

A Look at the Canadian Scenario

Prof. Xavier Fernando, PhD

Ryerson University

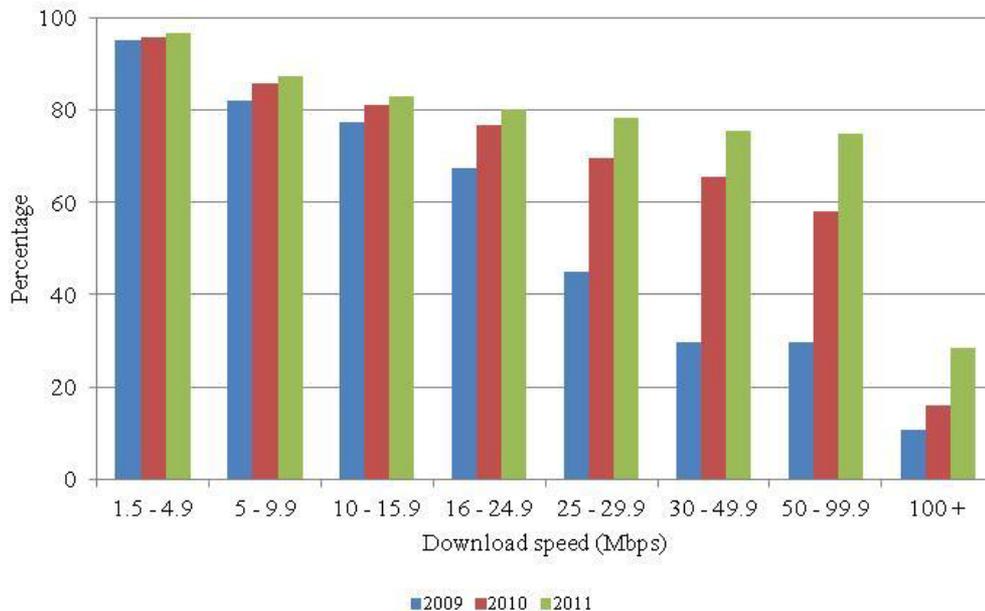
<http://canadianspectrumpolicyresearch.org/>

Canadian Spectrum Policy Research

- CSPR is a project examining the policy and management of radio spectrum in Canada
- One of the main focus is Canada's 700MHz spectrum auction, scheduled for 2013.
- **Industry Canada** has set 20 year terms for licences obtained via this auction.

