

# International Wireless Market Comparison

Prepared for:

**TELUS**

Prepared by:

**Nordicity**

June 2011





## Table of Contents

Highlights	3
1. Background	4
2. Adjusted Cost Comparisons	5
2.1 Carriers and Plans Considered	5
2.2 Per-use Wireless Costs	7
2.3 Per-subscriber (Not Per-subscription) Costs	9
2.4 Wireless Costs as a Percentage of Income	10
3. Other Key Wireless Market Comparisons	13
3.1 Wireless Cost Trends	13
3.2 Geographic Challenges	14
3.3 Competitive Market Structure	17
3.4 Other Telecommunications Services Penetration	18



## Highlights

### Canada

- § Canadian wireless providers charge rates below the international averages despite serving the least densely subscribed network in the OECD. Canada's network serves 12 subscribers per km<sup>2</sup> – the fewest in the OECD – compared to 37 subscribers per km<sup>2</sup> in the United States and 312 subscribers per km<sup>2</sup> in the United Kingdom.
- § The presence of three national wireless carriers and six regional providers gives Canada one of the six most competitive wireless market structures in the OECD.
- § Canada's average per-minute wireless costs are the 11th-lowest in the OECD, \$0.02 below the OECD average.
- § Average wireless voice costs in Canada declined at a rate greater than the international average (2.65% vs. 2.46%) between 2005 and 2010.
- § Based on average income, Canadian wireless voice costs are 10% lower than the OECD average and total wireless (voice and data) costs are 12% lower than the OECD average.

### OECD Rankings

- § Canada's complete OECD wireless price ranking across six different calling profiles is based on fees from only four different wireless plans (two each from Bell and Rogers).
- § The OECD compares post-paid, pre-paid and 'friends and family' plans to develop rankings within a single calling profile.
- § OECD rankings do not recognize that nearly half of the wireless subscribers in the OECD countries outside of North America pay for more than one mobile plan.
- § Typical Canadian calling patterns are not reflected in the OECD calculations. The OECD calling profiles closest to the average Canadian cell phone usage profile are based on:
  - 187 minutes less per month than the average Canadian usage; or
  - 194 minutes more per month than the average Canadian usage.

## 1. Background

The Organization for Economic Cooperation and Development (OECD) will release its *2011 Communications Outlook* on June 22, 2011. The Outlook will include rankings of wireless prices in Canada and 30+ other OECD countries. The last OECD *Communications Outlook*, released in 2009, ranked Canada as the third-most expensive OECD country with respect to medium mobile phone usage.

Unfortunately for Canadian consumers and policy makers seeking representative and thorough international wireless service cost comparisons, the OECD *Outlook* tends to stand as the authoritative – and often lone – wireless cost benchmark for the nearly two-year period until the next OECD report is released. It is unfortunate because the public is generally unaware of the limitations of the OECD methodology, particularly that:

### **The OECD rankings:**

- 1. Are based on wireless plans serving a small minority of subscribers per country, and the choice of plan types is inconsistent;**
- 2. Only somewhat account for vastly different mobile usage patterns per country;**
- 3. Do not reflect the fact that nearly half of all residents of OECD countries outside of North America pay for two cell phone plans; and**
- 4. Do not fully compare wireless costs in relation to average income.**

Furthermore, cost should only be considered as part of an international wireless comparison – rather than the definitive factor. Therefore, while the OECD rankings and other cost comparisons constitute one part of an international wireless comparison:

### **A thorough international benchmarking process should also analyze:**

- 1. Wireless cost trends;**
- 2. Relative geographic challenges;**
- 3. Competitive market structure; and**
- 4. Other telecommunications services penetration.**

The following report addresses the omissions of the OECD wireless price rankings and comprehensively compares international wireless markets. The analysis compares the 27 OECD countries for which there is significant available public wireless data. To facilitate comparison, all rates have been converted to Canadian dollars on a purchasing power parity (PPP) basis.

## 2. Adjusted Cost Comparisons

This section addresses the omissions in the OECD wireless price rankings by comparing wireless costs per market that are: inclusive of all carriers and plans; reflect per-subscriber (not per-subscription) costs; and relative to average per capita income.

### 2.1 Carriers and Plans Considered

OECD rankings are based on wireless plans serving a small minority of subscribers per country, and the choice of plan types is inconsistent: OECD wireless cost rankings for Canada are based – depending on the calls basket – only on wireless plans provided by Rogers and Bell. The OECD methodology includes two or more operators in order to reach at least 50% of market share in every market. Therefore, although TELUS serves nearly 1/3<sup>rd</sup> of all Canadian wireless subscribers, no TELUS plans have ever been included in the calculations for OECD wireless cost rankings. Nor do the OECD rankings account for plans offered by Wind Mobile, Mobilicity, Videotron, SaskTel, MTS, Public Mobile, or the national carriers' flanker brands, Koodo, Chatr, Fido, Solo Mobile or Virgin Mobile.

Canada's OECD wireless price ranking across six different calling profiles is based on fees from only four different wireless plans.

Figure 1: Canadian Wireless Providers Considered in OECD Rankings<sup>1</sup>



As the table above illustrates, the OECD cost rankings for Canada are based on plans from two providers out of a total of 14 (or only 14% of all Canadian wireless providers).

<sup>1</sup> Bank of America Merrill Lynch (BAML) *Global Wireless Matrix 1Q11*, Nordicity Research.

In fact, the OECD rankings are even less representative. The OECD ranks wireless prices per country in six calling basket categories, and selects only one phone plan to represent each country in each basket. The table below shows the calling plans used to develop the “Canadian” rates in each basket.

**Figure 2: Providers and Plans Used to Establish Canada’s OECD Wireless Price Ranking**

OECD Basket	Provider	Plan
30 Calls	Rogers	Pay As You Go 1¢ Evening & Weekend
100 Calls	Bell	Talk & More 30 Text + Message Centre Express
300 Calls	Bell	Talk & More 30 Text + Message Centre Express
900 Calls	Bell	Talk & More 35 Unlimited Five + Message Centre Express
40 Calls, Pre-paid	Rogers	Pay As You Go 1¢ Evening & Weekend
400 Messages	Rogers	Pay As You Go Socialite 20

Canada’s entire OECD wireless price ranking across six different calling profiles is based on fees from only four different wireless plans. Generally, if a customer doesn’t have one of the calling plans listed in Figure 2, the OECD prices are not relevant to them.

