

**Price Comparisons of
Wireline, Wireless and Internet Services in
Canada and with Foreign Jurisdictions**

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Wall Communications Inc.

NOTE: The views expressed in this document are solely those of *Wall Communications Inc.* and do not necessarily represent the views of Innovation, Science and Economic Development Canada.

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EXECUTIVE SUMMARY

This is the eleventh (2018) edition of ISED's annual telecom services price comparison study. The purpose of this Study is to provide a detailed comparative price analysis of telecommunications services in Canada relative to the United States and six other countries. The individual service categories covered by the Study are:

- 1) Fixed Line Telephony;
- 2) Mobile Wireless;
- 3) Fixed Line Broadband Internet;
- 4) Mobile Wireless; and
- 5) Bundled Services.

For each individual service category, prices are measured for a series of defined "service baskets" which have been designed to reflect typical Canadian low to high telecom service usage levels and features. A middle or "average" consumption basket for a typical Canadian consumer is included in each service category. There are three to six service baskets or "levels" defined for each service category. The lowest available advertised regular prices, as offered by the surveyed service providers included in the study, are used to measure the prices of each of the defined service baskets.

For Canada, the surveyed service providers include the incumbent telephone companies (e.g., Bell and TELUS) and cable companies (e.g., Rogers, Shaw and Videotron), resellers of telephony and/or Internet access (e.g., Primus, Teksavvy and Distributel) and regional wireless market providers (e.g., Freedom, SaskTel, Videotron and EastLink). In addition, Flanker brands (offered by the national mobile wireless providers) are included and used for separate comparisons. Prices are measured in six metropolitan areas: Halifax, Montreal, Toronto, Winnipeg, Regina and Vancouver. Aggregate Canada-wide prices are determined on a weighted average basis.

For international comparison purposes, prices have also been measured using the same methodology for the same set of service baskets for seven other countries: Australia (Sydney), France (Paris), Germany (Berlin), Italy (Rome), Japan (Tokyo), the United Kingdom (London) and the United States (Boston, Kansas City, Minneapolis and Seattle).

Key additions to this year's Study include an adjustment to the higher-level family plan mobile wireless telephony offering (a 10 to 49 GB data allowance) and two

higher-level fixed broadband offerings (a 100 to 250 mbps offering and a 250 to 500 mbps offering).

The highlights of this year's price comparison study update follow.

Mobile Wireless

Six service basket levels are considered for the mobile wireless service category:

- Level 1: 150 voice minutes;
- Level 2: 450 voice minutes and 300 SMS (texts);
- Level 3: 1,200 voice minutes, 300 texts and 1 GB of data usage per month;
- Level 4: unlimited nationwide talk and text along with 2 GB of data;
- Level 5: unlimited nationwide talk and text along with 5 GB of data; and
- Level 6: Shared plan with 3 phone lines and unlimited nationwide talk and text along with 10 to 49 GB of data.

Mobile Wireless Trends:

- *Domestic Trends:* All Canadian mobile wireless service basket prices have decreased (or remained unchanged) this year relative to last – i.e., by 16%, 4%, 0%, 8%, 16% and 14%, respectively. In contrast, the Level 4 to Level 6 baskets increased between 2016 and 2017 (although the Level 1 to Level 3 prices also declined from 2016 to 2017). Average mobile wireless prices were generally found to be lowest in the cities of Winnipeg, Montreal and Regina, consistent with previous years.
- Since 2008, when the first Telecom Pricing Study was undertaken, mobile wireless prices in Canada have generally trended downwards with CAGRs over the relevant period between roughly 2% and 7% (with the exception of Level 6 at just under 1% annual decrease).
- *Regionals' Prices:*¹ The Regionals continue to offer mobile wireless prices that are significantly lower than those of the incumbents – i.e., 6%, 27%, 15%, 33%, 25% and 15% lower for service basket Levels 1 to 6, respectively.
- *Incumbent Flanker Brand Prices:*² Compared to last year's study, the differentials between the incumbents' flanker and primary brand service prices have no discernable trend – some are higher and some are lower. Flankers still tend to be lower than incumbent prices (except for Levels 1 and 6), both on a national average basis and in most individual city/basket prices as well.

¹ Includes SaskTel, Bell-MTS, Eastlink, Freedom and Videotron.

² Includes Bell Virgin, Rogers Fido and TELUS Koodo.

- *Reseller/Mobile Virtual Network Operator (MVNO) Prices:*³ Reseller services tend to be lower than incumbents' prices in Nova Scotia, Ontario and BC and higher in Quebec, Saskatchewan and Manitoba. On a national average basis, Reseller average prices are lower for Level 1, Level 3 and Level 4. The differences in incumbent and reseller national average prices tend to be relatively small (with the exception of Level 2 where resellers are 16% higher). However, price differentials in any given city/basket can exhibit extreme price differences – as much as a 50% or more difference in some cases (e.g. Manitoba Level 4 and Saskatchewan Level 5).
- *Market Observation:* Freedom Mobile in most cases offers the lowest price for each basket in regions where they offer service (i.e. BC and Ontario).
- *International Comparison:* In Level 1 and 2 baskets, the US PPP adjusted prices are higher than Canada, with all other countries considerably lower. For the Level 3 basket, Canada is highest, followed by the U.S. Canada is also higher than the US in Level 4, but Japan has a higher price than Canada. Japan again has the highest price in Level 5 (followed by the US and then Canada). In Level 6, Canada's average price is highest, followed by Japan and then the US. It is worth noting that surveyed average prices for European countries included in the study have consistently fallen below the prices in Canada for all defined mobile wireless service baskets – generally considerably lower than in Canada.
- *Canada – U.S. Roaming Rates:* Stand-alone roaming plans offered by the US national providers result in lower monthly charges than those provided by Canadian national providers. The average PPP adjusted monthly cost of a stand-alone roaming plan in the US is about \$50 per month compared to \$115 in Canada. Moreover, the US national providers include Canada/US roaming at no charge in their unlimited Smartphone plans – plans that have an average price of just under \$100. Pay as You Go roaming charges tend to be similar in Canada and the US, with the exception of data charges where the average price per MB is \$2.80 in the US versus \$3.71 in Canada.

Fixed Broadband Internet

Six broadband Internet service baskets are included in the study, which are primarily defined on the basis of download speed:

- Level 1: speeds of 3-9 Mbps;
- Level 2: speeds of 10 to 15 Mbps;

³ Includes Primus, Petro-Canada and PC Mobile.

- Level 3: speeds of 16 to 40 Mbps;
- Level 4: speeds of 40 to 100 Mbps;
- Level 5: speeds of 101 to 250 Mbps; and
- Level 6: speeds of 251 to 500 Mbps.

Trends in fixed broadband service:

- *Domestic Trends:* The average prices of the Level 1 and 2 fixed broadband baskets decreased by 3% and 12%, respectively. In contrast, the Level 3, 4 and 5 basket prices all increased (by 8%, 8% and 5% respectively). Over the last five years, Canadian broadband prices have generally trended upwards in Levels 2, 3 and 4 but trended downward in Level 1.
- *Regional Trends:* As was the case last year, Quebec generally had the lowest prices across the country. In several instances, the prices in Quebec were substantially lower than any other province (i.e. Levels 3,4 and 6). Relative to the national average, Nova Scotia tended to have some of the highest prices in most baskets.
- *Reseller ISP Prices:*⁴ Reseller ISP broadband service prices are consistently lower than those of the incumbents across service baskets 2 to 5, with price discounts ranging from 13% in the case of the Level 5 basket to 35% in the case of the Level 3 basket.
- *International Comparison:* Very few of the surveyed service providers continue to offer Level 1 (3-9 Mbps) broadband services. Those who do were found in Canada, the U.S., Italy and Japan. Among these countries, Canada was found to have the lowest average Level 1 broadband basket price. Canada also compares favourably in the case of the Level 2 (10 – 15 Mbps) broadband service basket, where it falls in the middle of the group. Otherwise, Canada's average Level 3 to Level 6 basket prices are at the high end of the group of surveyed countries included in the study, although US PPP adjusted prices are higher than Canadian prices in all cases. The lowest prices are frequently found in France.

Mobile Internet

Three mobile Internet service baskets are included in the study. Level 1 covers plans providing 2 to 5 GB, Level 2 covers plans providing 5 to 10 GB and Level 3 covers plans providing greater than 10 GB of data usage per month.

⁴ Includes Primus and Teksavvy.

- *Domestic Trends:* This year, the Canadian average Level 1 mobile Internet service price decreased by 11% relative to last year, while Level 2 and 3 prices have increased slightly. Since 2014, prices for all three baskets have generally been stable.
- *Regionals' Pricing:* For the Level 1 mobile Internet service basket, the Regionals' prices are roughly 18% lower than the incumbents on average. For the Level 2 service basket, the differential is 19%. For Level 3, the price differential is 20%.
- *International Comparison:* In the case of the Level 1 mobile Internet service basket, the average Canadian price of \$38.22 is well above the average price for the other surveyed countries of roughly \$27.97. For the Level 2 service basket, the average Canadian mobile Internet price of \$61.90 is once again considerably higher than the average for the other countries of roughly \$40. In Level 3, the narrative is repeated, with Canada being on the high price end. The US and Japan are higher than Canada in all three baskets but the European countries (and Australia) being considerably lower.

Bundled Services

Three service bundles are considered in the study: Bundle 1 includes fixed broadband Internet and TV services (changed from previous years where Bundle 1 contained wireline, broadband Internet and Mobile wireless services); Bundle 2 includes wireline, broadband Internet and basic digital TV services; and Bundle 3 includes all four services.

- *Domestic Observations and Trends:* Canadian prices for Bundles have considerable variation across the country. Saskatchewan has the lower prices for Bundles 1 and 2.
- *Canada vs. US Bundle Comparison:* Average Canadian Bundle 1 and 2 service prices are lower than their US counterpart services. Bundle 3 is rarely available in the US (at least on a non-customized basis) and therefore no comparison is made.

The following table provides a summary of the 2018 price comparison results for Canada and the seven surveyed foreign jurisdictions included in the study. All reported prices for the surveyed foreign jurisdictions exclude sales taxes and are expressed in purchasing power parity (PPP) adjusted Canadian dollars.

Summary of International Price Comparisons 2018

Average Monthly Price in PPP adjusted \$CDN

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
Wireless Service								
Level 1 (Talk)	\$25.73	\$28.50	n/a	\$14.49	\$10.71	\$6.97	\$14.34	n/a
Level 2 (Talk and Text)	\$39.43	\$44.29	n/a	\$16.68	n/a	\$11.86	\$15.06	n/a
Level 3 (1 GB data)	\$70.99	\$62.48	\$19.40	\$32.40	n/a	n/a	\$30.10	n/a
Level 4 (2 GB data)	\$75.44	\$61.26	\$24.70	\$26.56	\$30.91	\$21.11	\$45.80	\$81.52
Level 5 (5 GB data)	\$87.32	\$97.88	\$27.27	\$31.26	\$34.31	\$29.55	\$64.89	\$103.07
Level 6 (10-49 GB data)	\$227.87	\$206.57	\$98.96	\$84.77	\$66.32	\$75.39	\$120.88	\$222.66
Broadband Service								
Level 1 (3-9 Mbps)	\$40.67	\$63.32	n/a	n/a	n/a	\$60.53	n/a	\$40.56
Level 2 (10-15 Mbps)	\$57.36	\$75.56	n/a	\$54.13	\$48.83	n/a	n/a	\$61.14
Level 3 (16-40 Mbps)	\$70.70	\$84.33	\$66.74	\$49.42	\$38.15	\$45.45	\$50.18	\$71.77
Level 4 (41-100Mbps)	\$87.00	\$105.34	\$88.74	\$67.69	\$53.14	\$65.20	\$64.84	\$84.43
Level 5 (100-249 Mbps)	\$102.76	\$131.06	n/a	\$64.86	\$60.86	n/a	\$72.45	\$79.90
Level 6 (250-400 Mbps)	\$123.87	\$160.08	n/a	\$78.96	\$70.18	\$46.33	\$94.33	\$72.23
Mobile Internet								
Level 1 (2-5 GB)	\$38.28	\$43.49	\$15.56	\$15.45	\$15.74	\$12.71	\$22.52	\$70.31
Level 2 (5-10 GB)	\$61.90	\$64.59	\$26.24	\$19.78	n/a	\$17.22	\$35.56	\$75.49
Level 3 (10+ GB)	\$83.35	\$87.30	\$39.35	\$28.19	\$33.53	\$38.73	\$38.38	\$105.94
Bundles								
Double Bundle 1 (BB and TV)	\$138.67	\$152.54						
Triple Bundle 2 (BB, TV and Wireline Telephone)	\$142.07	\$164.32						

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The year over year price changes for each basket are provided below.

Summary of Canadian Prices 2018

Average Monthly Price \$CDN

	2018	2017	YoY%
Wireline Service			
Level 1 (Low Usage)	\$43.40	\$42.94	1.07%
Level 2 (Medium Usage)	\$59.90	\$60.21	-0.51%
Level 3 (High Usage)	\$62.79	\$61.98	1.31%
Wireless Service			
Level 1 (Talk)	\$25.73	\$30.53	-15.72%
Level 2 (Talk and Text)	\$39.43	\$40.95	-3.72%
Level 3 (1 GB)	\$70.99	\$70.70	0.41%
Level 4 (2 GB data)	\$75.44	\$81.61	-7.56%
Level 5 (5 GB data)	\$87.32	\$104.49	-16.43%
Level 6 (10-49 GB data)	\$227.87	\$264.65	-13.90%

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Broadband Service			
Level 1 (3-9 Mbps)	\$40.67	\$41.83	-2.78%
Level 2 (10-15 Mbps)	\$57.36	\$65.54	-12.48%
Level 3 (16-40 Mbps)	\$70.70	\$65.59	7.78%
Level 4 (41-100Mbps)	\$87.00	\$82.54	5.41%
Level 5 (100-249 Mbps)	\$102.76	\$95.10	8.06%
Level 6 (250-400 Mbps)	\$123.87	n/a	
Mobile Internet			
Level 1 (2-5 GB)	\$38.28	\$43.01	-11.01%
Level 2 (5-10 GB)	\$61.90	\$60.79	1.83%
Level 3 (10+ GB)	\$83.35	\$82.28	1.30%
Bundles			
Double Bundle 1	\$138.67	n/a	
Triple Bundle 2	\$142.07	\$120.99	17.42%
Quad Bundle 3	\$181.11	\$199.19	-9.08%

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1.0 INTRODUCTION

This study provides a 2018 update of the previous annual telecommunications price comparison studies conducted since 2008.⁵

As in previous years, the consumer telecom service categories covered in this study include the following stand-alone and bundled service categories:

- i) Wireline telephony;
- ii) Mobile wireless telephony;
- iii) Fixed line broadband Internet;
- iv) Mobile wireless Internet; and
- v) Bundled services.

A series of service baskets reflecting different service usage and feature levels has been established for each of these service categories.

For Canada, the study provides a comparison of prices for each defined basket in each service category for the following cities: Halifax, Montreal, Toronto, Winnipeg, Regina and Vancouver. Service prices for Canada as a whole are derived as the weighted averages of the prices measured for each of the six surveyed cities.

The study also measures prices for the same set of service category baskets for Australia, France, Germany, Italy, Japan, the United Kingdom (U.K.) and the United States (U.S.). As a result, the study covers all G7 countries along with Australia. Service basket prices in these seven foreign jurisdictions are compared with those measured for Canada.

There are three notable modifications to this year's study⁶:

- i) An increase in the data cap for Level 6 mobile wireless telephony offering (up to 10 to 49 GB data allowance); and
- ii) Two higher-level fixed broadband offerings (a 100 to 250 mbps offering and a 250 to 500 mbps offering); and

⁵ Wall Communications Inc. prepared the studies from 2008 to 2015 while the 2016 and 2017 studies were prepared by Nordicity. Wall Communications Inc. conducted the 2018 Telecom Price Comparison Study.

⁶ Some minor additions and modifications also occur in the international data as companies merge, gain market prominence or otherwise alter their status relative to past years. These changes are noted in the following pages where appropriate.

- iii) Bundle 1 has been changed from a three-service bundle (Fixed Telephony, Fixed Broadband and Mobile Wireless Telephony) to a two-service bundle (Fixed Broadband and TV).⁷

In terms of layout, the next section of this report, Section 2, provides a brief review of the methodology used to measure and compare stand-alone and bundled service basket prices, and describes in more detail all changes made in the 2018 study relative to last year's study. The following five sections of the report, Sections 3 through 7, provide Canadian and international price comparison results for wireline telephony, mobile wireless, broadband Internet, mobile Internet and bundled services, respectively. A detailed summary of all service baskets and bundles included in the study is provided in Attachment 1. Historical domestic price levels for various services and baskets are provided in Attachment 2. International historical price series are provided in Attachment 3.

⁷ The original three-service Bundle 1 definition has become scarce as an offering amongst service providers in Canada and elsewhere in the world. A two-service bundle of Broadband Internet and TV, in contrast, is widely available both in Canada and internationally.

2.0 METHODOLOGY

2.1 Service Basket Design

As in previous studies, this study relies on the service basket-based price comparison methodology described in Wall Communications' 2008 methodology report.⁸ Various modifications to the 2008 methodology have been made in successive studies primarily to reflect changes in service usage patterns or characteristics over time.

The price comparison methodology used in this study is based on a "service basket" approach where separate telecom service baskets are defined on the basis of increasing "levels" of service usage, features and, where applicable, performance. The number of defined service basket levels for each of the stand-alone telecom services considered in this study varies from three to six in total:

- i) **Wireline Telephony:** Basket Levels 1 to 3
- ii) **Mobile Wireless:** Basket Levels 1 to 6
- iii) **Broadband Internet Access:** Basket Levels 1 to 6
- iv) **Mobile Internet Access:** Basket Levels 1 to 3.

Each of the service baskets has been designed to reflect, as applicable, low, mid, high and very-high volume, including unlimited, service options that are generally intended to capture a broad range of typical Canadian consumer usage levels, including an "average" consumption basket for a typical Canadian consumer.

Three service bundles are also included in the study:

- **Bundle 1:** broadband Internet and digital TV
- **Bundle 2:** wireline, broadband Internet and digital TV
- **Bundle 3:** wireline, broadband Internet, mobile wireless and digital TV

Level 2 stand-alone service baskets are generally used in each of the bundles. In some cases, however, there are restrictions on the specific service elements that are eligible for bundling discounts. In such cases, eligible service elements are included instead (which can involve including a Level 3 or 4 rather than Level 2 service element). For the digital TV service component, a "basic" digital television service package option is selected for inclusion in the applicable bundles. Only Bundles in Canada and the United States are examined in the 2018 Study, due to basket incompatibilities (between North America and the rest of the world) that have arisen over time.

⁸ Wall Communications Inc., *An Examination of Alternative Approaches for Conducting Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions*, prepared for the CRTC and Industry Canada, 5 May 2008.

The specific service elements included in each service basket are described in the following sections and the associated service elements and usage assumptions in each case are also summarized in Attachment 1.

2.2 Canadian Price Data Collection

The Canadian price data included in the study has been collected from a variety of telecom service providers (TSPs), including incumbent telephone companies (i.e., Bell Aliant, Bell Canada, Bell-MTS, SaskTel and TELUS) and incumbent cable companies (i.e., Eastlink, Videotron, Rogers, Access and Shaw). Service prices from resellers Primus, Vonage, Teksavvy, Petro-Can, and PC Mobile⁹ are also collected for the study. In addition, mobile wireless services offered by regional wireless service providers Freedom, EastLink, Videotron and SaskTel are also taken into account. In terms of geographic coverage, price data is collected for each of the following six Canadian cities: Halifax, Montreal, Toronto, Winnipeg, Regina and Vancouver. Table 1 provides a list of the surveyed Canadian service providers in this year's study broken out by city and by service basket.

Table 1
Selected Canadian Cities and Service Providers

City	Service Baskets	Service Providers
Halifax	Wireline Broadband Internet Mobile Wireless	Bell Aliant, Eastlink, Vonage, Teksavvy and Primus. Bell Aliant, Eastlink, Teksavvy and Primus
	Mobile Internet Bundles	Bell, TELUS, Rogers, Eastlink, PC Mobile, Petro-Can, Incumbent Flanker Brands Bell, TELUS, Rogers, Eastlink Bell Aliant, Eastlink
Montreal	Wireline Broadband Internet Mobile Wireless	Bell, Videotron, Primus Bell, Videotron, Primus, Teksavvy, Distributel Bell, TELUS, Rogers, Primus, Videotron, PC Mobile, Petro- Can, Incumbent Flanker Brands
	Mobile Internet Bundles	Bell, TELUS, Rogers, Videotron, Primus Bell, Videotron, Primus (as applicable)
Toronto	Wireline Broadband Internet Mobile Wireless	Bell, Rogers, Primus Bell, Rogers, Primus, Teksavvy, Distributel Bell, TELUS, Rogers, Primus, Freedom, Petro-Can, PC Mobile, Incumbent Flanker Brands
	Mobile Internet Bundles	Bell, TELUS, Rogers, Freedom, Primus Bell, Rogers, Primus (as applicable)
Winnipeg	Wireline Broadband Internet Mobile Wireless	Bell-MTS, Shaw Bell-MTS, Shaw, Teksavvy Bell-MTS, TELUS, Rogers, PC Mobile, Petro-Can, Incumbent Flanker Brands

⁹ PC Mobile announced it would drop its post-paid service in May 2018 and move those customers to TELUS' Koodo in October 2018. The pre-paid service (reselling Bell Mobility service) will continue to operate.