Broadband Access by Canadian Households

Availability

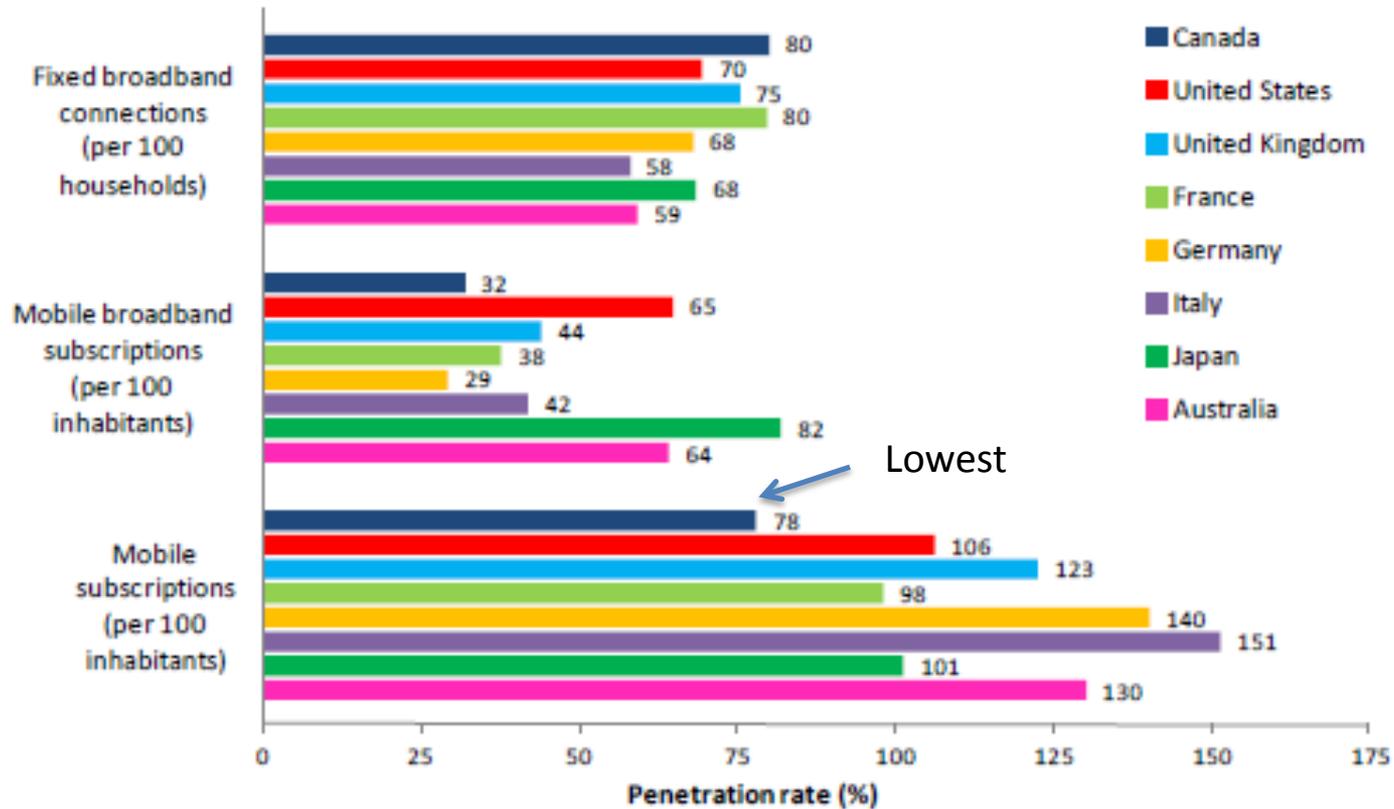


According to Industry Canada,

- The majority of Canadians will have access to 100 Mbps by the end of this decade.

The picture is really rosy or is it?

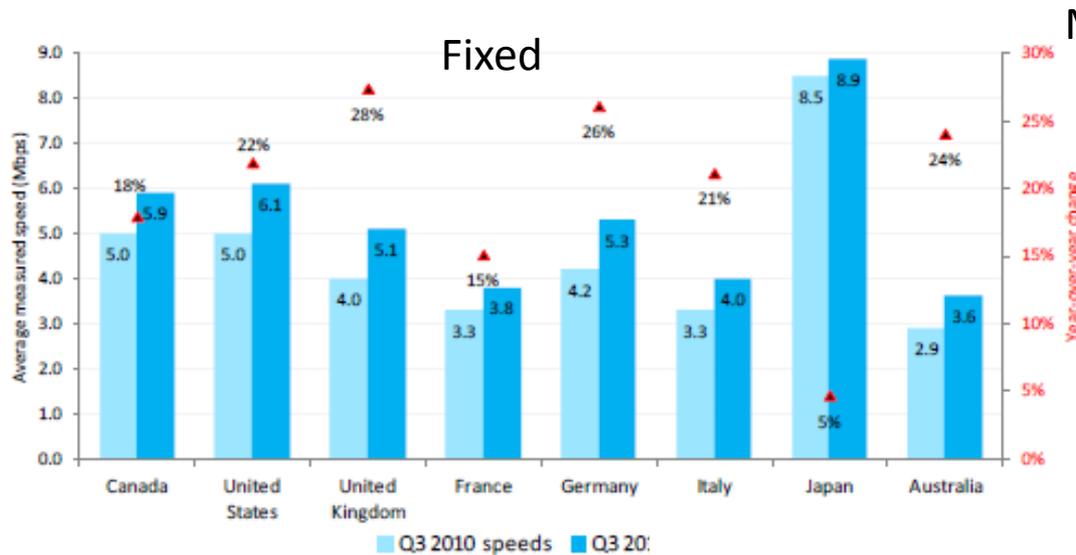
Fixed and Mobile Subscriptions



Sources: Bank of America Merrill Lynch, CRTC data collection, IDATE, ITU, OECD

- While Canada is high in fixed broadband connections, the mobile scenario is different

