Competitive Mobile Wireless Pricing Under Varying Demand and Supply Conditions

Reply to the Canadian Competition Bureau's Claim of Coordinated Behavior Based on Provincial Price Differences

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Disclosures

This report was commissioned by TELUS Communications Inc. (TELUS). All opinions herein are those of the author and do not necessarily reflect the opinions of TELUS, NERA Economic Consulting Inc., or any of the institutions with which they are affiliated.

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EXECUTIVE SUMMARY

ES1. The Competition Bureau Canada (Bureau) claims that rather than competing, Rogers, Bell, and TELUS coordinate their retail prices to keep them artificially high for their mutual benefit. The Bureau bases its most recent allegation on its observance of lower prices in Quebec and Saskatchewan relative to the remaining eight provinces. It hypothesizes that the lower prices in these two provinces are the result of the presence of a "strong regional competitor" that does not participate in the alleged coordination but undercuts the prices charged by the coordinating parties, thereby putting an end to the claimed anticompetitive behavior. The following evidence demonstrates that the Bureau's claim of coordinated behavior and its ensuing theory that a "strong regional competitor" is necessary to ensure competitive prices are false.

(1) **Pricing patterns find the Bureau's claim factually incorrect.** The provincial price differences allegedly observed by the Bureau are not persistent. For instance, no differences were found in July 2019. Moreover, the pricing patterns are not consistent with coordinated behavior. These findings collapse the Bureau's entire coordinated behavior theory.

(2) **The diverse pricing strategies are the result of different demand and supply conditions not coordinated behavior.** The Bureau simply observes diverse pricing strategies in different regions. This is consistent with a competitive market and is not unique to mobile wireless services. Provincial price differences are common for many other products. Further, provincial price differences for mobile wireless services existed prior to the entry of the regional providers. Moreover, idiosyncratic reasons explain the lower prices in Quebec and Saskatchewan.

(3) **A simple observation of price differences across different markets is not proof of coordinated behavior.** The Bureau's theory lacks theoretical support and its

finding omits that communications markets are contestable (e.g., disciplined by smaller providers that can undercut excessive price levels). The Bureau's theory also ignores the presence of other equally situated regional providers, considering them not to be "strong regional competitors" that are allegedly unable to undercut the prevailing price levels.

(4) **The economic literature disagrees with the Bureau's reasoning.** The economic literature is clear that for coordination to be viable the participants must (a) reach an agreement on the terms of coordination, (b) be able to monitor it, and (c) have credible punishment mechanisms. The Bureau has failed to substantiate any of these conditions.

(5) **Prior studies and the observable market outcome disagree with the Bureau's finding.** Prior competition studies have found the Canadian mobile wireless services market highly competitive and home to some of the most advanced networks in the world. These results cannot coexist with the Bureau's coordinated behavior theory.

ES2. The Bureau observed diverse prices in different provinces and attributed the lower prices in two provinces (Quebec and Saskatchewan) to the presence of a regional competitor. With a regional provider present in all 10 provinces and lower prices in only two provinces, the Bureau simply labels the two regional providers in Quebec and Saskatchewan as "strong," thus implying that all other regional providers are weak. There are a multitude of errors in the Bureau's study and its ensuing claim. The study is factually incorrect, contradicted by market evidence, and inconsistent with economic principles.

ES3. The Bureau's study is factually incorrect because provincial price differences are neither persistent nor constant over time. At times, there are no provincial price differences. When there are, the price trends are inconsistent with coordinated behavior. Instead, they are consistent with competitive market segmentation (where prices reflect local conditions of demand and supply). This simple factual evidence voids the Bureau's entire study. Importantly, with no steady provincial price differences, there can be no coordination.

ES4. The Bureau's study results do not align with the market evidence or with the Bureau's own prior findings. The Bureau previously found that mobile wireless providers do set their prices at the provincial level. Prices in a competitive market are set based on demand and supply conditions. It is therefore no surprise that if demand and/or supply conditions differ across provinces, the markets will have different prices. Quebec must have different demand and/or supply conditions because prices for mobile wireless services were lower prior to the entry of Videotron (the Bureau's purported strong regional competitor). Furthermore, Quebeckers spend less on TV and Internet subscriptions. Price differences in Quebec are also not unique to mobile wireless services but extend to a wide array of products and services. Thus, unless all these products and services are in markets subject to coordinated behavior, the Bureau's simplistic analysis is insufficient at best.

ES5. The Bureau's study also defies basic economic principles. The Bureau has found communications markets contestable, which implies that smaller providers can undercut supracompetitive prices, thereby defeating any attempt to coordinate. With regional competitors in each province, this means that a coordination attempt would not be successful. It is also unclear how the Bureau explains why Rogers, Bell, and TELUS would coordinate on monthly recurring charges only and not on all other price and quality aspects of their services. When products are homogenous, price fixing is possible. However, with differentiated products as they are in Canada, coordination of prices becomes more difficult. Price coordination becomes much more difficult when the number of products increases as well, and, as explained in this report, there are many different plans offered by each mobile provider. This makes explicit price coordination unlikely and tacit price coordination practically impossible. As evidenced by the varying churn rates among the three nationwide providers, Canadian consumers do not view the services as homogenous.

ES6. It is also telling that the Bureau had to categorize regional providers into those it deems "strong regional competitors" and those that are supposedly weak without any stated criteria. With regional providers in all provinces and lower prices in only two provinces, the Bureau needs the distinction between weak and strong to support its claim. However, there is no economic or other evidence to support this distinction. In fact, several of the presumably weak regional competitors are similarly, if not better, situated than the presumably strong regional competitors. Moreover, the Bureau has not provided any reasons why some providers are weak and why others are strong and has put forth no objective criteria as to how to assess whether a provider is weak or strong.

ES7. Not surprisingly, the economic literature does not support the Bureau's methodological approach. The economic literature makes it clear that coordinated behavior requires a common understanding on what it means to coordinate—an understanding of the dimensions on which coordination occurs and an indication of expected behavior. Price information may be a mechanism of coordination, but it is also a mechanism of competition and as such cannot be interpreted one way or another without additional analysis. A market where pricing is complex (i.e., involving multiple products or different versions of the same product) such as the mobile wireless market in Canada makes it harder for the firms to find a mutually acceptable understanding of what it means to tacitly coordinate.

ES8. The Bureau's finding of a competitive problem cannot be confirmed externally because independent competition studies and marketplace evidence finds Canada home to some of the most advanced networks in the world. Technological change is costly and is driven by vigorous competition, where firms strive to outperform the rivals. The fact that Canada has some of the fastest mobile download speeds in the world and is among the foremost countries in new technology deployment directly contradicts the Bureau's coordinated behavior claim.

ES9. In short, the Bureau's study is factually incorrect and methodologically deficient, and a rich set of market data and independent competitive assessment studies find its conclusions false. Hence, I recommend that it not be used for public policymaking or be considered in regulatory proceedings.

I. Background

A. The Competition Bureau's Claim

1. The Competition Bureau Canada (Bureau) erroneously alleges that it found evidence of anticompetitive behavior among the three nationwide mobile wireless providers Rogers, Bell, and TELUS. Specifically, the Bureau falsely claims that rather than competing, the three providers coordinate their retail prices to keep them artificially high for their mutual benefit.

2. The Bureau has made these claims in several documents including its "Competition Bureau statement regarding Bell's acquisition of MTS":

> Based on an analysis of information collected during this inquiry, the Competition Bureau … concluded that as a result of coordinated behaviour among Bell, TELUS and Rogers, mobile wireless prices in Canada are higher in regions where Bell, TELUS and Rogers do not face competition from a strong regional competitor.[1]

In addition, in its "Comments of the Competition Bureau on Telecom Notice of Consultation CRTC 2019-57," which is the review of mobile wireless services, the Bureau recently claimed:

> Based on the Bureau's previous analysis of Bell/MTS and the analysis above [the Bureau's analysis] it is likely that a large number of Canadians do not benefit from vigorous competition among wireless service carriers. As described, the principal evidence that supports that conclusion is the existence of substantial price differences across regions in Canada, which demonstrate the extent to which prices are increased when the national wireless carriers can effectively coordinate their pricing decisions.[2]

[1] Government of Canada, "Competition Bureau statement regarding Bell's acquisition of MTS," February 15, 2017, https://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04200.html.

[2] Government of Canada, "Comments of the Competition Bureau on Telecom Notice of Consultation CRTC 2019-57," May 15, 2019, https://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04431.html.

3. The Bureau bases its most recent allegation on its observance of lower prices in Quebec and Saskatchewan relative to the remaining eight provinces.[3] The Bureau wrongly hypothesizes that the lower prices in Quebec and Saskatchewan are the result of the presence of a "strong regional competitor" that supposedly does not participate in the alleged coordinated behavior but undercuts the prices charged by the coordinating parties, thereby putting an end to the claimed coordinated behavior. The Bureau further mistakenly hypothesizes that prices in the remaining eight provinces would be as low as they are in Quebec and Saskatchewan if all the provinces had a strong regional competitor. Thus, the Bureau's thesis is that regulation targeted at aiding in establishing a strong regional competitor in each province would lower prices in the eight provinces that allegedly have higher prices than Quebec and Saskatchewan.

4. The Bureau reportedly conducted two studies to support its thesis. First, as part of its review of the merger of Bell and Manitoba Telecom Services (MTS), the Bureau reportedly "conducted a thorough pricing analysis using confidential internal company data."[4] Although the details of this study are confidential to the Bureau, it concluded:

> [M]obile wireless pricing in Saskatchewan, Thunder Bay, Quebec and Manitoba – all areas that had a strong regional competitor – was substantially lower than in the rest of Canada, where coordinated behavior softened competition among Bell, Rogers and TELUS.[5]

[3] An earlier Bureau study also included Manitoba in the list of provinces with lower prices. With Bell's acquisition of the regional provider in Manitoba (MTS), it is unclear whether the Bureau considers Manitoba's new regional provider (Xplornet) as having taken MTS' position. Thus, the remainder of this report makes only reference to Quebec and Saskatchewan that are the Bureau's two prime examples in its most recent allegation of coordinated behavior.

[4] Comments of the Competition Bureau on Telecom Notice of Consultation CRTC 2019-57, May 15, 2019, ¶ 12 (hereinafter Bureau Wireless Submission).

[5] Ibid, ¶ 12.

5. In April 2019, the Bureau conducted a similar study based on public data that "demonstrates the persistence and magnitude of price differences across provinces in Canada."[6] To support its continued claim of coordinated behavior, the Bureau compared the prices of select postpaid plans across provinces. Although the Bureau's data sources are the provider's websites and thus from the public domain, the Bureau has not released the specific data that it harvested and has not provided enough information to replicate its database. Hence, it is unclear what and how many plans the Bureau compared. Based on the Bureau's limited supporting materials, it seems to have only compared plans based on monthly data allowances, which range from 1 GB to 10 GBs, and ignored all other potential plan and network differences. This omits all other plan attributes that might justify different prices and undermines the entire study.[7]

6. The Bureau adds that a review of confidential data from 2014–2016 found that strong regional competitors have been undermining the alleged coordinated behavior by Rogers, Bell, and TELUS for years. The Bureau concludes:

> [W]hile not conclusive on its own, the analysis of public pricing data described above is consistent with, and supplemental to, the Bureau's previous analysis. Additionally, the analysis of public data provides useful insights regarding whether those substantial differences across regions have persisted since the Bureau's review of Bell/MTS in 2017.[8]

7. In short, the Bureau claims that prices in all provinces except Quebec, Saskatchewan, and (in its first study) Manitoba are higher than what a competitive price would be and that

[6] Ibid, ¶ 18.