City	Service Baskets	Service Providers
	Mobile Internet Bundles	MTS, Bell, TELUS, Rogers MTS, Shaw
Regina	Wireline Broadband Internet Mobile Wireless Mobile Internet Bundles	SaskTel, Access Communications SaskTel, Access Communications, Teksavvy SaskTel, Bell, TELUS, Rogers, PC Mobile, Primus, Petro-Can, Incumbent Flanker Brands SaskTel, Bell, TELUS, Rogers SaskTel, Access Communications
Vancouver	Wireline Broadband Internet Mobile Wireless Mobile Internet Bundles	TELUS, Shaw, Primus TELUS, Shaw, Primus, Teksavvy Bell, TELUS, Rogers, Primus, Freedom, PC Mobile, Incumbent Flanker Brands Bell, TELUS, Rogers, Freedom, Primus TELUS, Shaw, Primus (as applicable)

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City-specific prices for each of the stand-alone and bundled service baskets offered by the TSPs listed in Table 1 are determined using each service provider’s respective estimated subscriber-based market share as weights.¹⁰ In addition, to determine Canada-wide market prices, city-specific prices are aggregated using corresponding city population levels as weights. Weighted average prices for each surveyed city and for Canada are provided in Attachment 2 for each of the service baskets and bundles included in this study.

In addition, for the mobile wireless service baskets, services offered by the incumbents' flanker brand services – i.e., Bell Virgin, Rogers Fido and TELUS Koodo – are also taken into account. The incumbents' flanker brand service prices are included in the calculation of the above-noted city-specific and national aggregate prices.¹¹ In Section 4.2 below, the incumbents' flanker brand prices are compared with incumbents' and entrants' mobile wireless prices as a separate analysis.

The price data collected for this study is drawn from the surveyed TSPs' websites and, where necessary, supplemented with further clarifications from customer service representatives (CSRs).¹² The price data reflects currently advertised prices that are generally available to new customers or existing customers changing service plans. The lowest available currently advertised price is used to determine the total price of each service basket. For this purpose, regular or

¹⁰ The estimated market shares are drawn from the CRTC's most recent annual Communications Monitoring Report (CMR), which in the case of the present study is the CRTC's 2017 CMR. In the case of wireline services, estimated market shares are city-specific; in the case of mobile wireless services, estimated market shares are province-specific; and in the case of residential broadband services the estimated market shares are national in scope. Mobile Internet market shares are based on mobile wireless market shares and the service bundle shares are based on the combination of the wireline, mobile wireless and broadband market shares.

¹¹ Previous editions of the Study did not include flanker prices in domestic averages.

¹² The 2018 Canadian price data was collected over the period June/July 2018.

“standard” prices are used – short-term promotional discounts available to new customers are not taken into account.¹³

Overall, the Canadian price comparisons included in this year's study are based on the measurement of the prices of over **600** separate service baskets, covering six cities, three to seven service providers by city and up twenty or more stand-alone and bundled service baskets for each service provider.

2.3 International Price Data Collection

Seven foreign jurisdictions are included in the study: Australia, France, Germany, Italy, Japan, the U.K. and the U.S. With the exception of the U.S., in each case, price data was collected for the services available in each country's largest city. For the U.S., four cities of varying size distributed across that country were used – i.e., Boston, Kansas City, Minneapolis and Seattle. The service providers surveyed by country and, as applicable by city, are summarized in Table 2.¹⁴

Table 2
Selected Foreign Jurisdictions and Service Providers

City	Basket	Service Providers
United States Boston, MA	Wireline Broadband Internet Mobile Wireless Mobile Internet Bundles	Verizon, Comcast Verizon, Comcast/Xfinity, RCN AT&T, Verizon, Sprint, T-Mobile, US Regionals ¹ AT&T, Verizon, Sprint Verizon, Comcast
Kansas City, MO	Wireline Broadband Internet Mobile Wireless Mobile Internet Bundles	AT&T, Time Warner AT&T, Time Warner, Windstream, Xfinity AT&T, Verizon, Sprint, T-Mobile, US Regionals ¹ AT&T, Verizon, Sprint AT&T, Time Warner
Minneapolis, MN	Wireline Broadband Internet Mobile Wireless Mobile Internet Bundles	CenturyLink, Comcast CenturyLink, Comcast/Xfinity AT&T, Verizon, Sprint, T-Mobile, US Regionals ¹ AT&T, Verizon, Sprint CenturyLink/Verizon, Comcast
Seattle, WA	Wireline Broadband Internet Mobile Wireless Mobile Internet Bundles	CenturyLink, Comcast CenturyLink, Comcast/Xfinity, Wave AT&T, Verizon, Sprint, T-Mobile, US Regionals ¹ AT&T, Verizon, Sprint CenturyLink/Verizon, Comcast
United Kingdom		

¹³ Note that current advertised prices are not necessarily reflective of the average price levels paid by a service provider's customer base as a whole since a significant number of existing customers are on pre-established or legacy service price plans.

¹⁴ The 2018 foreign jurisdiction price data was collected over the period June/July 2018.

City	Basket	Service Providers
London	Wireline Broadband Internet Mobile Wireless Mobile Internet Bundles	BT, Virgin, Talk Talk BT, Virgin, EE, AOL EE, Virgin, Vodafone, O2, “3” EE, Virgin, Vodafone, O2, “3” BT (EE), ² Virgin
Australia Sydney	Wireline/Broadband Mobile Wireless/Internet Bundles	Telstra and Optus Telstra, Optus, Vodafone, Virgin Telstra and Optus
France Paris	Wireline/Broadband Mobile Wireless/Internet Bundles	Orange (France Telecom), SFR (Neuf Cegetel), Numericable ³ Orange, SFR, Free, Bouygues Telecom Orange, SFR, Numericable
Germany Berlin	Wireline Broadband Internet Mobile Wireless/Internet Bundles	Deutsche Telekom (DT), Kabel Deutschland (KD) ⁴ DT, KD, Vodafone DT, KD, Vodafone, E-plus (KPN), O2 DT, KD
Italy Rome	Wireline/Broadband Mobile Wireless/Internet Bundles	Telecom Italia, FastWeb, Vodafone Telecom Italia (TIM), Vodafone, WIND, “3” Telecom Italia, FastWeb
Japan Tokyo	Wireline Broadband Internet Mobile Wireless/Internet Bundles	NTT, J:Com NTT, J:Com, KDDI, Yahoo! BB NTT DoCoMo, Softbank ⁵ , au KDDI, Y!Mobile ⁵ NTT, J:Com (au KDDI)

Notes: 1) The U.S. Regionals include: US Cellular and C-Spire Wireless. Note that Cricket Wireless was acquired by AT&T in 2014 and MetroPCS was acquired by T-Mobile in 2013.

2) EE was acquired by BT in late 2014. For the purposes of the U.K. bundles, EE’s mobile wireless service was included along with BT’s wireline, Internet and digital TV services.

3) Numericable and SFR merged in April 2014. They presently continue to market services under their separate brands.

4) KD was acquired by Vodafone in 2013. While they continue to offer fixed broadband services under their separate brands, KD no longer provides mobile wireless or Internet services. KD formerly offered mobile services as an MVNO.

5) In previous studies, wireless service providers Willcom (formerly affiliated with J:Com) and eMobile were included in the study for Japan. Both Willcom and eMobile were acquired by Softbank. eMobile was subsequently rebranded as Y!Mobile. Softbank has also been included in the study place of Willcom.

Canadian incumbent flanker brand mobile wireless price information is included in Canadian prices. The U.S. regional brand (i.e. US Cellular and C-Spire) service prices are not included in the calculation of U.S. national aggregate prices.¹⁵

For international price comparison purposes, foreign currency prices have been converted to Canadian dollars using currency market exchange rates adjusted for

¹⁵ The US Regionals reportedly have less than a 2% national market share in total. Estimating individual national market shares for regional operators was deemed too problematic and because of the low overall share of Regionals, they are not included in the indices. See <https://www.statista.com/statistics/199359/market-share-of-wireless-carriers-in-the-us-by-subscriptions>.

purchasing power parity (PPP) differences between countries. For this study, the OECD's latest available PPP comparative price level indexes for May 2018 were used for this purpose in conjunction with average market exchange rates for the same one-month period.¹⁶

Canadian dollar-based price comparisons between Canada and other countries can be affected significantly by year-over-year currency exchange rate fluctuations. PPP-adjusted exchange rates take into account both changes in exchange rates and PPP adjustment factors between countries and, therefore, generally provide a more appropriate economic basis for comparing price levels between countries. For this reason, all of the international price comparison results shown in the main body of this report are based on PPP-adjusted Canadian dollars. Own-currency and non-PPP-adjusted Canadian dollar price comparisons are provided in Attachment 3.

It should be noted that fluctuations in both exchange rates and PPP adjustment factors can affect international price comparisons over time. This caveat is particularly relevant to inter-temporal comparisons given the significant changes in both exchange rates and PPP adjustment factors over the last decade.

As well, it should also be noted that service prices in the U.K., France, Germany, Italy, Australia and Japan are typically quoted inclusive of retail value added taxes (VAT) or goods and services taxes (GST). Where appropriate, we have excluded applicable VAT or GST charges to allow cross-country comparisons of service prices excluding government sales taxes.¹⁷ On the other hand, where applicable, other industry-specific regulatory fees and surcharges are included for price comparison purposes (e.g., 9-1-1 fees, universal service fees and other regulatory fees).

*Overall, the international price comparisons included in this year's study are based on the measurement of the prices of close to **550** separate stand-alone and bundled service baskets. Adding the Canadian and international service baskets together, the prices of roughly **1,050** service baskets were measured to generate the price comparison results presented in this report.*

2.4 Summary of New Additions and Updates

As noted at the outset, there are several modifications to this year's study. These include:

¹⁶ See the OECD's main economic indicators at: <http://www.oecd.org/std/prices-ppp/purchasingpowerparitiespppsdata.htm>.

¹⁷ Currency exchange rates were obtained from: <http://www.xe.com>.

¹⁷ The VAT rates in the U.K., France, Germany and Italy are 20%, 19.6%, 19% and 22%, respectively. The VAT rate in Japan increased from 5% to 8% as of 2014. The GST in Australia is 10%.

- i) A higher data cap for Level 6 Family Plan mobile wireless has been introduced (i.e. 10 to 49 GB data allowance);
- ii) Two higher-level fixed broadband offerings (a 100 to 250 mbps offering and a 250 to 500 mbps offering);
- iii) Bundle 1 has been changed from a three-service bundle (Fixed Telephony, Fixed Broadband and Mobile Wireless Telephony) to a two-service bundle (Fixed Broadband and TV);
- iv) Bundles are only tracked for Canada and the United States due to the incompatibilities between baskets (in North America and the rest of the world) that have developed over time; and
- v) As in previous years' studies, updated market share information has been used to determine current year Canadian and international weighted average prices.¹⁸

Since it was first conducted in 2008, each successive price comparison study update has incorporated a number of methodological and measurement changes (such as those just mentioned). Some adjustments can significantly affect comparisons of measured prices over the historical period. In general, given the ongoing methodological and measurement modifications to the study on a year-to-year basis, caution should be exercised when considering price trends over time.

¹⁸ For Canada, the CRTC 2017 CMR was primarily relied on for this purpose. For the U.S., FCC market share and industry reports were used. In other cases, regulatory agency market reports, company financial and market analyst reports were also relied on, where necessary.

3.0 WIRELINE TELEPHONY SERVICE

3.1 Wireline Telephony Service Baskets

As in previous studies, the following service element charges are considered for wireline service price comparison purposes:

- i) access line charges (including, as applicable, free calling allowances);
- ii) local usage/calling charges (where applicable);
- iii) long distance charges for both domestic and international calls;
- iv) optional feature charges (e.g., voice mail, call display & other features); and
- v) other recurring charges, where applicable, such as 9-1-1, network access fees and/or other surcharges or regulatory fees.

One-time service charges, such as installation and activation fees, are excluded.

Three wireline service baskets are included in the study. They consist of the following main elements:

- **Level 1:** 400 incoming & outgoing minutes per month, with 10% of outgoing minutes treated as long distance, and no optional features
- **Level 2:** 1,000 incoming & outgoing minutes per month, with 20% of outgoing minutes treated as long distance, and two optional features (voice mail and call display)
- **Level 3:** 1,600 incoming & outgoing minutes per month, with 30% of outgoing minutes treated as long distance, and a full set of optional features

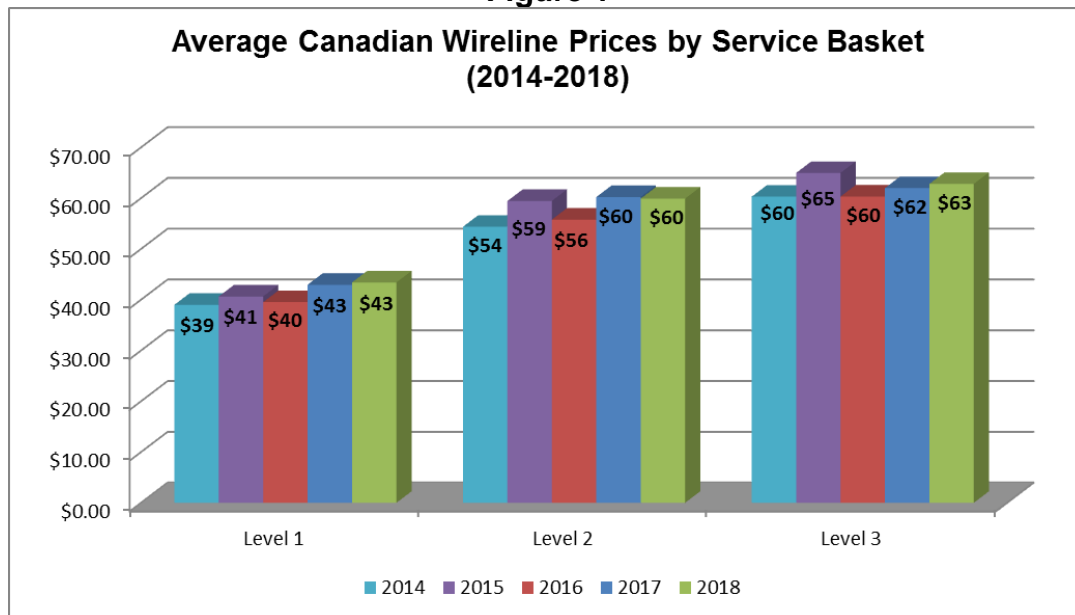
Table A1.1 in Attachment 1 provides a detailed summary of the service elements and usage assumptions for each of the three wireline telephony service baskets included in this study. No changes to the wireline service basket definitions have been made in this year's study relative to previous studies.

3.2 Canadian Wireline Telephony Service Prices

Figure 1 below provides a summary of Canadian average monthly prices for each of the three wireline telephony service baskets for the five-year period 2014 to 2018. More detailed wireline price information, by service basket and by surveyed city (i.e., Halifax, Montreal, Toronto, Winnipeg, Regina and Vancouver) for the period 2008 to 2018, where available, is provided in Table A2.1 in Attachment 2.

- The Level 1 wireline service basket price increased from \$42.94 in 2017 to \$43.64 in 2018, an increase of 1.6%. Average 2018 Level 1 wireline prices varied widely by city, ranging from \$25.04 in Regina to \$51.67 in Toronto. Since 2013, Level 1 prices increased at an average annual rate of 4.3%.
- The Level 2 basket price increased from \$60.21 in 2017 to \$60.89 in 2018, an increase of 1.1%. Average 2018 Level 2 prices also varied widely by city, ranging from \$40.10 in Regina to \$68.00 in Toronto. Over the last five years, Level 2 prices have increased at an average annual rate of 2.3%.
- Lastly, the Level 3 basket price increased from \$61.98 in 2017 to \$63.92 in 2018, an increase of 3.1%. In this case, the lowest average Level 3 price was found in Regina at \$47.43 and the highest price was in Nova Scotia at \$81.64. Since 2014, Level 3 prices have increased at an average annual rate of 1.2%, lower than the Level 1 and 2 growth rates.

Figure 1



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4.0 MOBILE WIRELESS SERVICE

4.1 Mobile Wireless Service Baskets

As in previous studies, the following mobile wireless service element charges, where applicable, are considered for price comparison purposes:

- i) network access/airtime charges (taking into account defined amounts of daytime, evening and weekend minute volumes);
- ii) optional feature charges (e.g., voice mail, call display and others);
- iii) long distance charges for both domestic and international calls;
- iv) short message service (SMS) or text message charges;
- v) data service charges; and
- vi) any other applicable monthly service charges such as emergency, universal service and/or other regulatory fees.

There are several notable charges or costs that are excluded from the calculation of mobile service prices in this study, which include: one-time charges (such as activation fees), upfront handset or device costs and roaming charges. However, a separate comparative analysis of Canadian and U.S. roaming charges is provided in Section 4.4 below.

Six mobile wireless service baskets are included in the study. Each basket consists of the following main elements:

- **Level 1:** 150 incoming & outgoing minutes per month, with 10% of outgoing minutes treated as long distance.
- **Level 2:** 450 incoming & outgoing minutes per month, with 10% of outgoing minutes treated as long distance, two optional features (voice mail and call display), and 300 texts per month.¹⁹
- **Level 3:** 1,200 incoming & outgoing minutes per month, with 15% of outgoing minutes treated as long distance, more than two optional features, 300 texts and 1 GB data usage per month.

¹⁹ This figure is consistent with the current number of monthly text messages sent by the average Canadian wireless service subscriber; see: <http://cwta.ca/facts-figures>.

- **Level 4:** Unlimited nationwide talk and text (no international calling included), more than two optional features, and 2 GB data usage per month.
- **Level 5:** Unlimited nationwide talk and text (no international calling included), more than two optional features, and 5 GB targeted data usage per month.
- **Level 6:** Family Basket - Unlimited nationwide talk and text (no international calling included), more than two optional features, 10 to 49 GB data usage per month and three lines.

Table A1.2 in Attachment 1 provides a more detailed summary of each of the service elements and usage assumptions included in all six mobile wireless service baskets.

Prices are measured for each of the mobile wireless service baskets based on a TSP's standard mobile service plan rates. Where applicable, both "pre-paid" and "post-paid" service options are considered. The less expensive of the two options is used to determine the service basket price.

Post-paid plans can be offered on a no-contract or term-contract basis (the most common term being 24 months in the latter case).²⁰ Term-contract service plans typically provide a means for subscribers to purchase a new handset or device at a discounted price. Such plans generally include an implicit or explicit handset cost recovery component in the service plan price. No-contract term, bring-your-own-device or SIM card only, service plans are also often available at lower price points given they do not include a handset cost recovery component. Consistent with previous years' studies, as applicable, the post-paid service plan prices collected for this study are based on term-contract service plans.²¹

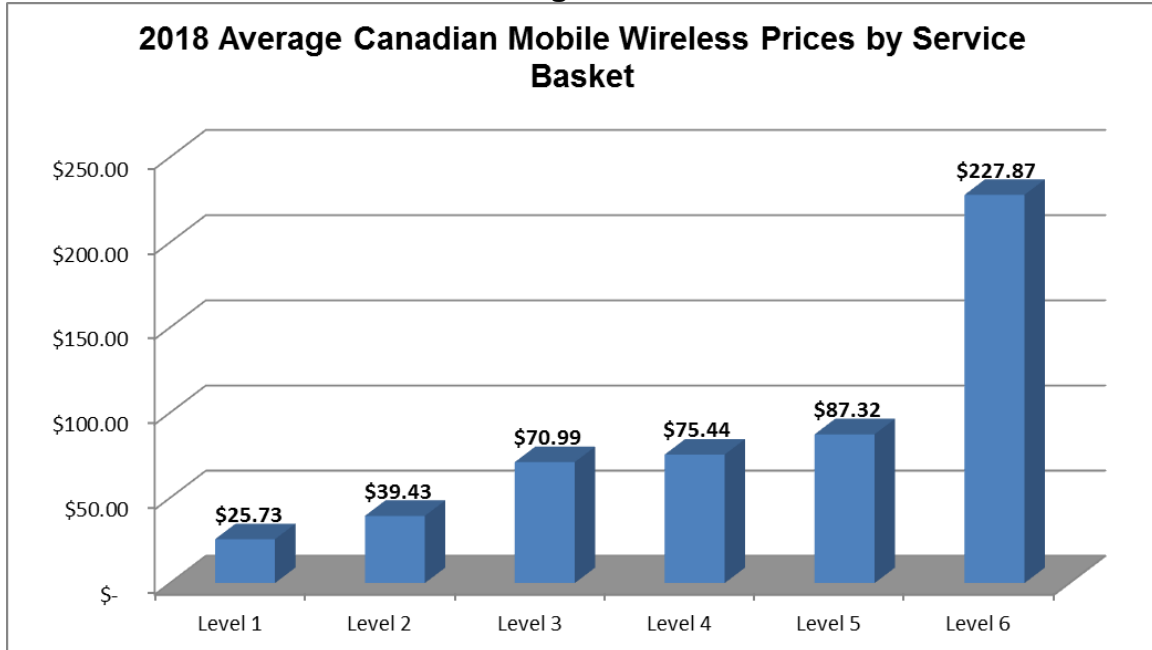
4.2 Canadian Mobile Wireless Prices

Figure 2 provides a summary of 2018 Canadian prices for all six mobile wireless service baskets. Weighted average prices range from \$25.73 per month for a Level 1 limited talk-only plan to \$227.87 per month for a Level 6 Canada-wide unlimited talk and text family plan with up to 50 GB of data.

²⁰ The implementation of the CRTC's Wireless Code in December 2013 (i.e., Telecom Regulatory Policy CRTC 2013-271) had a significant impact on the terms of wireless service plans available in Canada. Under the Wireless Code, contract cancellation fees must be reduced to zero after a period of 24 months. In Canada, many TSPs' standard contract term had previously been 36 months. With the implementation of the Wireless Code, the standard contract term was reduced to 24 months.

²¹ It should also be noted that we have tried to use the least expensive smartphone handset available in the contract plans.