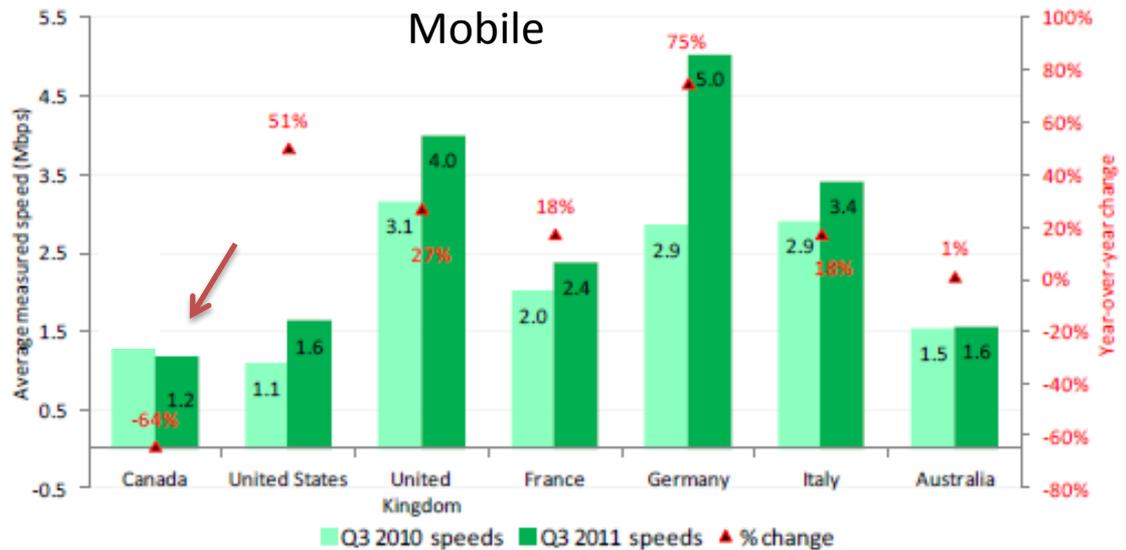
Average Measured Broadband Speeds, 2011



Mobile Devices in Canada

Source: Akamai

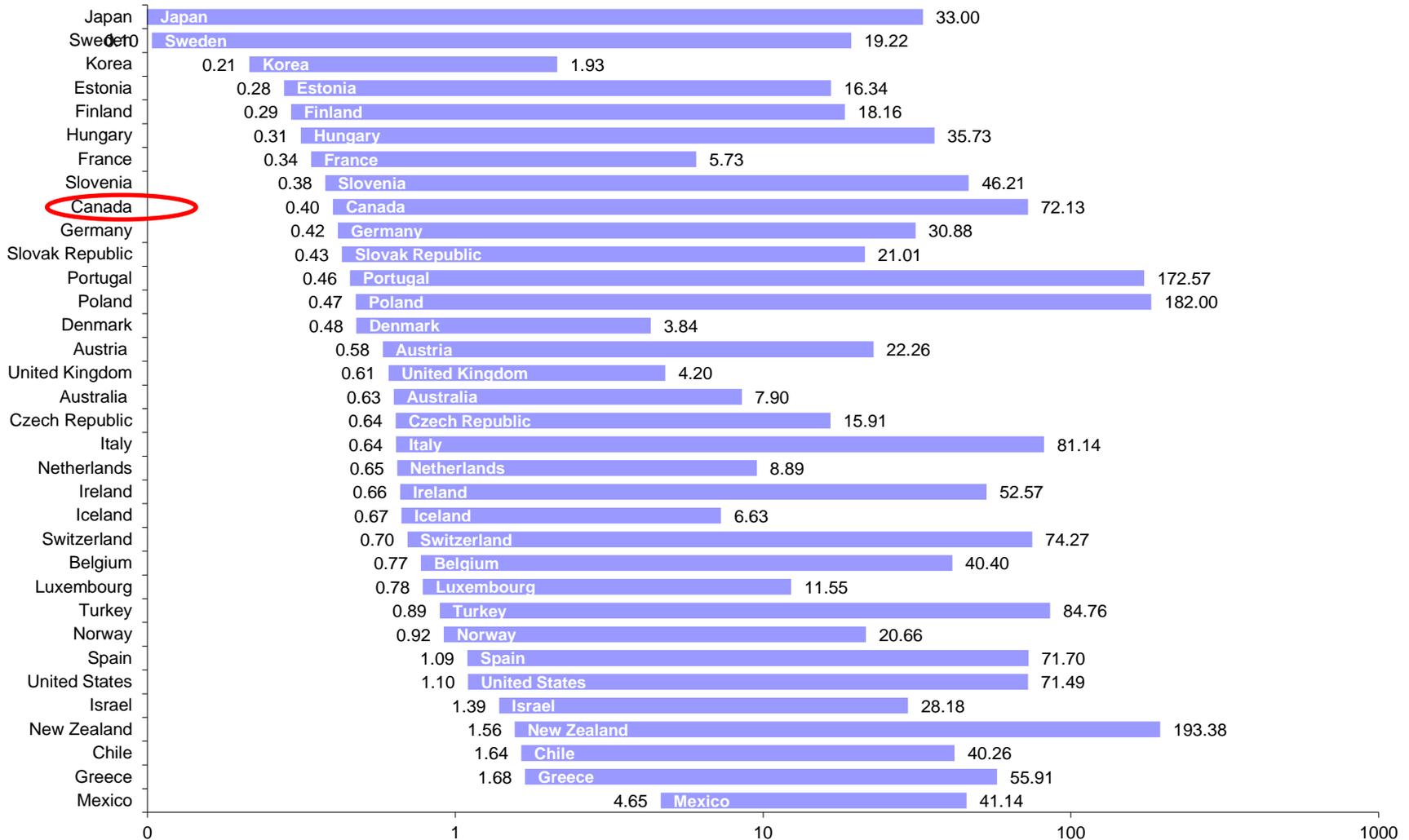
