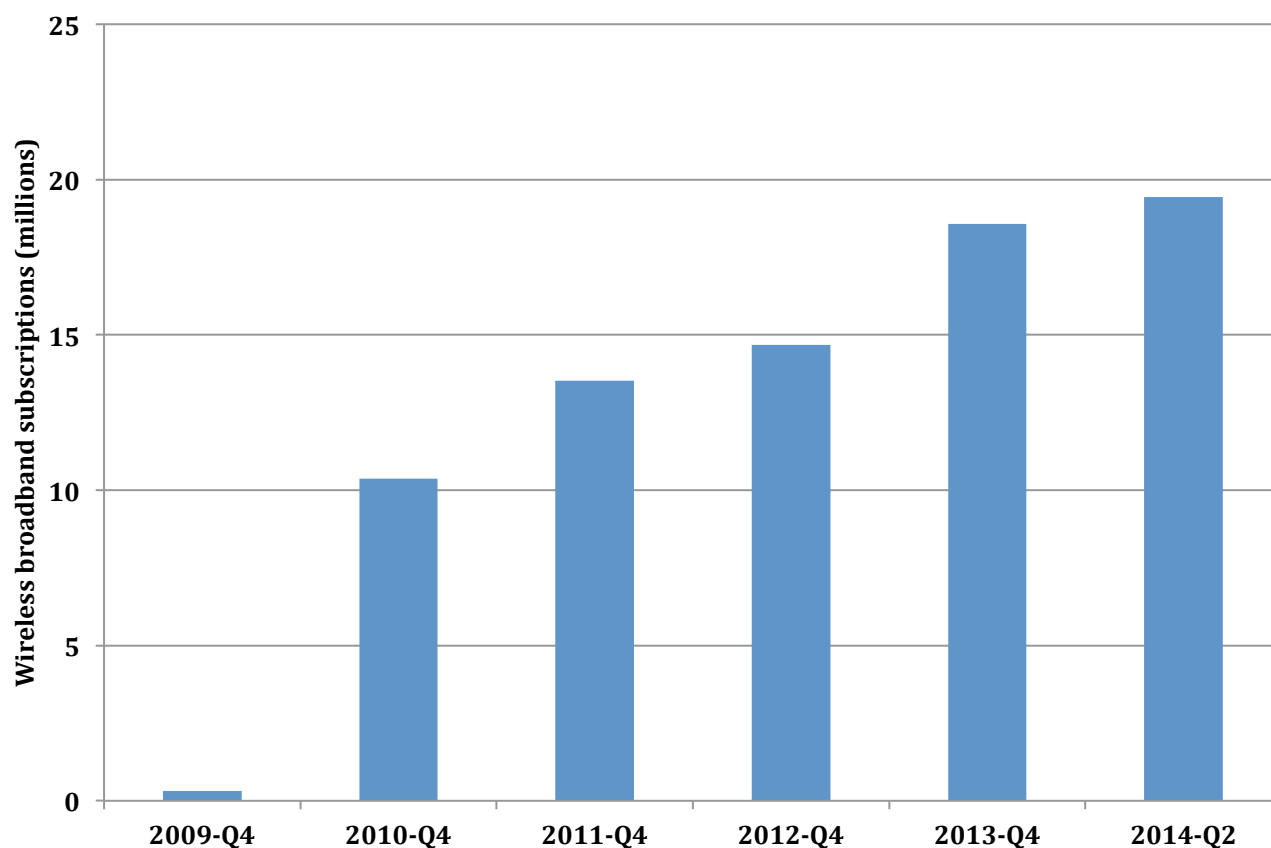
- Organization for Economic Co-Operation and Development, *OECD Communications Outlook 2013*, 11 July 2013, Tables 3.9, 4.2, and 4.6, online at <http://www.oecd.org/sti/broadband/communications-outlook.htm>
- Wall Communications Inc. *Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions 2014 Update*, Table A3.3. Prepared for the Canadian Radio-television and Telecommunications Commission and Industry Canada. Available online at <http://www.crtc.gc.ca/eng/publications/reports/rp140714.pdf>.
- Akamai, *State of the Internet 3rd Quarter, 2014 (Volume 8, Number 3)*, Section 11: Appendix
- Cisco, *VNI Forecast Highlights*, online at: http://www.cisco.com/web/solutions/sp/vni/vni_forecast_highlights/index.html
- Organization for Economic Co-Operation and Development, *OECD Broadband Portal*, Category 1.2, <http://www.oecd.org/sti/broadband/oecdbroadbandportal.htm>
- Appendix 4.2