[7] For a detailed discussion on the components of an accurate price comparison, see the NERA Pricing Study submitted as Appendix B to TELUS' Intervention in the CRTC's *Review of Mobile Wireless Services* proceeding, TNC 2019-57.

[8] Bureau Wireless Submission, ¶ 37.

establishing a strong regional competitor through regulatory intervention would remedy this alleged problem.[9]

B. Purpose and Structure of this Report

8. The purpose of this report is to point out the flaws in the Bureau's claim of coordinated behavior and the related need for a "strong regional competitor" to disrupt the alleged "coordination among the national wireless carriers."[10] As such, this report serves as an independent review of the Bureau's price comparison study to ensure that the media, market participants, government agencies, and regulators do not rely on inaccurate and misleading facts but use actual economic evidence when forming their opinions.[11] In short, the Bureau's study is factually incorrect and methodologically deficient, and a rich set of market data and independent competitive assessment studies find its conclusions false. This report shows that the Bureau's claims are not valid and cannot be used to support, for example, procompetitive measures in the 3500 MHz framework or new wholesale remedies for competitors in the CRTC's wireless framework review.

9. The structure of this report is as follows. Section II examines whether the alleged provincial price differences exist and if so whether they are constant among providers. Section III examines the drivers of provincial price differences and looks at whether they are also present in other industries. Section IV explains why simple observations of price differences do not and cannot serve as evidence of coordinated behavior. Section V

[9] The Bureau also analyzed prices in the Tbaytel territory.

[10] Bureau Wireless Submission, ¶ 15.

[11] In its Bell-MTS merger analysis, the Bureau indicated, "The Bureau's findings, as reflected in this Position Statement, are not findings of fact or law that have been tested before a tribunal or court." (Government of Canada, "Competition Bureau statement regarding Bell's acquisition of MTS," February 15, 2017 (hereinafter Bell-MTS Merger Statement).)

examines how the economic literature proves coordinated behavior. Section VI summarizes the studies and marketplace evidence that the Bureau omitted from its study and serves to validate or reject the Bureau's study hypotheses. Section VII presents the conclusions.

II. THE BUREAU'S CLAIM IS FACTUALLY INCORRECT

10. The Bureau's claim of anticompetitive behavior rests on the simple observation that some providers charge different prices for similar, albeit not identical, plans across provinces. If this observation is false and these so-called provincial price differences are not constant over time or are not consistent with coordinated behavior, the Bureau's entire study collapses. A review of marketplace evidence finds that the Bureau's study fails both tests. Price differences across provinces are not always present and the observed pricing strategies are not consistent with coordinated behavior. This evidence alone is sufficient to conclude that the Bureau's study must not serve as a reason to interfere with market forces.

A. Provincial Pricing Strategies Are Not Constant Over Time

11. In its latest study, the Bureau reports to have harvested pricing data from Canadian mobile wireless provider websites in April 2019.[12] The Bureau did not disclose the specific data that it collected with its filing on May 15, 2019. Thus, in an attempt at replicating the Bureau's data, I collected Rogers, Bell, TELUS, Videotron, and SaskTel pricing information on or about July 1, 2019. Appendix A shows that the July prices do not indicate any provincial price differences, thus collapsing the Bureau's theory. Specifically, the July data reveal the following pricing strategies.

[12] Bureau Wireless Submission, ¶ 19.

- Prepaid plan prices by the alleged coordinating parties are identical in all provinces although they are different among the individual providers. That is, TELUS has the same prices in all provinces, but TELUS' prices are not the same as Rogers' or Bell's prices. Prepaid plans are substitutes for postpaid plans. The Bureau offers no explanation why the alleged coordination among competitors does not break down for prepaid plans in the provinces without "strong" regional competitors.
- Rogers prices its unlimited postpaid plans identically in British Columbia, Ontario, and Quebec. There can be no coordinated behavior if not all nationwide providers in the market exhibit the alleged provincial price differences.
- Rogers' basic postpaid plans do vary in price by province, but they also vary in plan offerings. Coordinated behavior is difficult if not impossible when the services subject to the alleged coordinated behavior are not homogenous.
- TELUS' unlimited postpaid plans are also identical in British Columbia, Ontario, and Quebec. There can be no coordinated behavior if not all nationwide providers in the market exhibit the alleged provincial price differences.

12. It is important to note that even though some providers do pursue different pricing strategies by province, for the Bureau's claim to hold it must be the case that all plans, or at a minimum all major plans, exhibit the alleged provincial price differences. For instance, although Bell offers lower prices in Quebec and Saskatchewan, this is not sufficient to establish a coordinated behavior claim because neither Rogers' nor TELUS' pricing strategies mirror those of Bell.

13. Certain prices may be the same across the country by individual provider but not across providers. Further, each provider's plan attributes differ, which makes coordination impossible. In addition, prices change frequently also making coordination impossible. With no consistent provincial price difference, the Bureau's coordinated behavior theory collapses and one must reject the Bureau's findings. Notwithstanding, for the completeness

of my analysis, in the remainder of my report I examine various other aspects of the Bureau's claim under the assumption that there are provincial price differences (even if in fact there are not) that warrant a review.

B. Provincial Pricing Strategies Are Inconsistent with Coordinated Behavior

14. As summarized in Appendix B, I repeated the same analysis that I performed in July around August 6, 2019; that is, I collected Rogers, Bell, TELUS, Videotron, and SaskTel pricing information from their respective websites. Repeating this analysis not only reexamines the presence or absence of provincial price differences but also whether the alleged coordinating parties follow provincial pricing strategies that would be consistent with coordinated behavior. Unlike the July pricing review, the August pricing review revealed some limited provincial price differences. However, comparing the July and August data reveals a highly dynamic market where providers do not coordinate but compete vigorously. Specifically, comparing the data from July 2019 (Appendix A) to the data from August 2019 (Appendix B) yields the following results.

- Rogers, Bell, TELUS, and Videotron all introduced new plans and/or adjusted their pricing strategies approximately four weeks before early July 2019 and again before early August 2019. Presumably, these providers also changed plans and prices before the Bureau's analysis in April 2019. This is indicative of a highly dynamic market in which prices change constantly. This observation is consistent with a competitive market and inconsistent with a market of "softened competition" because coordinated behavior results in stable (fixed) plan offerings and stable prices.
- Bell increased its prices in Quebec and Saskatchewan and lowered them in British Columbia and Ontario. For instance, Bell decreased the price of its 20 GB plan in British Columbia from $165 to $105 and increased the price for the same plan in Saskatchewan from $75 to $95. This observation directly undermines the Bureau's

allegations as the supposedly more competitive markets became more expensive whereas a market with alleged coordinated behavior became cheaper.

- Rogers, which previously charged the same prices for its unlimited plans in British Columbia, Ontario, and Quebec, lowered its prices in Quebec to align with its prices in Saskatchewan. However, Videotron kept its prices mostly constant during these four weeks and thus could not have been the cause for Rogers' price change. Rogers also did not match Videotron's prices and range of plans and instead offered only three plans. This observation directly undermines the Bureau's allegation that a "strong regional competitor" causes lower prices because Rogers did not respond to Videotron either in level of its prices or in variety of products.
- TELUS introduced some new plans and reduced the prices of existing plans in Quebec to the level of those in Saskatchewan. Because Videotron did not change most of its prices, TELUS' change in strategy seems to be in response to Rogers or vice versa. This observation directly undermines the Bureau's allegation that a "strong regional competitor" causes lower prices because TELUS was not responding to an action by Videotron.
- All providers continue to offer different plans with different prices in each province. Such dynamic product variety makes coordination difficult both in terms of product coordination and then in prices. Adding to this finding, the fact that the alleged coordinating parties did not respond to the product variety or prices charged by the "strong regional provider" collapses the Bureau's entire coordinated behavior claim.

15. This and similar evidence are enough to reject the Bureau's claim that the nationwide providers engage in coordinated pricing behavior and a "strong regional provider" would break this anticompetitive behavior.

III. MARKETPLACE EVIDENCE CONTRADICTS THE BUREAU'S CLAIM

16. The factual evidence discussed above rejects the Bureau's claim, and there is no further analysis required to disprove it. Notwithstanding, for the completeness of this discussion,

this section explains why the Bureau's coordinated behavior claim is inconsistent with marketplace evidence *even if one were to assume the presence of provincial price differences as alleged by the Bureau*. It demonstrates that the pricing strategies are consistent with those under competitive conditions, reveals that prices in Quebec and Saskatchewan are lower for reasons other than a "strong regional competitor," and finds that prices for other services are also lower in the two provinces. Moreover, it shows that provincial price differences exist for many products and services in Canada and seem to raise no competitive concerns.[13]

A. The Bureau Failed to Consider Different Demand and Supply Conditions in Provincial Markets

17. Demand and supply conditions in a market determine its equilibrium and market price. If demand and supply conditions are different across markets, then market prices will also differ. According to the Bureau, the relevant (geographic) market for mobile wireless service in Canada is the province. The Bureau measured the alleged impact of a "strong regional competitor" at the provincial level, implying a provincial market definition. Similarly, in assessing the merger of Bell and MTS, the Bureau opined, "The relevant geographic market for assessing the Proposed Transaction was found to be no broader than the province of Manitoba."[14] If each province is an individual market, it follows that provinces could have different price levels if demand and supply conditions differ. As the Bureau previously found, "Mobile wireless carriers can, and do, set different prices for

[13] For example, in its Bell-MTS merger investigation it stated, "The Bureau's investigation considered the full breadth of Bell and MTS' products and service offerings in Manitoba. Competition concerns were identified only in mobile wireless services." (Bell-MTS Merger Statement, p. 2.)

[14] Ibid, p. 3.

mobile wireless plans in different Canadian provinces."[15] Thus, it should not be surprising that prices differ by province, and a finding of provincial price differences does not indicate coordinated behavior. Rather, it points to differences in demand and/or supply conditions.

18. In an attempt to understand the drivers of provincial price differences that it allegedly observed in April 2019, the Bureau focused on the presence of a regional competitor. However, rather than examining the demand and supply conditions at the provincial level, the Bureau hypothesized that it was the presence of a regional competitor that caused the alleged lower prices and then set out to "examine[] alternative explanations for regional price differences."[16] The Bureau reportedly considered quality, coverage, demographic, or geographic characteristics through a series of simple one-to-one (univariate) correlation graphs.[17] The Bureau's causation analysis is deficient and actual pricing described above demonstrate that its conclusion is incorrect. Rather than caused by a "strong regional competitor," as alleged by the Bureau, provincial price variations are the result of different demand and supply conditions.

19. First, the simple correlation analysis undertaken by the Bureau does not establish causation and does not rule out alternative explanations. The Bureau must use a proper statistical method to assess causation. Pair-wise analysis such as the method used by the Bureau, or univariate correlations, does not allow for interaction among the key explanatory variables. When there are multiple complex factors affecting demand and supply, appropriate analysis would include all relevant variables. A method such as a multivariate regression analysis is one appropriate way to do so. Furthermore, causation would need to be

[15] Ibid.
[16] Bureau Wireless Submission, ¶ 15.
[17] Ibid.

established through formal hypothesis testing of competing explanations. Simple pair-wise correlations fall far short from standard analytical methods used by economists to study market prices.

20. Second, the Bureau only focused on a limited selection of variables (just four: one measure of quality, coverage, demographics, and geographic characteristics), thereby omitting all other supply and demand attributes. For instance, the Bureau ignored the fact that network costs (a supply attribute) vary significantly across provinces. TELUS' network in Manitoba is relatively small, and TELUS pays for access to the Bell/MTS and Rogers networks for coverage in the remainder of Manitoba. Similarly, in Saskatchewan, SaskTel has structure sharing agreements with TELUS and Bell,[18] whereas Rogers has its own network but covers only a portion of the province. Furthermore, the Bureau ignores the fact that there are multiple measures of product quality (e.g., dropped calls, coverage, and speed). Moreover, the Bureau's analysis also skips a review of potentially different demand attributes and most prominently different willingness to pay. Simply put, consumers in different provinces might have different service needs. If consumers across provinces have differing demand levels for mobile wireless services, then prices will vary accordingly. In fact, a review of mobile wireless average revenue per user (ARPU) and general consumption patterns in Quebec reveal markedly different demand conditions.