Canadian mobile broadband speeds are the lowest



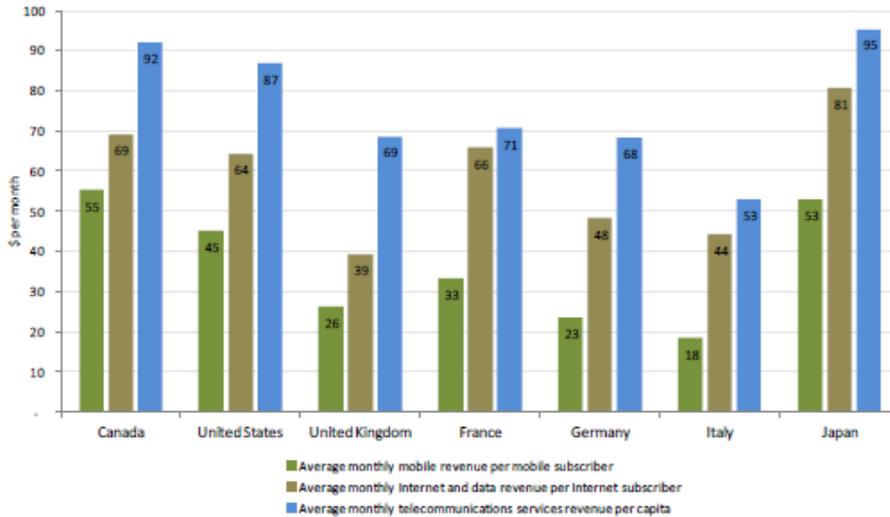
Source: Akamai

Broadband Prices/ Mbps

Broadband prices per megabits per second of advertised speed, Sept. 2011 - USD PPP