The OECD compares post-paid, pre-paid and ‘friends and family’ plans to develop rankings within a single calling profile.

The plans used for the OECD rankings are also not consistent. In its revised mobile price methodology, the OECD includes plans with selective discounts (i.e. “family and friends” calling plans).

However, the use of selective discount plans appears to be random. A selective discount plan is only used to calculate wireless rates for Canada in the 900 calls basket, which is shown later in this report to be based on a calling pattern that is five times greater than the Canadian average.

The use of pre-paid calling plans (as opposed to post-paid) in the OECD calculation also appears to be random. The table below provides the breakdown of the use of selective discount and pre-paid plans for six OECD calls baskets, and whether a pre-paid or selective discount plan was used in the Canadian calculation.

**Figure 3: Use of Pre-paid and Selective Discount Plans in OECD Wireless Price Calculations**

OECD Basket	Total Plans	Pre-paid	Pre-paid Canada?	Selective Discount	Selective Discount Canada?
30 Calls	34	18	Yes	6	No
100 Calls	34	10	No	10	No
300 Calls	34	4	No	5	No
900 Calls	34	3	No	11	Yes
40 Calls, Pre-paid	34	34	Yes	6	No
400 Messages	34	17	Yes	6	No



The OECD rankings are based on a limited, random selection of pre-paid and selective discount plans from only a couple of wireless providers per country. The result is that rates from regular post-paid plans being are being compared against pre-paid and 'friends and family' plans to establish rankings within a single calling profile. And yet the OECD rankings are often treated as being 'representative.'

To ensure the rankings in this report are fully representative, the wireless cost comparisons that follow are based on Average Revenue Per Subscriber, which is the total revenue accrued by each country's wireless industry divided by the number of unique subscribers in the country. As wireless revenue is generated by voice and data charges, it is directly related to average costs. Typically, the only additional costs included in reported revenue are handset sales. Comparing markets on an average revenue basis means **all carriers and plans are considered** in the analysis.

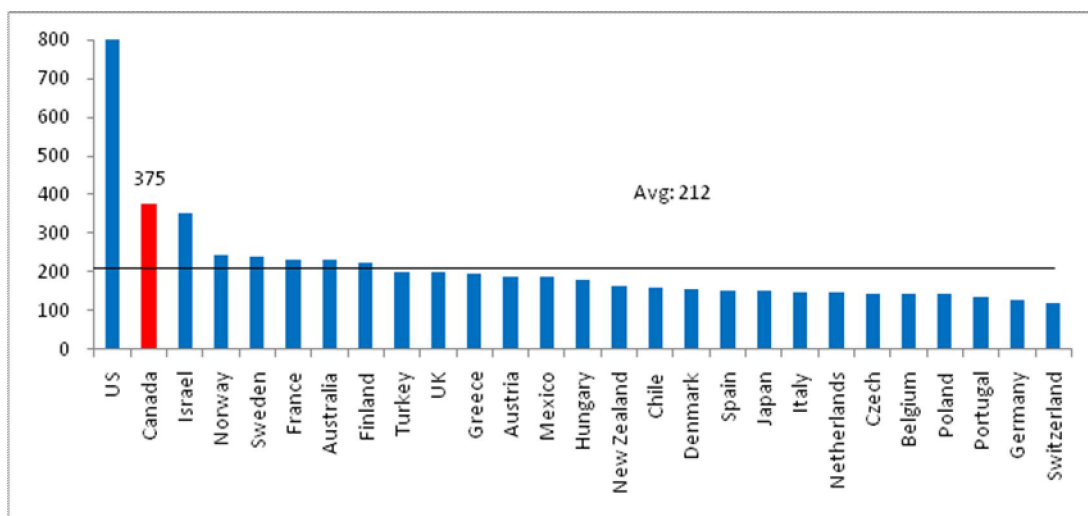
## 2.2 Per-use Wireless Costs

The OECD rankings only somewhat account for vastly different mobile usage patterns per country: While the OECD rankings are based on a detailed methodology designed to account for different usage profiles, it is virtually impossible to account for the extreme variance in cell phone plans available in more than 30 countries.

Canada's per-minute wireless cost is the 11<sup>th</sup>-lowest in the OECD, \$0.02 below the OECD average.

In general, wireless is a metered service; as call volumes increase, so too do rates. Therefore, when comparing average calling costs between countries, typical calling volumes must be considered.

Figure 4: Average Monthly Minutes of Use Per Subscription





As Figure 4 illustrates, wireless usage varies greatly between OECD countries. On a per-subscription basis, Canadian's use their cell phones more than residents of all the other profiled countries except the United States. Canadian usage is 163 minutes greater than the OECD average. Based on this variance, it would make little sense to compare average Canadian costs with those in say the Netherlands or Belgium. Rather, as rates within a market will typically reflect average usage profiles, it is more accurate to compare rates between countries with similar cell phone usage patterns.

In 2010, the OECD mobile price rankings were amended to more accurately reflect the variance in cell phone usage throughout the OECD. To do so, the OECD increased the number of calling profile baskets from three (low; medium; and high usage) to six (30 calls per month; 100 calls per month; 300 calls per month; 900 calls per month; low-usage pre-paid; and SMS only).<sup>2</sup> But although the calculation was adjusted to be more inclusive, the typical Canadian cell phone user is still poorly represented.

As Figure 5 illustrates, Canada's average calling volume of 375 minutes per month is well above (by 187 minutes) the OECD's 100 Calls Basket, and well below (by 194 minutes) the OECD's 300 calls basket. There is no other calling basket that comes closer to representing average Canadian call volumes.