21. The time series of annual ARPUs in Quebec in Table 1 below demonstrate that the "strong regional competitor" (Videotron) had nothing to do with the allegedly lower price levels in Quebec. Prices in Quebec were lower than elsewhere in Canada before Videotron entered

[18] "For wireless services, SaskTel has long standing relationships with Bell and TELUS under a Three Party Agreement providing for network reciprocity. Under that agreement, SaskTel has access to the mobile networks of Bell and TELUS and those two companies have access to SaskTel's network." (Mark H. Goldberg & Associates Inc., "Impact of BCE/MTS Transaction on SaskTel," June 2016, p. 10.)

the Quebec market. This indicates that demand conditions in Quebec are different, thereby revealing the true reason for the providers' different pricing strategies. If, as the Bureau claims, Videotron was the cause of lower prices in Quebec, the prices in Quebec had to have dropped *after* Videotron's entry into the market in September 2010. Prices for mobile wireless plans are not readily observable because they consist of many pricing elements, and there is no one price for all plans. However, we can observe ARPU. Although not a good proxy for price (because ARPU is the product of price and quantity consumed), ARPU serves as an informative variable for an event study. Specifically, under the Bureau's theory, prices in Quebec would have decreased following Videotron's entry, thus leading to either a decrease in ARPU (assuming demand stayed constant) or an increase in ARPU (assuming lower prices resulted in higher demand). However, neither is the case. In fact, as shown in Table 1, ARPU levels in Quebec were significantly below the national average long before Videotron entered the market and changed only minimally after Videotron's entry in 2010.[19]

[19] Other years show similar patterns.

Table 1: Monthly Average Mobile Service Revenues per Subscriber by Province

Province/region	2007	2016	2017
Quebec	**$ 50.21**	**$ 55.36**	**$ 56.07**
Manitoba	54.46	64.10	63.01
PEI	63.58	61.08	64.64
Nova Scotia	54.59	63.78	65.32
New Brunswick	52.87	63.22	65.53
British Columbia	59.10	65.16	66.39
Ontario	59.63	66.84	68.25
Saskatchewan	55.11	68.14	68.47
Newfoundland & Labrador	50.29	70.49	72.38
Alberta	73.81	72.62	73.60
Canada	**59.30**	**63.98**	**65.33**
Quebec as a % of Canada	85%	87%	86%

Source: CRTC, Communications Monitoring Report, 2012 and 2018.

22. Specifically, in 2007, three years prior to the entry of Videotron, Quebec's ARPU was 15 percent below the national average. After the competitive entry of Videotron, this percentage changed minimally to 13 percent in 2016 and to 14 percent in 2017, effectively ruling out Videotron as being responsible for the lower prices in Quebec. Moreover, Quebeckers have long had a lower ARPU (lower prices, lower consumption, or a combination of the two), and Videotron did not change this trend at all. Remarkably, ARPU in Quebec continued to be lower – and by the same average percentage – than elsewhere in Canada. Thus, it appears that a "strong regional provider" did not lower prices in Quebec, and there is no reason to expect that a "strong regional provider" would, by definition, lower prices in other provinces. Furthermore, as noted below, considering the seemingly weaker demand for mobile wireless services in Quebec relative to other provinces, it would make sense for mobile wireless providers to adjust their pricing strategies accordingly.

23. The finding of different demand conditions in Quebec is also confirmed by examining general communications consumption patterns in the province. For instance, Quebec has

long had a lower demand for smartphones. As shown in Table 2, Quebec only reaches approximate parity in smartphone penetration in 2017, rising from 86 percent of the Canadian average in 2014 to 96 percent in 2017. A smartphone is important if one wants to take advantage of LTE network capabilities, that is, "the latest network technologies require newer smartphones."[20]

Table 2: Provincial Mobile Device Penetration by Type

	2014		2015		2016		2017	
	Smartphone	Regular Cell Phone	Smartphone	Regular Cell Phone	Smartphone	Regular Cell Phone	Smartphone	Regular Cell Phone
Alberta	80%	12%	83%	9%	84%	8%	84%	7%
Manitoba/Saskatchewan	69%	16%	74%	11%	82%	8%	83%	4%
British Columbia	68%	16%	77%	10%	79%	7%	80%	9%
Ontario	68%	15%	76%	12%	79%	8%	77%	9%
Atlantic	58%	20%	70%	10%	74%	12%	76%	10%
Quebec	**57%**	**18%**	**64%**	**14%**	**70%**	**10%**	**75%**	**11%**
Canada	**66%**	**16%**	**73%**	**12%**	**77%**	**9%**	**78%**	**9%**
Quebec as a % of:								
Alberta	71%	150%	77%	156%	83%	125%	89%	157%
Ontario	84%	120%	84%	117%	89%	125%	97%	122%
Canada	86%	113%	88%	117%	91%	111%	96%	122%

Source: Statistics Canada's Survey of Household Spending, as reported in the CRTC, Communications Monitoring Report, 2015–2018.

24. As shown in Table 3, Quebeckers still rely more heavily on wireline telephony than the rest of the nation. As the table shows, 14.1 percent of Quebec households used wireline only (i.e., do not subscribe to wireless services) in 2017. This is the highest in the nation and compares to an average of 9.5 percent and a low of 5.1 percent in 2017.

[20] Sascha Segan, "Fastest Mobile Networks Canada 2016, Testing Methodology," *PCMag.com*, August 31, 2016.

Table 3: Wireline Only Subscribers per 100 Households

Province	2011	2012	2013	2014	2015	2016	2017
Quebec	**28.9**	**28.7**	**20.8**	**19.6**	**20.2**	**16.8**	**14.1**
Nova Scotia	21.6	19.4	16.3	14.6	16.0	12.2	11.8
Prince Edward Island	21.9	19.0	20.8	17.2	15.0	14.3	11.3
New Brunswick	23.3	20.1	18.5	17.9	15.7	16.9	11.2
Newfoundland and Labrador	19.9	16.1	13.2	14.0	12.7	14.5	10.5
Manitoba	20.5	19.8	16.5	12.3	13.9	13.0	9.4
Ontario	18.1	15.4	11.9	11.8	11.4	9.7	8.5
British Columbia	15.2	15.2	12.0	11.7	10.4	9.1	6.7
Saskatchewan	17.5	14.7	13.2	8.9	8.4	9.0	6.2
Alberta	11.4	9.5	9.4	7.6	6.4	6.4	5.1
Canada	**19.9**	**17.8**	**14.4**	**13.6**	**13.2**	**11.4**	**9.5**
Quebec as a % of Canada	145%	161%	144%	144%	153%	147%	148%

Source: Statistics Canada's Survey of Household Spending, as reported in the CRTC, Communications Monitoring Report, 2013–2019.

25. Thus, although the Bureau claimed that it considered alternative explanations for the provincial price differences, it ignored the fact that Quebec always had lower prices and/or demand for mobile wireless services.

B. The Bureau Failed to Account for the Fact that Quebec Spends Less on TV and Internet Subscriptions

26. There is further evidence that it is the local conditions in Quebec rather than the presence of a strong regional provider that causes lower prices. Quebeckers in urban households also spend less on TV and Internet subscriptions. Table 4 and Table 5 show the provincial difference in urban household spending on TV and Internet, respectively.[21] As is the case for the mobile wireless ARPU, spending for TV in Quebec on average has been 16 percent below the national average over this period. Quebeckers also spend 15 percent less on Internet subscriptions.

[21] Urban centers, also known as small/medium/large population centers, are defined by the following: small centers have populations between 1,000 and 29,999, medium centers have populations between 30,000 and 99,999, and large centers have populations greater than 100,000.

**Table 4: Household Average Monthly Expenditures
TV (Urban Centers)**

Region	2012	2013	2014	2015	2016	2017
Quebec	$46.39	$45.75	$47.64	$47.83	$48.72	$48.50
Canada	56.61	57.00	59.00	55.72	57.33	55.14
Quebec as a % of Canada	82%	80%	81%	86%	85%	88%

Source: Statistics Canada's Survey of Household Spending, custom breakdown of Table 11-10-0223-01, as reported in the CRTC, Communications Monitoring Report, 2019.

**Table 5: Household Average Monthly Expenditures
Internet (Urban Centers)**

Region	2012	2013	2014	2015	2016	2017
Quebec	$33.22	$35.17	$32.83	$35.50	$37.08	$46.19
Canada	34.89	39.11	41.00	45.47	47.08	52.97
Quebec as a % of Canada	95%	90%	80%	78%	79%	87%

Source: Statistics Canada's Survey of Household Spending, custom breakdown of Table 11-10-0223-01, as reported in the CRTC, Communications Monitoring Report 2019.

27. Again, spending is the product of price and demand. In addition, just like mobile wireless ARPU, the lower spending on TV and Internet in Quebec indicates that prices for TV and Internet are lower in Quebec than in other provinces, demand for these services is lower, or a combination of the two factors exists.

C. The Bureau Failed to Account for the Fact that There Are Provincial Price Differences for Many Other Products and Services

28. The Bureau draws sweeping conclusions from a simple observation of price differences. If a coordinated behavior claim was as simple as this (which it is not), many product markets in Canada would be suffering from coordinated behavior. Appendix C presents a non-exhaustive list of products and services with provincial price differences. Not surprisingly, it shows lower prices in Quebec for TV and Internet services. It also exemplifies that many

Canadian companies spanning multiple sectors of the economy pursue different pricing strategies by province. For instance, the car rental company Hertz charges $117.26 (prior to taxes and fees) for a midsize car (Toyota Corolla or similar) at the Saskatoon International Airport. Hertz charges $153.04 (prior to taxes and fees) for the exact same car at Toronto's Pearson Airport, which is a 31 percent provincial price difference. Similarly, fast-food chain Tim Hortons charges $1.86 for a medium original blend black coffee in Vancouver, whereas it charges $1.67 in Saskatoon.

29. It is important to note that the products and services listed in Appendix C are closer to what economists view as homogenous because they are more similar in many dimensions. However, this is not the case in the Bureau's mobile wireless price comparison. Mobile wireless providers distinguish themselves competitively in many ways including but not limited to coverage, voice minute allowances, SMS allowances, handset pricing, plan diversity, and so on. The Bureau ignores these and many other differences in its analysis and compares all plans as if they are as homogenous as a cup of coffee from Tim Hortons.

D. The Bureau Failed to Consider the Local Conditions of Quebec and Saskatchewan

30. Further undermining the Bureau's study is its use of Quebec and Saskatchewan as benchmarks for the other eight provinces. These two provinces have idiosyncrasies that render them poor benchmarks for pricing purposes and provide further explanation as to why prices in the two provinces might be different.

31. Fundamentally, SaskTel, which is the largest mobile wireless provider in Saskatchewan, is a government-owned (Crown) corporation. On the other hand, Quebecor, a major telecommunications and cable television company with backbone infrastructure in Quebec

and cost-based domestic roaming access in the rest of the nation, owns Videotron. Neither of these providers serve as proper benchmarks because they have idiosyncratic efficiencies that few, if any, other providers have.