3. Wireless

This section collects data that shed light on the emerging role of wireless services, as they relate to voice and broadband Internet services. This includes information about the adoption of wireless technologies, in particular wireless broadband and, for telephony, for wireless-only households. Tables and figures include:

- Figure 3.1 presents a time-series of the total number of wireless broadband subscriptions in Canada, for 2009-2014. This data is sourced from the OECD.
- Figure 3.2 presents a time-series of the penetration rate of wireless broadband in Canada, based on the number of subscriptions, normalized by population. This data is for 2009-2014 and is sourced from the OECD.
- Figure 3.3 compiles data on the proportion of households in Canada that only subscribe to wireless telephony services, for 2002-2011. This data is sourced from the CRTC.
- Table 3.1 presents a time-series of the total number of household connections, by type of connection, including local, wireless, Internet and broadcasting services, for 2008-2012. This data is sourced the CRTC.

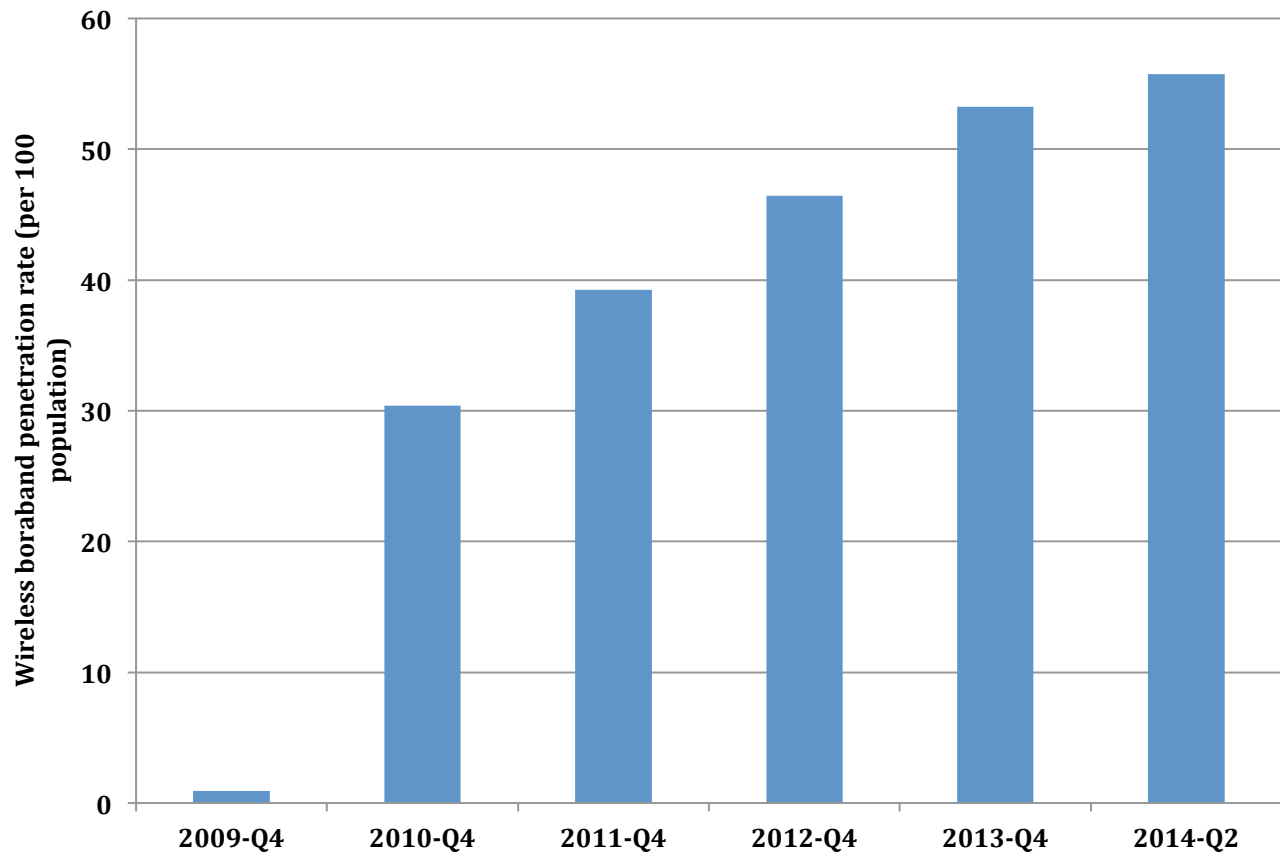
Figure 3.1 Canadian wireless broadband subscriptions