**Figure 5: OECD Monthly Wireless Baskets and Canadian Average Comparison<sup>3</sup>**

Basket	Minutes Per Month
30 Calls Basket	50
100 Calls Basket	188
Canada	375
300 Calls Basket	569
900 Calls Basket	1787

While the typical Canadian cell phone usage profile is somewhat better represented in the updated OECD calculation than it was in the past, the current rankings still do not accurately reflect average usage costs. A more straightforward way to compare per-use costs is on a cost-per-minute basis, as is illustrated in Figure 6.

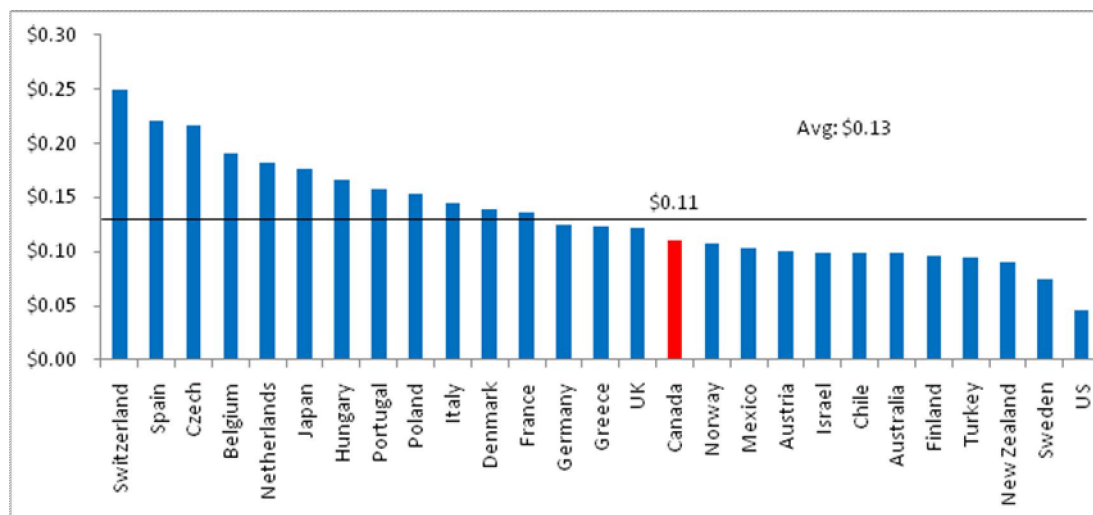
Canadians pay on average \$0.11 per minute of wireless voice usage, which is the 11<sup>th</sup> lowest average revenue per minute among the profiled OECD countries and \$0.02 below the international average. Only two countries – Sweden and the United States – have an average voice revenue per minute below \$0.09. And users in 10 countries – Switzerland, Spain, Czech Republic, Belgium, Netherlands, Japan, Hungary, Poland, Portugal and Italy – pay more than \$0.15 per minute on average.

<sup>2</sup> OECD, *Revisions of the Methodology for Constructing Telecommunication Price Baskets*, March 2010.

<sup>3</sup> BAML; OECD, *Revisions of the Methodology for Constructing Telecommunication Price Baskets*, March 2010.



Figure 6: Average Voice Revenue (\$C PPP) Per Minute<sup>4</sup>



### 2.3 Per-subscriber (Not Per-subscription) Costs

The OECD rankings do not reflect the fact that nearly half of all residents in the OECD countries outside of Canada pay for multiple wireless plans: On average, in the OECD countries outside of North America, cell phone penetration is more nearly 145% for the national population 10 years of age and over.

That is, virtually one in two mobile subscribers in OECD countries has multiple phone plans. Because wireless plans in many European countries in particular favour low minute usage (as the OECD rankings indicate), and because cross-border travel is more common, European subscribers commonly pay for more than one wireless plan.

Nearly half of the wireless subscribers in the OECD countries outside of North America pay for more than one mobile plan.

The OECD rankings, however, only compare per-subscription costs, not per-subscriber costs, meaning they do not reflect what effectively results in a greater than 40% per-user wireless service cost increase.

<sup>4</sup> BAML; OECD *StatExtracts*; PPPs and Exchange Rates; Nordicity Research.



In fact, per-subscriber costs are underreported by more than 50% in 11 OECD countries if the use of multiple wireless plans per subscriber is not accounted for. Canada remains the only OECD country with sub-100% wireless penetration for the population over the age of nine years.

The actual per-subscriber average for the all 27 profiled is 38% higher than the per-subscription average. When penetration levels are adjusted to be based only on the national population over the age of nine years, the same 11 countries have mobile penetration rates greater than 150%.

Figure 7: Difference between Per-Subscription and Actual Per-User Wireless Voice Revenue (\$C PPP)<sup>5</sup>

Country	Per-Subscription Revenue	Per-Subscriber Revenue	% Increase	Adjusted Penetration
Finland	\$21.37	\$42.16	97%	197%
Israel	\$34.86	\$60.89	75%	175%
Portugal	\$21.19	\$36.59	73%	173%
Austria	\$18.74	\$31.92	70%	170%
Italy	\$21.48	\$35.77	67%	167%
Sweden	\$18.00	\$29.41	63%	163%
Greece	\$24.01	\$38.65	61%	161%
New Zealand	\$14.83	\$23.13	56%	156%
Chile	\$15.66	\$24.22	55%	155%
Czech Republic	\$31.21	\$47.72	53%	153%
Switzerland	\$29.47	\$44.13	50%	150%
Developed Market Average	\$24.97	\$34.56	38%	142%

When calculated on a straight per-subscription basis, Canada is misrepresented as having the highest per-subscriber wireless cost in the OECD. In fact, without considering penetration rates, Canada's wireless costs are represented as being more than \$16 greater (65%) than the OECD average. Of course, such a conclusion is erroneous and must assume that literally millions of wireless plans worldwide are going unpaid.

## 2.4 Wireless Costs as a Percentage of Income

Based on average income, Canadian wireless service costs are 10-12% lower than the OECD average.