32. Several factors indicate that SaskTel, which is the dominant wireless services provider in Saskatchewan with a 61.8 percent subscriber share in 2017, is not a useful benchmark for a price comparison study.[22] First, SaskTel is a Crown Corporation that does not seek to maximize profits or shareholder value but serves as a public interest company. Specifically, as disclosed in a report to the Parliament, the Treasury Board of Canada explained, "Crown corporations derive their raison d'être from their statutory role as instruments of public policy."[23] Second, as a Crown company, SaskTel is "not subject to federal or provincial income taxes in Canada."[24] Third, SaskTel benefits from Saskatchewan's credit rating as "the Province of Saskatchewan … issues debt on SaskTel's behalf."[25] Fourth, SaskTel also has lower costs because of its significantly lower network investment levels. Moreover, SaskTel, despite its large share of subscribers, has been granted status that allows it to obtain set-aside spectrum under the ISED framework. As Table 6 shows, SaskTel deployed 4G LTE much slower than the rest of the industry and only caught up in 2017 with basic LTE coverage. The company is still lagging significantly in LTE-A rollout.

[22] CRTC, Communications Monitoring Report, 2018, Retail Mobile Sector, Table 6.6.

[23] Treasury Board of Canada Secretariat, "Review of the Governance Framework for Canada's Crown Corporations," Report to Parliament, 2005, p. 9.

[24] SaskTel does pay Saskatchewan Taxes, which "represent the payment of corporation capital tax to the province of Saskatchewan and grants-in-lieu of taxes paid to cities, towns, villages, rural municipalities, and northern sites in Saskatchewan." (SaskTel, Annual Report, 2017–2018, pp. 35, 49.)

[25] Ibid, p. 37.

Table 6: LTE and LTE-A Coverage

	LTE						LTE-A	
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2016**	**2017**
Saskatchewan	37.8%	59.3%	60.0%	77.7%	86.2%	99.5%	44.4%	48.1%
Canada	72.0%	81.4%	92.8%	97.4%	98.5%	99.0%	83.0%	92.0%

Note: The average for Canada includes the northern territories.
Source: CRTC, Communications Monitoring Report, 2013–2018.

33. Thus, unless the nationwide providers are granted Crown status, are tax exempt, and receive financing at government rates as well as abandon their quest to lead the world in network investment and new technology deployment, it is unreasonable to assume that they will have the same cost structure as SaskTel. However, Rogers, Bell, and TELUS, as nationwide providers competing for market share, must tailor their pricing strategies in Saskatchewan to compete with the idiosyncratic competitive advantages enjoyed by SaskTel. TELUS and Bell seem to have done so, in part, by entering into structure sharing agreements with SaskTel, whereas Rogers decided to build its own network, albeit with a rather limited footprint.

34. Videotron has at least three idiosyncratic or artificial cost efficiencies that render it a poor benchmark for national price levels. First, Videotron limits its mobile wireless service offerings to approximately the same footprint as that of its parent company's (Quebecor) fixed backbone network, thereby enjoying significant costs savings in the province.[26] This

[26] For example, Quebecor states, "*Leverage geographic clustering*. Our Videotron subsidiary holds cable licenses that cover approximately 79% of the Province of Québec's estimated 3.7 million premises. Geographic clusters facilitate bundled service offerings and, in addition, allow us to tailor our offerings to certain demographic markets. We aim to leverage the highly clustered nature of our systems to enable us to use marketing dollars more efficiently and to enhance customer awareness, increase use of products and services and build brand loyalty." (Quebecor Media Inc., U.S. Securities and Exchange Commission, Form 20-F, 2018, p. 56.)

likely also explains why Videotron does not have plans to expand outside Quebec.[27] Second, Videotron (and all other regional providers) gets cost-based and risk-free access to domestic wholesale roaming under the CRTC's mandatory roaming regime. Third, ISED regulations (set-aside spectrum in particular) have allowed Quebecor to obtain much of its spectrum at significant discounts over the prices paid by the nationwide providers. Quebecor has also been afforded the opportunity to sell the spectrum acquired outside of Quebec and the Ottawa region at what The Globe and Mail described as "subsidized rates."[28] In 2017, Quebecor sold spectrum it had acquired in the Toronto area for CAD 96 million in 2008, to Rogers for CAD 184 million.[29] That same year it also sold 700 MHz and 2500 MHz spectrum to Shaw/Freedom. In 2014 and 2015, Quebecor had paid CAD 420 million for 25 licenses across several provinces, of which it sold seven licenses to Shaw for CAD 430 million.[30]

35. Thus, unless nationwide providers cease serving the entire country, obtain access to a third-party network risk free and at cost, and are granted spectrum at significantly lower prices, they cannot match the cost structures of the regional provider Videotron. However, Rogers, Bell, and TELUS, as nationwide providers competing for market share, must tailor their pricing strategies in Quebec to compete with the artificial competitive advantages enjoyed by Videotron.

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[27] In its 2017 presentation to analysts, Quebecor indicated its intent to "Focus on Core Business," and as part of that it conducted the "Sale of Spectrum outside Quebec." (Quebecor, CIBC 16th Annual Eastern Institutional Investor Conference, September 28, 2017, slide 11.)

[28] Konrad Yakabuski, "Ottawa's approval of the Quebecor spectrum sale would see Péladeau laughing all the way to the bank," *The Globe and Mail*, June 16, 2017.

[29] Ibid.

[30] Ibid.; see also "Shaw acquires 700MHz, 2500MHz spectrum from Videotron for CAD430m, sells ViaWest for CAD2.3bn," *Telegeography*, June 14, 2017.

IV. The Bureau's Claim Is Inconsistent with Basic Economic Theory

A. The Bureau's Coordinated Behavior Claim Is Theoretically Inconsistent

36. Coordinated behavior, where such involves a multitude of differentiated products is difficult, if not impossible, to establish and maintain. Other than a cursory review, the Bureau did not examine how the alleged coordination can be accomplished. Mobile wireless services differ in plan attributes (e.g., number of monthly voice, data, and SMS allowances), activation fees, network quality (download speeds), handset offerings and discounts, and bundling options. The Bureau claims that Rogers, Bell, and TELUS coordinate on the monthly recurring charge (MRC). It makes little economic sense to coordinate on one pricing attribute when there are multiple attributes involved. For instance, even if the nationwide providers coordinate on the MRC (which they do not), such an observation does not establish coordinated behavior because providers could "cheat" by offering greater handset discounts or increased download speeds at the alleged coordinated price level.

37. Had the Bureau focused not just on price, it would have recognized that providers do compete on quality (despite the Bureau's claim to the opposite). Speedtest (aka Ookla), a network testing firm, developed a "Speed Score" that incorporates low-end, median, and top-end performance for both download and upload speeds to "reflect the full breadth of consumer experience on a given network."[31] The rankings in the 2nd and 3rd quarter 2017 and 1st and 2nd quarter 2018 are shown in Table 7. Two observations are clear: (1) the speed rankings have improved significantly for all providers during this short period, and

[31] Speedtest, Canada Market Snapshot 2017, November 15, 2017, and Canada Market Snapshot 2018, September 19, 2018, http://www.speedtest.net/reports/canada/.

(2) there is a significant difference between TELUS and Bell on one hand and Rogers (and its flanker brand Fido) on the other. Both observations are inconsistent with coordinated behavior.

Table 7: Average Download Speed by Provider

Carrier	Q2-Q3 2017	Q1-Q2 2018	Change	% Change
			(3)-(2)	(4)/(2)
(1)	(2)	(3)	(4)	(5)
TELUS	42.2	58.0	15.8	38%
Bell	41.2	57.1	15.9	38%
Fido	28.0	39.6	11.6	41%
Rogers	27.3	36.2	8.9	33%
Videotron	28.7	35.0	6.3	22%
Freedom	17.3	20.4	3.1	18%

Source: Speedtest, Canada Market Snapshot 2017, November 15, 2017; Canada Market Snapshot 2018, September 19, 2018.

38. Similarly, if there was coordinated behavior, as alleged by the Bureau (which there is not), one would expect churn rates to be constant among the coordinating parties. Coordinated conduct depends upon stability in the market. Churn rates measure subscriber turnover with the higher the churn rate the greater the turnover.[32] The CRTC, which publishes the monthly rates of the three nationwide providers, notes, "A high churn rate suggests that customers are leaving their existing mobile providers for a number of reasons, including dissatisfaction with the service, and taking advantage of competitive offers and pricing issues."[33] Because almost none of the churn is caused by subscribers moving to another area (unlike broadband Internet), wireless provider churn represents only subscriber turnover. Churn is expensive to the provider. According to a CIBC analysis, it costs about

[32] A provider's churn rate depends on a number of factors including the distribution of its customers between postpaid and prepaid service plans, customer satisfaction with their service provider and its offerings, and switching costs.

[33] CRTC, Communications Monitoring Report, 2018, p. 168.

50 times more to acquire a new subscriber (due to marketing and other acquisition costs) than to retain an existing one, with the average acquisition cost at CAD 521 in 2017 for Bell and TELUS.[34]

39. As shown in Table 8, the monthly Canadian nationwide wireless provider churn rates ranged between 1.1 and 2.0 percent since 2007. More important, there is no consistency among the alleged coordinating parties with Rogers having a churn rate 45 percent higher than TELUS' churn rate. This provides further evidence that there is no coordinated behavior.

Table 8: Nationwide Wireless Provider Monthly Churn Rates

	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Bell	1.7%	1.6%	1.6%	1.9%	2.0%	1.7%	1.6%	1.5%	1.5%	1.4%	1.4%
TELUS	1.5%	1.6%	1.6%	1.6%	1.7%	1.5%	1.4%	1.3%	1.3%	1.2%	1.1%
Rogers	1.6%	1.5%	1.4%	1.5%	1.8%	1.8%	1.7%	1.6%	1.6%	1.6%	1.6%
Ratio:											
Bell/TELUS	1.13	1.00	1.00	1.19	1.18	1.13	1.14	1.15	1.15	1.17	1.27
Rogers/TELUS	1.07	0.94	0.88	0.94	1.06	1.20	1.21	1.23	1.23	1.33	1.45

Source: CRTC, Communications Monitoring Report, 2011, 2014, 2017, and 2018.

40. In fact, the Canadian nationwide provider churn rates are in line with U.S. provider churn rates, as shown in Table 9. Unlike in Canada, there is no allegation by U.S. enforcement or regulatory agencies of coordinated behavior.

[34] Emily Jackson, "Big telecoms are spending more cash to keep customers, but some tactics raise concerns," financialpost.com, March 10, 2017.

Table 9: U.S. Nationwide Provider Churn Rates

	2013	2014	2015	2016	2017
AT&T	1.4%	1.5%	1.4%	1.5%	1.4%
Verizon	1.3%	1.3%	1.2%	1.3%	1.3%
Sprint	2.6%	2.6%	2.3%	2.2%	1.9%
T-Mobile	2.7%	2.4%	2.0%	1.7%	1.8%

Source: FCC Fact Sheet, Communications Marketplace Report, GN Docket No. 18-231, November 21, 2018.

B. The Bureau's Theory Is Inconsistent with the Contestability of the Market

41. A market is deemed contestable if market entry barriers are low or if existing smaller providers can expand quickly when presented with a profit opportunity. In a contestable market, coordinated behavior will fail because a maverick provider will undercut the supracompetitive price imposed by the coordinating parties.

42. The Bureau previously recognized the importance of considering contestability theory in assessing the competitiveness of a market. Specifically, in examining the competitiveness of the broadband market, the Bureau found that "contestability is key" and elaborated:

> [E]ven competitors with a high market share must respond to the threat of entry or expansion when other competitors are seen by consumers as an effective alternative in the marketplace. This very issue is at the heart of the analysis in this study….[35]

43. Further, in the context of mobile wireless, ISED acknowledged that all regional providers have the ability to expand quickly and thus can contest the market. Specifically, ISED found:

> [R]ecent spectrum assignments in the 700 MHz, AWS-3, AWS-4 and 2500 MHz bands have provided **all current and potential wireless service providers with multiple opportunities to access additional spectrum in the licence areas to meet their spectrum needs.**[36]

[35] Competition Bureau Canada, "Delivering Choice: A Study of Competition in Canada's Broadband Industry," August 7, 2019, p. 21.