Figure 2



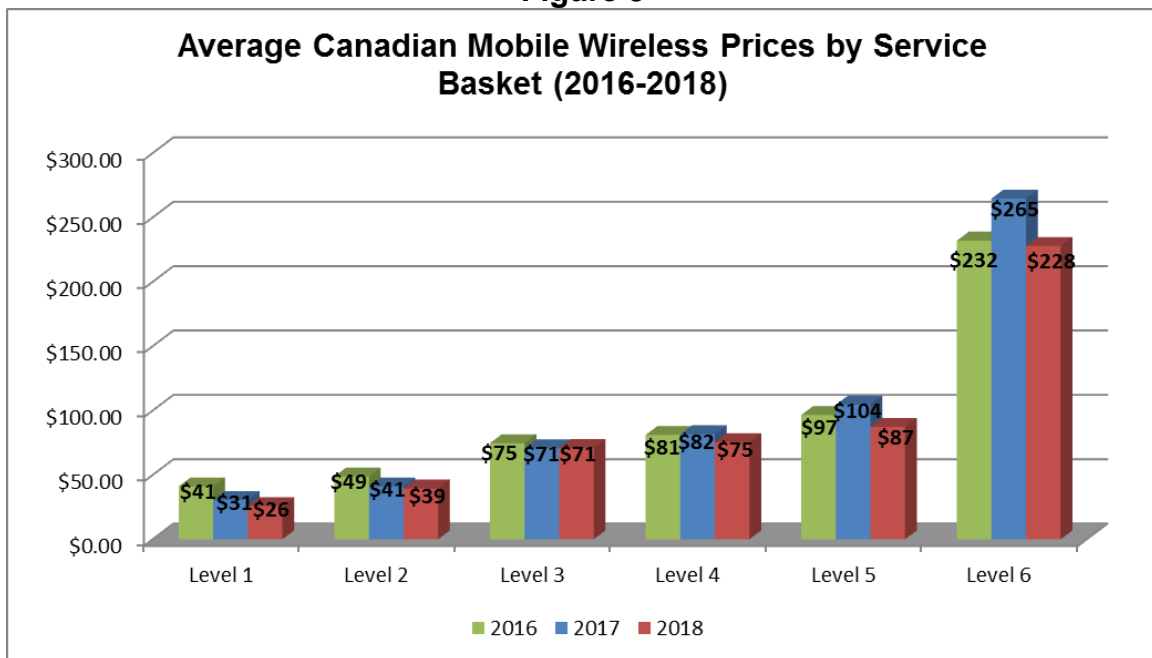
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Figure 3 below provides a summary of Canadian weighted average mobile wireless prices for each service basket Levels 1 through 6 for the five-year period 2014 to 2018. More detailed historical mobile wireless price information by service basket and city is provided in Table A2.2 in Attachment 2.

- The Level 1 mobile wireless service basket price decreased from \$30.53 in 2017 to \$25.73 in 2018, a decrease of 16%. Average 2018 Level 1 prices varied by city, from a low of between \$24.98 in Toronto to a high of \$30.24 in Winnipeg. While Level 1 prices increased between 2013 and 2016, they have fallen the last two years to their lowest level since the Telecom Price Comparisons were initiated in 2008.
- The Level 2 price decreased from \$40.95 in 2017 to \$39.43 in 2018. Average 2018 Level 2 mobile wireless prices varied from \$36.71 in Regina to \$42.39 in Halifax. Level 2 prices remain at their lowest levels over the period from 2008 to 2018.
- The Level 3 service basket price was essentially unchanged, increasing nominally from \$70.70 in 2017 to \$70.99 in 2018. Average 2018 Level 3 mobile wireless prices varied widely by city, from a low of \$45.91 in Montreal to \$83.67 in Vancouver. Again, despite the slight price increase this year, Level 3 prices in 2018 are historically low, just slightly higher than in 2017 and considerably lower than the 2008 average price of \$112.

- The Level 4 service basket price decreased from \$81.61 in 2017 to \$75.44 in 2018, a drop of 8%. Average 2018 Level 4 mobile wireless prices also varied widely by city, from a low of \$52.77 in Winnipeg to \$86.48 in Halifax. Level 4 basket prices have been declining on average over the last four years.
- Level 5 service basket prices dropped from the 2017 level of \$104.49 to \$87.32 in 2018, a decrease of about 16%. The 2018 average price of \$87.32 is the lowest tracked price since this basket was first introduced in 2015.
- Level 6 “Family Basket” service basket prices also dropped significantly from the 2017 level of \$264.65 to \$227.87 in 2018, a decrease of 14%. While Level 6 prices have only been tracked for three years, the 2018 prices are lower than the initial year (2016) average price of \$231.99. The lowest city price was found in Winnipeg at \$123.60 while the highest price was in Halifax at \$280.81.

Figure 3



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The lowest average mobile wireless prices were generally found in Winnipeg, Regina and Montreal for most mobile wireless service baskets – consistent with the past several years.

Since 2008, when the first Telecom Pricing Study was undertaken, mobile wireless prices in Canada have generally trended downwards with CAGRs over

the relevant period between roughly 2% and 7% (with the exception of Level 6 at just under 1% annual decrease).

Comparison of Incumbent and Regional Providers Prices

A comparison of average mobile wireless rates for the incumbent carriers and the regional carriers is provided in Table 3 below. The comparison is provided for six cities: Vancouver and Toronto (where Freedom operates), Montreal (where Videotron operates), Winnipeg (MTS), Regina (SaskTel) and Halifax (where Eastlink operates).²² For each of the cities, the incumbent carriers include Rogers, Bell and TELUS.

Table 3
2018 Canadian Mobile Wireless Service Rates
Incumbents versus Regionals

	NS	QC	ON	MB	SK	BC	Canada
Level 1							
Incumbents	\$26.10	\$26.13	\$25.67	\$27.17	\$28.11	\$25.67	\$26.47
Regionals	N/A	N/A	\$20.00	\$34.50	N/A	\$20.00	\$24.83
Difference	N/A	N/A	-22.08%	26.99%	N/A	-22.08%	-6.19%
Level 2							
Incumbents	\$42.10	\$39.13	\$45.00	\$40.17	\$37.77	\$45.00	\$41.53
Regionals	\$25.55	\$30.41	\$25.00	\$40.50	\$35.94	\$25.00	\$30.40
Difference	-39.31%	-22.28%	-44.44%	0.83%	-4.85%	-44.44%	-26.80%
Level 3							
Incumbents	\$87.93	\$44.46	\$89.17	\$45.00	\$49.27	\$89.17	\$67.50
Regionals	\$64.55	\$44.41	N/A	\$55.00	\$65.83	N/A	\$57.45
Difference	-26.59%	-0.11%	N/A	22.22%	33.60%	N/A	-14.89%
Level 4							
Incumbents	\$93.76	\$62.96	\$95.00	\$50.00	N/A	\$95.00	\$79.34
Regionals	\$74.55	\$56.41	\$40.00	\$55.00	N/A	\$40.00	\$53.19
Difference	-20.49%	-10.40%	-57.89%	10.00%	N/A	-57.89%	-32.96%
Level 5							
Incumbents	\$108.76	\$67.46	\$110.00	\$60.00	\$59.27	\$110.00	\$85.92
Regionals	\$84.55	\$68.41	\$50.00	\$65.00	\$70.94	\$50.00	\$64.82
Difference	-22.26%	1.41%	-54.55%	8.33%	19.68%	-54.55%	-24.56%
Level 6							
Incumbents	\$238.76	\$168.77	\$228.33	\$126.67	\$125.94	\$228.33	\$186.14
Regionals	N/A	\$124.41	\$180.00	\$110.00	\$200.94	\$180.00	\$159.07
Difference	N/A	-26.29%	-21.17%	-13.16%	59.55%	-21.17%	-14.54%

Unweighted averages used for incumbents and regionals. Unweighted prices can vary significantly from the weighted prices used in calculating national averages but are suitable for comparing incumbents and regionals.

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²² Note that former new entrant Public Mobile has been excluded from this year's study given that it is now owned by TELUS. Bell MTS is included in this year's Study as a Regional provider with Bell Mobility as an incumbent national wireless provider.

As shown in the table, for the Level 1 mobile wireless service basket, the prices offered by regional carriers are 6% lower on average for the six cities combined. This is the lowest price differential of all categories levels. The relative price discounts (on average) available from the regionals in the case of the Level 2 service basket through Level 6 (for all cities combined) are 27%, 15%, 33%, 25% and 15% respectively.

Compared to last year's study, the differentials between the incumbents' and Regionals' mobile wireless prices have generally been stable or moved upwards.

Incumbent Flanker Brand Prices

Incumbent flanker brand services Bell Virgin, Rogers Fido, and TELUS Koodo are available across the country.

Table 4 below provides a summary of incumbent primary brand, incumbent flanker brand and regional mobile wireless service prices for 2018 in Halifax, Montreal, Toronto, Winnipeg, Regina and Vancouver for each of the mobile wireless service baskets. It also provides percentage rate differentials between the incumbents' primary and flanker brands as well as the incumbents' flanker brands and the regionals. Except for Levels 1 and 6, Flanker prices are consistently lower than incumbent prices. The most dramatic differences are found in Levels 4 and 5, where flanker prices are 23% and 21% lower (respectively) than incumbent prices.

Compared to last year's study, the differentials between the incumbents' flanker and primary brand service prices have no discernable trend – some are higher and some are lower. Flankers still tend to be lower than incumbent prices (except for Levels 1 and 6), both on a national average basis and in most individual city/basket prices as well.

Table 4
2018 Canadian Mobile Wireless Service Rates
Incumbents, Incumbent Flanker Brands and Regionals

	NS	QC	ON	MB	SK	BC	Canada
Level 1							
Incumbents	\$26.10	\$26.13	\$25.67	\$27.17	\$28.11	\$25.67	\$26.47
Regionals	N/A	N/A	\$20.00	\$34.50	N/A	\$20.00	\$24.83
Flankers	N/A	\$25.46	N/A	\$28.00	\$28.94	N/A	\$27.47
Diff F/I	N/A	-2.55%	N/A	3.07%	2.96%	N/A	3.76%
Diff F/R	N/A	N/A	N/A	-18.84%	N/A	N/A	10.60%
Level 2							
Incumbents	\$42.10	\$39.13	\$45.00	\$40.17	\$37.77	\$45.00	\$41.53
Regionals	\$25.55	\$30.41	\$25.00	\$40.50	\$35.94	\$25.00	\$30.40

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Flankers	\$34.90	\$33.74	\$34.61	\$33.00	\$33.94	\$34.61	\$34.13
Diff F/I	-17.10%	-13.77%	-23.09%	-17.84%	-10.15%	-23.09%	-17.81%
Diff F/R	36.58%	10.95%	38.44%	-18.52%	-5.56%	38.44%	12.28%
Level 3							
Incumbents	\$87.93	\$44.46	\$89.17	\$45.00	\$49.27	\$89.17	\$67.50
Regionals	\$64.55	\$44.41	N/A	\$55.00	\$65.83	N/A	\$57.45
Flankers	\$70.60	\$48.71	\$70.17	N/A	N/A	\$70.17	\$64.91
Diff F/I	-19.71%	9.56%	-21.31%	N/A	N/A	-21.31%	-3.84%
Diff F/R	9.37%	9.68%	N/A	N/A	N/A	N/A	12.99%
Level 4							
Incumbents	\$93.76	\$62.96	\$95.00	\$50.00	N/A	\$95.00	\$79.34
Regionals	\$74.55	\$56.41	\$40.00	\$55.00	N/A	\$40.00	\$53.19
Flankers	\$65.43	\$48.79	\$65.00	N/A	N/A	\$65.00	\$61.06
Diff F/I	-30.22%	-22.50%	-31.58%	N/A	N/A	-31.58%	-23.05%
Diff F/R	-12.23%	-13.50%	62.50%	N/A	N/A	62.50%	14.78%
Level 5							
Incumbents	\$108.76	\$67.46	\$110.00	\$60.00	\$59.27	\$110.00	\$85.92
Regionals	\$84.55	\$68.41	\$50.00	\$65.00	\$70.94	\$50.00	\$64.82
Flankers	\$82.10	\$56.13	\$81.67	\$52.67	\$53.61	\$81.67	\$67.97
Diff F/I	-24.52%	-16.80%	-25.76%	-12.22%	-9.56%	-25.76%	-20.89%
Diff F/R	-2.90%	-17.96%	63.33%	-18.97%	-24.43%	63.33%	4.87%
Level 6							
Incumbents	\$238.76	\$168.77	\$228.33	\$126.67	\$125.94	\$228.33	\$186.14
Regionals	N/A	\$124.41	\$180.00	\$110.00	\$200.94	\$180.00	\$159.07
Flankers	\$389.43	\$198.46	\$389.00	N/A	N/A	\$389.00	\$341.47
Diff F/I	63.10%	17.59%	70.36%	N/A	N/A	70.36%	83.45%
Diff F/R	N/A	59.52%	116.11%	N/A	N/A	116.11%	114.67%

Unweighted averages used for incumbents and regionals.

Incumbent flanker brands are given equal weights.

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Table 4 also includes the regionals' average prices for the same cities and provides percentage-based price differentials between the regionals' and incumbents' flanker brand prices. The regionals' prices are consistently lower than the incumbents' flanker brand prices nationally, but can be higher in specific regions and baskets. In particular, incumbent prices tend to be lower than regional prices in Saskatchewan and Manitoba.

As was seen last year, the price differentials between regionals and incumbent flanker brand prices have generally widened, whereas the differentials between regional and incumbent primary brand prices have largely remained unchanged. In other words, average prices offered by incumbent flanker brands rose and are now closer to those of the incumbents' primary brands, while the regionals' price discounts relative to the incumbents' primary brands generally remained the same.

Reseller or MVNO Prices

Mobile wireless service prices offered by two resellers or mobile virtual network operators (MNVO) – i.e., Primus and PC Mobile – were also collected. Table 5 provides a summary of the national-level price differentials between the incumbents' primary brands and MVNOs for each of the mobile service baskets. Note that no reseller services were available for Level 6 baskets.

Table 5
2018 Canadian Mobile Wireless Service Rates
Incumbents versus Resellers/MVNOs

	NS	QC	ON	MB	SK	BC	Canada
Level 1							
Incumbents	\$26.10	\$26.13	\$25.67	\$27.17	\$28.11	\$25.67	\$26.47
Resellers	\$26.25	\$25.86	\$25.63	\$26.25	\$26.10	\$25.63	\$25.95
Difference	0.59%	-1.04%	-0.16%	-3.37%	-7.16%	-0.16%	-1.97%
Level 2							
Incumbents	\$42.10	\$39.13	\$45.00	\$40.17	\$37.77	\$45.00	\$41.53
Resellers	\$53.34	\$45.72	\$45.42	\$53.13	\$46.04	\$45.42	\$48.18
Difference	26.71%	16.86%	0.93%	32.26%	21.89%	0.93%	16.01%
Level 3							
Incumbents	\$87.93	\$44.46	\$89.17	\$45.00	\$49.27	\$89.17	\$67.50
Resellers	\$65.43	\$62.96	\$62.50	\$65.00	\$63.44	\$62.50	\$63.64
Difference	-25.59%	41.61%	-29.91%	44.44%	28.75%	-29.91%	-5.72%
Level 4							
Incumbents	\$93.76	\$62.96	\$95.00	\$50.00	N/A	\$95.00	\$79.34
Resellers	\$75.43	\$77.96	\$77.50	\$75.00	\$78.44	\$77.50	\$76.97
Difference	-19.55%	23.82%	-18.42%	50.00%	N/A	-18.42%	-2.99%
Level 5							
Incumbents	\$108.76	\$67.46	\$110.00	\$60.00	\$59.27	\$110.00	\$85.92
Resellers	\$85.43	\$90.46	\$90.00	\$85.00	\$90.94	\$90.00	\$88.64
Difference	-21.45%	34.09%	-18.18%	41.67%	53.42%	-18.18%	3.17%
Level 6							
Incumbents	\$238.76	\$168.77	\$228.33	\$126.67	\$125.94	\$228.33	\$186.14
Resellers	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Difference	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Unweighted averages.

Resellers/MVNOs include Primus and PC Mobile.

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Reseller services tend to be lower than incumbents' prices in Nova Scotia, Ontario and BC and higher in Quebec, Saskatchewan and Manitoba. On a national average basis, Reseller average prices are lower for Level 1, Level 3 and Level 4. The differences in incumbent and reseller national average prices tend to be relatively small (with the exception of Level 2 where resellers are 16% higher). However, price differentials in any given city/basket can exhibit extreme price differences – as much as a 50% or more difference in some cases (e.g. Manitoba Level 4 and Saskatchewan Level 5).

Discussion of the Canadian Market: Observations Relevant to High and Low Cost Service Provision

Table 6 below provides the highest and lowest available prices (by region) by specific provider. We would note that Freedom Mobile in most cases offers the lowest price in regions where they offer service (i.e. BC and Ontario).

Table 6

Canadian Wireless Plans 2018 Lowest and Highest Offered Prices by Province and by Wireless Service Provider														
Baskets		BC	BC	SK	SK	MB	MB	ON	ON	QC	QC	NS	NS	Canada
		<i>low</i>	<i>high</i>	<i>low</i>	<i>high</i>	<i>low</i>	<i>high</i>	<i>low</i>	<i>high</i>	<i>low</i>	<i>high</i>	<i>low</i>	<i>high</i>	<i>average</i>
1) Talk	Price	20.00	27.00	25.94	30.44	25.00	34.50	20.00	27.00	20.46	30.46	25.43	27.43	25.73
	WSP	Freedom	Telus	Rogers, Primus	Bell	Rogers	MTS	Freedom	Telus	Bell	Rogers	Bell, Rogers	Telus	
2) Talk and Text	Price	25.00	56.25	30.94	56.25	32.40	56.25	25.00	56.25	33.40	56.25	25.55	56.25	39.43
	WSP	Freedom	Petro-Can	Rogers, Primus	Petro-Can	Fido, Virgin	Petro-Can	Freedom	Petro-Can	Virgin, Fido	Petro-Can	Eastlink	Petro-Can	
3) 1 GB	Price	60.00	90.00	45.94	65.94	45.00	65.00	60.00	90.00	44.41	65.46	62.03	90.43	70.99
	WSP	Primus	Rogers, Bell	Rogers	PC Mobile, Sasktel	Rogers, Bell, Telus	PC Mobile	Primus	Bell, Rogers	Bell, Videotron	PC Mobile	Koodo	Bell	
4) 2 GB	Price	40.00	95.00	75.94	80.94	50.00	75.00	40.00	95.00	45.46	80.46	45.43	95.43	75.44
	WSP	Freedom	Telus, Rogers, Bell	PC Mobile	Primus	Bell, Rogers, Telus	PC Mobile	Freedom	Bell, Rogers, Telus	Virgin, Koodo	Primus	Koodo	Bell	
5) 5 GB	Price	50.00	110.00	48.94	95.94	48.00	85.00	50.00	110.00	49.46	95.46	75.43	110.43	87.32
	WSP	Freedom	Telus, Rogers, Bell	Koodo	Primus	Koodo	PC Mobile	Freedom	Bell, Rogers, Telus	Koodo	Primus	Koodo	Bell, Telus	
6) 10-49 GB	Price	180.00	390.00	110.94	200.94	110.00	150.00	180.00	390.00	124.41	198.46	225.43	390.43	227.87
	WSP	Freedom	Virgin, Fido, Koodo	Bell	Sasktel	MTS, Bell	Rogers	Freedom	Virgin, Fido, Koodo	Videotron	Virgin	Telus	Virgin, Fido, Koodo	

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For Canada, the highest and lowest prices (offered by specific providers) are provided in Table 7 below. We would note that Freedom Mobile has the lowest (or equal to lowest) price offering in three of the six baskets.

Table 7

Canada Wireless Plans 2018 Lowest and Highest Canadian Prices				
Baskets		Canada	Canada	Canada
		<i>low</i>	<i>high</i>	<i>average</i>
1) Talk	Price	\$20.00	\$34.50	\$25.73
	WSP	Freedom (ON, BC), Bell (QC)	MTS (MB)	
2) Talk and Text	Price	\$25.00	\$56.25	\$39.43

	WSP	Freedom (ON, BC), Eastlink (NS)	Petro-Can	
3) 1 GB	Price	\$44.41	\$90.43	\$70.99
	WSP	Bell (QC), Videotron (QC)	Rogers (BC, ON), Bell (BC, ON, NS)	
4) 2 GB	Price	\$40.00	\$95.43	\$75.44
	WSP	Freedom (ON, BC)	Rogers, Telus (BC, ON), Bell (BC, ON, NS)	
5) 5 GB	Price	\$48.00	\$110.43	\$87.32
	WSP	Koodo (MB, SK)	Rogers (BC, ON), Bell, Telus (BC, ON, NS)	
6) 10-49 GB	Price	\$110.00	\$390.43	\$227.87
	WSP	MTS (MB), Bell (MB, SK)	Virgin, Fido, Koodo (BC, ON, NS)	

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We would note that an individual vendor price that is considerably lower than the national average can be found in all baskets – as is also the case in each region.

4.3 International Mobile Wireless Service Prices

As noted in previous studies, there are a number of important pricing differences that should be borne in mind when comparing Canadian and foreign mobile wireless prices.

- Price Structure:* The pricing of mobile wireless service plans in the U.K., Germany, Italy, France, Australia and Japan differs significantly compared to Canada (as well as the U.S.). Mobile wireless prices in Europe, Australia and Japan are set on a "calling party pays" basis, under which mobile customers pay only for outgoing calls. In contrast, Canadian and U.S. pricing plans are based on a "receiving party pays" approach, under which customers pay for incoming and outgoing calls. Unlike Canada and the U.S., some mobile wireless service plans in Europe, Australia and Japan also include per call setup charges and/or different per minute call rates to landline versus mobile customers, as well as potentially different per minute rates for on-net versus off-net mobile calls. However, as in Canada, unlimited national calling plans and service add-ons that cover calls to both fixed and mobile and both on and off-net mobile lines are now commonly available.

- *Regulatory Fees:* Regulatory fees of one form or another apply in the cases of Canada, Japan and the U.S. In Canada, there is typically an explicit emergency 9-1-1 fee and, in some cases, universal service fees (as in the case of Japan). In the U.S., there are a variety of regulatory fees, federal and state USF surcharges and other fees.²³ We have estimated these charges based on information collected in previous pricing studies and, where applicable, updated USF fees and carrier-specific regulatory cost recovery charges.

Figure 4 below provides a comparison of current mobile wireless prices for Canada and the surveyed foreign jurisdictions for each of the seven wireless service baskets. All prices are expressed in PPP-adjusted Canadian dollars and exclude retail sales taxes. Table A3.2 and Figures A3.2 a, b and c in Attachment 3 provide more detailed historical international mobile wireless price information for the period 2014 to 2018, as applicable, for each country and basket.