Sources:

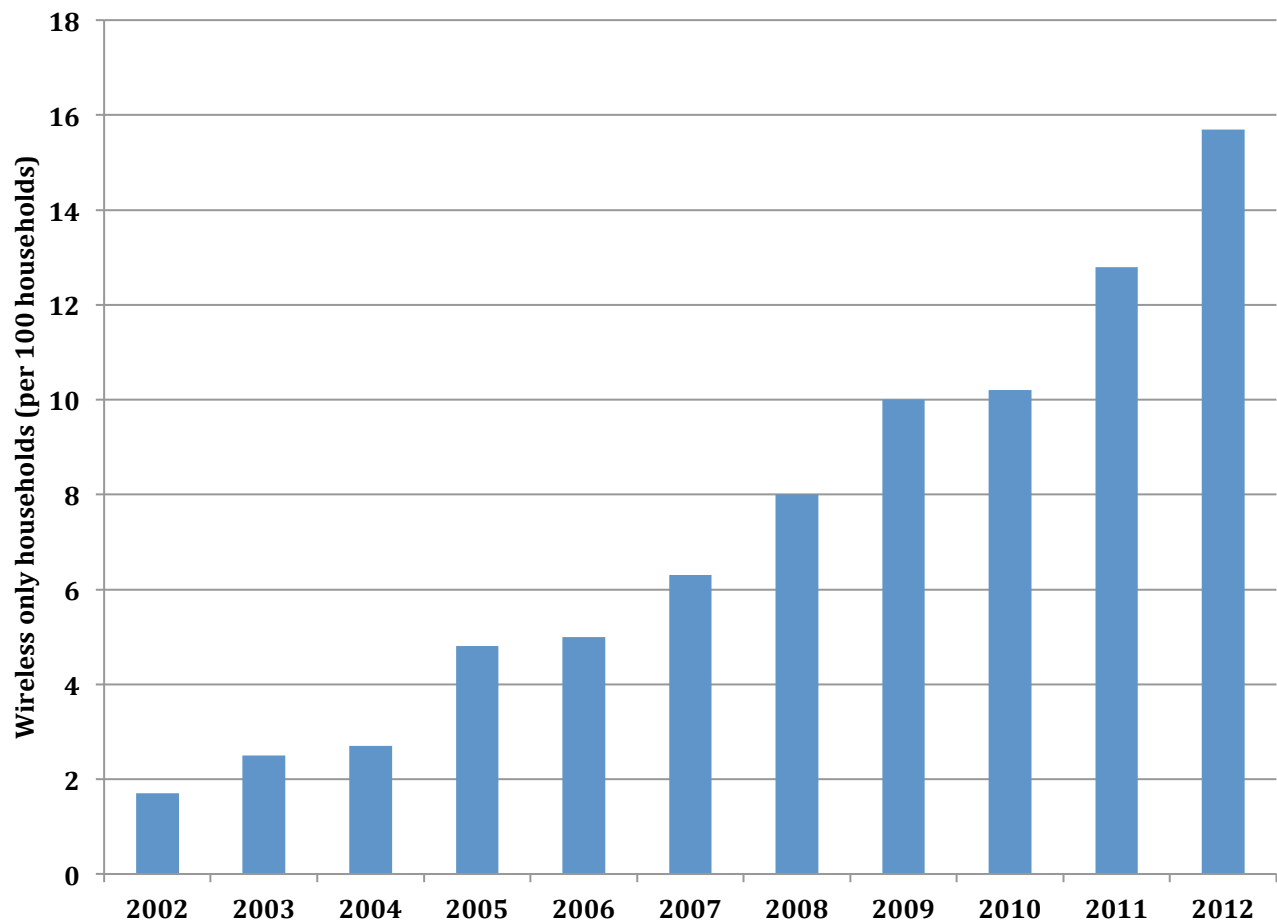
- Organization for Economic Co-Operation and Development, *OECD Communications Outlook 2013*, 11 July 2013, Table 4.14, online at <http://www.oecd.org/sti/broadband/communications-outlook.htm>
- Organization for Economic Co-Operation and Development, *OECD Broadband Portal*, Category 1.1(2), online at <http://www.oecd.org/sti/broadband/oecdbroadbandportal.htm>.
- Organization for Economic Co-Operation and Development, *OECD Broadband Portal*, Category 1c(2) 2013, online at www.oecd.org/sti/broadband/1c-TotalBBSubs-bars-2013-12.xls.
- Organization for Economic Co-Operation and Development, *OECD Broadband Portal*, Category 1c(2) 2012, online at www.oecd.org/sti/broadband/1c-TotalBBSubs-bars-2012-12.xls.