[36] Government of Canada, "Transfer of Spectrum Licences to Bell Canada and Xplornet Communications Inc. from MTS Inc.," Transfer Decision, February 15, 2017 (emphasis added).

44. Moreover, the Bureau curiously excludes Freedom from the list of "strong regional competitors" even though Freedom owns significant spectrum, is present in several regions (e.g., British Columbia, Alberta, and Ontario), and belongs to Shaw Communications, which is a company with a market capitalization of $13.6 billion.[37] Hence, Freedom is well positioned to be the maverick. Absent established criteria as to what constitutes a strong competitor, the Bureau can exclude a provider from that designation without justification. Thus, the market is fully contestable rendering the Bureau's claim a practical impossibility.

C. The Bureau Does Not Provide Any Justification as to what Constitutes a Strong Regional Competitor

45. The Bureau limits its theory to "strong regional competitors," implying that not-so-strong or weak regional competitors cannot discipline the alleged anticompetitive behavior. The Bureau implies that Videotron, SaskTel, Tbaytel, and MTS (prior to its merger with Bell) are "strong regional competitors." All other regional providers, including Freedom, Eastlink, Xplornet, and Ice Wireless are supposedly weak regional competitors. The Bureau does not explain what distinguishes a strong regional competitor from a weak competitor. Rather, the Bureau labels a regional provider as a strong competitor if it supports its theory (i.e., alleged lower prices in the areas served by regional competitors). The Bureau labels regional providers that are inconsistent with its claim as not strong—so that must mean weak. The Bureau's distinction between strong and supposedly weak regional providers exposes several fallacies underlying the Bureau's theory.

46. First, not knowing what distinguishes a strong versus a weak regional provider makes it impossible to establish a causal link between the presence of the regional provider and the

[37] See Bloomberg, https://www.bloomberg.com/quote/SJR/B:CN (accessed July 14, 2019).

alleged lower prices. The Bureau's analysis only superficially examines "alternative explanations for regional price differences."[38] More important, the Bureau fails to examine why other regional providers do not support its claim. For instance, the Bureau did not examine why Freedom does not yield lower prices. There is no justification to call Freedom a weak regional provider but assert that Videotron is a strong regional provider. Major communications companies that provide wireline and wireless services own both regional providers. Notably, Shaw has a larger market capitalization of CAD 13.6 billion versus CAD 8.1 billion for Videotron,[39] thereby calling into question why Freedom is weak and Videotron is not. The Bureau also has no explanation of why it considers Eastlink, Xplornet, and Ice Wireless weak regional competitors.

47. Second, the Bureau's distinction between weak and strong regional providers is inconsistent with its prior statements. For example, the Bureau considered Xplornet, which obtained 40 MHz of spectrum in Manitoba as part of the conditions imposed on the Bell-MTS merger, as being sufficient for the new entrant to satisfy Canada's Supreme Court criterion that "competition is not substantially less than it was before the merger."[40] This raises the question of why Xplornet is not on the Bureau's list of strong regional providers.

48. Third, the Bureau's distinction is also inconsistent with the market evidence. Table 10 summarizes spectrum holdings by service area and provider. It reveals no significant difference in spectrum holdings between supposedly weak and strong regional providers. For instance, Videotron (strong) owns between 11 and 19 percent of the spectrum in its

[38] Bureau Wireless Submission, ¶ 15.

[39] See Bloomberg, https://www.bloomberg.com/quote/SJR/B:CN and https://www.bloomberg.com/quote/QBR/A:CN (both accessed July 14, 2019).

[40] Government of Canada, Competition Bureau, "To acquire MTS, Bell must sell assets and provide services to Xplornet, Consent agreement addresses Commissioner's concerns," February 15, 2017.

service territory. Eastlink (weak) owns between 11 and 14 percent of the spectrum in its service territory. Freedom (weak) owns between 13 and 14 percent of the spectrum in its service territory. The Bureau does not explain why regional providers with similar spectrum portfolios in their service territories result in strong providers that break the alleged coordinated behavior and weak providers that do not.

Table 10: Spectrum Holdings by Service Area and Provider in MHz (as of August 1, 2019)

Service Area	Bell	Rogers	TELUS	Videotron	SaskTel	Freedom	Eastlink	Other	Total
NL	212	242	120	0	0	0	90	125	788
Share of MHz	*27%*	*31%*	*15%*	*0%*	*0%*	*0%*	*11%*	*16%*	*100%*
NS & PEI	194	244	124	0	0	0	110	124	797
Share of MHz	*24%*	*31%*	*16%*	*0%*	*0%*	*0%*	*14%*	*16%*	*100%*
NB	198	248	116	0	0	0	110	163	836
Share of MHz	*24%*	*30%*	*14%*	*0%*	*0%*	*0%*	*13%*	*19%*	*100%*
Eastern QC	154	232	196	134	0	0	0	86	803
Share of MHz	*19%*	*29%*	*24%*	*17%*	*0%*	*0%*	*0%*	*11%*	*100%*
Southern QC	156	240	202	133	0	0	0	67	799
Share of MHz	*20%*	*30%*	*25%*	*17%*	*0%*	*0%*	*0%*	*8%*	*100%*
Northern QC	162	193	102	150	0	0	0	176	784
Share of MHz	*21%*	*25%*	*13%*	*19%*	*0%*	*0%*	*0%*	*22%*	*100%*
Eastern ON	155	237	198	93	0	30	0	110	823
Share of MHz	*19%*	*29%*	*24%*	*11%*	*0%*	*4%*	*0%*	*13%*	*100%*
Southern ON	214	280	128	0	0	105	0	69	796
Share of MHz	*27%*	*35%*	*16%*	*0%*	*0%*	*13%*	*0%*	*9%*	*100%*
Northern ON	217	243	139	0	0	0	58	177	834
Share of MHz	*26%*	*29%*	*17%*	*0%*	*0%*	*0%*	*7%*	*21%*	*100%*
MB	176	230	213	0	0	0	0	180	800
Share of MHz	*22%*	*29%*	*27%*	*0%*	*0%*	*0%*	*0%*	*22%*	*100%*
SK	49	196	201	0	220	0	0	132	797
Share of MHz	*6%*	*25%*	*25%*	*0%*	*28%*	*0%*	*0%*	*17%*	*100%*
AB	133	244	219	0	0	115	2	114	828
Share of MHz	*16%*	*29%*	*26%*	*0%*	*0%*	*14%*	*0%*	*14%*	*100%*
BC	145	256	208	0	0	107	0	70	787
Share of MHz	*18%*	*33%*	*26%*	*0%*	*0%*	*14%*	*0%*	*9%*	*100%*

Note: Results for the northern territories are not shown. "Other" includes Tbaytel and Xplornet.
Source: Government of Canada, National Holdings for Commercial Mobile Spectrum Licenses, current as of August 1, 2019.

49. Fourth, each regional provider, whether weak or strong, has access to set-aside spectrum and cost-based domestic roaming. Thus, even assuming coordinated behavior (which there is none); all regional providers have ample opportunity to undercut the alleged supracompetitive prices. If they opt not to do so, this does not imply that they require additional regulatory handouts. Rather, it indicates that the market is competitive, and they are unable to undercut prices.

50. Fifth, weak regional providers are growing significantly faster than the nationwide providers are. This observation is inconsistent with the Bureau's theory alleging that weak regional providers are unable to compete with nationwide providers and hence unable to break the alleged coordinated behavior. Freedom and Eastlink, both categorized as weak regional competitors, have grown significantly faster than the nationwide providers have. Specifically, between fiscal 2016 and 2017, Freedom grew by 10 percent and by another 22 percent between fiscal 2017 and 2018. In the nine months period ending May 2019, Freedom reported 12.5 percent growth.[41] Likewise, between 2017 and 2018, Eastlink grew 10.0 percent, and another 8 percent in the first quarter of 2019.[42] These growth statistics compare to an average 2013–2017 growth rate of 2.8 percent for nationwide providers. The phenomenon of Freedom's and Eastlink's growth is inconsistent with the Bureau's coordinated behavior theory. Clearly, these regional providers are competing for market share. The growth is direct evidence of their effectiveness as a competitor. Conversely, it also indicates that the nationwide providers do not have as much market power (if any) as

[41] Shaw's fiscal year runs through August. (Shaw Communications Inc., 2017 Annual Report, p. 7; 2018 Annual Report, p. 9. Shaw Announces Second Quarter and Year-To-Date Fiscal 2019 Results, April 9, 2019, p. 12.)
[42] TeleGeography.

the Bureau alleges – each nationwide provider's loss of market share is the direct evidence of that.

51. The Bureau made some erroneous assumptions in reaching its conclusion. It appears that if the Bureau observed lower prices, and after limited testing it assumed the regional provider was the reason and therefore decided that the regional provider was strong. To the contrary, if it observed no provincial price differences, it attributed this to a weak regional provider. This method is not only poor scientific research but also is inconsistent with the market and theoretical evidence. Moreover, this method obviously leads to incorrect conclusions that in turn might lead to bad policy decisions.

V. THE ECONOMIC LITERATURE DISAGREES WITH THE BUREAU'S METHODOLOGY

52. Economic analysis of coordinated behavior across firms has identified key features that make coordination possible.

> [F]or coordination to be viable, it must be feasible for participants to reach an *agreement* on the terms of coordination; it must also be possible to *monitor* that this agreement is being respected by the colluding firms; and deviating firms must be punished, and in the case of tacit collusion it is the credibility of this punishment mechanism that holds the collusive agreement together, i.e. *enforces* it.[43]

This framework applies to both explicit and tacit coordination.[44] Yet, the Bureau's analysis does not address any of these factors.

[43] See Peter Davis and Eliana Garces, "Quantitative Techniques for Competition and Antitrust Analysis," (Princeton University Press: 2010): 319. See also, Richard Schmalensee and Robert Willig, "Handbook of Industrial Organization," Fifth Edition, Volume 1, (North Holland: 1998): 416-424 (hereinafter Schmalensee and Willig); see also Peter Davis and Eliana Garces, "Quantitative Techniques for Competition and Antitrust Analysis," (Princeton University Press: 2010): 319.

[44] Ibid.

53. Reaching an *agreement* requires a common understanding on what it means to coordinate, for example, an understanding of the dimensions on which coordination occurs and an indication of expected behavior.[45] In tacit collusion, the agreement would not be explicit; instead, the market participants would have to infer it from information available in the market. A market where pricing is complex (i.e., involving multiple products or different versions of the same product) makes it harder for the firms to find a mutually acceptable understanding of what it means to tacitly coordinate. For example, coordinating prices is not enough when customer retention discounts could be offered. The Bureau assumes away all this complexity.

54. In practice, each mobile wireless provider offers a menu of products and product bundles (e.g., a bundle may include voice minutes, SMS messages, and data). The bundles differ across mobile wireless providers (e.g., "TELUS offered plans with 8, 9 or 10 GB of data with unlimited voice and unlimited SMS in Quebec, whereas Rogers offers a 10 GB plan only). Similarly, bundles of services where mobile wireless services are bundled with Internet or TV differ across providers in the quality of the Internet connection (e.g., speed) or content (for TV offerings). Reaching an agreement on a multitude of bundles and a multitude of packages in multiple markets is difficult and not likely to result in an effective agreement. Agreements are also more difficult in industries with rapid change, which is the case for the mobile wireless market where all competitors constantly introduce new products or features (e.g., handset financing).[46]

[45] Ibid.

[46] See Rogers Communications, Inc., "Rogers introduces new 24- and 36-month device financing options," Globe Newswire, July 10, 2019.