- In the case of the Level 1 mobile wireless service basket, the Canadian average price of \$25.73 is the second highest in the group of surveyed countries, surpassed only by the U.S. The Canadian Level 1 basket price is also well above the average price for the group of surveyed foreign jurisdictions of \$15. The substantially lower prices found in Europe are generally due to the availability of exceptionally low-priced prepaid voice services.
- For the Level 2 service basket, the Canadian average price of \$39.43 falls well above the average price for the group of surveyed foreign jurisdictions as a whole of \$22. Canada is only lower than the US price.
- For the Level 3 wireless service basket, the average Canadian monthly rate of \$70.99 is well above the average for the group of surveyed foreign jurisdictions of roughly \$36. Canada ranks highest among the surveyed countries.
- In the case of the Level 4 basket, which includes unlimited nationwide talk and text along with 2 GB of monthly data usage, the Canadian average price of \$74.22 is similarly positioned. It is considerably above the Level 4 basket average price for the surveyed foreign jurisdictions of just over \$40. Canada ranks seventh among the group of countries, below only the measured average price for Japan.
- For the Level 5 basket, which includes unlimited nationwide talk and text along with 5 GB (target) of monthly data usage, the Canadian average price of \$87.32 is well above the Level 5 basket average price for the

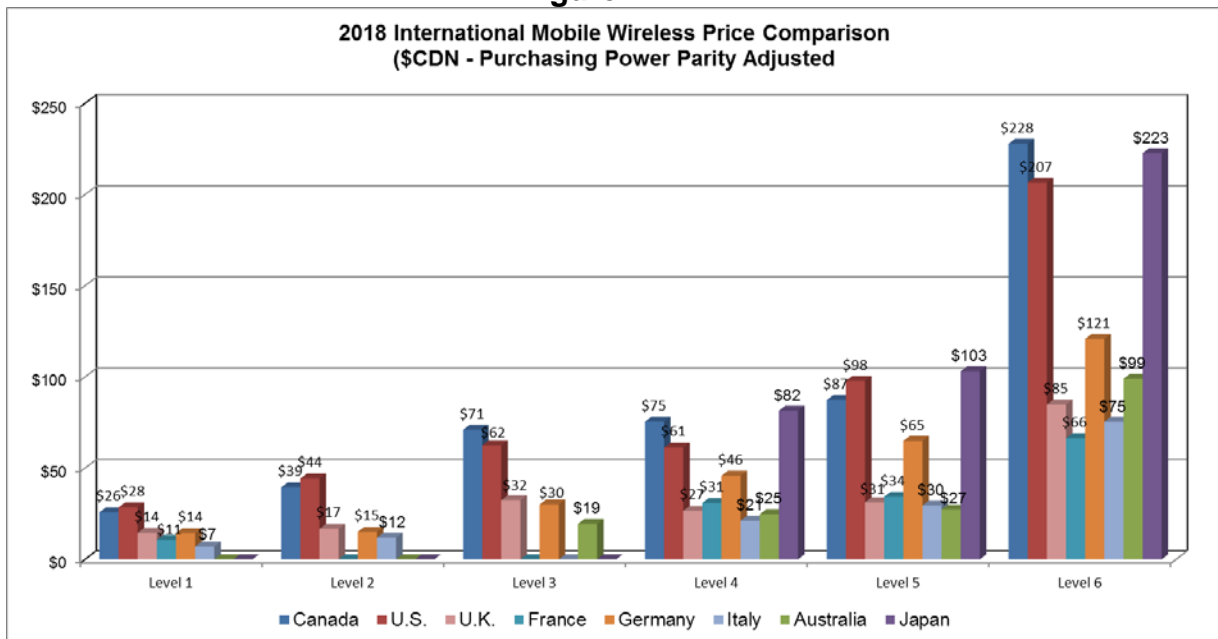
²³

See, for instance, <http://www.fcc.gov/cgb/phonebills/WirelessPhonebill.html>.

surveyed foreign jurisdictions of roughly \$55. Both Japan and the US have higher average PPP adjusted prices.

- The Level 6 (Family) Basket price in Canada is \$223.32, higher than all other countries. However, the US (at \$206.57) and Japan (at \$222.66) are not far off the Canadian price. Prices in Europe and Australia are significantly less.

Figure 4



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The Level 1 to 3 mobile wireless service baskets have been included in this study since the outset in 2008. Canada's relative mobile wireless service price ranking for these three baskets has not changed significantly between 2008 and 2014. Canada has tended to be on the high side of the group, but generally below the U.S. and, since its introduction to the study in 2010, Japan for Level 3 (and in part Level 2). The Level 4 basket was introduced to the study in 2014 and the Level 5 basket was included in 2015. Canada's Level 4 and 5 rankings are similar to the Level 1 to 3 baskets – i.e. it falls on the high side of the group.

Level 6 (Family Basket) was introduced in 2016 and once again Canada is on the high side of the price range.

It is worth noting that surveyed average prices for European countries included in the study have consistently fallen below the prices in Canada for all defined mobile wireless service baskets – generally considerably lower than in Canada.

In sum, average Canadian mobile wireless prices are consistently at the upper-end of the group of surveyed countries.

4.4 Canada-U.S. Roaming Prices

As a separate price comparison exercise, rate information on voice, text and data roaming services available to Canadian and American mobile wireless service consumers when traveling to the U.S. and Canada, respectively, has been collected as part of this study.

The wireless service providers surveyed for this study generally offer two types of international roaming services. The first is a "pay-as-you-go" roaming service option under which users pay per-use rates for any voice, text or data usage they incur while traveling abroad. The second is a travel or roaming add-on package option under which users can choose to pay a fixed fee for defined amounts of call minutes, texts, and/or data. Typically, roaming add-on packages remain in effect for a 30 day period of time. With an add-on package, per unit usage rates are typically discounted significantly relative to base pay-as-you-go rates. When the usage allowance under an add-on plan is consumed, then either specific overage rates or base rates apply for any additional usage, or the service charge is capped (equal to a specified number of days).

Roaming from Canadian Providers

Canadian incumbent and, to a somewhat lesser degree, incumbent flanker brand wireless service providers offer a wide range of stand-alone U.S.-specific voice, text or data roaming add-on packages as well as bundled talk & text and talk, text & data roaming add-on packages. The Regionals now offer daily/periodic plans that directly compete with the incumbents, as well as Pay as You Go options.

The three Canadian national mobile wireless carriers generally have similar roaming plans, charging \$7 per day for US/Canada roaming. Rogers and TELUS allow you to use the amount of voice minutes and texts that are included in your domestic Smartphone plan, while Bell allows unlimited minutes and texts. All three also allow the use of the data allotment in your domestic plan. All three national providers cap the monthly roaming expenditure in their plans (\$100, \$105 and \$140 respectively for TELUS, Rogers and Bell). TELUS also offers a Monthly Roaming Pass that is \$30 for 30 days, but limits voice minutes to 300.

The Regionals also offer daily plans ranging from \$5 to \$6 per day. The Freedom roaming plans are based on terms of 5, 10 or 20 days while Eastlink has no term. Videotron caps its monthly maximum roaming plan charge at \$60, considerably lower than any of the national carrier plans.

The Flanker (Fido, Koodo and Virgin) plans are virtually the same as those provided by their associated primary brand national carrier plans, with the

exception of the Koodo rate of \$8 per day (\$1 higher than the TELUS plan). Public Mobile also offers unlimited talk and text at \$10 for 10 days, the lowest talk and text roaming plan option available in Canada.

Primus offers an unlimited Talk (no text) plan of \$30 for 30 days.

Table 8: Canadian Roaming Plan Comparison (\$Can)

	Plan	Price (cap if available)	Term/Max	Data	Calling/Text
Rogers	Roam Like Home	\$7 day	Cap at \$105 per month	Use data from your Canadian plan	Consistent with domestic plan
Bell	Roam Better	\$7 day	Cap at \$140 per month	Use data from your Canadian plan	Unlimited
TELUS	Easy Roam	\$7 day (\$100/month)	Cap at \$100 per billing cycle)	Use data from your Canadian plan	Consistent with domestic plan
TELUS	30 Day Roaming Pass	\$30 month	30 days	0 MB	300 minutes and Unlimited Texts
Freedom	Big Gig Roam	\$5/day	5 days (10 and 20 day plans also available)	1 GB	Unlimited
Videotron	US Daily Traveller Pass	\$6 day	Cap at \$60 per month	Use data from your Canadian plan	Unlimited
Eastlink	Worry Free Roaming	\$6 day	No term	Use data from your Canadian plan	Unlimited
Koodo	Easy Roam	\$8 day	Cap at \$100 per month	Use data from your Canadian plan	Consistent with domestic plan
Fido	Fido	\$7 day	Cap at	Use data	Consistent with

	Roam		\$105 per month	from your Canadian plan	domestic plan
Virgin	Roam Sweet Roam	\$7 day	Cap at \$140 per month	Use data from your Canadian plan	Unlimited
Public Mobile	US Talk and Text	\$10	10 days	0 Mb (\$10 for 250 MB)	Unlimited
Primus	Travel Pack	\$30	30 days	0 Mb (\$1 per Mb)	Unlimited calls/ no texts
Primus	Travel Pack	\$40	30 days	0 Mb (\$1 per Mb)	100 minutes/unlimited texts
Petro Canada	NA	NA	NA	NA	NA

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The national mobile wireless providers, two Regionals and two Flankers also offer Pay as You Go roaming. Prices are once again very similar across the nationals, ranging from \$1.45 to \$1.50. Rogers and Bell both charge \$0.75 per text while TELUS charges \$0.60 per text. Bell and TELUS charge \$6.00 and \$5.00 per MB of data respectively while Rogers has a package of 50 MB for \$7.99.

Freedom and Videotron have much lower per minute rates than the nationals, at \$0.15 and \$0.30 respectively. Similarly text and data charges are also much lower at \$0.05 per text or MB for Freedom and \$0.15 per text or MB for Videotron.

The Flanker (Virgin and Fido) rates match those of their owners' primary brand service.

Table 9: Canadian Roaming Pay as You Go (\$Can)

	Price per minute	Price per MB	Price per Text
Rogers	\$1.45	\$7.99 50 MB	\$0.75
Bell	\$1.45	\$6.00 per MB	\$0.75
TELUS	\$1.50	\$5.00 per MB	\$0.60

Freedom	\$0.15	\$0.05 MB	\$0.05
Videotron	\$0.30	\$0.15 MB	\$0.15
Eastlink	NA	NA	NA
Fido	\$1.45	\$7.99 50 MB	\$0.75
Virgin	\$1.45	\$6.00 per MB	\$0.75
Koodo	NA	NA	NA

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Roaming From US Providers

In the US, the national carriers all offer no charge roaming to Canada in their unlimited Smartphone plans. These unlimited data Smartphone plans are priced at US\$70 to US\$75 per month. They provide a full Smartphone telephone, text and unlimited data service with US/Canada roaming included in the regular monthly price.

For customers that are not on an unlimited plan from one of the four US national carriers, daily (or periodic) roaming plans are available from three of the carriers. Verizon offers an unlimited calling plan for \$5.00 per month, AT&T offers a \$10 a day plan²⁴ and Sprint offers a \$2.00 per day plan.

Two regional carriers offer roaming plans. US Cellular offers a \$5.00 a month unlimited Talk plan as well as a \$10.00 per month unlimited talk and text plan. C-Spire offers a \$5.00 month unlimited talk and text plan that is limited to 10 telephone numbers.

Table 10: US Roaming Plan Comparison (\$US)

	Plan	Price (cap if available)	Term/Max	Data	Calling/Text
Verizon	Go Unlimited Smartphone plan (\$75)	Included in Smartphone Plan (\$0)	Monthly	No charge for roaming in Canada (500 MB per day allowance)	Unlimited
Verizon	Travel Pass	\$5 day	Daily	Use data	Consistent with

²⁴ AT&T offers no charge roaming to Canada not only on their unlimited Smartphone plans but also on shared plans with 10 GB of data or more. The International Day Pass is applicable to 200 countries, not just Canada.

Canadian and International Price Comparisons – 2018 Update

				from your domestic plan	domestic plan
Verizon	Unlimited Together	\$5.00 per month	Monthly		Unlimited calling
Verizon	Mexico and Canada	\$15.00 per month	Monthly	100 MB	100 min/ 100 Text
AT&T	Unlimited and More Smartphone plan (\$70)	Included in Smartphone Plan (\$0)	Monthly	Use data from your domestic plan	Consistent with domestic plan
AT&T	International Day Pass	\$10 day	Daily	Use data from your domestic plan	Unlimited
	AT&T Passport	\$60 month	Monthly	1 GB	\$0.35 per minute and unlimited texts
Sprint	Sprint Unlimited Plus Smartphone Plan (\$70)	Included in Smartphone Plan (\$0)	Monthly	10 GB	Unlimited
Sprint	Global Roaming	\$2 day or \$5 per week	Daily/Weekly	Basic data included	\$0.20 minute and Unlimited Texts
T-Mobile	T-Mobile ONE Smartphone Plan (\$70)	Included in Smartphone Plan (\$0)	Monthly	2 GB	\$0.25 minute and Unlimited Texts
T-Mobile	Unlimited Talk and Text (\$20)	Included in Plan (\$0)	Monthly	No data (can't be added)	Unlimited Talk and Text
U. S. Cellular	Unlimited Calling Canada Plan	\$5.00 month	Monthly		Unlimited Talk
U. S. Cellular	Unlimited Talk and Text to Mexico and Canada Plan	\$10.00 month	Monthly		Unlimited Talk and Text
C-Spire	Unlimited Calling Global Family	\$5.00 month (Calling is limited to 10 telephone numbers)	Monthly		Unlimited Talk and Text

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Pay as You Go roaming (post paid) is only available from two US carriers: Verizon and AT&T. Both providers charge the same rate of \$1 per minute, with data at \$2.05 MB and texts at \$0.50 each.

Table 11: US Roaming Pay as You Go (\$US)

	Price per minute	Price per MB	Price per Text
Verizon	\$0.99	\$2.05 MB	\$0.50
AT&T	\$1.00	\$2.05 MB	\$0.50
Sprint	NA	NA	NA
T-Mobile	NA	NA	NA
U.S. Cellular	\$0.44		
C-Spire	\$0.08		

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Canada/US Roaming Comparison

A striking feature differentiating Canadian and US services is the “no charge” roaming provided by the national US providers in their unlimited Smartphone plans. These plans provide a full mobile phone service (voice, texts and unlimited data) plus (generally) unlimited roaming to Canada. There is no counterpart service in Canada.

The periodic roaming plans (including voice, texts and data) offered by Canadian national carriers, if used to their maximum allowances, have an average price of \$115 per month. US carriers offer an average PPP-adjusted price of \$50.50 per month.

If only a calling (voice) roaming service is required, US plans can be found for unlimited calling at US\$5.00 per month (e.g. Verizon, U. S. Cellular). In Canada, Primus offers a voice only service for \$30 per month while Public Mobile offers a similar service for about \$30 per month.

Table 12: Canada/US Roaming Plan Comparison (\$Canadian PPP Adjusted)

	Terms	Average Price (PPP adjusted)
<i>Smartphone plan with Roaming Included</i>		

Canadian Incumbents	NA	NA
US National Providers	Unlimited data Smartphone plan includes “no charge” roaming	\$97.26
<i>Daily/Periodic Plans</i>		
Canadian Incumbents	Daily plan with monthly cap (includes voice, text and data allowed in domestic plans)	\$115 per month max (\$7/day)
US National Providers (Verizon and Sprint) ²⁵	Weekly or monthly plans (includes voice, text and data)	\$50.50 per month

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“Pay as You Go” rates are fairly comparable between the two countries, although data charges are 25% lower in the US.

Table 13: Canadian and US “Pay as You Go” Roaming Comparison (\$Canadian PPP Adjusted)

	Average Price per minute	Average Price per MB	Average Price per Text
Canadian Incumbents	\$1.47	\$3.71	\$0.70
US National Providers	\$1.37	\$2.80	\$0.68
Canadian Regionals	\$0.23		
US Regionals	\$0.35		

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²⁵ Verizon Mexico and Canada \$25 plan and Sprint Global Roaming Mexico and Canada \$10 per week (with 450 minutes assumed at \$0.20 per minute).

5.0 BROADBAND INTERNET SERVICE

5.1 Broadband Internet Service Baskets

The six broadband service baskets included in the study are defined in terms of broadband service speed and monthly data usage:

- **Level 1:** *Speed:* "basic" Internet service with advertised²⁶ download speed of up to **3 to 9 Mbps**.

 Data usage per month: 10 GB.

- **Level 2:** *Speed:* "average" (Canadian) high-speed Internet service with advertised download speed of **10 to 15 Mbps** (targeted speed in the upper end of the range).

 Data usage per month: 50 GB.

- **Level 3:** *Speed:* high-speed Internet service with advertised download speed of **16 to 40 Mbps** (targeted speed in the upper end of the range).

 Data usage per month: 100 GB.

- **Level 4:** *Speed:* high-speed Internet service with advertised download speed of **40 to 100 Mbps** (targeted speed in the upper end of the range).

 Data usage per month: 150 GB.

- **Level 5:** *Speed:* high-speed Internet service with advertised download speed of **100 to 250 Mbps** (targeted speed in the upper end of the range).

 Data usage per month: 500 GB

²⁶ It should be noted that "advertised" speeds can differ from "actual" speeds for a variety of reasons and that the range of any such differences can vary by technology and geographic location. For the purpose of this study, any such variations are assumed to be roughly equal on a relative basis across the broadband services included in this study. The CRTC 2016 CMR noted that roughly 98% of Canadian broadband users could access a broadband service with a download speed of at least 5 Mbps.

- **Level 6:** Speed: high-speed Internet service with advertised download speed of **250 to 500 Mbps** (targeted speed in the upper end of the range).

Data usage per month: 500 GB or Unlimited

It should be noted that broadband speeds have increased dramatically over the past decade and the baskets used in the Telecom Pricing Reports have accordingly been adjusted over time.

Changes to Broadband Baskets Criteria 2010 to 2018

Basket	2010	2011	2012 - 2015	2016-2017	2018
Level 1	< 1.5 Mbps	< 1.5 Mbps	< 3 Mbps	3 - 9 Mbps	3 - 9 Mbps
Level 2	2 – 9 Mbps	2 – 9 Mbps	4 – 15 Mbps	10 – 15 Mbps	10 – 15 Mbps
Level 3	10 – 19 Mbps	10 – 19 Mbps	16 – 40 Mbps	16 – 40 Mbps	16 – 40 Mbps
Level 4	-	> 20 Mbps	> 40 Mbps	41– 100 Mbps	41- 100 Mbps
Level 5	-	-	-	> 100 Mbps	100-250 Mbps
Level 6					250-500 Mbps

Modem rental fees are taken into account since they are mandatory in some instances. In other cases, where the modem is not included but must be purchased by the customer, the cost of the required equipment is amortized over 24 months. One-time installation or activation fees are generally not included.

Some Internet service providers (ISPs) apply monthly data usage caps to their broadband service plans. Where they are applied, they are typically set on the basis of a monthly data allowance (GB/month), with overage fees applied when the data allowance is exceeded. Overage or additional data fees are included in the study if assumed usage levels exceed any applicable data caps. In virtually all cases, the applicable data caps were high enough that no overage fees are likely incurred given the data usage assumptions adopted for the defined broadband service baskets.

Table 14: Broadband Download/Upload Mbps Speeds (and Cap) Canada 2018

	B1	B2	B3	B4	B5	B6
Halifax						
Bell	3/.7 (20G)		25/10 (350G)	50/10	150/150	500/500
Eastlink				100/10	150/10	300/10
TekSavvy	7/.6					
Montreal						
Bell	3/.7 (20G)	15/10 (50G)		50/10 (300G)	150/150	500/500
Videotron		15/10 (50G)		60/10 (200G)	120/20	
Primus	7/1					

TekSavvy	5/1 (200G)			60/10 (150G)	200/30	
Distributel	6/1	15/10 (250G)	30/5 (300G)	75/10 (400G)	250/20 (600G)	
Toronto						
Bell	3/.7 (20G)		25/10	50/10	150/150	500/500
Rogers	5/1 (20G)		30/5 (250G)	60/10	150/15	500/15
Primus	7/1		25/10 (200G)	75/10	250/20	
TekSavvy	5/1 (200G)		30/5 (200G)	75/10	250/20	
Distributel	6/1	15/10 (250G)	30/5 (300G)	75/10 (400G)	250/20 (600G)	
Winnipeg						
Bell MTS		10/2	25/2	100/10		300/100
Shaw		15/1.5 (150G)		75/7.5 (500G)	150/15	
TekSavvy	5/.5 (400G)		25/2.5	75/7.5		
Regina						
SaskTel	5/1	10/1	40/10	80/15	175/25	300/40
Access	5/2	10/2	25/3	100/7		
Vancouver						
TELUS		15/15 (200G)	25/25 (300G)	75/75 (550G)	150/150 (1,000G)	
Shaw		15/1.5 (150G)		75/7.5 (500G)	150/15	
Primus	7/1		25/2.5 (200G)	50/10		
TekSavvy	5/.5 (400G)	15/1 (400G)	25/5 (300G)	50/3 (300G)		
Can. Av.	5.25/1	13.6/5.8	27.5/7.1	67.5/12.6	172/54	414/238

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5.2 Canadian Broadband Service Prices

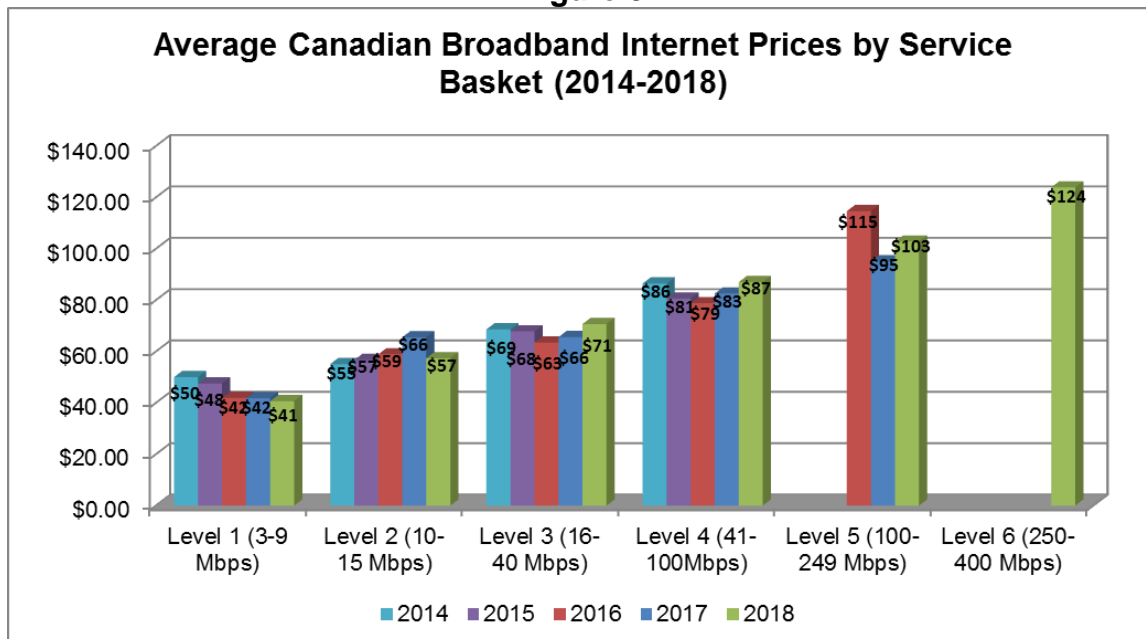
Figure 5 below provides a summary of Canadian weighted average broadband Internet access service prices for the Levels 1 to 6 service baskets for the period 2016 to 2018. More detailed historical broadband price information by city is provided in Table A2.4 in Attachment 2.