Figure 3.2 Canadian wireless broadband penetration (per 100 population)



Source: Organization for Economic Co-Operation and Development, *OECD Broadband Portal*, Category 1.7(2), <http://www.oecd.org/sti/broadband/oecdbroadbandportal.htm>

Figure 3.3 Canadian wireless only households (telephony)



Source: Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2014*, Table 2.0.8.

Table 3.1 Canadian household connections

(millions)	2008	2009	2010	2011	2012	2013
Local and access	13.0	12.7	12.6	12.3	12.0	11.7
Internet	9.8	10.1	10.4	10.7	11.0	11.3
Wireless	22.1	23.7	25.6	27.1	27.9	28.5
BDU	11.0	11.2	11.5	11.8	11.9	11.9
Total Connections	55.9	57.7	60.1	61.8	62.8	63.4
Average connections per household	4.2	4.3	4.4	4.5	4.5	4.5

Note: Wireless includes both residential and business connections

Source:

- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report September 2013*, Table 2.2.1.
- Canadian Radio-television and Telecommunications Commission, *Communications Monitoring Report October 2014*, Table 2.0.3.

4. Appendices

Appendix 4.1 Capital Intensity Sources

CAPEX Revenues	2000	2001	2002	2003	2004	2005	2006
AT&T (US) Wireline Ended Dec 31	2002 AR (SBC) C: Page 44 R: Page 44	2003 AR (SBC) C: Page 45 R: Page 45	2003 AR (SBC) C: Page 44 R: Page 44	2004 AR (SBC) C: Page 49 R: Page 49	2005 AR C: Page 66 R: Page 66	2006 AR C: Page 60 R: Page 60	2007 AR C: Page 64 R: Page 64
Bell (BCE): Wireline Ended Dec 31	N/A	N/A	N/A	N/A	N/A	2007 AR C: Page 82 R: Page 82	2008 AR C: Page 93 R: Page 93
BT (UK) All Ended Mar 31	2004 AR C: Page 136 R: Page 24	2005 AR C: Page 124 R: Page 23	2006 AR C: Page 130 R: Page 23	2007 AR C: Page 155 R: Page 151	2008 AR C: Page 151 R: Page 147	2009 AR C: Page 145 R: Page 143	2010 AR C: Page 153 R: Page 151
Cogeco Canada Ended Aug 31	2003 AR C: Page 40 R: Page 40	2003 AR C: Page 40 R: Page 40	2003 AR C: Page 40 R: Page 40	2004 AR C: Page 18 R: Page 1	2005 AR C: Page 23 R: Page 7	2006 AR C: Page 49 R: Page 49	2007 AR C: Page 52 R: Page 52
Comcast (US) Cable Ended Dec 31	2002 AR C: Page 83 R: Page 83	2003 10-K C: Page 76 R: Page 76	2004 AR C: Page 66 R: Page 66	2005 AR C: Page 63 R: Page 63	2006 AR C: Page 66 R: Page 66	2007 10-K C: Page 67 R: Page 67	2008 10-K C: Page 69 R: Page 69
Orange (France) Home Ended Dec 31	N/A	N/A	N/A	N/A	2008 KPIs	2008 KPIs	2008 KPIs
Rogers Cable/Internet/Bu siness Services Ended Dec 31	2001 AR C: Page 78 R: Page 78	2002 AR C: Page 66 R: Page 66	2003 AR C: Page 100 R: Page 100	2004 AR C: Page 102 R: Page 102	2005 AR C: Page 134 R: Page 134	2006 AR C: Page 85 R: Page 85	2007 AR C: Page 89 R: Page 89
Shaw Cable Ended Aug 31	2002 AR C: Page 68 R: Page 68	2003 AR C: Page 80 R: Page 80	2004 AR C: Page 81 R: Page 81	2005 AR C: Page 80 R: Page 80	2006 AR C: Page 80 R: Page 80	2007 AR C: Page 77 R: Page 77	2008 AR C: Page 81 R: Page 81
TELUS Wireline Ended Dec 31	2004 BR C: Page 8 R: Page 8	2008 FR C: Page 10 R: Page 10	2009 FR C: Page 10 R: Page 10	2010 AR C: Page 36 R: Page 36	2010 AR C: Page 36 R: Page 36	2011 AR C: Page 36 R: Page 36	2012 AR C: Page 38 R: Page 38
Time Warner (US) Cable Ended Dec 31	2001 AR (AOL TWI) C: Page 82 R: Page 80	2003 AR (TWI) C: Page 49 R: Page 41	2004 AR (TWI) C: Page 51 R: Page 41	2005 10-K (TWI) C: Page 45 R: Page 36	2006 AR C: Page 83 R: Page 76	2007 AR C: Page 66 R: Page 58	2008 AR C: Page 73 R: Page 64
Verizon (US) Wireline Ended Dec 31	2002 AR C: Page 63 R: Page 63	2003 AR C: Page 63 R: Page 63	2004 AR C: Page 64 R: Page 64	2005 AR C: Page 62 R: Page 62	2006 AR C: Page 70 R: Page 70	2007 AR C: Page 67 R: Page 67	2008 AR C: Page 67 R: Page 67
Videotron Cable/Business (Quebecor) Ended Dec 31	N/A	2003 AR C: Page 58 R: Page 56	2004 AR C: Page 70 R: Page 68	2005 AR C: Page 74 R: Page 72	2006 AR C: Page 88 R: Page 86	2006 AR C: Page 88 R: Page 86	2007 FR C: Page 84 R: Page 82