55. Further, successful coordination depends on a firm's ability to observe or infer with confidence the actions of its competitors and to observe deviations for the coordinated actions, for example, from coordinated prices. The dynamic nature of mobile wireless markets where each competitor constantly introduces new product bundles makes it harder to monitor a competitor's actions. The Bureau did not identify any specific monitoring mechanism.

56. Any success with coordination depends on the ability to enforce the agreement. In both explicit and tacit coordination, enforcement depends on the existence of a threat of a credible punishment directed either at a deviating firm if they move away from the coordinated outcome when a deviation is detected. A successful punishment mechanism eliminates gains from deviation and helps sustain coordination. An effective enforcement mechanism is generally difficult to find, which is why even explicit cartels break down.[47] Such a mechanism is especially difficult for tacit collusion. Here, the Bureau has not identified any enforcement or punishment mechanism.

VI. THE BUREAU'S CLAIM IS INCONSISTENT WITH PRIOR STUDIES

57. The Bureau's claim is inconsistent with several studies that found the market to be competitive. Reviewing and incorporating these studies is important, particularly given the serious shortfalls in the Bureau's study.

58. First, as part of my review of the Wall/Nordicity studies (see Appendix D), I prepared an alternative study that corrects for their "omission of key plan attributes, the complete

[47] See Margaret C. Levenstein and Valerie C. Suslow, "What determines cartel success," *Journal of Economic Literature,* Vol. 44, No. 1, 2006.

oversight of network qualities, and the absence of country-specific characteristics."[48] I compared Canadian prices at both the country level and the region level.[49] In both cases, I found that around 80 percent of the forecasted prices were below the international benchmark, and only about 20 percent were above the international benchmark.[50] These results refute the claims of Wall/Nordicity, the Competition Bureau, and other studies that incorrectly claim that Canada's prices are above the international norm.[51] I presented my study to ISED along with the database used to conduct the analysis.

59. Second, a study conducted by Dr. Jeffrey Eisenach in 2014 concluded that Canada's "mobile wireless services are robustly competitive and that additional wholesale regulation would almost certainly harm – and in any case, would not improve – consumer welfare."[52] The same principle applies to any proposed preferential treatment. In the presence of a competitive market, these measures would harm consumer welfare. Dr. Eisenach based these findings on factors such as voice minutes of use, data traffic per connection, revenue per subscriber as well as investment and network quality reflected in part in smartphone adoption.

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[48] See Christian M. Dippon, Ph.D., "An Accurate Price Comparison of Communications Services in Canada and Select Jurisdictions," NERA Economic Consulting, October 19, 2018 p. 27 (hereinafter Dippon Price Comparison).

[49] I used cities operating as proxies for the region, for example, Toronto for Ontario and Regina for Saskatchewan.

[50] Dippon Price Comparison, pp. 34–35.

[51] See Christian Dippon, "Oversimplified and Misleading International Price Comparisons Must Not Guide Policy and Regulatory Decisions," March 13, 2019, NERA Economic Consulting, available for download at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3420803.

[52] Before the Canadian Radio-television and Telecommunications Commission, *Review of Wholesale Mobile Wireless Services*, CRTC 2014-76, Expert Report of Jeffrey A. Eisenach, Ph.D. on Behalf of TELUS Communications Company, May 15, 2014, ¶ 6 (hereinafter Eisenach 2014).

60. Dr. Eisenach also accounted for operating conditions, for example, the number of wireless connections per square kilometer and the number of mobile connections by provider. Dr. Eisenach further explains that regulatory intervention requires a two-pronged test:

> (1) A market failure must exist which prevents competitive forces from maximizing consumer welfare in the usual, well-understood ways. That is, the market must exhibit some form of market power, externality, or other imperfection that causes the quantity and/or quality of output to deviate from the economically efficient level. (2) It must be possible to design and implement, in the real world, a form of regulatory intervention that will, on net, improve market performance and enhance consumer welfare.[53]

Dr. Eisenach's recommendation is relevant to the present consultation. ISED must establish that market failure has occurred *and* weigh the pros and cons of its available regulatory tools, ultimately recommending one that promises a net market performance improvement. The above discussion demonstrates that the selected studies that ISED considered in its 3500 MHz consultation (i.e., the Bureau's filing n CRTC 2019-57 and the Wall report) are insufficient and frequently incorrect in demonstrating market failure. Further, ISED's consultation gives no indication that it considered the trade-offs of continued market intervention, continued preferential treatment of a select group of bidders, and set-asides.

61. Third, Dr. Robert Crandall in a recent study concluded, "the Canadian mobile wireless sector is competitive with most of the competitive focus on the delivery of high-speed data services."[54] He further noted that with 5G deployment beginning it "is important that the regulatory environment continue to induce high levels of network investment."[55] Again,

[53] Ibid, ¶ 7 (notes omitted).

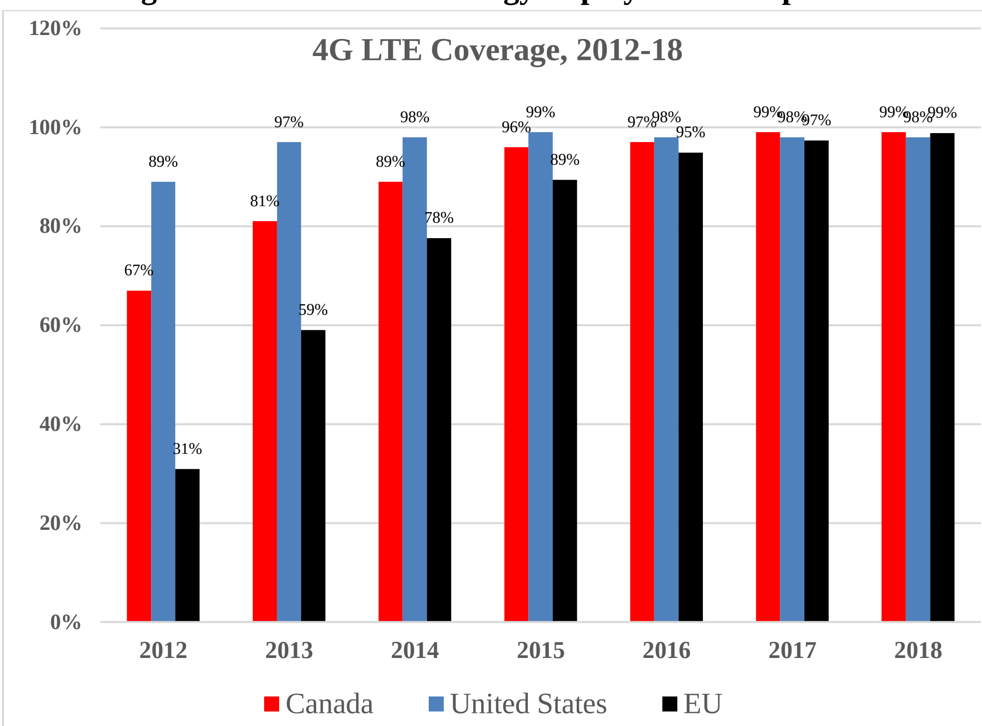
[54] Before the Canadian Radio-Television and Telecommunications Commission, *Telecom Notice of Consultation CRTC 2019-57*, *Review of mobile wireless services*, "An Analysis of the Performance of the Canadian Mobile Wireless Industry," Expert Report of Robert W. Crandall On behalf of TELUS Communications, Inc., May 15, 2019, ¶ ES1 (hereinafter Crandall Report).

[55] Ibid, ¶ ES2.

there is no indication that ISED considered this evidence. If it did, it would necessarily have concluded that procompetitive measures are superfluous at best.

62. Fourth, the fact that Canada is home to some of the most advanced networks in the world is a reflection of the competitiveness of the mobile wireless market in Canada. For instance, as explained by Dr. Crandall, "Canada has moved much more rapidly to deploy 4G than has the average European country. Europe has only recently approached Canada in terms of 4G availability."[56] Figure 1 is a reproduction of Dr. Crandall's findings.

Figure 1: Crandall Technology Deployment Comparison

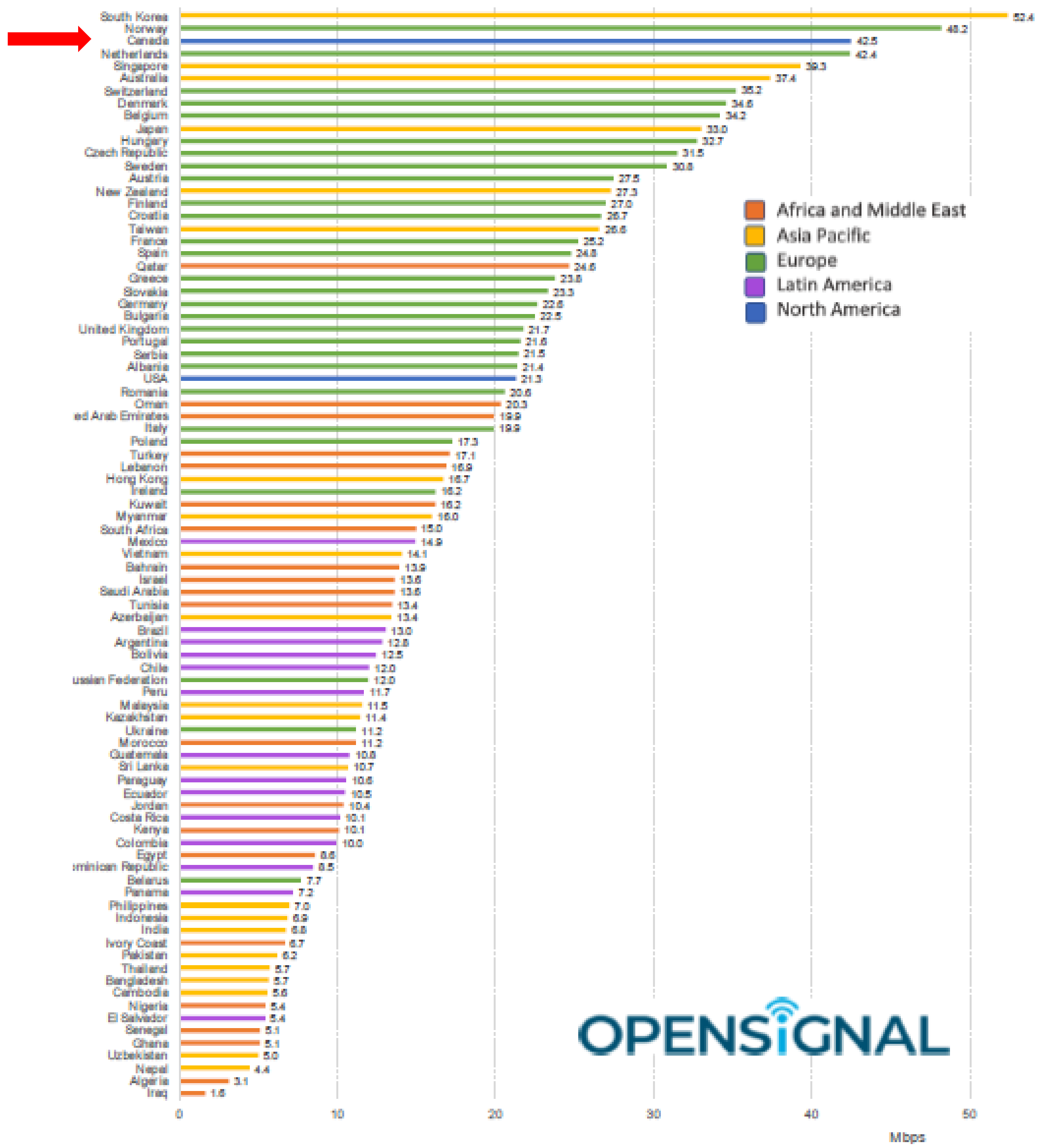


Source: Crandall Report.