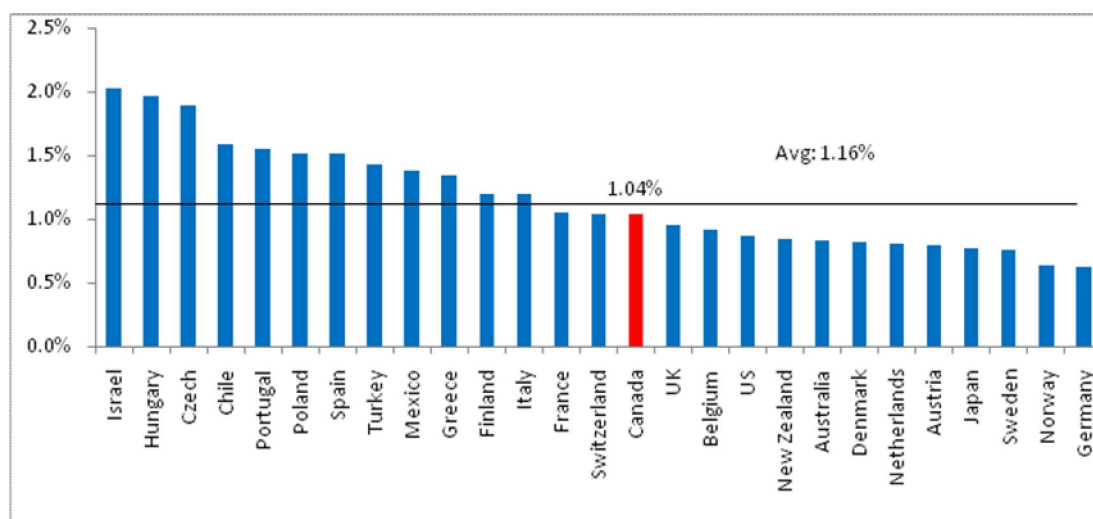
The OECD rankings do not fully compare wireless costs in relation to average income: The OECD rankings are presented in terms of purchasing power parity in \$US to equalize the costs based on the purchasing power in each country. However, the OECD

<sup>5</sup> Source: Ibid.

rankings do not otherwise reflect wireless costs in relation to average annual earnings.

The failure to compare wireless costs in terms of a percentage of average income results in misleading data. For instance, average wireless costs in Turkey are significantly less than those in Canada, but the average annual income in Canada is nearly three times greater than it is in Turkey. Figure 8, therefore demonstrates the relative affordability of wireless service.

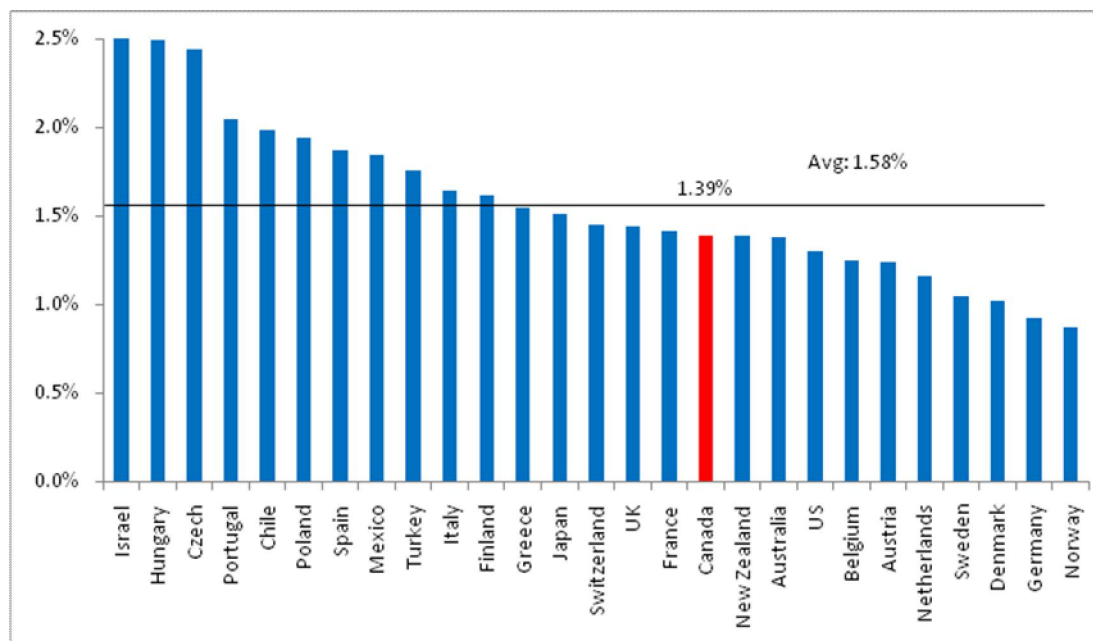
Figure 8: Average Voice Revenue Per Subscriber as a Percentage of Per Capita Income<sup>6</sup>



Based on average income levels, Canada has the 13<sup>th</sup>-lowest wireless voice costs in the OECD, 10% below the international average. In addition to demonstrating the affordability of wireless service, comparing costs as a percentage of per capita income inherently reflects the relative costs of deploying and maintaining wireless service in each country – higher per capita income results in significantly increased labour rates, as well as other associated costs. While Canada has the seventh-highest per capita income of the 27 profiled countries – thus, relatively high capital and operating expenses – it has below-average wireless voice and total wireless (voice and data) service revenues as a percentage of per capita income. In fact, Canada has the 11<sup>th</sup>-lowest total wireless costs as a percentage of per capita income in the OECD, 12% below the international average.

<sup>6</sup> Source: BAML; OECD *StatExtracts*; PPPs and Exchange Rates; International Monetary Fund, *World Economic Outlook Database*; April 2011; Nordicity Research.

Figure 9: Average Total Wireless (voice and data) Revenue Per User as a Percentage of Per Capita Income<sup>7</sup>



<sup>7</sup> Source: Ibid.

### 3. Other Key Wireless Market Comparisons

This section compares the wireless markets in the OECD countries along other key measurements to illustrate the differences in the profiled wireless markets. The measurements include: cost trends; geography and population density; competitive market structure; and other telecommunications services penetration.