- The Level 1 national average broadband price fell marginally from \$41.83 in 2017 to \$40.67 in 2018. Average 2018 Level 1 prices varied from \$30.61 in Winnipeg to \$46.17 in Regina. Level 1 prices generally

increased from 2008 to 2014 but have been falling gradually since then. As noted, our criteria for Level 1 has evolved over time such that the “quality” of the basket has also been improving as speeds have been increased.

- The Level 2 2017 basket price of \$65.54 decreased to \$57.36 in 2018, a decrease of 12.5%. Average 2015 Level 2 prices varied considerably from a low of \$52.88 in Regina to roughly \$74.45 in Halifax. Over the last five years, Level 2 broadband prices have increased at an average annual rate of 3.3%.
- The 2018 Level 3 national average price increased to \$70.70 from \$65.59 in 2017 – a relatively high jump (almost 8%) that continued the price trend of the last few 5 years. Nova Scotia had the highest price at \$82.50 while the lowest price was found in Quebec at \$55.62.
- The Level 4 2017 national price of \$82.54 increased to \$87.00 in 2018 (a 5% increase), continuing a trend that started in 2016. Average 2018 Level 4 prices varied from \$71.14 in Quebec to \$96.65 in Saskatchewan.
- The Level 5 national average price also increased from 2017 to 2018, going from \$95.10 to \$102.76 (about 8%). Quebec once again had the lowest price (\$87.22) while the highest price was found in Manitoba (\$116.44).
- Level 6 prices (introduced this year), varied from \$105.45 (Quebec) to \$144.95 (Saskatchewan) for an average national price of \$123.87.

Figure 5



NOTE: *Broadband service basket definitions have been periodically revised to reflect the general availability of faster broadband service speeds; consequently, inter-temporal price comparisons should be made with caution.
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As was the case last year, Quebec generally had the lowest prices across the country. In several instances, the prices in Quebec were substantially lower than any other province (i.e. Levels 3,4 and 6). Relative to the national average, Nova Scotia tended to have some of the highest prices in most baskets.

Price variations in the case of broadband services can be affected by differences in service speeds offered by ISPs. Although we target a “standard” speed for those baskets with ranges in order to achieve better comparability, the actual speeds for surveyed services can vary – sometimes significantly. In such cases, price comparisons need to be interpreted with caution.

Canadian broadband service plans span a range of data caps. For Level 1, the lowest posted data cap was 20 GB (with a high of 400 GB). For Level 2, data caps ranged from 50 GB to 400 GB. For Level 3 caps varied from 200 GB to unlimited. For Level 4, the lowest data cap was 150 GB but 300 to 400 GB are typical. Level 5 and Level 6 data caps are generally, as expected, much higher (with many unlimited). Over time, data cap upper limits have been increasing steadily.

The changes to the basket criteria this year were primarily driven by the ever-increasing speeds offered in the market. We would note that speeds of 100 Mbps or higher are common now – in contrast to even three years ago. We would also note that 1 Gbps service was offered for the first time in Canada this year with both Bell and Rogers providing the service in Toronto.

Reseller ISP Prices

Broadband service prices offered by two resellers ISPs (Primus and Teksavvy) were once again surveyed this year (along with Distributel where warranted). These ISPs rely on wholesale broadband access services (acquired from the incumbent telephone and cable companies) to provide retail broadband services.

Table 15 provides a summary of the national-level differentials between the incumbents' and reseller ISPs' prices for each of the four broadband service baskets. As shown in the table, reseller ISP broadband service prices are consistently lower than those of the incumbents across all six service baskets.

Table 15

2018 Canadian Broadband Internet Service Rates

Incumbent versus Reseller ISPs			
Baskets	Incumbents	Resellers	Differential
Level 1	\$42.23	\$43.10	2.05%
Level 2	\$66.34	\$49.62	-25.21%
Level 3	\$77.50	\$50.34	-35.04%
Level 4	\$90.57	\$68.76	-24.08%
Level 5	\$105.65	\$92.56	-12.56%
Level 6	\$127.61	n/a	n/a

*Unweighted averages. Resellers include Primus and TekSavvy. Data caps and speeds may not match exactly between resellers and incumbents.
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5.3 International Broadband Service Prices

As with the other service categories, there are a number of notable differences in the way in which broadband services are provisioned in some of the surveyed countries compared to Canada:

- In some of the surveyed European countries, to obtain a DSL broadband Internet service on a stand-alone basis, the customer must in some cases also lease a landline connection (which adds an additional access line charge).
- Fibre and/or DSL-based broadband services offered in the U.K., France, Germany and Italy generally include VoIP and/or IPTV services for a single bundled price. The option of a pure stand-alone broadband Internet service is not available in some cases.
- In Japan, broadband Internet service typically consists of two separate service elements: (i) a network access facility (fibre or ADSL), often obtained from NTT and (ii) an Internet access service provided by a third-party ISP. Therefore, there are two fees involved: the broadband access fee and ISP fee.

Table 16 below provides a summary of the unweighted average "advertised" download and upload service speeds of the surveyed broadband services included in each of the six specified broadband service baskets for Canada and the surveyed foreign jurisdictions.²⁷ Data caps are typically no longer listed in most countries (with the exception of Canada and Australia).

²⁷ While advertised download speeds are readily available, the same is not true for upload speeds. Consequently, the average upload speeds are based on a somewhat lower number of observations compared to average download speeds.

Table 16
2018 International Broadband Internet Services
Average Advertised Speeds Mbps

	B1	B2	B3	B4	B5	B6
Can. Av.	5.25/1	13.6/5.8	27.5/7.1	67.5/12.6	172/54	414/238
US Av.	4.25/.6	12.4/4.5	20/na	73/22.7	216.7/10	NA
UK Av.	NA	10.3/na	36/na	62.8/na	108/6	362/21
Aus Av	NA	10/.7	22.5/na	91/2	NA	NA
FR Av	NA	15/1	30/na	100/53	200/75	450/100
JA Av	4.5/.5	12/1.5	15.5/2	88/na	160/na	320/na
GM Av	NA	NA	21.3/1.5	100/28.7	200/100	450/200
IT Av	7/na	NA	20/1.7	100/26.7	NA	500/na
International average (exc. Canada)	5.25/.6	11.9/1.9	23.6/1.7	87.8/26.6	177/47.8	416/107

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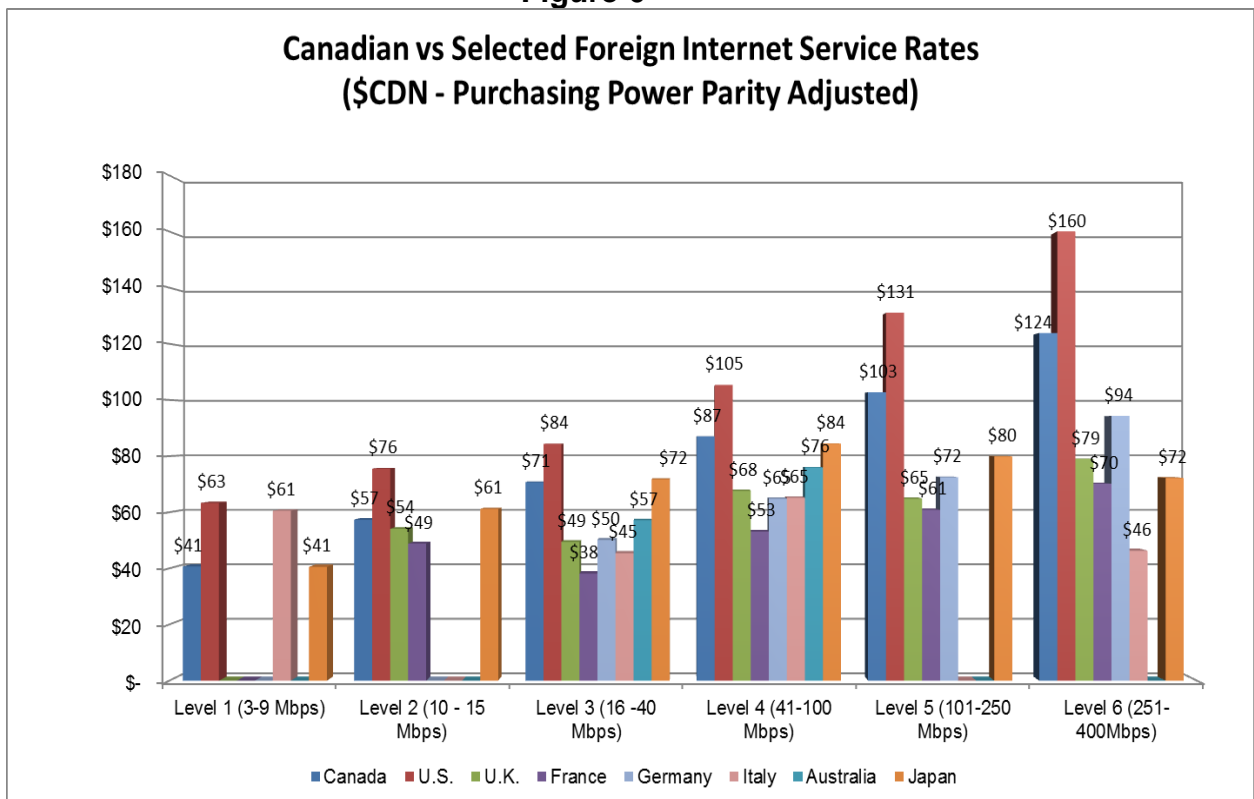
Figure 6 below provides a comparison of current weighted average broadband service prices for Canada and the seven surveyed foreign jurisdictions for each of the six broadband service level baskets. Table A3.3 and Figures A3.3 a, b, c and d in Attachment 3 provide more detailed historical broadband Internet service price results for the period 2008 to 2018, as applicable, for each of the four broadband service baskets.

- Level 1 broadband services were only available from surveyed ISPs in four of the eight countries included in the study – i.e., Canada, the U.S., Italy and Japan. Canada's average monthly price of \$40.67 is considerably lower than the measured average prices for the U.S. (\$63.32) and Italy (\$60.53) but about the same as Japan (\$40.56).
- In the case of the Level 2 basket, Canada's average monthly price of \$57.36 falls in the middle of the group of countries offering Level 2 Broadband service. Overall Canada ranks fourth in the group, ahead of the U.S., France and Japan. There was no Level 2 service plan offered by any of the surveyed service providers in the U.K.
- For the Level 3 basket, Canada's average monthly price of \$70.70 falls considerably above the average price for the other surveyed countries with the exception of the US and Japan.
- For the Level 4 basket, Canada's average monthly price of \$87.00 again falls considerably above the average for most of the other surveyed countries. In this case, Canada ranks sixth out of the eight countries in the

study, ahead of only the U.S. and Australia. Otherwise, the average price in Canada is considerably higher than many of the measured prices in the remaining countries. France has the lowest price at \$53.

- The average Canadian price for Level 5 broadband is \$102.76, again higher than all other countries except for the US (with a price of \$131.06).²⁸ The lowest prices of about \$60 can be found in the UK and France.
- The Canadian Level 6 broadband price of \$123.87 is highest among the surveyed countries, save for the US price of \$160.08.²⁹ The low price of \$46 can be found in Italy³⁰.

Figure 6



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²⁸ It should be noted that the surveyed download speed can vary considerably since the range is 100 to 249 Mbps. The speeds of the surveyed US providers tend to be higher than those of surveyed Canadian providers.

²⁹ See Footnote 32. The range of speeds for Level 6 is 249 Mbps to 500 Mbps. US speeds tend to be considerable higher for surveyed providers in the Level 6 basket than those offered in Canada. Advertised speeds of 1 Gbps are fairly common in the US.

³⁰ In Italy, Fastweb provides a low-priced service (€30) but the speed can vary from 20 Mbps to much higher depending on the location.

Canada's broadband service price ranking has remained relatively consistent since the study was first conducted in 2008. The measured prices for the European countries included in the study (U.K., France, Italy and Germany) have consistently been lower than those in Canada – in some cases, by a wide margin.

In sum, Canadian broadband Internet service prices compare reasonably favourably with the other surveyed countries in the case of the Levels 1 and 2 – although many countries no longer provide these lower level service baskets. However, Canadian Level 3 and higher basket prices tend to be higher than the prices measured in the surveyed countries, with the exception of the U.S.

6.0 MOBILE INTERNET SERVICE

6.1 Mobile Internet Service Baskets

There are three mobile Internet service levels included in the study, essentially based on the data allowance of the service. They consist of the following usage-based service elements and characteristics:

- Technology: 3rd or 4th generation (e.g., 3G, 3G+, 4G or 4G LTE)
- Service speed: Advertised download speed³¹
- Equipment: USB modem key (included with service on a no-charge, rental or purchase basis)
- Data usage: **Level 1:** 2 to 5 GB per month
Level 2: 5 to 10 GB per month
Level 3: Greater than 10 GB per month

One-time charges (such as activation fees) are generally excluded.

6.2 Canadian Mobile Internet Service Prices

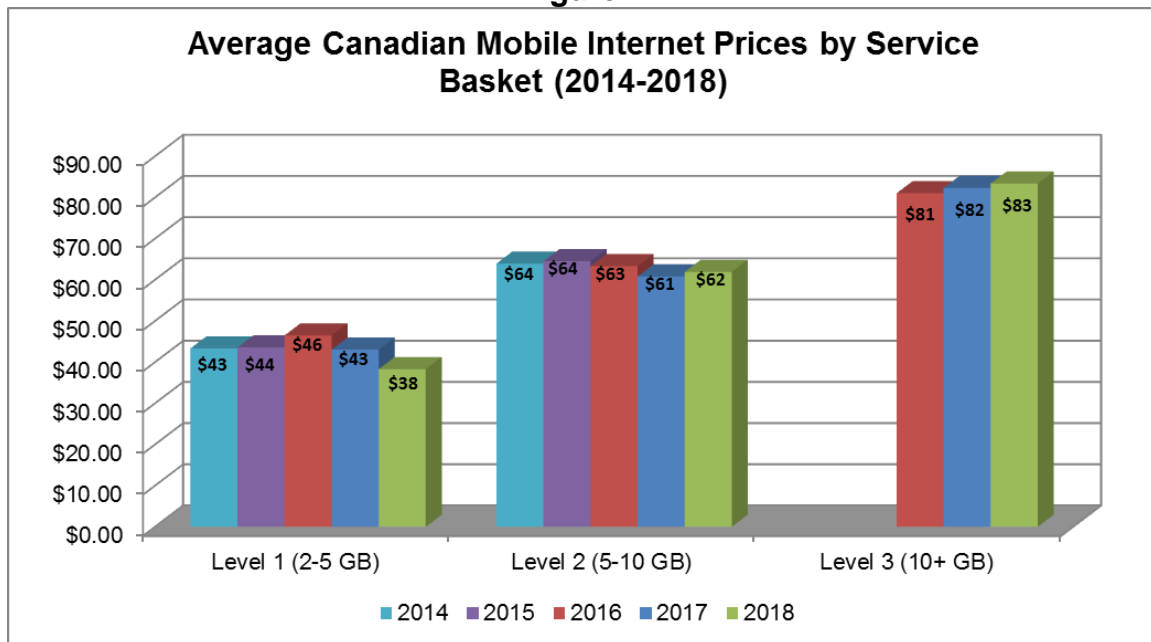
Figure 7 below provides a summary of Canadian Level 1 through 3 mobile Internet service basket prices for the periods 2016 to 2018. More detailed price information by city is provided in Table A2.5 of Attachment 2.

- Level 1 mobile Internet service price decreased from \$43.01 in 2017 to \$38.28 in 2018, a decrease of 11%. Level 1 prices were fairly consistent across the country, ranging from a low of \$37.36 in BC to \$41.96 in Nova Scotia. Most Level 1 service plans included 2 or 3 GB of data allowance per month. Download speeds generally ranged from 75 bps to 150 Mbps. Prices have generally trended downwards for the Level 1 basket since 2010.

³¹ Advertised versus actual average speeds can vary significantly in the case of mobile wireless services. Actual average speeds are sensitive to local network usage levels and users locations, among other factors. Some wireless service providers include theoretical maximum speeds in their advertising, while others use or least also note expected average speeds in their advertising. Consequently, comparing service speeds across service providers and countries is not straightforward even when the same mobile wireless technology is in use.

- The Level 2 price increased slightly from \$60.79 in 2017 to \$61.90 in 2018. Level 2 prices had very little variation from province to province with the exception of Saskatchewan, who offered a plan at \$37.63 (in contrast to all other plans in the low \$60s). The Level 2 plans mostly included data allowances of 5 or 6 GB per month.
- The 2017 Level 3 national price of \$82.28 increased slightly to \$83.35 in 2018. Once again, Saskatchewan was significantly lower than other provinces with a price of \$51.98 (versus prices in other regions in the \$83 to \$85 range).

Figure 7



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The advertised download speed of the mobile Internet services included in this year's study typically varies between 75 Mbps and 150 Mbps. Freedom is atypical with an offering of 21 Mbps.

A comparison of the mobile Internet service rates offered by the incumbents (Rogers, Bell and TELUS) and Regionals (SaskTel, MTS, Freedom, Videotron and Eastlink), as applicable, in the cities of Vancouver, Toronto, Montreal, Winnipeg, Regina and Halifax is provided in Table 17. The Incumbents offer the same price in each province/city and therefore the average price is consistent across the country.

For the Level 1 mobile Internet service basket, the Regionals' prices are roughly 18% lower than the incumbents on average. For the Level 2 service basket, the differential is 19%. For Level 3, the price differential is 20%. No comparison with

resellers was conducted due to the very few number of reseller offerings (i.e. only a few instances in Level 1).

Table 17
Incumbents versus Regionals

	NS	QC	ON	MB	SK	BC	Canada
Level 1							
Incumbents	\$39.03	\$39.03	\$39.03	\$39.03	\$39.03	\$39.03	\$39.03
Regionals	n/a	\$42.29	\$20.00	\$45.00	N/A	\$20.00	\$31.82
Differential	n/a	8.36%	-48.75%	15.30%	n/a	-48.75%	-18.46%
Level 2							
Incumbents	\$62.36	\$62.36	\$62.36	\$62.36	\$62.36	\$62.36	\$62.36
Regionals	n/a	\$62.29	n/a	\$65.00	\$24.17	n/a	\$50.49
Differential	n/a	-0.11%	n/a	4.23%	-61.25%	n/a	-19.04%
Level 3							
Incumbents	\$84.03	\$84.03	\$84.03	\$84.03	\$84.03	\$84.03	\$84.03
Regionals	n/a	\$82.29	n/a	\$85.00	\$34.17	n/a	\$67.15
Differential	n/a	-2.07%	n/a	1.16%	-59.34%	n/a	-20.08%

Unweighted averages

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Compared to last year, the Regionals' mobile Internet price discounts relative to the Incumbents have declined. While differentials varied last year from 23% to 27%, the differentials in 2018 vary between 18% and 20%. The reduced price differential between Regionals and Incumbents is primarily due to Regional prices increasing in 2018 relative to 2017 (for Levels 2 and 3) and Incumbents' prices decreasing year over year for Level 1.

6.3 International Mobile Internet Service Prices

Table 18 provides a summary of the average Level 1 to Level 3 advertised download speeds and data caps for Canada and each of the seven surveyed foreign jurisdictions. Upload speeds are often not advertised by wireless service providers and, therefore, are not included in the table.