Average Monthly Telecommunication Retail Revenues, 2011

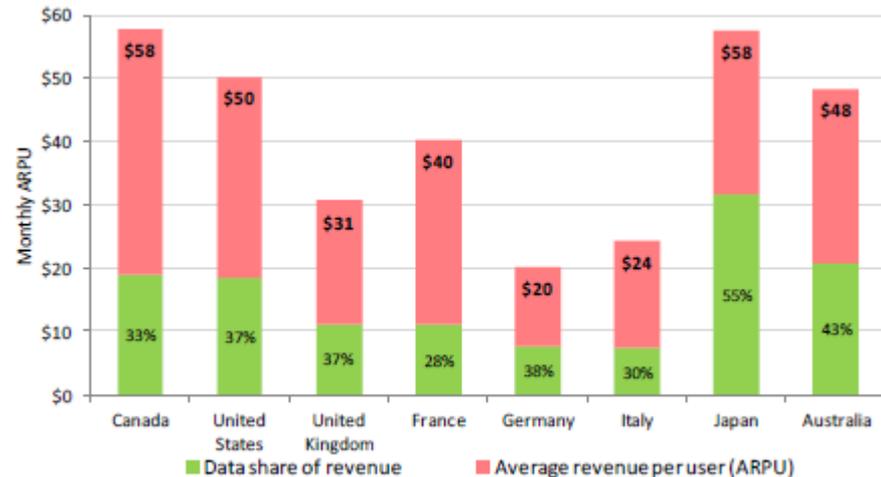


• Canadian dollars shown have been converted based on IMF 2010 year average exchange rates.
Source: IDATE

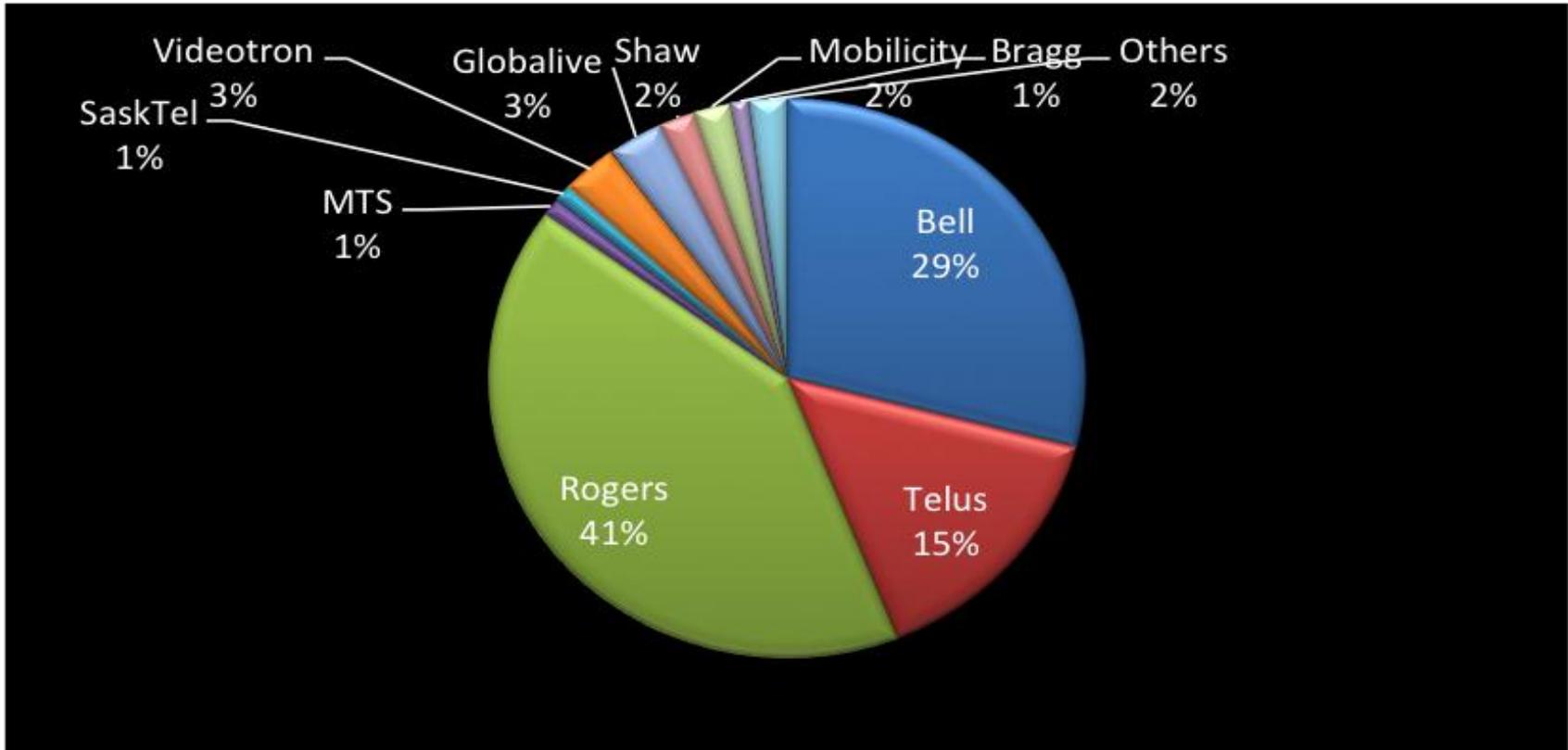
Canada has the highest mobile revenue per subscriber, on par with Japan (but not on par in terms of service)