	2007	2008	2009	2010	2011	2012	2013
AT&T (US) Wireline Ended Dec 31	2009 AR C: Page 71 R: Page 71	2009 AR C: Page 71 R: Page 71	2010 AR C: Page 71 R: Page 71	2011 AR C: Page 67 R: Page 67	2012 AR C: Page 68 R: Page 68	2013 AR C: Page 48 R: Page 48	2013 AR C: Page 48 R: Page 48
Bell Wireline Ended Dec 31	2009 AR C: Page 95 R: Page 95	2010 AR C: Page 103 R: Page 103	2010 AR C: Page 102 R: Page 102	2011 AR C: Page 92 R: Page 92	2012 AR C: Page 97 R: Page 97	2013 AR C: Page 124 R: Page 124	2013 AR C: Page 123 R: Page 123
BT (UK) All Ended Mar 31	2011 AR C: Page 160 R: Page 158	2012 AR C: Page 173 R: Page 171	2013 AR C: Page 175 R: Page 173	2014 AR C: Page 189 R: Page 187	2014 AR C: Page 189 R: Page 187	2014 AR C: Page 189 R: Page 187	2014 AR C: Page 189 R: Page 187
Cogeco Canada Ended Aug 31	2008 AR C: Page 53 R: Page 53	2009 AR C: Page 61 R: Page 61	2010 AR C: Page 55 R: Page 55	2011 AR C: Page 61 R: Page 61	2011 AR C: Page 61 R: Page 61	2013 AR C: Page 4 R: Page 4	2013 AR C: Page 4 R: Page 4
Comcast (US) Cable Ended Dec 31	2009 10-K C: Page 69 R: Page 69	2010 10-K C: Page 84 R: Page 84	2011 10-K C: Page 125 R: Page 125	2012 AR C: Page 116 R: Page 116	2013 AR C: Page 118 R: Page 118	2013 AR C: Page 117 R: Page 117	2013 AR C: Page 117 R: Page 117
Orange (France) Home Ended Dec 31	2008 KPIs	2010 KPIs	2011 KPIs	2012 KPIs	2012 KPIs	2012 KPIs	N/A
Rogers Cable/Internet/Business Ended Dec 31	2008 AR C: Page 95 R: Page 95	2009 AR C: Page 95 R: Page 95	2010 AR C: Page 91 R: Page 91	2011 AR C: Page 100 R: Page 100	2012 AR C: Page 94 R: Page 94	2013 AR C: Page 103 R: Page 103	2013 AR C: Page 102 R: Page 102
Shaw Cable Ended Aug 31	2009 AR C: Page 86 R: Page 86	2010 AR C: Page 99 R: Page 99	2011 AR C: Page 114 R: Page 114	2011 AR C: Page 113 R: Page 113	2012 AR C: Page 105 R: Page 105	2013 AR C: Page 106 R: Page 106	2013 AR C: Page 105 R: Page 105
TELUS Wireline Ended Dec 31	2013 AR C: Page 40 R: Page 40	2013 AR C: Page 40 R: Page 40	2013 AR C: Page 40 R: Page 40	2013 AR C: Page 40 R: Page 40	2013 AR C: Page 40 R: Page 40	2013 AR C: Page 40 R: Page 40	2013 AR C: Page 40 R: Page 40
Time Warner (US) Cable Ended Dec 31	2009 AR C: Page 48 R: Page 42	2010 AR C: Page 69 R: Page 58	2011 AR C: Page 60 R: Page 50	2012 AR C: Page 60 R: Page 49	2013 AR C: Page 50 R: Page 60	2013 AR C: Page 50 R: Page 60	2013 AR C: Page 50 R: Page 60
Verizon (US) Wireline Ended Dec 31	2009 AR C: Page 69 R: Page 69	2010 AR C: Page 70 R: Page 70	2011 AR C: Page 78 R: Page 78	2012 AR C: Page 78 R: Page 78	2013 AR C: Page 66 R: Page 66	2013 AR C: Page 66 R: Page 66	2013 AR C: Page 65 R: Page 65
Videotron Cable/ Business (Quebecor) Ended Dec 31	2008 FR C: Page 77 R: Page 75	2008 FR C: Page 77 R: Page 75	N/A	N/A	N/A	N/A	N/A