Table 18
2018 International Mobile Internet Services
Average Advertised Speeds and Data Caps

	B1	B2	B3
Canada Average	91 mbps (2.7G)	104 mbps (5.3G)	112 mbps (10G)
US Av.	12 mbps (2.5G)	12.8 mbps (7G)	12.2 mbps (30G)
UK Av.	24 mbps (2G)	24 mbps (5G)	24 mbps (14G)
AUS Av	40 mbps (3G)	40 mbps (8G)	40 mbps (30G)
FR Av	71 mbps (2G)		71 mbps (15G)
JA Av	223 mbps (2.5G)	175 mbps (5.7G)	225 mbps (20G)
GRM Av	38 mbps (2.3G)	96 (mbps 5.5G)	85.8 mbps (11G)
IT Av	123 mbps (4G)	103 mbps (10G)	87 mbps (27G)

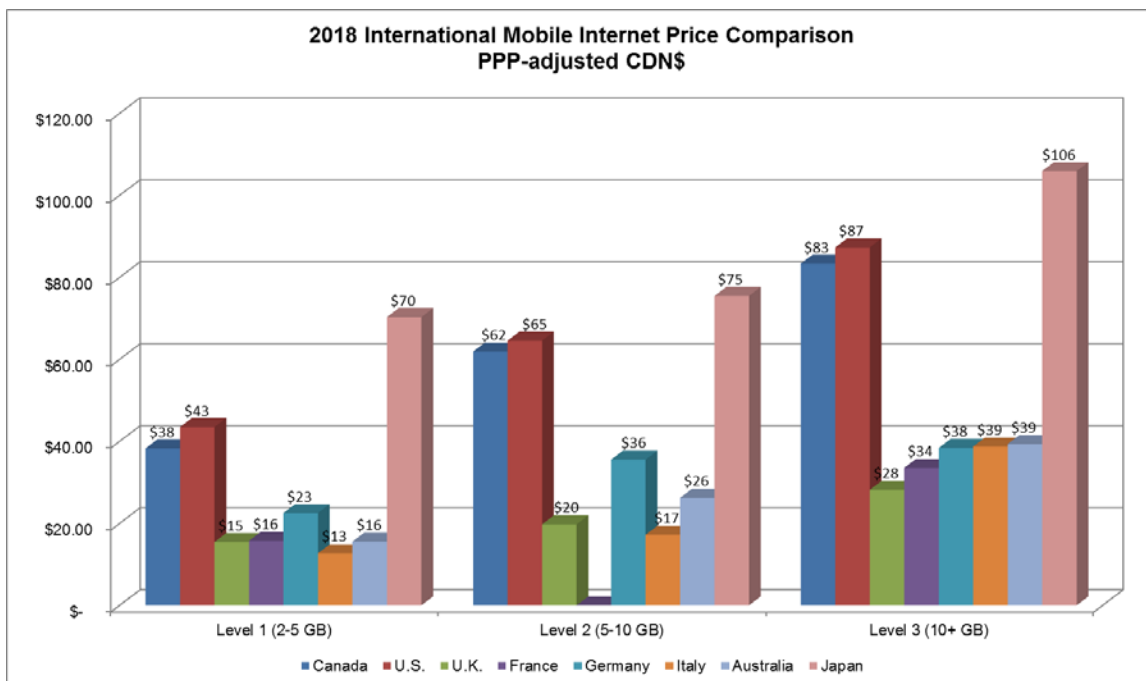
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Canada is generally at the high end of download speed in each basket but tends to be at the low end for data cap limits in basket 2 and 3.

Figure 8 below provides a comparison of Level 1 to Level 3 mobile Internet service basket prices for Canada and the surveyed foreign jurisdictions. Table A3.4 and Figures A3.4 (a and b) in Attachment 3 provide detailed historical mobile Internet price results.

- In the case of the Level 1 mobile Internet service basket, the average Canadian price of \$38.22 is well above the average price for the other surveyed countries of roughly \$27.97. Overall, Canada ranks sixth among the eight countries in the study for this basket. Only the average Level 1 basket prices for U.S. and Japan are higher than Canada. Prices in all four surveyed European countries as well as Australia are considerably lower than Canada.
- For the Level 2 service basket, the average Canadian mobile Internet price of \$61.90 is once again considerably higher than the average for the other countries of roughly \$40. In this case, Canada again ranks sixth overall, with the U.S. and Japan placing higher. Prices in the European countries are generally much lower.
- In Level 3, the narrative is repeated, with Canada being on the high price end – the US and Japan again higher than Canada but the European countries (and Australia) being much lower.

Figure 8



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Relative to previous years' studies, Canada's mobile Internet service basket rankings have largely remained stable. Canada has ranked on the high side of the group, generally close to or below the U.S. and Japan. On the other hand, Australia and the European countries included in the study have consistently had lower prices for both baskets compared to Canada – by a substantial margin in many cases.

As a point of interest, the major US mobile wireless providers have begun offering widely available “hotspot” service across their wireless networks. The “hotspot” services essentially are a substitute for a mobile wireless Internet service for laptops and related devices. These added services are typically free when a customer purchases an “unlimited data” plan from the operator. Separate mobile data services are also available for lower level plans for a cost.

In sum, Canada's average mobile Internet service prices fall on the high side of the group of surveyed countries.

7.0 BUNDLED SERVICES

7.1 Bundled Service Baskets

In previous Price Comparison Reports, three bundled service baskets were included in the study:

- Bundle 1: wireline telephony, broadband Internet and a mobile service
- Bundle 2: wireline telephony, broadband Internet and digital TV package
- Bundle 3: wireline telephony, broadband Internet, mobile wireless and digital TV package

Two significant changes are made in the 2018 Report. Bundle 1 has been modified this year to only include Broadband Internet and TV. The reason for the adjustment is that bundles of wireline telephony, wireline broadband Internet and mobile wireless are rarely found in Canada (and internationally). Bundles of broadband and TV are prevalent, however, and therefore Bundle 1 now is a two service bundle of Broadband and TV.³²

The second significant change relates to comparisons of bundle prices only in North America (i.e. the US and Canada). There are two reasons for the change: first, bundling seems to have become a tool to sell higher-end services (as opposed to lower end or “average consumer” baskets). As such, the Bundle definitions used in past Reports (which were targeted at “average” consumption levels) do not result in many market observations, particularly outside of North America. Second, most European (and Australia and Japan) bundles that include TV have a fundamentally different TV service offering than in Canada (and, to a somewhat lesser extent, the US).

The 2018 Bundles are:

- **Bundle 1:** broadband Internet and TV
- **Bundle 2:** wireline telephony, broadband Internet and digital TV package
- **Bundle 3:** wireline telephony, broadband Internet, mobile wireless and digital TV package

³² Consequently comparisons of Bundle 1 prices over time are invalid, at least with respect to 2018 versus other years.

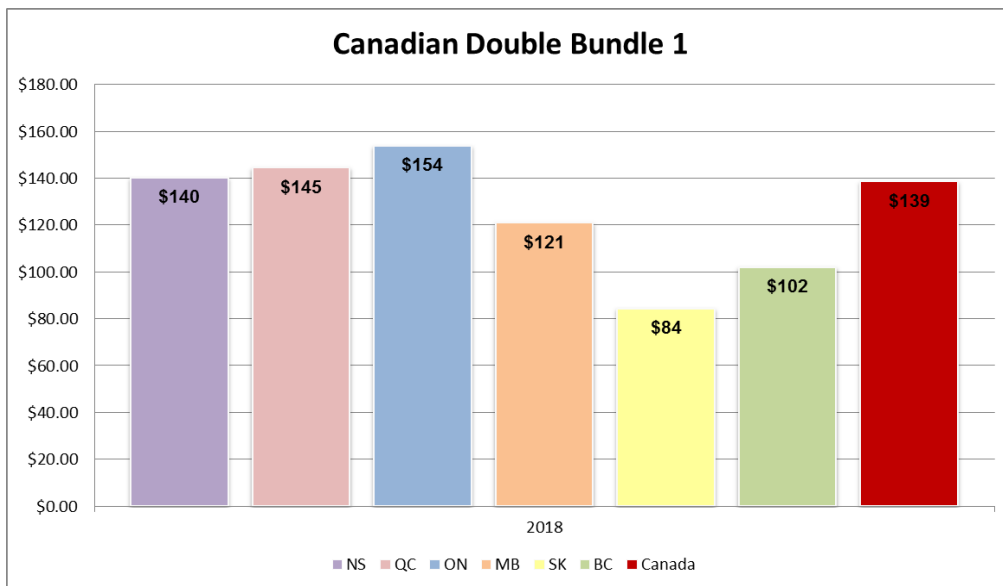
For the wireline telephony, Internet and mobile wireless service elements in each bundle, Level 2 stand-alone service options are used. For the digital TV service element, a "basic" digital TV service option is included in the bundle. In a limited number of cases where Level 2 service options were not available or eligible for bundling discounts, higher-level service options (e.g., Level 3 or 4) have been included.

7.2 Canadian Bundled Service Prices

Canadian prices for Bundle 1 have considerable variation across the country. While Nova Scotia, Ontario and Quebec prices are relatively similar (ranging from about \$140 to \$154), prices in the other three regions are considerably lower. The lowest price is found in Saskatchewan at \$84.45, with BC at \$102.09 and Manitoba at \$121.08.

As noted earlier, lower end services are often not offered in bundles – and this tends to be the case for TV services in Canada. While most providers offer a Basic digital TV service on a standalone basis, such low end products are rare in a pre-packaged bundle.³³ Consequently, the TV offering found in Canadian bundle 1 packages are often much more extensive than a bare bones service. Bundle 1 in Saskatchewan is an exception, offering a basic TV service in the bundle. Regions that have higher Bundle 1 prices typically find providers offering higher-end TV packages in the pre-packaged bundle.

Figure 9



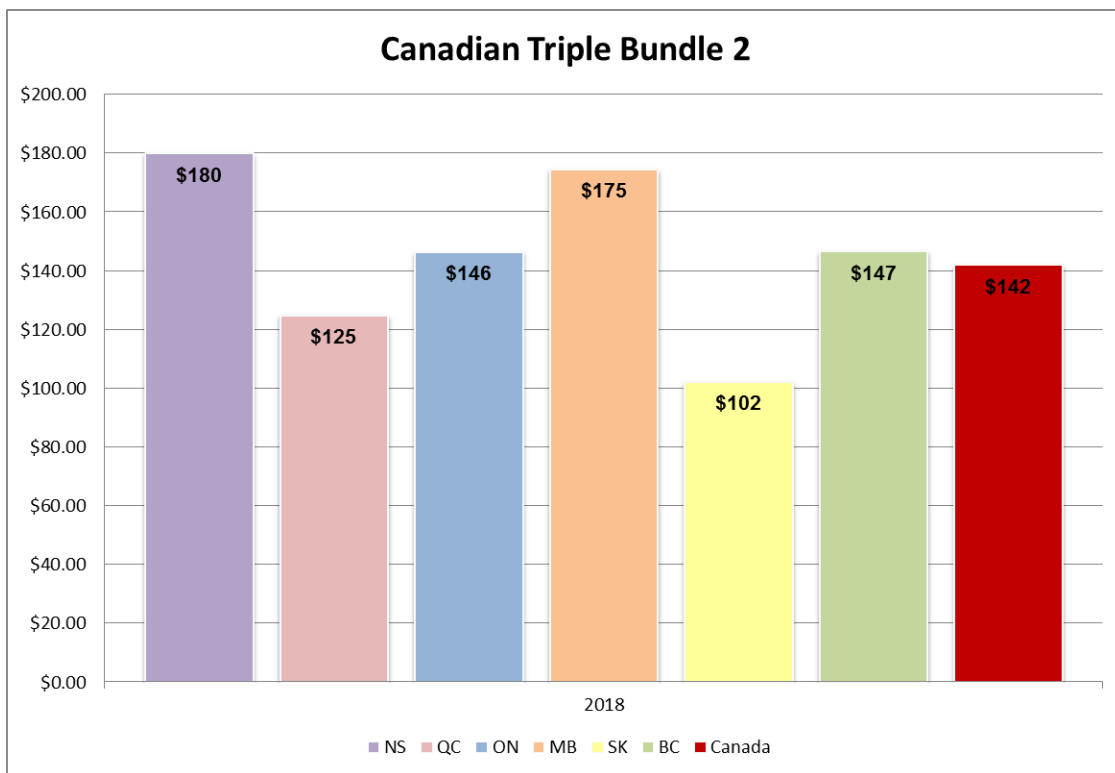
³³ Some providers do let customers customize their bundles, but again, lower-end services (such as Basic TV) often do not qualify for significant (or any) price discount. Customization of bundles is difficult on vendor websites and typically requires a customer to personally contact a sales representative and to provide a home address and other information.

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The average price for a Bundle 1 (fixed broadband internet service with digital TV) in Canada is \$139.

Bundle 2 is comprised of a wireline telephone service, fixed broadband Internet and a TV service. Again there is considerable price variation between regions, with Nova Scotia at the high end with an average price of \$179.95 and Saskatchewan on the low end with a price of \$102.22. The average price is \$142.07.

Figure 10

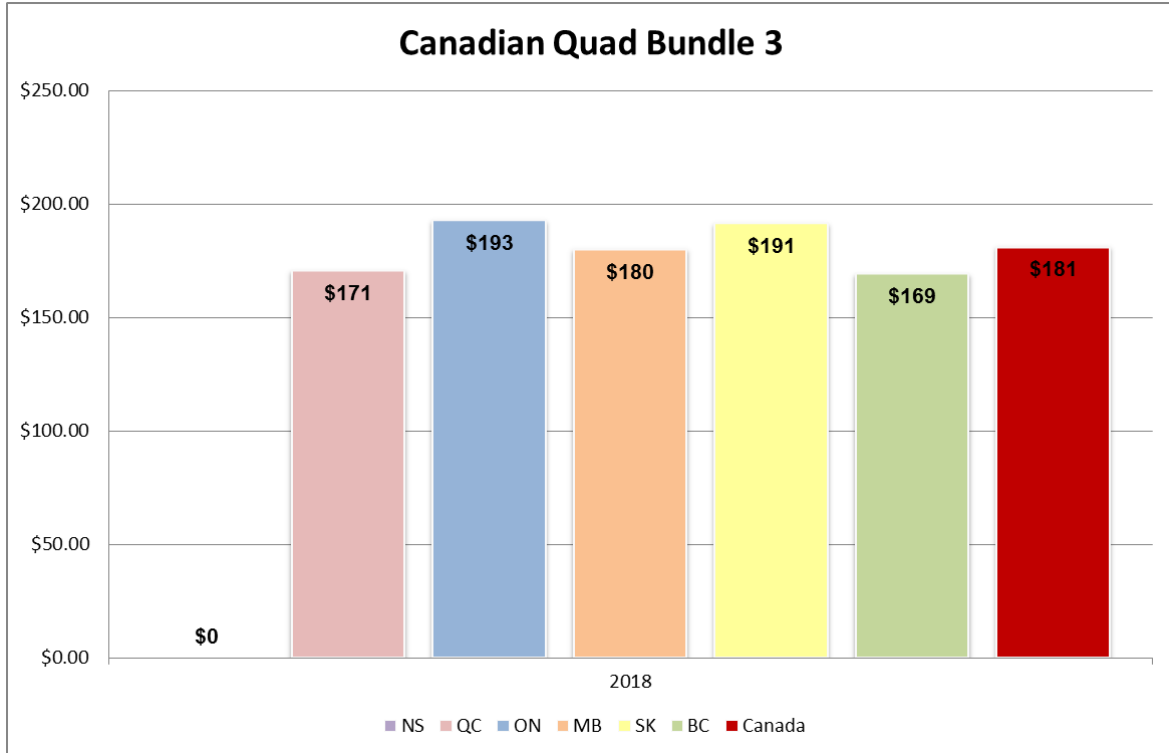


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Bundle 3 has four service elements: wireline telephony, fixed broadband Internet, TV and mobile telephony. Not all regions have a provider that offers a bundle with all four services (e.g. Nova Scotia) and some regions allow you to add a mobile service to an existing bundle (although a discount isn't always offered or clearly specified).

Regional prices tend to be more uniform for Bundle 3, varying between \$169 and \$193.

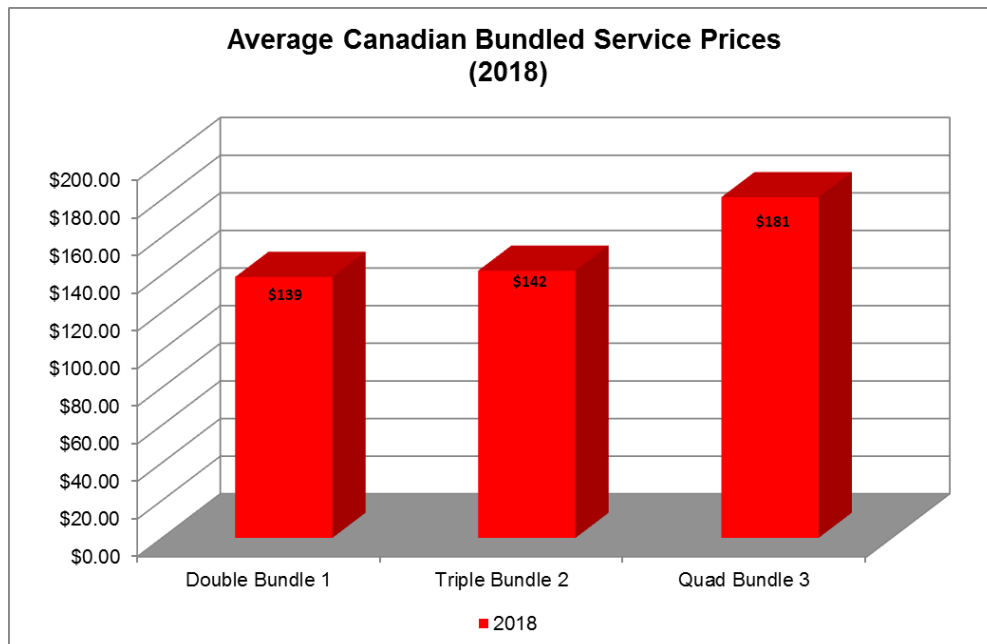
Figure 11



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Average Canadian prices for the three bundles varied from \$139 (Bundle 1) to \$181 for Bundle 3.

Figure 12

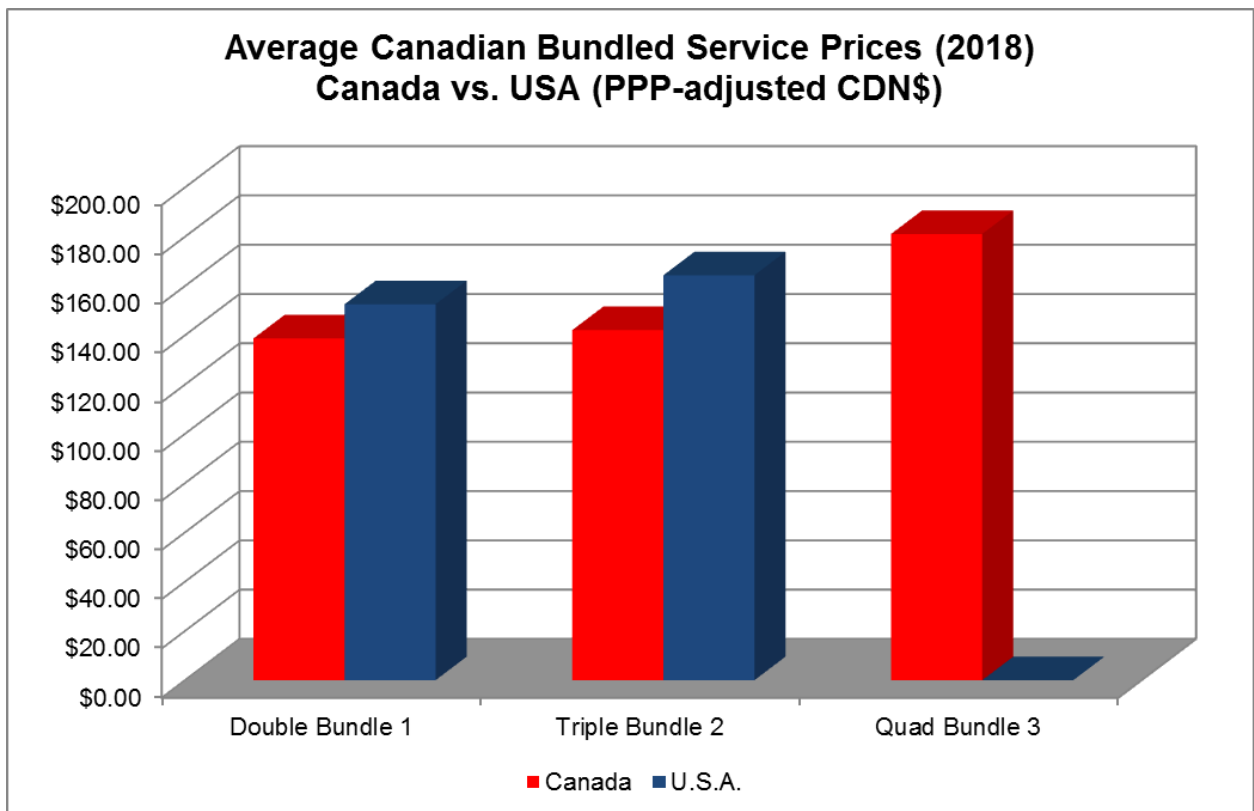


7.3 Canada Versus US Bundled Service Prices

Much like the Canadian regional price variations, comparisons of Canadian and US bundle prices should be made cautiously since often the service elements (particularly for the TV service) can vary significantly.

In the case of Bundle 1 (fixed broadband and TV), the PPP-adjusted average price in the US is \$153 versus the Canadian average price of \$139. Similarly, the average price for Bundle 2 (wireline telephone, fixed broadband and TV) in the US (at \$164) is somewhat higher than the average Canadian price of \$142. Bundle 3 observations in the US were too limited to generate a meaningful price index.³⁴

Figure 13



³⁴US Bundle 3 observations typically did not allow for inclusion of a mobile wireless service in the advertised bundle. In some cases, mobile wireless could be added to a bundle on a custom basis, but not at any apparent discount.