63. Similarly, as shown in Figure 2, OpenSignal finds Canada among the leaders in terms of average download speeds.

[56] Ibid, p. 17.

Figure 2: OpenSignal Average Download Speeds

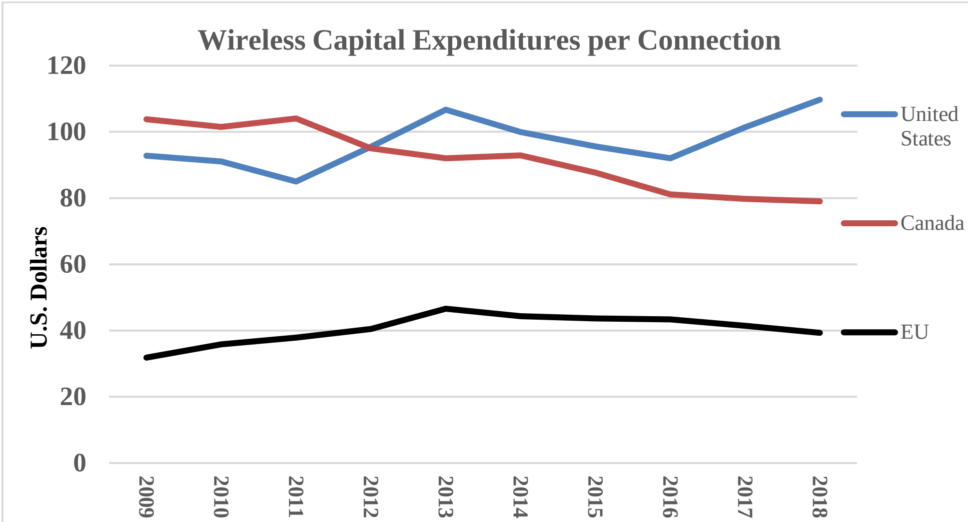


Source: OpenSignal, "The State of Mobile Network Experience, Benchmarking mobile on the eve of the 5G revolution," May 2019.

64. Canada's leading market performance is the result of its providers' equally leading investment efforts. As reported by Dr. Crandall and reproduced in Figure 3, "Canadian carriers continue to invest more heavily than their EU counterparts…."[57]

[57] Crandall Report, p. 25.

Figure 3: Crandall Network Investment Comparison



Source: Crandall Report.

65. Within Canada, the three nationwide providers also rank at the top with all three exhibiting excellent quality across a number of metrics such as average download speed and latency, and they generally outperform the regional providers.[58] The characteristics of the Canadian mobile wireless market are consistent with those of a competitive market.

VII. Conclusion

66. The Bureau observed temporal provincial price differences and concluded that provinces with higher prices are subject to coordinated behavior. This sweeping and serious allegation requires much more proof than the evidence offered by the Bureau. My review of the Bureau's study uncovered serious shortfalls and inconsistencies with marketplace evidence and economic theory. There is no coordinated behavior among the three nationwide providers despite provincial differences found by the Bureau. Further, the presence of a regional provider – be it strong or weak – does not indicate coordinated

[58] OpenSignal, "Mobile Network Experience Report, Canada," February 2019, https://www.opensignal.com/reports/2019/02/canada/mobile-network-experience.

behavior within a province. The Bureau's claims are false because the facts simply do not support the claims. In addition, the methodology used by the Bureau to support its claims is faulty. It is therefore my expert opinion that the Bureau's study should not serve as input to public policy discussions and regulatory and competition matters.

APPENDIX A: MOBILE WIRELESS PRICING DATA JULY 2019

Provincial Prices
Prepaid Plans
July 1, 2019

	No Data, 50+ Mins		
Province	**Bell**	**TELUS**	**Rogers**
British Columbia	$ 20.00	$ 25.00	$ 20.00
Saskatchewan	$ 20.00	$ 25.00	$ 20.00
Ontario	$ 20.00	$ 25.00	$ 20.00
Quebec	$ 20.00	$ 25.00	$ 20.00

	250 MB		
Province	**Bell**	**TELUS**	**Rogers**
British Columbia	$ 30.00	$ 35.00	$ 30.00
Saskatchewan	$ 30.00	$ 35.00	$ 30.00
Ontario	$ 30.00	$ 35.00	$ 30.00
Quebec	$ 30.00	$ 35.00	$ 30.00

	500 MB		
Province	**Bell**	**TELUS**	**Rogers**
British Columbia	$ 45.00	$ 55.00	$ 50.00
Saskatchewan	$ 45.00	$ 55.00	$ 50.00
Ontario	$ 45.00	$ 55.00	$ 50.00
Quebec	$ 45.00	$ 55.00	$ 50.00

	1 GB+		
Province	**Bell**	**TELUS**	**Rogers**
British Columbia	$ 50.00	$ 55.00	$ 65.00
Saskatchewan	$ 50.00	$ 55.00	$ 65.00
Ontario	$ 50.00	$ 55.00	$ 65.00
Quebec	$ 50.00	$ 55.00	$ 65.00

Notes:
All plans include unlimited SMS; Bell includes international SMS
Bell 50 plan includes 100 local mins and 100 MB
Bell 250 includes 250 local mins and 350 MB w/ promotion
Bell 500 plan includes 500 nationwide mins and 1 GB
Bell GB plan includes 500 nationwide mins and 1 GB
TELUS 50 plan includes 50 local mins (plus unlimited local nights & weekends)
TELUS 250 includes 100 local mins and 250 MB (plus unlimited local nights & weekends)
TELUS 500 plan includes 500 nationwide mins and 1 GB
TELUS GB plan includes 500 nationwide mins and 1 GB
Rogers 50 plan includes 50 local mins
Rogers 250 includes 50 local mins and 250 MB
Rogers 500 plan includes 100 local mins and 500 MB (plus unlimited local nights & weekends)
Rogers GB plan includes 1 GB and 150 local mins (plus unlimited local nights & weekends).
Source: Providers' websites.

Provincial Prices
Postpaid Plans
July 1, 2019

	No Data, 50+ Mins		
Province	**Bell**	**TELUS**	**Rogers**
British Columbia	$ 20.00	$ 25.00	$ 20.00
Saskatchewan	$ 20.00	$ 25.00	$ 20.00
Ontario	$ 20.00	$ 25.00	$ 20.00
Quebec	$ 20.00	$ 25.00	$ 20.00

	250 MB		
Province	**Bell**	**TELUS**	**Rogers**
British Columbia	$ 30.00	$ 35.00	$ 30.00
Saskatchewan	$ 30.00	$ 35.00	$ 30.00
Ontario	$ 30.00	$ 35.00	$ 30.00
Quebec	$ 30.00	$ 35.00	$ 30.00

	500 MB		
Province	**Bell**	**TELUS**	**Rogers**
British Columbia	$ 45.00	$ 55.00	$ 50.00
Saskatchewan	$ 45.00	$ 55.00	$ 50.00
Ontario	$ 45.00	$ 55.00	$ 50.00
Quebec	$ 45.00	$ 55.00	$ 50.00

	1 GB+		
Province	**Bell**	**TELUS**	**Rogers**
British Columbia	$ 50.00	$ 55.00	$ 65.00
Saskatchewan	$ 50.00	$ 55.00	$ 65.00
Ontario	$ 50.00	$ 55.00	$ 65.00
Quebec	$ 50.00	$ 55.00	$ 65.00

Notes:
All plans listed include unlimited Canada-wide minutes and SMS
Bell 50 plan includes 100 local mins and 100 MB
Bell 250 includes 250 local mins and 350 MB w/ promotion
Bell 500 plan includes 500 nationwide mins and 1 GB
Bell GB plan includes 500 nationwide mins and 1 GB
TELUS 50 plan includes 50 local mins (plus unlimited local nights & weekends)
TELUS 250 includes 100 local mins and 250 MB (plus unlimited local nights & weekends)
TELUS 500 plan includes 500 nationwide mins and 1 GB
TELUS GB plan includes 500 nationwide mins and 1 GB
Rogers 50 plan includes 50 local mins
Rogers 250 includes 50 local mins and 250 MB
Rogers 500 plan includes 100 local mins and 500 MB (plus unlimited local nights & weekends)
Rogers GB plan includes 1 GB and 150 local mins (plus unlimited local nights & weekends).
Source: Providers' websites.

Provincial Prices
Rogers Postpaid Basic Plans
July 1, 2019

MRC	Data (GB)	Prov. Minutes	Nat'l Minutes	SMS
		BC		
$25.00	0.1	n/a	50	100
$25.00	0	n/a	150	50
$35.00	0	Unlimited	0	Unlimited
$40.00	0	n/a	Unlimited	Unlimited
		ON		
$25.00	0.1	n/a	50	100
$25.00	0	n/a	150	50
$35.00	0	Unlimited	0	Unlimited
$40.00	0	n/a	Unlimited	Unlimited
		QC		
$29.00 [2]	0	n/a	300 [1]	Unlimited
$30.00	0	n/a	100 [1]	Unlimited
$35.00	0	n/a	200 [1]	Unlimited
$35.00	0	Unlimited	0	Unlimited
$40.00	0	n/a	Unlimited	Unlimited
		SK		
$25.00	0.1	n/a	50	100
$25.00	0	n/a	150	50
$25.00	0	200 [3]	0	Unlimited
$29.00 [2]	0	n/a	300 [1]	Unlimited
$30.00	0	n/a	500 [1]	Unlimited
$35.00	0	Unlimited	0	Unlimited
$45.00	0.2	n/a	1000 [1]	Unlimited
$40.00	0	n/a	Unlimited	Unlimited

Notes: Overage fee is $10/100 MB
[1] Unlimited Canada-wide calling after 6 pm
[2] Plan is exclusive to Doro Phone
[3] Unlimited local calling after 6 pm
Source: Providers' websites.

APPENDIX B: MOBILE WIRELESS PRICING DATA AUGUST 2019

Provincial Prices Postpaid Plans July 1, 2019

Bell

BC		ON		QC		SK	
GB	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**
5	n/a	5	n/a	5	n/a	5	$50.00
6	$90.00	6	$90.00	6	$50.00	6	n/a
8	n/a	8	n/a	8	$59.00	8	n/a
10	$100.00	10	$100.00	10	$64.00	10	$60.00
14	$110.00	14	$110.00	14	$75.00	14	n/a
15	$135.00	15	$135.00	15	n/a	15	n/a
16	n/a	16	n/a	16	$85.00	16	n/a
20	$165.00	20	$165.00	20	n/a	20	$75.00

Rogers

BC		ON		QC		SK	
GB	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**
10	$75.00	10	$75.00	10	$75.00	10	$65.00
20	$95.00	20	$95.00	20	$95.00	20	$85.00
50	$125.00	50	$125.00	50	$125.00	50	$115.00

TELUS

BC		ON		QC		SK	
GB	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**
10	$75.00	10	$75.00	10	$75.00	10	$65.00
20	$95.00	20	$95.00	20	$95.00	20	$85.00
50	$125.00	50	$125.00	50	$125.00	50	$115.00
6	$90.00	6	$90.00	6	$50.00	6	$55.00
8	n/a	8	n/a	8	$59.00	8	n/a
9	n/a	9	n/a	9	$64.00	9	n/a
10	$100.00	10	$100.00	10	$69.00	10	n/a
10	$125.00	10	$125.00	10	n/a	10	n/a
12	n/a	12	n/a	12	$75.00	12	$65.00
14	$110.00	14	$110.00	14	n/a	14	n/a
15	$150.00	15	$150.00	15	n/a	15	$75.00
18	n/a	18	n/a	18	$95.00	18	n/a
20	$180.00	20	$180.00	20	n/a	20	$85.00
24	n/a	24	n/a	24	$130.00	24	n/a
25	n/a	25	n/a	25	n/a	25	$100.00
32	n/a	32	n/a	32	$160.00	32	n/a
35	n/a	35	n/a	35	n/a	35	$115.00
40	$280.00	40	$280.00	40	n/a	40	n/a
50	n/a	50	n/a	50	n/a	50	n/a
80	$410.00	80	$410.00	80	n/a	80	n/a