In 2011, Canadians spent ~ \$181/m on Telecom services. This is 4.1% of total household spending, same as the amount spent on healthcare.

Wireless Only

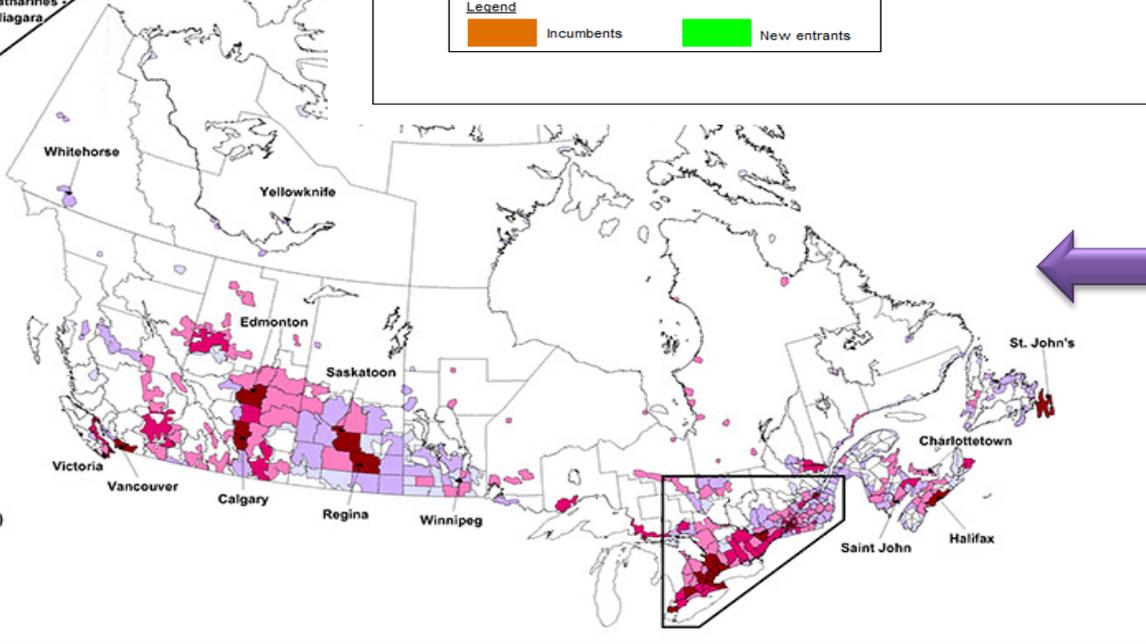
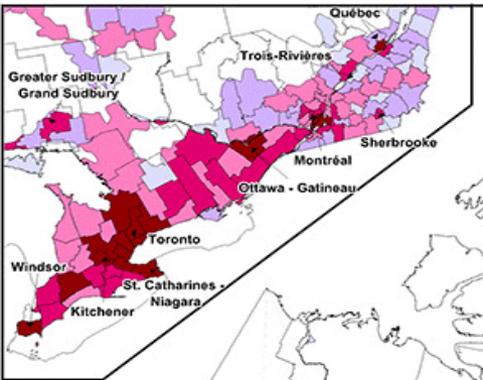
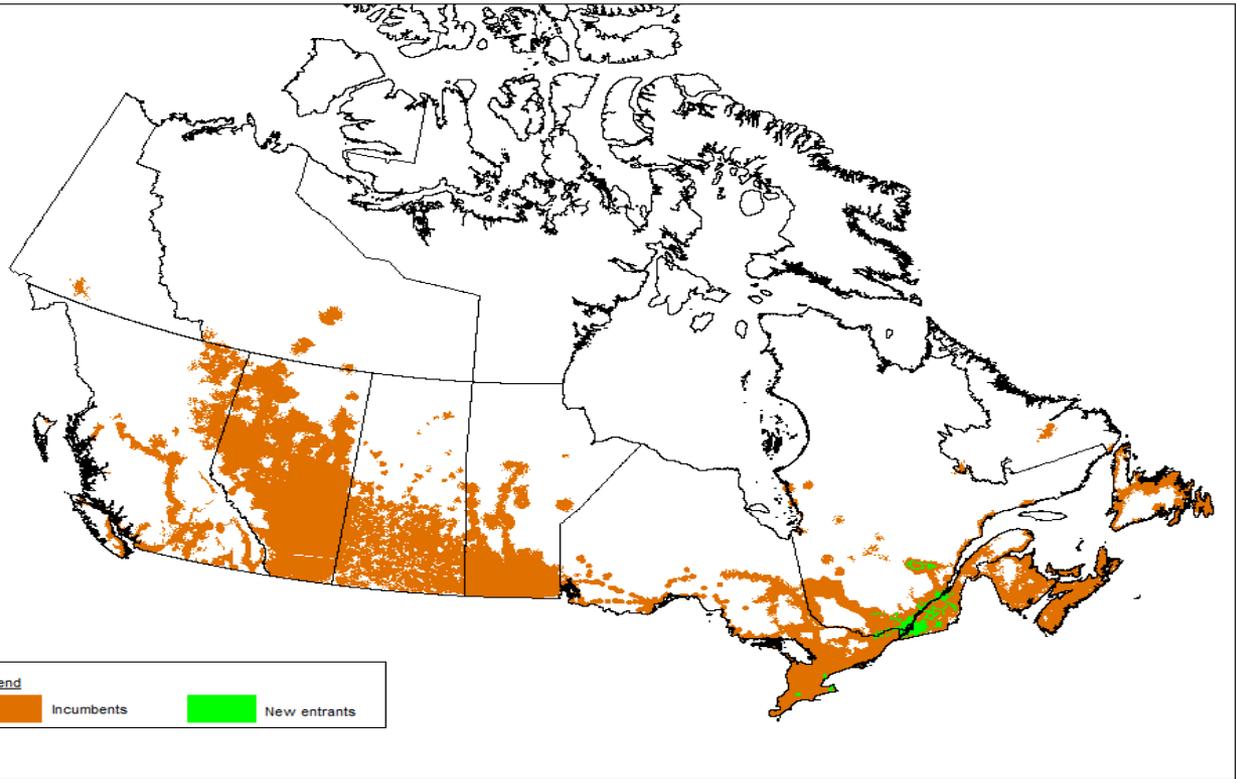
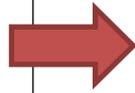


Wireless TSP Subscriber Market Share



- Rogers, Bell, and TELUS, known as “the Big Three” and “incumbents” control the market(85%)
- Until 2008, spectrum was allocated in Canada via a comparative review process (“beauty contests”)