ATTACHMENT 1 – SERVICE BASKETS

**TABLE A1.1
WIRELINE SERVICE BASKETS**

Local Minutes of Use	Level 1	Level 2	Level 3
Outgoing (55%)	220	550	880
Incoming (45%)	180	450	720
Total Minutes	400	1,000	1,600
Outgoing by Time of Day/Week			
Peak (40%)	88	220	352
Off-Peak (60%)	132	330	528
Outgoing LD	10% of total	20% of total	30% of total
National Minutes	16	70	150
U.S. Minutes	6	30	80
Other Int'l Minutes		10	34
Total	22	110	264
Outgoing to Mobile	15% of total	15% of total	15% of total
Local	33	60	100
National		22.5	32
International			
Total	33	82.5	132
Average Call Length	3	3	3
Optional Features			
Voice Mail		Yes	Yes
Caller ID		Yes	Yes
Other			Yes (bundled, if available)

**TABLE A1.2
MOBILE WIRELESS SERVICE BASKETS**

Minutes of Use/Month	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Outgoing (60%)	90	270	720	Unlimited Nationwide (to fixed and mobile)	Unlimited Nationwide (to fixed and mobile)	Shared Family Plan (3 phones) 10 to 49 GB
Incoming (40%)	60	180	480			
Total	150	450	1,200			
Time of Day/Week						
Peak (40%)	60	180	480	NA	NA	NA
Off-Peak (60%)	90	270	720			
Outgoing LD	10% of total	10% of total	15% of total	NA (zero International calling)	NA (zero International calling)	NA (zero International calling)
National	9	21	90			
Other						
Total	9	21	90			
Outgoing to Mobile	50% of total	50% of total	50% of total	NA	NA	NA
On-net (2/3)	30	90	240			
Off-net (1/3)	15	45	120			
Total	45	135	360			
Average Call Length	3 min.	3 min.	3 min.	NA	NA	NA
Features						
Voice Mail		Yes	Yes	Yes	Yes	Yes
Caller ID		Yes	Yes	Yes	Yes	Yes
Other			Yes			Yes

Minutes of Use/Month	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
SMS		300	300	Unlimited	Unlimited	Unlimited
Data			1 GB target	2 GB target	5 to 9 GB	10 to 49 GB

**TABLE A1.3
BROADBAND INTERNET SERVICE BASKETS**

Elements	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Transmission Speed	Basic Services 3 to 9 Mbps	10 – 15 Mbps (highest available)	16 – 40 Mbps (highest available)	40 to 100 Mbps (highest available in target range of 41 to 100 Mbps)	101 to 250 Mbps	251 to 500 Mbps
Monthly Usage	10 GB	50 GB	100 GB	150 GB	500 GB	500 GB to Unlimited
	Modem rental cost or 24 month amortization	Modem rental cost or 24 month amortization	Modem rental cost or 24 month amortization	Modem rental cost or 24 month amortization	Modem rental cost or 24 month amortization	Modem rental cost or 24 month amortization

**TABLE A1.4
MOBILE INTERNET SERVICE BASKETS**

Elements	Level 1	Level 2	Level 3
Monthly Usage	2 to 5 GB	5 to 10 GB	> 10 GB
Transmission Speed	(3G technology or higher)		(3G technology or higher)
USB Modem	No cost with contract or rental / 24 month amortization		No cost with contract or rental / 24 month amortization

**TABLE A1.5
BUNDLED SERVICE BASKETS**

Elements	Bundle 1 Double-play	Bundle 2 Triple-play	Bundle 3 Quad-Play
Wireline		Wireline Level 2	Wireline Level 2
Mobile Wireless			Wireless Level 2
Broadband Internet	Broadband Level 2	Broadband Level 2	Broadband Level 2
Television	Basic Digital TV Package	Basic Digital TV Package	Basic Digital TV Package

Note that where Level 2 service options are not eligible for bundling discounts, higher level services (i.e., Level 3 or 4) may be included in a bundle as long as the resulting bundled price is lower than the sum of the corresponding stand-alone Level 2 service component prices.

ATTACHMENT 2 – CANADIAN PRICE COMPARISONS

Table A2.1 - Canadian Wireline Prices

Wireline Level 1

Year	NS	QC	ON	MB	SK	BC	Canada	
2008	\$31.73	\$30.27	\$31.61	\$30.49	\$28.16	\$30.90	\$30.88	
2009	\$32.23	\$28.92	\$32.51	\$30.48	\$28.16	\$25.92	\$29.80	-3.50%
2010	\$30.08	\$29.39	\$33.88	n/a	\$26.49	\$28.27	\$31.16	4.60%
2011	\$31.79	\$27.33	\$34.63	n/a	\$26.52	\$34.52	\$32.06	2.90%
2012	\$31.89	\$31.31	\$35.30	n/a	\$26.76	\$33.16	\$33.42	4.20%
2013	\$32.04	\$32.85	\$38.45	n/a	\$26.86	\$33.12	\$35.33	5.70%
2014	\$33.06	\$37.10	\$44.24	n/a	\$27.17	\$31.45	\$38.99	10.40%
2015	\$35.07	\$38.47	\$47.30	\$36.73	\$27.34	\$31.39	\$40.64	4.20%
2016	\$38.29	\$36.41	\$45.42	\$40.30	\$24.50	\$31.55	\$39.52	-2.80%
2017	\$42.06	\$42.30	\$49.52	\$34.53	\$22.30	\$32.69	\$42.94	8.60%
2018	\$43.23	\$39.92	\$51.23	\$37.80	\$25.35	\$33.45	\$43.40	1.07%
CAGR	3.14%	2.81%	4.95%	2.17%	-1.05%	0.80%	3.46%	

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Wireline Level 2

Year	NS	QC	ON	MB	SK	BC	Canada	
2008	\$48.93	\$45.44	\$48.96	\$50.61	\$41.39	\$48.67	\$47.91	
2009	\$53.61	\$52.01	\$57.78	\$51.35	\$41.39	\$34.68	\$50.05	-3.50%
2010	\$50.78	\$46.81	\$58.09	n/a	\$41.50	\$44.18	\$51.42	4.60%
2011	\$47.34	\$46.72	\$54.66	n/a	\$41.52	\$44.62	\$49.81	2.90%
2012	\$49.05	\$48.55	\$57.08	n/a	\$41.71	\$45.19	\$51.71	4.20%
2013	\$51.56	\$54.58	\$62.50	n/a	\$39.94	\$43.63	\$55.77	5.70%
2014	\$55.19	\$52.26	\$61.77	n/a	\$39.97	\$41.11	\$54.37	10.40%
2015	\$59.57	\$59.83	\$64.88	\$58.23	\$40.81	\$47.69	\$59.44	4.20%
2016	\$61.07	\$55.43	\$61.49	\$54.35	\$39.20	\$43.56	\$55.78	-2.80%
2017	\$71.20	\$58.12	\$66.70	\$53.87	\$35.10	\$50.30	\$60.21	8.60%
2018	\$70.83	\$56.01	\$67.32	\$55.63	\$40.20	\$49.54	\$59.90	-0.51%
CAGR	3.77%	2.11%	3.24%	0.95%	-0.29%	0.18%	2.26%	

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Wireline Level 3

Year	NS	QC	ON	MB	SK	BC	Canada	
2008	\$60.63	\$59.36	\$63.02	\$60.47	\$49.81	\$57.45	\$60.27	
2009	\$66.34	\$61.68	\$67.59	\$59.47	\$49.56	\$51.51	\$61.55	2.10%
2010	\$67.02	\$61.15	\$64.19	n/a	\$48.96	\$51.79	\$60.78	-1.30%
2011	\$58.35	\$60.97	\$61.36	n/a	\$48.99	\$57.59	\$60.22	-0.90%
2012	\$60.33	\$59.08	\$65.97	n/a	\$49.66	\$50.62	\$60.52	0.50%
2013	\$64.58	\$60.94	\$65.84	n/a	\$49.11	\$52.69	\$61.53	1.70%
2014	\$67.85	\$58.95	\$65.80	n/a	\$49.03	\$48.91	\$60.29	-2.00%
2015	\$69.70	\$66.89	\$68.89	\$65.87	\$48.98	\$52.66	\$64.96	7.70%
2016	\$71.38	\$61.60	\$65.77	\$55.29	\$46.91	\$45.98	\$60.32	-7.10%
2017	\$81.94	\$59.65	\$68.01	\$58.55	\$42.45	\$50.60	\$61.98	2.70%
2018	\$80.91	\$60.29	\$68.21	\$65.33	\$47.38	\$51.30	\$62.79	1.31%
CAGR	2.93%	0.16%	0.79%	0.78%	-0.50%	-1.13%	0.41%	

Wall Communications 2018

Table A2.2 - Canadian Mobile Wireless Prices
Based on Incumbent Primary Brand, Flanker, Regional and Reseller Prices

Mobile Wireless Level 1

	NS	QC	ON	MB	SK	BC	Canada	YoY%
2008	\$33.25	\$31.96	\$33.55	\$31.44	\$30.16	\$32.90	\$32.73	
2009	\$32.48	\$33.24	\$33.34	\$31.85	\$29.44	\$33.32	\$33.03	0.90%
2010	\$29.23	\$34.38	\$34.33	n/a	\$28.64	\$34.10	\$34.03	3.00%
2011	\$29.24	\$34.47	\$34.45	n/a	\$29.59	\$31.94	\$33.73	-0.90%
2012	\$29.75	\$34.72	\$34.44	n/a	\$29.66	\$34.58	\$34.32	1.80%
2013	\$30.76	\$30.63	\$31.09	n/a	\$28.88	\$30.06	\$30.71	-10.50%
2014	\$36.50	\$36.28	\$35.04	n/a	\$35.05	\$36.29	\$35.70	16.30%
2015	\$37.37	\$37.46	\$37.54	\$32.98	\$32.43	\$38.21	\$37.29	4.40%
2016	\$40.62	\$40.46	\$41.71	\$38.98	\$36.12	\$41.79	\$41.08	10.20%
2017	\$29.74	\$28.95	\$31.71	\$29.90	\$30.57	\$30.50	\$30.53	-25.70%
2018	\$26.11	\$25.84	\$24.98	\$30.24	\$28.82	\$25.60	\$25.73	-15.72%
CAGR	-2.39%	-2.10%	-2.91%	-0.39%	-0.45%	-2.48%	-2.38%	

Wall Communications 2018

Mobile Wireless Level 2

	NS	QC	ON	MB	SK	BC	Canada	YoY%
2008	\$53.14	\$62.62	\$63.37	\$51.91	\$61.20	\$58.34	\$60.81	
2009	\$48.73	\$59.17	\$59.20	\$50.49	\$44.44	\$59.30	\$57.78	-5.00%
2010	\$48.05	\$54.34	\$53.56	n/a	\$44.77	\$53.74	\$53.49	-7.40%
2011	\$47.39	\$51.50	\$49.99	n/a	\$48.19	\$50.86	\$50.51	-5.60%
2012	\$47.22	\$51.04	\$51.97	n/a	\$42.54	\$51.61	\$51.31	1.60%
2013	\$43.44	\$44.78	\$45.40	n/a	\$44.86	\$43.93	\$44.86	-12.60%
2014	\$45.40	\$45.59	\$44.29	n/a	\$54.29	\$46.20	\$45.26	0.90%
2015	\$48.45	\$49.04	\$48.15	\$46.65	\$56.70	\$49.28	\$48.68	7.60%
2016	\$49.56	\$44.39	\$50.96	\$46.98	\$49.38	\$50.89	\$48.77	0.20%
2017	\$41.03	\$38.62	\$41.85	\$36.40	\$35.91	\$44.40	\$40.95	-16.00%
2018	\$42.39	\$36.69	\$40.42	\$39.25	\$36.71	\$41.28	\$39.43	-3.72%
CAGR	-2.23%	-5.21%	-4.40%	-2.76%	-4.98%	-3.40%	-4.24%	

Wall Communications 2018

Mobile Wireless Level 3

	NS	QC	ON	MB	SK	BC	Canada	YoY%
2008	\$121.04	\$113.21	\$111.51	\$111.51	\$113.67	\$109.68	\$112.34	
2009	\$105.61	\$104.38	\$102.20	\$112.82	\$94.64	\$101.24	\$103.24	-8.10%
2010	\$101.44	\$108.37	\$112.63	n/a	\$94.97	\$107.27	\$109.59	6.20%
2011	\$96.73	\$98.73	\$100.76	n/a	\$96.69	\$99.61	\$99.69	-9.00%
2012	\$96.44	\$98.92	\$98.26	n/a	\$96.42	\$98.22	\$98.37	-1.30%
2013	\$94.40	\$93.78	\$93.89	n/a	\$77.07	\$93.96	\$93.59	-4.90%
2014	\$86.91	\$73.59	\$81.00	n/a	\$65.33	\$86.46	\$79.69	-14.90%
2015	\$86.76	\$82.96	\$87.36	\$73.54	\$72.56	\$88.32	\$85.22	6.90%
2016	\$79.29	\$62.98	\$80.48	\$69.86	\$71.59	\$80.48	\$74.67	-6.30%
2017	\$80.73	\$59.05	\$75.63	\$58.18	\$62.88	\$80.43	\$70.70	-5.30%
2018	\$83.13	\$45.91	\$84.76	\$50.42	\$61.35	\$83.67	\$70.99	0.41%
CAGR	-3.69%	-8.63%	-2.71%	-7.63%	-5.98%	-2.67%	-4.49%	

Wall Communications 2018

Mobile Wireless Level 4

	NS	QC	ON	MB	SK	BC	Canada	YoY%
2014	\$89.23	\$92.29	\$92.81	n/a	\$65.62	\$97.69	\$92.99	
2015	\$91.23	\$76.22	\$87.83	\$61.82	\$64.43	\$89.78	\$83.08	-10.70%
2016	\$88.73	\$69.98	\$87.69	\$63.69	\$68.15	\$88.24	\$81.05	-2.40%
2017	\$93.98	\$68.26	\$87.45	\$67.04	\$56.43	\$93.74	\$81.61	0.70%
2018	\$86.48	\$57.95	\$85.23	\$52.77	\$78.48	\$85.09	\$75.44	-7.56%
CAGR	-0.78%	-10.98%	-2.11%	-5.14%	4.57%	-3.39%	-5.09%	

Wall Communications 2018

Mobile Wireless Level 5

	NS	QC	ON	MB	SK	BC	Canada	YoY%
2015	\$122.21	\$94.67	\$117.93	\$65.76	\$65.62	\$117.65	\$107.50	
2016	\$109.64	\$79.44	\$105.81	\$70.38	\$82.15	\$109.11	\$96.55	-10.20%
2017	\$105.89	\$87.09	\$113.95	\$74.71	\$74.06	\$121.49	\$104.49	8.20%
2018	\$101.67	\$65.27	\$99.69	\$61.56	\$66.68	\$100.76	\$87.32	-16.43%
CAGR	-5.95%	-11.66%	-5.45%	-2.18%	0.54%	-5.04%	-6.70%	

Wall Communications 2018

Mobile Wireless Level 6

	NS	QC	ON	MB	SK	BC	Canada	YoY%
2016	\$250.18	\$190.40	\$257.18	\$180.00	\$182.44	\$256.00	\$231.99	
2017	\$265.33	\$216.56	\$288.55	\$257.38	\$194.98	\$292.34	\$264.65	14.10%
2018	\$280.81	\$164.28	\$265.86	\$123.60	\$177.52	\$267.69	\$227.87	-13.90%
CAGR	5.94%	-7.11%	1.67%	-17.13%	-1.36%	2.26%	-0.89%	

Wall Communications 2018

Table A2.3 - Canadian Fixed Broadband Internet Service Prices

Fixed Broadband Level 1 (3-9 Mbps)

	NS	QC	ON	MB	SK	BC	Canada	YoY
2008	\$34.95	\$32.45	\$38.95	\$29.95	\$30.45	\$23.45	\$32.88	
2009	\$35.95	\$28.43	\$35.45	\$30.95	\$30.45	\$24.95	\$30.98	-5.79%
2010	\$36.95	\$29.43	\$33.45	n/a	\$30.95	\$29.00	\$31.44	1.49%
2011	\$36.15	\$36.90	\$34.15	n/a	\$32.52	\$33.00	\$34.85	10.86%
2012	\$39.15	\$33.35	\$45.37	n/a	\$31.95	\$35.40	\$39.37	12.98%
2013	\$42.15	n/a	n/a	n/a	\$31.95	\$39.00	\$38.91	-1.19%
2014	\$40.15	n/a	\$50.95	n/a	\$42.95	n/a	\$50.00	28.50%
2015	\$55.13	n/a	n/a	n/a	\$34.10	n/a	\$47.51	-4.96%
2016	\$88.73	\$41.07	\$33.63	\$55.80	\$46.95	\$51.00	\$41.94	-11.74%
2017	\$50.27	\$41.47	\$32.52	\$59.00	\$49.75	\$57.58	\$41.83	-0.25%
2018	\$39.40	\$45.19	\$39.11	\$30.61	\$46.17	\$40.01	\$40.67	-2.78%
CAGR	1.21%	3.37%	0.04%	0.22%	4.25%	5.49%	2.15%	

Wall Communications 2018

Fixed Broadband Level 2 (10-15 Mbps)

	NS	QC	ON	MB	SK	BC	Canada	YoY
2008	\$47.45	\$48.95	\$48.95	\$41.95	\$45.45	\$40.95	\$46.58	
2009	\$48.45	\$50.43	\$50.95	\$42.95	\$45.45	\$38.45	\$47.26	1.47%
2010	\$49.45	\$51.43	\$47.95	n/a	\$45.95	\$40.00	\$47.60	0.71%
2011	\$50.75	\$52.83	\$49.33	n/a	\$48.52	\$45.65	\$49.79	4.61%
2012	\$57.75	\$60.92	\$52.79	n/a	\$54.95	\$46.40	\$54.31	9.07%
2013	\$51.15	\$55.60	\$47.18	n/a	\$54.95	\$53.51	\$51.20	-5.72%
2014	\$54.95	\$53.91	\$55.25	n/a	\$54.95	\$56.68	\$55.10	7.61%
2015	\$74.45	\$54.83	\$55.17	\$59.17	\$52.88	\$59.90	\$56.66	2.84%
2016	n/a	\$51.75	\$61.92	\$62.60	\$56.95	\$62.00	\$58.88	3.91%
2017	n/a	\$53.26	\$72.14	\$66.70	\$59.75	\$69.29	\$65.54	11.31%
2018	n/a	\$56.61	\$48.33	\$76.52	\$55.34	\$74.77	\$57.36	-12.48%
CAGR	n/a	1.46%	-0.13%	6.19%	1.99%	6.21%	2.10%	

Wall Communications 2018

Fixed Broadband Level 3 (16-40 Mbps)

	NS	QC	ON	MB	SK	BC	Canada	YoY
2008	\$57.45	\$83.45	\$73.95	\$52.95	\$55.95	\$50.95	\$68.74	
2009	\$58.45	\$64.40	\$62.45	\$52.95	\$55.95	\$53.45	\$60.08	-12.60%
2010	\$59.45	\$65.40	\$62.45	n/a	\$56.45	\$55.48	\$61.88	3.00%
2011	\$60.75	\$66.33	\$65.35	n/a	\$56.75	\$55.00	\$63.44	2.52%
2012	\$88.95	\$66.95	\$72.17	n/a	\$79.95	\$54.60	\$67.94	7.09%
2013	\$77.95	\$67.05	\$64.35	n/a	\$79.95	\$60.69	\$65.18	-4.07%
2014	\$87.95	\$67.15	\$70.87	n/a	\$70.95	\$62.00	\$68.60	5.25%
2015	\$92.95	\$59.93	\$71.39	\$67.93	\$62.88	\$68.17	\$67.81	-1.15%
2016	n/a	\$56.09	\$65.20	\$70.60	\$62.95	\$69.06	\$63.48	-6.39%
2017	n/a	\$50.80	\$70.89	\$73.35	\$73.95	\$73.09	\$65.59	3.32%
2018	\$82.50	\$55.62	\$79.15	\$76.82	\$66.19	\$71.16	\$70.70	7.78%
CAGR	3.69%	-3.98%	0.68%	3.79%	1.70%	3.40%	0.28%	

Wall Communications 2018

Fixed Broadband Level 4 (41-100Mbps)

	NS	QC	ON	MB	SK	BC	Canada	YoY
2011	\$84.75	\$73.30	\$73.75	n/a	\$99.95	\$91.40	\$77.71	
2012	\$138.95	\$82.95	\$106.98	n/a	n/a	\$74.90	\$94.39	21.47%
2013	\$102.75	\$82.95	\$80.57	n/a	\$99.95	\$85.00	\$82.88	-12.19%
2014	\$99.55	\$84.75	\$86.87	n/a	\$105.95	\$86.00	\$86.46	4.31%
2015	\$99.26	\$74.51	\$79.68	\$87.10	\$105.80	\$89.79	\$80.63	-6.74%
2016	\$84.17	\$72.21	\$76.80	\$89.80	\$85.95	\$89.16	\$78.77	-2.30%
2017	\$87.22	\$78.06	\$85.51	\$90.00	\$83.95	\$79.18	\$82.54	4.79%
2018	\$95.69	\$71.14	\$95.84	\$94.14	\$96.65	\$86.67	\$87.00	5.41%
CAGR	1.75%	-0.43%	3.81%	2.63%	-0.48%	-0.76%	1.63%	

Wall Communications 2018

Fixed Broadband Level 5 (100-249 Mbps)

	NS	QC	ON	MB	SK	BC	Canada	YoY
2016	\$133.10	\$138.80	\$92.91	\$123.00	n/a	\$123.00	\$114.65	
2017	\$113.55	\$79.15	\$100.08	\$122.01	\$139.95	\$92.50	\$95.10	-17.06%
2018	\$108.62	\$87.22	\$108.90	\$116.44	\$104.95	\$107.61	\$102.76	4.78%
CAGR	-9.66%	-20.73%	8.26%	-2.70%	-25.01%	-6.47%	-5.33%	

Wall Communications 2018

Fixed Broadband Level 6 (250-500 Mbps)

	NS	QC	ON	MB	SK	BC	Canada	YoY
2018	\$125.69	\$105.45	\$135.23	n/a	\$144.95	n/a	\$123.87	
CAGR	n/a	n/a	n/a	n/a	n/a	n/a	n/a	

Wall Communications 2018

Table A2.4 - Canadian Mobile Internet Prices

Mobile Internet Level 1 (2-5 GB)

	NS	QC	ON	MB	SK	BC	Canada	YoY%
2010	\$54.15	\$54.15	\$54.15	n/a	\$56.23	\$54.16	\$54.19	
2011	\$52.32	\$52.76	\$52.17	n/a	\$53.98	\$52.22	\$52.41	-3.29%
2012	\$53.05	\$52.56	\$52.51	n/a	\$53.05	\$52.51	\$52.55	0.27%
2013	\$45.12	\$44.52	\$44.37	n/a	\$48.99	\$44.52	\$44.55	-15.22%
2014	\$43.75	\$43.22	\$43.19	n/a	\$47.08	\$43.30	\$43.30	-2.80%
2015	\$43.06	\$43.63	\$43.19	\$44.88	\$50.38	\$43.30	\$43.55	0.56%
2016	\$46.07	\$45.72	\$46.53	\$48.00	\$52.56	\$46.53	\$46.47	6.71%
2017	\$42.93	\$42.32	\$43.92	\$44.65	\$27.68	\$42.86	\$43.01	-7.44%
2018	\$41.96	\$39.43	\$37.38	\$39.10	\$41.77	\$37.36	\$38.28	-11.01%
CAGR	-3.14%	-3.89%	-4.53%	-4.49%	-3.65%	-4.54%	-4.25%	