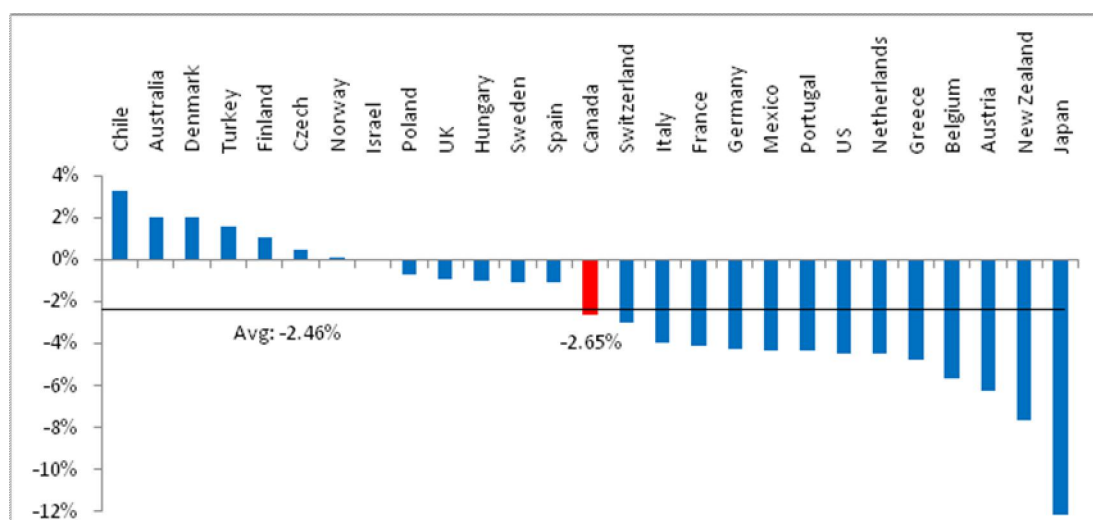
#### 3.1 Wireless Cost Trends

Comparing wireless service cost growth provides insight into international trends in wireless voice and total wireless costs. As Figure 10 demonstrates, wireless voice costs in the 27 profiled OECD countries declined by a Compound Annual Growth Rate (CAGR) of 2.46% between 2005 and 2010. With a CAGR of -2.65%, wireless voice costs in Canada declined at a greater rate than the OECD average.

Average wireless voice costs in Canada declined at a rate greater than the international average between 2005 and 2010.

Overall, 20 of the 27 profiled OECD countries experienced declines in wireless voice costs between 2005 and 2010. Canada's market experienced the 14<sup>th</sup>-greatest average wireless voice cost decline: 1.73% greater than that experienced in the UK but 1.8% slower than that experienced in the US.

Figure 10: Average Voice Revenue Per Subscriber Growth (CAGR 2005-2010)<sup>8</sup>

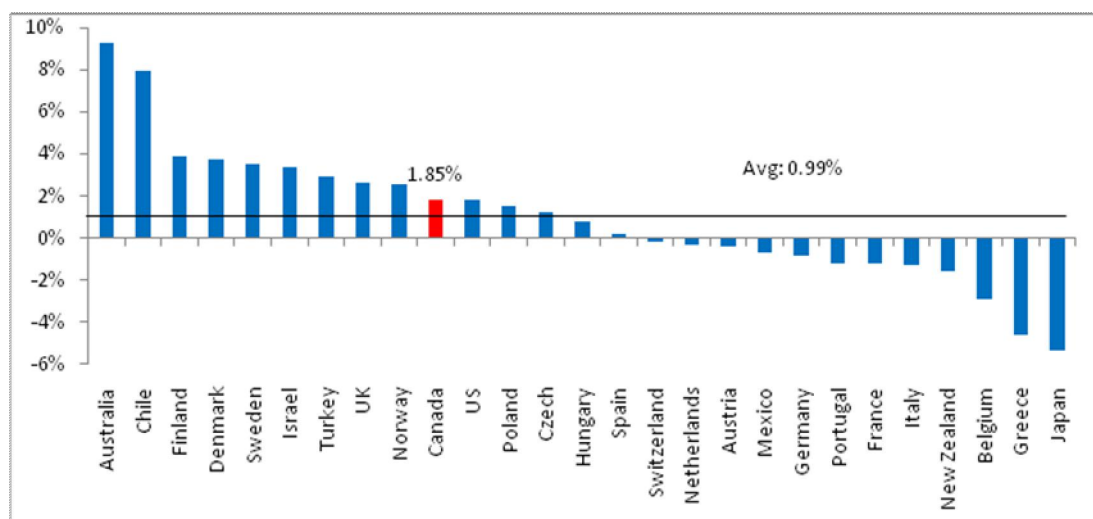


<sup>8</sup> Source: BAML; Nordicity Research.

Total wireless (voice and data) costs experienced nearly the opposite trend between 2005 and 2010, growing by a CAGR of 0.99%. Overall wireless costs increased over the five-year period in 15 of the 27 profiled countries, including Canada, which outpaced the international average with a growth rate of 1.85%: 0.01% greater than in the US and 0.78% less than in the UK.

The wireless cost growth figures (Figures 10 and 11) also illustrate the limited variation in wireless cost growth within the OECD. In fact, in terms of voice costs, 23 of the 27 profiled OECD countries fall within a 7.65% range between Australia's 2.02% increase and Belgium's 5.63% decline. Similarly, in terms of total wireless cost growth, 23 of the 27 profiled OECD countries fall within the 6.81% range between Finland's 3.88% growth and a Belgium's 2.93% decline, over the past five years.