Regional MNOs

BC		ON		Videotron - QC		Sasktel - SK	
GB	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**
n/a		n/a		1	$38.00	1	$50.00
				4	$49.00	4	n/a
				5	n/a	5	$65.00
				8	$55.00	8	n/a
				9	$58.00	9	n/a
				10	$61.00	10	$75.00
				11	$68.00	11	n/a
				15	n/a	15	$85.00
				16	n/a	16	n/a
				17	$75.00	17	n/a
				19	$85.00	19	n/a
				20	n/a	20	$100.00
				35	n/a	35	$130.00
				50	n/a	50	$170.00

Provincial Prices Postpaid Plans July 29, 2019 (Bell, Rogers, and TELUS) August 6, 2019 (Videotron and SaskTel)

Bell

BC		ON		QC		SK	
GB	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**
5	$70.00	5	$70.00	5	$60.00	5	$60.00
6	n/a	6	n/a	6	n/a	6	n/a
8	n/a	8	n/a	8	n/a	8	n/a
10	$85.00	10	$85.00	10	$75.00	10	$75.00
14	n/a	14	n/a	14	n/a	14	n/a
15	n/a	15	n/a	15	n/a	15	n/a
16	n/a	16	n/a	16	n/a	16	n/a
20	$105.00	20	$105.00	20	$95.00	20	$95.00

Rogers

BC		ON		QC		SK	
GB	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**
10	$75.00	10	$75.00	10	$65.00	10	$65.00
20	$95.00	20	$95.00	20	$85.00	20	$85.00
50	$125.00	50	$125.00	50	$115.00	50	$115.00

TELUS

BC		ON		QC		SK	
GB	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**
10	$75.00	10	$75.00	10	$65.00	10	$65.00
20	$95.00	20	$95.00	20	$85.00	20	$85.00
50	$125.00	50	$125.00	50	$115.00	50	$115.00
6	n/a	6	n/a	6	$55.00	6	$55.00
8	n/a	8	n/a	8	n/a	8	n/a
9	n/a	9	n/a	9	n/a	9	n/a
10	$75.00	10	$75.00	10	$65.00	10	$65.00
10	n/a	10	n/a	10	n/a	10	n/a
12	n/a	12	n/a	12	n/a	12	n/a
14	n/a	14	n/a	14	n/a	14	n/a
15	n/a	15	n/a	15	n/a	15	n/a
18	n/a	18	n/a	18	n/a	18	n/a
20	$95.00	20	$95.00	20	$85.00	20	$85.00
24	n/a	24	n/a	24	n/a	24	n/a
25	n/a	25	n/a	25	n/a	25	n/a
32	n/a	32	n/a	32	n/a	32	n/a
35	n/a	35	n/a	35	n/a	35	n/a
40	n/a	40	n/a	40	n/a	40	n/a
50	$125.00	50	$125.00	50	$115.00	50	$115.00
80	n/a	80	n/a	80	n/a	80	n/a

Regional MNOs

BC		ON		Videotron - QC		Sasktel - SK	
GB	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**	**GB**	**$/Month**
n/a		n/a		1	$38.00	1	$50.00
				4	$49.00	4	n/a
				5	n/a	5	$65.00
				8	$52.00	8	n/a
				9	$55.00	9	n/a
				10	$58.00	10	$75.00
				11	n/a	11	n/a
				15	n/a	15	$85.00
				16	$65.00	16	n/a
				17	$72.00	17	n/a
				19	$82.00	19	n/a
				20	n/a	20	$100.00
				35	n/a	35	$130.00
				50	n/a	50	$170.00

Notes:
All plans listed include unlimited Canada-wide minutes and SMS
Contract terms vary by provider
Data quantity refers to LTE full-speed data
Tables only include single-line plans (no group plans)
SaskTel plans include a $10 BYOD discount.
Source: Providers' websites.

Appendix C: A Non-exhaustive List of Products and Services with Provincial Price Differences

Price Levels across Canada

Vendor	Market	Product	Location	Price Less Tax and Fees
(a)	(b)	(c)	(d)	(e)
Bell	TV	"Good" Package	Toronto, ON	$46.45
Bell	TV	"Good" Package	Sudbury, ON	$46.45
Bell	TV	"Good" Package	Montreal, QC	$44.45
Bell	TV	"Good" Package	Gatineau, QC	$44.45
Bell	Broadband	"Fibe 50" Package (50 Mbps up/down)	Toronto, ON	$67.95
Bell	Broadband	"Fibe 50" Package (50 Mbps up/down)	Gatineau, QC	$64.95
Bell	Broadband	"Fibe 50" Package (50 Mbps up/10 down)	Sudbury, ON	$67.95
Bell	Broadband	"Fibe 50" Package (50 Mbps up/10 down)	Montreal, QC	$64.95
Shaw	Broadband	"Internet 100" (100Mbps up/down)	Saskatoon, SK	$70.00
Shaw	Broadband	"Internet 100" (100Mbps up/down)	Vancouver, BC	$70.00
Shaw	Broadband	"Internet 100" (100Mbps up/down)	Thunder Bay, ON	$70.00
Shaw	Broadband	"Medium TV" Package	Saskatoon, SK	$80.00
Shaw	Broadband	"Medium TV" Package	Vancouver, BC	$80.00
Shaw	Broadband	"Medium TV" Package	Thunder Bay, ON	$80.00
Hertz	Rental Cars	Midsize Car (Toyota Corolla or Similar) - 42 hours	YVR, BC	$127.56
Hertz	Rental Cars	Midsize Car (Toyota Corolla or Similar) - 42 hours	YXE, SK	$117.26
Hertz	Rental Cars	Midsize Car (Toyota Corolla or Similar) - 42 hours	YUL, QC	$135.14
Hertz	Rental Cars	Midsize Car (Toyota Corolla or Similar) - 42 hours	YYZ, ON	$153.04
Hertz	Rental Cars	Midsize Car (Toyota Corolla or Similar) - 42 hours	Mississauga, ON	$146.10
Hertz	Rental Cars	Midsize Car (Toyota Corolla or Similar) - 42 hours	Downtown Montreal, QC	$124.02
National	Rental Cars	Midsize (Hyundai Elantra or Similar) - 42 hours	YVR, BC	$132.00
National	Rental Cars	Midsize (Hyundai Elantra or Similar) - 42 hours	YXE, SK	$124.00
National	Rental Cars	Midsize (Hyundai Elantra or Similar) - 42 hours	YYZ, ON	$146.90
National	Rental Cars	Midsize (Hyundai Elantra or Similar) - 42 hours	YUL, QC	$135.62
National	Rental Cars	Midsize (Hyundai Elantra or Similar) - 42 hours	YQB, QC	$123.94
Domino's	Food	14" Veggie Pizza	Vancouver, BC	$21.99
Domino's	Food	14" Veggie Pizza	Saskatoon, SK	$24.99
Domino's	Food	14" Veggie Pizza	Toronto, ON	$19.99
Domino's	Food	14" Veggie Pizza	Thunder Bay, ON	$18.49
Domino's	Food	14" Veggie Pizza	Montreal, QC	$21.99
Domino's	Food	14" Veggie Pizza	Gatineau, QC	$21.00
Subway	Food	Spicy Italian Sandwich	Vancouver, BC	$8.99
Subway	Food	Spicy Italian Sandwich	Saskatoon, SK	$8.29
Subway	Food	Spicy Italian Sandwich	Toronto. ON	$8.79
Subway	Food	Spicy Italian Sandwich	Montreal, QB	$8.79
Tim Hortons	Food	Medium Original Blend Black Coffee	Vancouver, BC	$1.86
Tim Hortons	Food	Medium Original Blend Black Coffee	Saskatoon, SK	$1.67
Tim Hortons	Food	Medium Original Blend Black Coffee	Thunder Bay, ON	$1.76
Tim Hortons	Food	Medium Original Blend Black Coffee	Montreal, QB	$1.76
JOEY	Food	Tuna Poke Bowl	Vancouver, BC	$21.00
JOEY	Food	Tuna Poke Bowl	Toronto, ON	$19.75

Notes: All data was collected on August 6, 2019, or August 7, 2019. The only exception is Bell TV and Internet data, which was collected on July 8, 2019. YVR, BC YXE, SK YUL, QC YYZ, ON and YQB, QC are airport codes.
Sources: Providers' websites.

Appendix D: An Accurate Price Comparison of Communications Services in Canada and Select Jurisdictions

See Attachment A of the Reply Expert Report of Christian M. Dippon, Ph.D. on Behalf of TELUS Communications Inc. Re: Consultation on a Policy and Licensing Framework for Spectrum in the 3500 MHz Band, dated September 20, 2019.

About the Author

Dr. Dippon is a Managing Director at NERA and a leading authority in complex litigation disputes and regulatory matters in the communications, Internet, and high-tech sectors. He is also the Chair of NERA's Global Energy, Environment, Communications & Infrastructure (EECI) Practice, where he leads over 100 experts in the areas of energy, communications, media, Internet, environment, auctions, transport, and water. Global Arbitration Review (2019) ranks Dr. Dippon among the world's leading commercial arbitration experts.

Dr. Dippon advises his clients in economic damages assessments, class certifications and damages, false advertising, antitrust matters, and regulatory and competition issues. He has extensive testimonial and litigation experience, including depositions, jury and bench trials in state and federal courts, domestic (AAA) and international arbitrations (UNCITRAL, ICC), and submissions before international courts. He assists clients with a broad range of litigation disputes related to wireline, wireless, cable, media, Internet, consumer electronics, and the high-tech sector. Dr. Dippon also routinely testifies before U.S. and international regulatory authorities, including the Federal Communications Commission, the International Trade Commission, the Canadian Radio-television and Telecommunications Commission, and the Competition Bureau Canada.

Dr. Dippon has authored and edited several books as well as book chapters in anthologies and has written numerous articles on telecommunications competition and strategies. He also frequently lectures in these areas at industry conferences, continuing education programs for lawyers, and at universities. National and international newspapers and magazines, including the Financial Times, Business Week, Forbes, the Chicago Tribune, and the Sydney Morning Herald, have cited his work.

Dr. Dippon serves on NERA's Board of Directors, the Board of Directors of the International Telecommunications Society (ITS), and on the Editorial Board of Telecommunications Policy. He is a member of the Economic Club of Washington, DC, the American Economic Association (AEA), the American Bar Association (ABA), and the Federal Communications Bar Association (FCBA).

Report Qualifications/Assumptions and Limiting Conditions

This report is for the exclusive use of TELUS Communications Inc. There are no third-party beneficiaries with respect to this report and NERA Economic Consulting does not accept any liability to any third party.

Information furnished by others, upon which all or portions of this report are based, is believed to be reliable but has not been independently verified, unless otherwise expressly indicated. Public information and industry and statistical data are from sources we deem to be reliable; however, we make no representation as to the accuracy or completeness of such information. The findings contained in this report may contain predictions based on current data and historical trends. Any such predictions are subject to inherent risks and uncertainties. NERA Economic Consulting accepts no responsibility for actual results or future events.

The opinions expressed in this report are valid only for the purpose stated herein and as of the date of this report. No obligation is assumed to revise this report to reflect changes, events or conditions, which occur subsequent to the date hereof.

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