Wall Communications 2018

Mobile Internet Level 2 (5-10 GB)

	NS	QC	ON	MB	SK	BC	Canada	YoY%
2012	\$66.38	\$60.94	\$65.59	n/a	\$69.55	\$70.22	\$65.11	
2013	\$66.79	\$59.22	\$65.21	n/a	\$70.11	\$71.28	\$64.67	-0.67%
2014	\$67.08	\$59.49	\$65.60	n/a	\$68.75	\$65.90	\$63.90	-1.19%
2015	\$65.73	\$60.57	\$65.60	\$68.63	\$71.88	\$65.90	\$64.48	0.91%
2016	\$62.47	\$62.62	\$63.19	\$66.00	\$71.31	\$63.19	\$63.30	-1.82%
2017	\$61.01	\$60.71	\$61.08	\$62.78	\$33.99	\$62.14	\$60.79	-3.98%
2018	\$62.39	\$61.98	\$62.38	\$62.80	\$37.63	\$62.52	\$61.90	1.83%
CAGR	-1.03%	0.28%	-0.83%	-2.92%	-9.73%	-1.92%	-0.84%	

Wall Communications 2018

Mobile Internet Level 3 (10+ GB)

	NS	QC	ON	MB	SK	BC	Canada	YoY%
2016	\$78.89	\$81.07	\$80.70	\$84.50	\$81.41	\$80.70	\$80.98	
2017	\$83.85	\$80.86	\$85.00	\$81.36	\$47.83	\$81.25	\$82.28	1.60%
2018	\$85.02	\$83.77	\$83.94	\$83.25	\$51.98	\$83.94	\$83.35	1.30%
CAGR	3.81%	1.65%	1.99%	-0.74%	-20.09%	1.99%	1.45%	

Wall Communications 2018

Table A2.5 - Canadian Bundled Service Prices

Double (Fixed Broadband and TV) Bundle 1

	NS	QC	ON	MB	SK	BC	Canada	YoY%
2018	\$140.30	\$144.65	\$153.95	\$121.08	\$84.45	\$102.09	\$138.67	
CAGR	0.03%	0.21%	0.11%	-0.32%	-4.93%	-3.93%	-0.58%	

Wall Communications 2018

Triple (Fixed Broadband, TV and Wireline Telephone) Bundle 2

	NS	QC	ON	MB	SK	BC	Canada	YoY%
2008	\$124.71	\$118.68	\$126.54	\$114.83	\$112.13	\$111.40	\$119.93	
2009	\$121.14	\$123.46	\$129.71	\$121.76	\$115.13	\$110.31	\$122.43	2.08%
2010	\$120.37	\$116.94	\$123.39	n/a	\$119.47	\$108.36	\$118.41	-3.28%
2011	\$121.46	\$119.09	\$129.92	n/a	\$127.52	\$112.05	\$122.87	3.77%
2012	\$124.19	\$127.91	\$135.81	n/a	\$131.56	\$111.81	\$128.44	4.53%
2013	\$127.95	\$139.67	\$140.25	n/a	\$133.57	\$111.87	\$134.19	4.48%
2014	\$144.34	\$134.74	\$145.16	n/a	\$124.63	\$123.57	\$137.51	2.48%
2015	\$171.00	\$139.37	\$147.79	\$124.39	\$124.66	\$121.95	\$139.78	1.65%
2016	\$159.60	\$130.85	\$142.16	\$141.65	\$105.39	\$124.25	\$135.60	-2.99%
2017	\$152.10	\$104.45	\$118.38	\$130.35	\$105.97	\$147.25	\$120.99	-10.77%
2018	\$179.95	\$124.85	\$146.49	\$174.50	\$102.22	\$146.58	\$142.07	17.42%
CAGR	3.74%	0.51%	1.47%	4.27%	-0.92%	2.78%	1.71%	

Wall Communications 2018

Quad Bundle 3

	NS	QC	ON	MB	SK	BC	Canada	YoY%
2008	\$178.86	\$182.13	\$183.94	\$153.06	\$148.97	\$186.47	\$181.31	
2009	\$169.03	\$181.24	\$182.81	\$168.21	\$142.07	\$151.22	\$172.68	-4.76%
2010	\$169.19	\$168.65	\$169.82	n/a	\$145.81	\$158.98	\$167.01	-3.28%
2011	\$170.01	\$164.24	\$177.48	n/a	\$160.04	\$150.77	\$167.81	0.48%
2012	\$171.85	\$171.99	\$179.85	n/a	\$181.58	\$166.61	\$174.71	4.11%
2013	\$165.50	\$179.99	\$183.73	n/a	\$186.56	\$155.97	\$176.80	1.19%
2014	\$180.02	\$179.87	\$186.56	n/a	\$167.45	\$174.55	\$181.70	2.77%
2015	\$217.93	\$186.00	\$195.47	\$154.39	\$170.48	\$176.51	\$187.33	3.09%
2016	\$206.09	\$177.55	\$195.41	\$186.80	\$137.22	\$172.50	\$185.06	-1.21%
2017	\$231.18	\$166.07	\$210.53	\$166.36	\$222.22	\$227.50	\$199.19	7.63%
2018	n/a	\$170.65	\$192.74	\$180.00	\$191.49	\$169.16	\$181.11	-9.08%
CAGR	2.89%	-0.65%	0.47%	1.63%	2.54%	-0.97%	-0.01%	

Wall Communications 2018

ATTACHMENT 3 – INTERNATIONAL PRICE COMPARISONS

Table A3.1 - International Mobile Wireless Prices

Mobile Wireless Level 1 (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2008	\$32.73	\$40.92	\$21.96	\$26.57	\$23.55	n/a	n/a	n/a
2009	\$33.03	\$42.51	\$19.98	\$24.33	\$25.37	n/a	n/a	n/a
2010	\$34.03	\$40.43	\$18.96	\$23.31	\$26.54	n/a	n/a	\$24.20
2011	\$33.73	\$33.38	\$20.95	\$18.64	\$26.13	n/a	n/a	\$25.29
2012	\$34.32	\$33.78	\$22.44	\$17.21	\$24.09	n/a	n/a	\$25.53
2013	\$30.71	\$33.08	\$21.82	\$21.97	\$20.24	n/a	n/a	\$28.09
2014	\$35.70	\$30.34	\$25.28	\$26.46	\$20.75	\$10.85	\$16.68	\$28.88
2015	\$37.29	\$37.04	\$25.35	\$23.50	\$14.26	\$12.15	\$15.23	\$27.23
2016	\$41.08	\$27.00	\$28.19	\$20.84	\$22.49	\$17.70	\$17.15	\$29.06
2017	\$30.53	\$36.31	\$7.82	\$13.75	\$14.59	n/a	n/a	n/a
2018	\$25.73	\$28.50	n/a	\$14.49	\$10.71	\$6.97	\$14.34	n/a
CAGR	-2.38%	-3.55%	n/a	-5.88%	-7.58%	-10.48%	-3.71%	n/a

Wall Communications 2018

Mobile Wireless Level 2 (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2008	\$60.81	\$64.54	\$32.90	\$53.98	\$56.30	n/a	n/a	n/a
2009	\$57.78	\$66.38	\$36.67	\$44.73	\$61.51	n/a	n/a	n/a
2010	\$53.49	\$60.60	\$35.65	\$37.27	\$68.70	n/a	n/a	\$44.34
2011	\$50.51	\$68.69	\$36.97	\$32.75	\$74.86	n/a	n/a	\$49.14
2012	\$51.31	\$72.94	\$34.56	\$38.43	\$61.13	n/a	n/a	\$49.28
2013	\$44.86	\$76.14	\$35.04	\$38.85	\$44.08	n/a	n/a	\$44.36
2014	\$45.26	\$55.91	\$38.69	\$41.17	\$37.55	\$33.61	\$36.48	\$50.98
2015	\$48.68	\$57.59	\$38.98	\$33.62	\$40.87	\$22.48	\$35.35	\$54.81
2016	\$48.77	\$51.64	n/a	\$25.79	\$24.17	\$24.41	\$28.28	\$48.78
2017	\$40.95	\$49.48	\$27.36	\$22.58	\$23.88	n/a	n/a	\$45.38
2018	\$39.43	\$44.29	n/a	\$16.68	n/a	\$11.86	\$15.06	n/a
CAGR	-4.24%	-3.69%	n/a	-11.08%	n/a	-22.93%	-19.85%	n/a

Wall Communications 2018

Mobile Wireless Level 3 (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2008	\$112.34	\$135.72	\$96.75	\$90.23	\$110.46	n/a	n/a	n/a
2009	\$103.24	\$132.58	\$93.13	\$76.36	\$109.08	n/a	n/a	n/a
2010	\$109.59	\$124.01	\$91.93	\$69.49	\$109.37	n/a	n/a	\$117.19
2011	\$99.69	\$139.03	\$73.87	\$64.27	\$100.75	n/a	n/a	\$120.21
2012	\$98.37	\$141.80	\$52.35	\$69.30	\$84.77	n/a	n/a	\$118.51
2013	\$93.59	\$145.79	\$49.54	\$63.52	\$58.90	n/a	n/a	\$125.24
2014	\$79.69	\$91.52	\$72.10	\$72.14	\$63.68	\$67.06	\$71.15	\$139.90
2015	\$85.22	\$85.65	\$69.97	\$68.03	\$61.50	\$53.94	\$71.91	\$88.96
2016	\$74.67	\$73.00	\$30.91	\$30.13	\$38.08	\$34.79	\$56.20	\$89.72
2017	\$70.70	\$54.17	\$39.08	\$28.65	\$30.24	\$20.51	\$64.03	n/a
2018	\$70.99	\$62.48	\$19.40	\$32.40	n/a	n/a	\$30.10	n/a
CAGR	-4.49%	-7.46%	-14.85%	-9.73%	n/a	n/a	-19.35%	n/a

Wall Communications 2018

Mobile Wireless Level 4 (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2014	\$92.99	\$109.28	\$84.85	\$58.37	\$50.14	\$61.52	\$80.63	n/a
2015	\$83.08	\$92.23	\$77.80	\$62.03	\$48.24	\$63.47	\$71.56	n/a
2016	\$81.05	\$89.50	\$44.78	\$35.55	\$61.60	\$49.42	\$68.12	n/a
2017	\$81.61	\$67.20	\$54.29	\$34.26	\$31.86	\$41.22	\$72.41	\$60.11
2018	\$75.44	\$61.26	\$24.70	\$26.56	\$30.91	\$21.11	\$45.80	\$81.52
CAGR	-5.09%	-13.47%	-26.54%	-17.87%	-11.40%	-23.47%	-13.19%	35.61%

Wall Communications 2018

Mobile Wireless Level 5 (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2015	\$107.50	\$131.12	\$97.43	\$68.93	\$60.96	\$77.44	\$102.74	n/a
2016	\$96.55	\$117.33	\$66.67	\$42.22	\$70.12	\$61.02	\$88.23	n/a
2017	\$104.49	\$75.06	\$67.04	\$39.20	\$46.45	\$53.22	\$82.21	\$74.12
2018	\$87.32	\$97.88	\$27.27	\$31.26	\$34.31	\$29.55	\$64.89	\$103.07
CAGR	-6.70%	-9.29%	-34.59%	-23.17%	-17.43%	-27.47%	-14.20%	39.07%

Wall Communications 2018

Mobile Wireless Level 6 (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2016	\$231.99	\$206.19	\$198.50	\$99.31	n/a	n/a	\$284.12	n/a
2017	\$264.65	\$244.64	n/a	\$91.42	\$157.80	n/a	\$291.53	n/a
2018	\$227.87	\$206.57	\$98.96	\$84.77	\$66.32	\$75.39	\$120.88	\$222.66
CAGR	-0.89%	0.09%	-29.39%	-7.61%	n/a	n/a	-34.77%	n/a

Wall Communications 2018

Table A3.2 - International Broadband Internet Service Prices

Fixed Broadband Level 1 (3-9 Mbps) (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2008	\$32.88	\$33.77	\$42.79	\$29.93	\$42.23	n/a	n/a	n/a
2009	\$30.98	\$40.19	\$41.31	n/a	\$44.87	n/a	n/a	n/a
2010	\$31.44	\$39.61	\$34.91	n/a	n/a	n/a	n/a	\$39.73
2011	\$34.85	\$51.06	\$29.84	n/a	\$28.33	n/a	n/a	\$43.13
2012	\$39.37	\$57.24	n/a	n/a	n/a	n/a	n/a	\$50.48
2013	\$38.91	\$52.38	n/a	n/a	n/a	n/a	n/a	\$45.55
2014	\$50.00	\$62.53	n/a	n/a	n/a	n/a	n/a	\$56.55
2015	\$47.51	\$54.54	n/a	n/a	n/a	n/a	n/a	\$57.83
2016	\$41.94	\$79.64	\$58.38	n/a	n/a	n/a	\$28.28	n/a
2017	\$41.83	\$63.92	\$54.72	n/a	n/a	\$41.18	n/a	\$59.49
2018	\$40.67	\$63.32	n/a	n/a	n/a	\$60.53	n/a	\$40.56
CAGR	2.15%	6.49%	n/a	n/a	n/a	46.97%	n/a	0.26%

Wall Communications 2018

Fixed Broadband Level 2 (10-15 Mbps) (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2008	\$46.58	\$55.97	\$62.56	\$44.05	\$45.82	n/a	n/a	n/a
2009	\$47.26	\$57.92	\$63.76	\$30.22	\$48.69	n/a	n/a	n/a

Canadian and International Price Comparisons – 2018 Update

2010	\$47.60	\$58.97	\$52.01	\$40.57	\$44.03	n/a	n/a	\$49.55
2011	\$49.79	\$65.14	\$56.74	\$40.72	\$47.41	n/a	n/a	\$53.79
2012	\$54.31	\$78.84	\$59.81	\$30.50	\$46.97	n/a	n/a	\$55.70
2013	\$51.20	\$81.42	\$58.15	\$32.85	n/a	n/a	n/a	\$52.53
2014	\$55.10	\$72.91	\$50.67	\$30.22	n/a	\$52.26	\$26.09	\$60.65
2015	\$56.66	\$67.66	\$53.75	n/a	\$67.78	\$54.31	\$29.08	\$61.03
2016	\$58.88	\$83.85	\$54.49	n/a	\$73.83	\$64.29	n/a	\$51.75
2017	\$65.54	\$82.43	\$46.90	n/a	\$39.81	n/a	\$27.77	\$54.39
2018	\$57.36	\$75.56	n/a	\$54.13	\$48.83	n/a	n/a	\$61.14
CAGR	2.10%	3.05%	n/a	2.08%	0.64%	n/a	n/a	2.66%

Wall Communications 2018

Fixed Broadband Level 3 (16-40 Mbps) (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2008	\$68.74	\$67.40	\$76.47	\$52.72	\$49.41	n/a	n/a	n/a
2009	\$60.08	\$70.41	\$77.98	\$35.93	\$47.73	n/a	n/a	n/a
2010	\$61.88	\$75.26	\$74.32	\$46.24	\$57.45	n/a	n/a	\$72.15
2011	\$63.44	\$79.60	\$59.72	\$40.09	\$66.37	n/a	n/a	\$54.52
2012	\$67.94	\$97.00	\$61.69	\$40.88	\$46.07	n/a	n/a	\$59.37
2013	\$65.18	\$99.10	\$57.10	\$43.01	\$49.34	n/a	n/a	\$61.52
2014	\$68.60	\$79.76	\$67.44	\$46.89	\$51.15	\$52.92	\$38.30	\$63.88
2015	\$67.81	\$91.55	\$69.64	\$41.25	\$51.68	\$52.28	\$47.08	\$64.50
2016	\$63.48	\$97.53	\$57.41	\$40.43	n/a	\$41.77	\$49.75	\$71.52
2017	\$65.59	\$99.64	\$70.35	\$55.67	\$50.43	n/a	\$46.80	\$68.32
2018	\$70.70	\$84.33	\$66.74	\$49.42	\$38.15	\$45.45	\$50.18	\$71.77
CAGR	0.28%	2.27%	-1.35%	-0.64%	-2.55%	-3.73%	6.99%	-0.07%

Wall Communications 2018

Fixed Broadband Level 4 (41-100Mbps) (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2011	\$77.71	\$95.07	\$67.19	\$50.07	\$49.79	n/a	n/a	\$59.76
2012	\$94.39	\$160.97	\$82.25	\$58.66	\$62.36	n/a	n/a	\$62.65
2013	\$82.88	\$123.27	\$72.69	\$53.31	\$54.58	n/a	n/a	\$64.89
2014	\$86.46	\$103.17	\$70.33	\$47.76	\$55.98	\$61.79	\$58.52	\$67.73
2015	\$80.63	\$105.90	\$72.66	\$50.75	\$57.95	\$60.45	\$59.32	\$65.32
2016	\$78.77	\$112.30	\$71.03	\$54.20	\$63.80	\$53.02	\$61.78	\$49.78
2017	\$82.54	\$114.81	\$89.98	\$59.38	\$42.47	n/a	\$54.45	\$69.58
2018	\$87.00	\$105.34	\$88.74	\$67.69	\$53.14	\$65.20	\$64.84	\$84.43
CAGR	1.63%	1.48%	4.05%	4.40%	0.94%	1.35%	2.59%	5.06%

Wall Communications 2018

Fixed Broadband Level 5 (100-249 Mbps) (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2016	\$114.65	\$127.69	n/a	\$57.56	\$70.54	n/a	\$56.57	\$71.36
2017	\$95.10	\$145.15	n/a	\$70.67	\$50.19	\$60.39	\$58.33	\$65.64
2018	\$102.76	\$131.06	n/a	\$64.86	\$60.86	n/a	\$72.45	\$79.90
CAGR	-6.78%	1.31%	n/a	6.15%	-7.11%	n/a	13.17%	5.81%

Wall Communications 2018

Fixed Broadband Level 6 (250-500 Mbps) (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2018	\$123.87	\$160.08	n/a	\$78.96	\$70.18	\$46.33	\$94.33	\$72.23
CAGR	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Wall Communications 2018

Table A3.3 - International Mobile Internet Prices

Level 1 (2-5 GB) (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2010	\$54.19	\$73.26	\$33.89	\$24.86	\$46.29	n/a	n/a	\$76.00
2011	\$52.41	\$71.50	\$27.18	\$23.51	\$43.30	n/a	n/a	\$69.38
2012	\$52.55	\$52.29	\$31.38	\$27.42	\$39.36	n/a	n/a	\$54.89
2013	\$44.55	\$54.61	\$28.80	\$23.71	\$34.98	n/a	n/a	\$57.54
2014	\$43.30	\$63.74	\$25.67	\$21.90	\$18.47	\$17.56	\$34.37	\$50.05
2015	\$43.55	\$63.02	\$28.15	\$21.44	\$17.60	\$15.87	\$25.96	\$55.49
2016	\$46.47	\$50.68	\$15.57	\$17.61	\$14.98	\$14.35	\$23.56	\$51.81
2017	\$43.01	\$38.73	\$11.73	\$15.33	\$12.11	\$14.81	\$20.40	\$37.22
2018	\$38.28	\$43.49	\$15.56	\$15.45	\$15.74	\$12.71	\$22.52	\$70.31
CAGR	-4.25%	-6.31%	-9.27%	-5.77%	-12.61%	-7.77%	-10.03%	-0.97%

Wall Communications 2018

Level 2 (5-10 GB) (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2012	\$65.11	\$69.51	\$44.85	\$39.11	\$100.15	n/a	n/a	\$56.77
2013	\$64.67	\$59.82	\$35.13	\$62.01	\$44.65	n/a	n/a	\$58.24
2014	\$63.90	\$69.05	\$36.80	\$45.93	\$43.04	\$25.86	\$49.70	\$62.04
2015	\$64.48	\$77.72	\$41.69	\$30.60	\$29.18	\$27.05	\$37.17	\$63.82
2016	\$63.30	\$76.93	\$29.67	\$21.07	\$28.11	\$21.71	\$37.31	\$73.74
2017	\$60.79	\$72.44	\$30.84	\$20.54	\$18.59	\$20.87	\$29.67	\$54.81
2018	\$61.90	\$64.59	\$26.24	\$19.78	n/a	\$17.22	\$35.56	\$75.49
CAGR	-0.84%	-1.22%	-8.55%	-10.74%	n/a	-9.66%	-8.03%	4.86%

Wall Communications 2018

Level 3 (10+ GB) (PPP Adjusted)

	Canada	U.S.A.	Australia	U.K.	France	Italy	Germany	Japan
2016	\$80.98	\$110.38	\$48.17	\$24.47	\$63.45	\$31.58	n/a	\$87.09
2017	\$82.28	\$92.46	\$36.62	\$28.48	\$39.09	\$28.80	\$35.98	\$64.28
2018	\$83.35	\$87.30	\$39.35	\$28.19	\$33.53	\$38.73	\$38.38	\$105.94
CAGR	1.45%	-11.07%	-9.61%	7.31%	-27.30%	10.75%	6.69%	10.29%

Wall Communications 2018

Table A3.4 - International Bundled Service Prices

Bundle 1 (Fixed Broadband and TV)

	Canada	U.S.A.
2018	\$138.67	\$152.54
CAGR	n/a	n/a

Bundle 2 (Fixed Broadband, TV and Wireline Telephone)

	Canada	U.S.A.
2008	\$119.93	\$155.09
2009	\$122.43	\$163.81
2010	\$118.41	\$164.95
2011	\$122.87	\$173.88
2012	\$128.44	\$177.15
2013	\$134.19	\$167.92
2014	\$137.51	\$172.07
2015	\$139.78	\$168.62
2016	\$135.60	\$145.92
2017	\$120.99	\$138.41
2018	\$142.07	\$164.32
CAGR	1.71%	0.58%