Figure 11: Average Total Wireless (voice and data) Revenue Per Subscriber Growth (CAGR 2005-2010)<sup>9</sup>



## 3.2 Geographic Challenges

In terms of the network deployment needed to reach a significant amount of subscribers, only Australia's geography and population density presents a challenge similar to Canada to wireless

Due to its geography and population density, Canada's network serves 12 subscribers per km<sup>2</sup>, compared to 37 in the US and 312 in the UK.

providers. Each country's wireless networks cover roughly 1.9 million square kilometres, approximately the same area as the 15<sup>th</sup> largest country in the world. For every square kilometre of deployed network, Australia's wireless providers

<sup>9</sup> Source: Ibid.



have captured 15 wireless subscriptions, while Canada’s have captured 12. By comparison, wireless carriers in the United States count 37 subscriptions per square kilometre of deployed network, while providers in the United Kingdom serve 312.

In fact, even though only 20% of Canada’s geographic area needs to be covered to provide wireless service to more than 99% of Canadians, the population density within the landmass covered by the wireless network – 16.9 people/km<sup>2</sup> – would rank as the 200th least-densely populated country in the world.

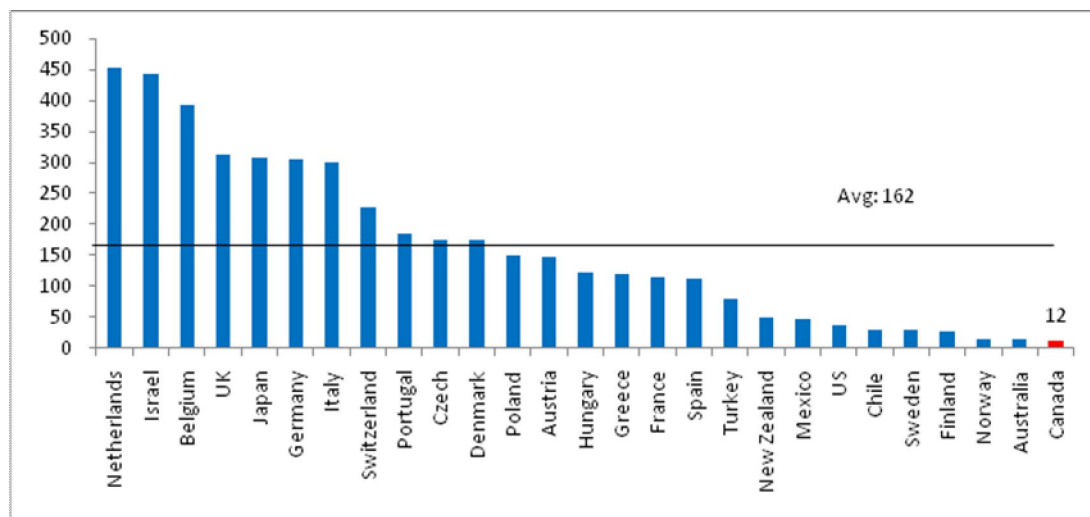
Europe is another story. The most densely-populated network – the Netherlands – has 453 subscriptions per square kilometre. Overall, the combined networks cover the 18 European countries profiled in this report serve on average 131 subscriptions per square kilometre.

Figure 12: Geographic Comparison of Canada’s and Europe’s Wireless Networks

	Canada	Europe	Difference
km <sup>2</sup>	1,997,000	3,946,567	2x
Wireless subscriptions	24,900,000	516,193,000	20.7x
Subscriptions/km <sup>2</sup>	12	131	10.9x

Canada has the fewest wireless subscriptions per square kilometre of all of the profiled OECD markets, making it one of the most unattractive OECD countries in which to deploy a wireless network.

Figure 13: Wireless Subscriptions per km<sup>2</sup> of Wireless Network<sup>10</sup>

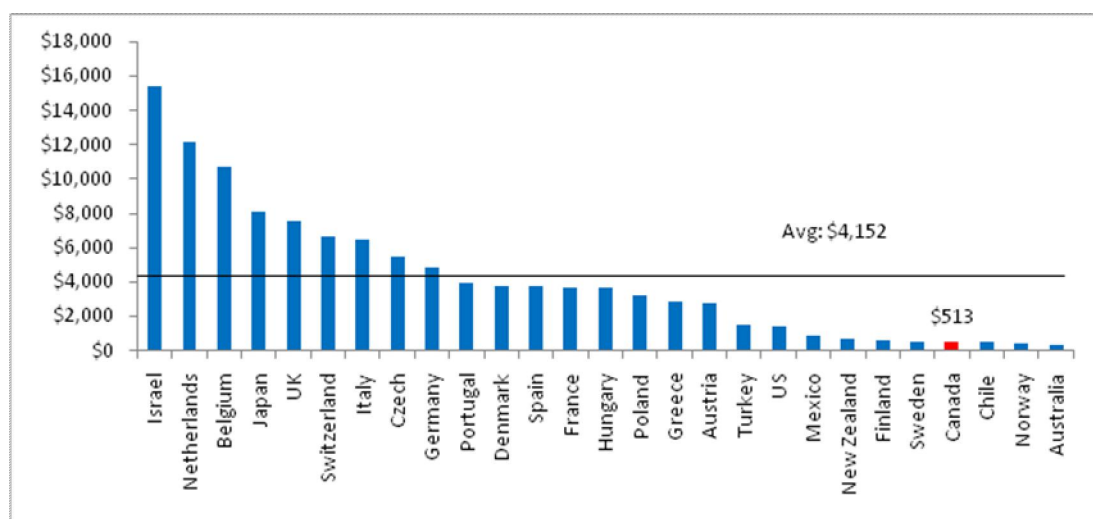


<sup>10</sup> Source: BAML; Nordicity Research; Canada, Australia, New Zealand and the US were adjusted to account for the geographic coverage of the wireless networks: Canada – 20% of geographic area; New Zealand – 40%; Australia 25%; Contiguous United States.

Generally, the fewer subscribers available per square kilometre, the lower the potential revenue and thus return on investment. Naturally, geographic and population density challenges often translate directly to higher wireless prices. It is no coincidence then that the Netherlands, Belgium and Germany, which have three of the six highest subscription-to-km<sup>2</sup> ratios, also have three of the seven lowest wireless cost-to-per capita income ratios.