Appendix 4.2 Average Household Size Sources

Country	Years	Source	Link
Australia	2006, 2011	Australian Bureau of Statistics	http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/0
Austria	2004-2013	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
Belgium	2004-2012	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
Canada	2006	Statistics Canada	https://www12.statcan.gc.ca/census-recensement/2006/dp-pd/92-596/P2-2.cfm?Lang=eng&T=PR&LINE_ID=407
	2011	Statistics Canada	http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/famil53a-eng.htm
Denmark	2004-2013	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
Finland	2004-2013	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
France	2004-2013	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
Germany	2005-2013	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
Greece	2004-2012	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
Ireland	2004-2012	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
Italy	2004-2013	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
Netherlands	2005-2013	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
New Zealand	2006	Statistics New Zealand	http://www.stats.govt.nz/Census/2006CensusHomePage/QuickStats/AboutAPlace/SnapShot.aspx?type=region&tab=Households&id=9999999
	2004-2013 (Calculated)	Statistics New Zealand	http://www.stats.govt.nz/browse_for_stats/population/estimates_and_projections/dwelling-and-household-estimates.aspx#tables http://www.stats.govt.nz/browse_for_stats/population/estimates_and_projections/historical-population-tables.aspx
Norway	2004-2013	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
Portugal	2004-2013	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
Spain	2004-2013	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
Sweden	2004-2013	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
Switzerland	2007-2012	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
United Kingdom	2005-2013	Eurostat	http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph01&lang=en
United States	2005	United States Census Bureau	http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_05_EST_GCT1105.US01PR&prodType=table
	2006	United States Census Bureau	http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_06_EST_GCT1105.US01PR&prodType=table
	2007	United States Census Bureau	http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_07_1YR_GCT1105.US01PR&prodType=table
	2008	United States Census Bureau	http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_08_1YR_GCT1105.US01PR&prodType=table
	2009	United States Census Bureau	http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_09_1YR_GCT1105.US01PR&prodType=table
	2010	United States Census Bureau	http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_10_1YR_GCT1105.US01PR&prodType=table

	2011	United States Census Bureau	http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_11_1YR_GCT1105.US01PR&prodType=table
	2012	United States Census Bureau	http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_12_1YR_GCT1105.US01PR&prodType=table
	2012	United States Census Bureau	http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_13_1YR_GCT1105.US01PR&prodType=table

Note: For years where data is unavailable, an estimate is made using interpolation based on adjacent data.