There are, of course, exceptions. Although Canada has the lowest subscription-to-km<sup>2</sup> ratio, it maintains a below average wireless cost as a percentage of capita income ratio.

Figure 14: Average Voice Revenue (Monthly, \$C PPP) Per km<sup>2</sup><sup>11</sup>



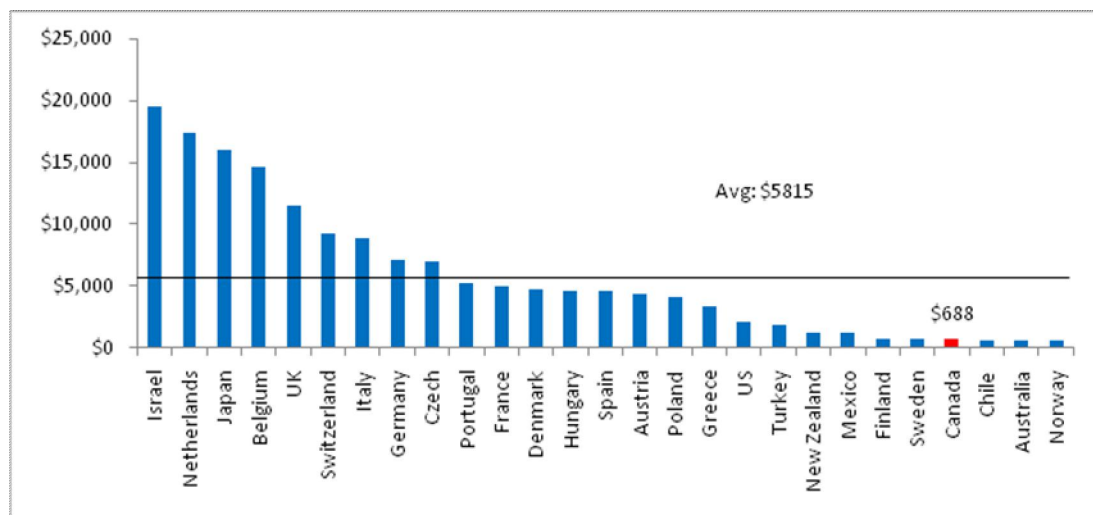
Canada's limited number of subscriptions per square kilometre of wireless network translates to the fourth-lowest monthly voice revenue per square kilometre of all developed wireless markets. At \$513 of monthly voice revenue per square kilometre, it falls more than \$3,600 below the international average.

Canada similarly has the fourth-lowest total wireless (voice and data) revenue per square kilometre of network, \$5127 lower than the international average. Canada's \$688 of total wireless revenue per square kilometre is greater only than in Chile, Australia and Norway. It is impressive then that this revenue is generally shared between at least three wireless providers, often more. That equates to roughly \$230 per carrier per month when split evenly between Canada's three national wireless providers. At the other end of the spectrum is the Netherlands, which has only three wireless providers total, resulting in \$5,802 per provider per square kilometre.

<sup>11</sup> Source: Ibid; OECD *StatExtracts*



Figure 15: Average Total Wireless (voice and data) Revenue (Monthly, \$C PPP) Per km<sup>212</sup>



### 3.3 Competitive Market Structure

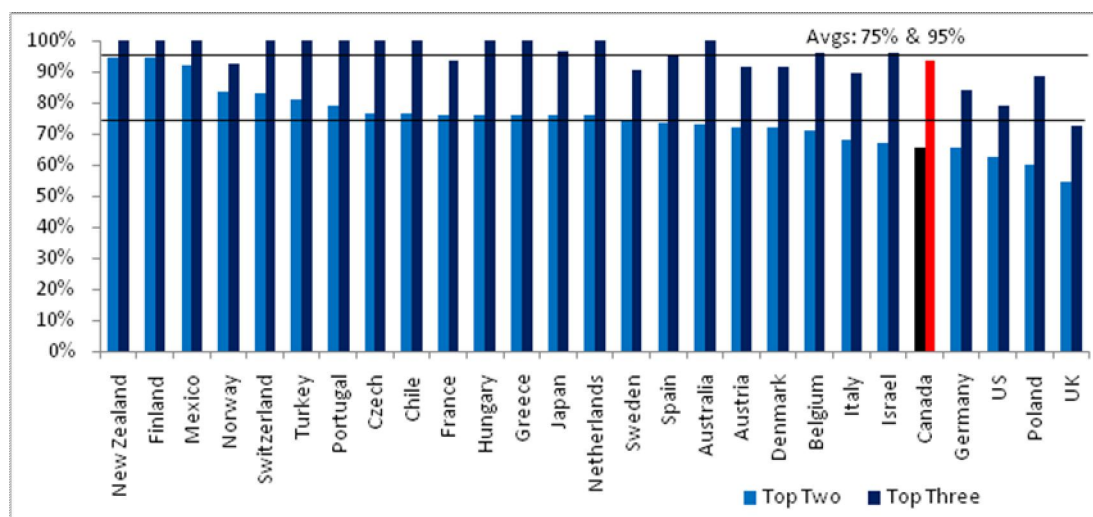
Global wireless trends have demonstrated that the average national wireless market can rarely support more than three strong competitors. Indeed, many countries have difficulty supporting more than two substantial wireless services providers. In fact, in only seven of the 27 profiled OECD countries do the two largest wireless carrier control less than 70% of all wireless subscribers, and in only 11 countries do the three largest carriers control less than 95% of all wireless subscribers.

Canada has one of the six most competitive wireless market structures in the OECD.

With three national wireless providers and six regional providers, Canada has one of the most competitive market structures in the OECD. In fact, Canada is one of only six OECD countries where the two-leading providers serve fewer than 70% of all subscribers and the three-leading providers serve less than 95% of all subscribers. The competitive market structure has led to consumer wireless costs below international averages.

<sup>12</sup> Ibid.

Figure 16: Subscriber Share of Leading Two and Leading Three Carriers<sup>13</sup>



### 3.4 Other Telecommunications Services Penetration

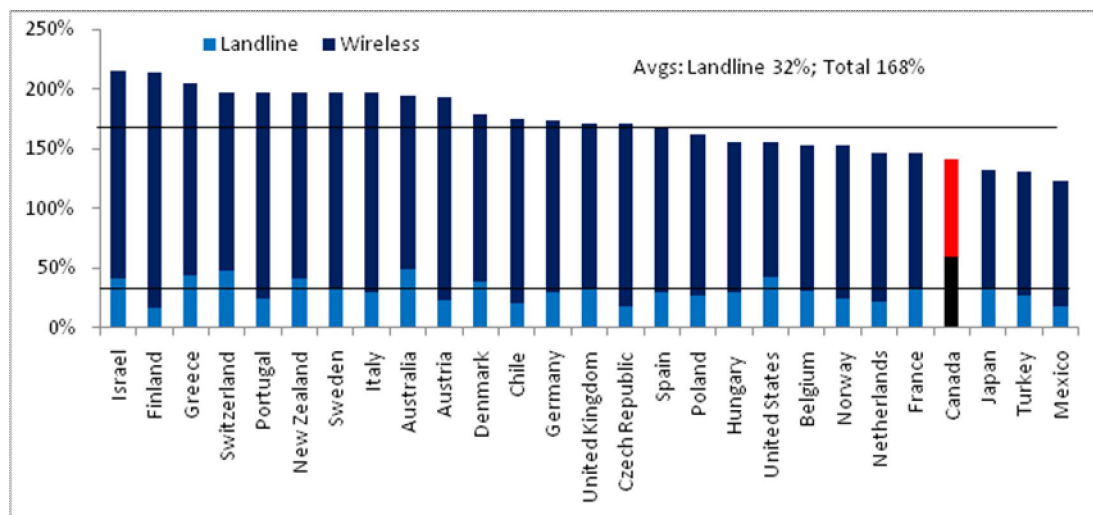
As noted earlier in this report, Canada is the only OECD country with a sub-100% wireless penetration rate when only considering the population aged 10 and over. In fact, Canada's adjusted wireless penetration rate is 82%. Perhaps the most significant reason for Canada's relatively low wireless

penetration is the fact that Canadians are served by one of the most robust and reliable landline telephony networks in the world. As a result, Canada's roughly 59% landline penetration rate is the highest of the 27 OECD countries profiled, 10% higher than the next closest country and 27% greater than the international average.

Canada's total combined landline and wireless penetration rate of 141% is approximately 27% below the OECD average. Intuitively, because landline telephony is largely a 'per-household' service and wireless telephony is largely a 'per-individual' service, wireless penetration will increase by a factor of at least two as landline penetration declines. For instance, Finland has the lowest landline penetration (16%) in the OECD, but has the highest wireless penetration (197%) and second-highest total telecommunications services penetration (213%).

<sup>13</sup> Source: BAML; Nordicity Research.

Figure 17: Total Telecommunications (Landline + Wireless) Penetration<sup>14</sup>



Total telecommunications penetration illustrates to what extent customers in each country continue to use landline telephony. However, with total telecommunications penetration being represented to such a large extent by wireless penetration, it is also a product of the wireless pricing strategies in an individual country. That is, if consumers can get the plan and service (including voice and data rates and roaming) they need from one provider, there is no reason to pay for multiple plans. Therefore, significantly high penetration can also be as sign that consumers are unable to receive the service and options they need from one carrier.

According to Bank of America Merrill Lynch, Smartphone penetration is driven by “improving network and device capabilities and very rapid innovation, fuelled by intense platform-based competition.”<sup>15</sup>

Smartphone penetration therefore could be considered an indicator of network quality, and possibly innovation and competition. As Figure 18 illustrates, Smartphone penetration is substantially higher – and is projected to remain higher – in North America than other global regions.

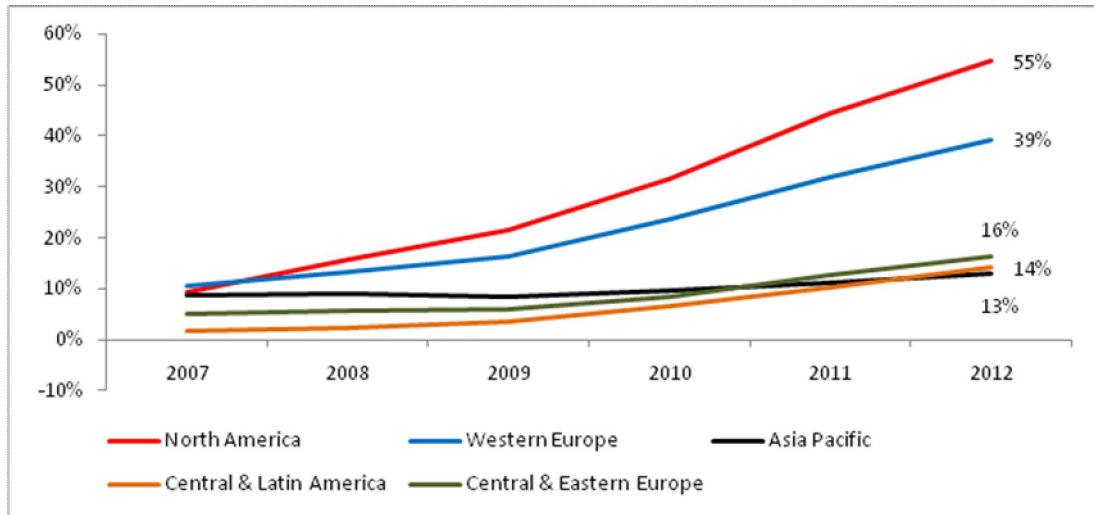
**Smartphone penetration in North America was more than double the international average in 2010 and is projected to remain so through 2012.**

At the end of 2010 North American Smartphone penetration was more than double the international average and it is projected to remain so through 2012.

<sup>14</sup> Source: BAML; Nordicity Research.

<sup>15</sup> Source: BAML (page 4).

Figure 18: Smartphone Penetration by Global Region (2007-2012)<sup>16</sup>



<sup>16</sup> BAML.