Presence of HSPA+ based service providers



Population Distribution of Canada



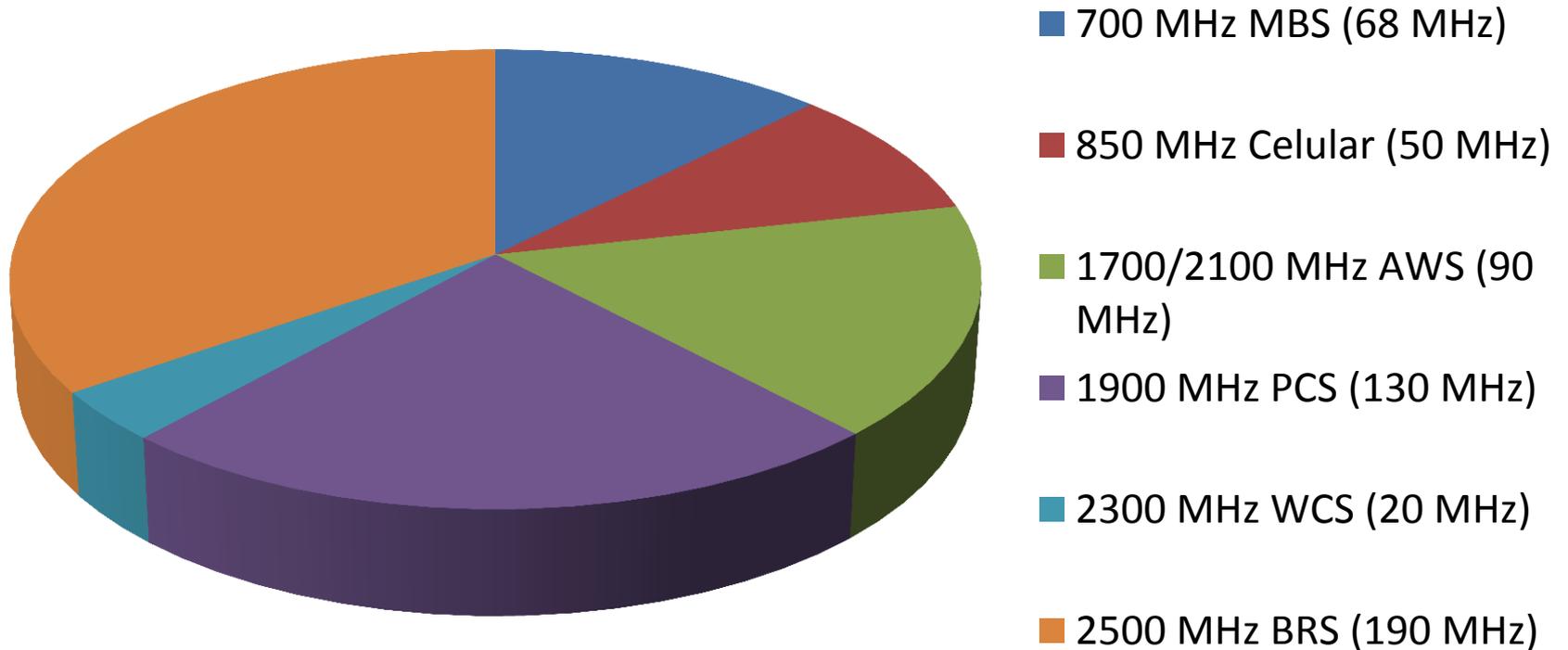
Pricing

- OECD findings confirm that Canadians pay more for broadband services than consumers in most other developed countries.
 - 2.5 to 15 Mbps - Canada ranks 28th out of 33
 - 15 - 30 Mbps - Canada ranked 29th out of 33
 - Faster than 45 Mbps - Canada ranked 23rd out of 28
- Wireless pricing structure is outrageous
 - 3-year contracts, abandoned in many other countries
 - \$3.99/p roaming, 911 fee, system access fee.....
 - Locked SIM cards, severe penalties

Upcoming Auctions

- The 700 MHz bands will be auctioned soon that will free up to 84 MHz for mobile providers
- Canada adopted the U.S. 700 MHz band plan to protect equipment interoperability.
- Spectrum in the Broadband Radio Services (BRS): 2500-2690 MHz band is scheduled for auction across Canada, after the 700 MHz auction.
- But Canada did not follow the U.S. for BRS spectrum. Canada will follow internationally harmonized band plan for this spectrum.

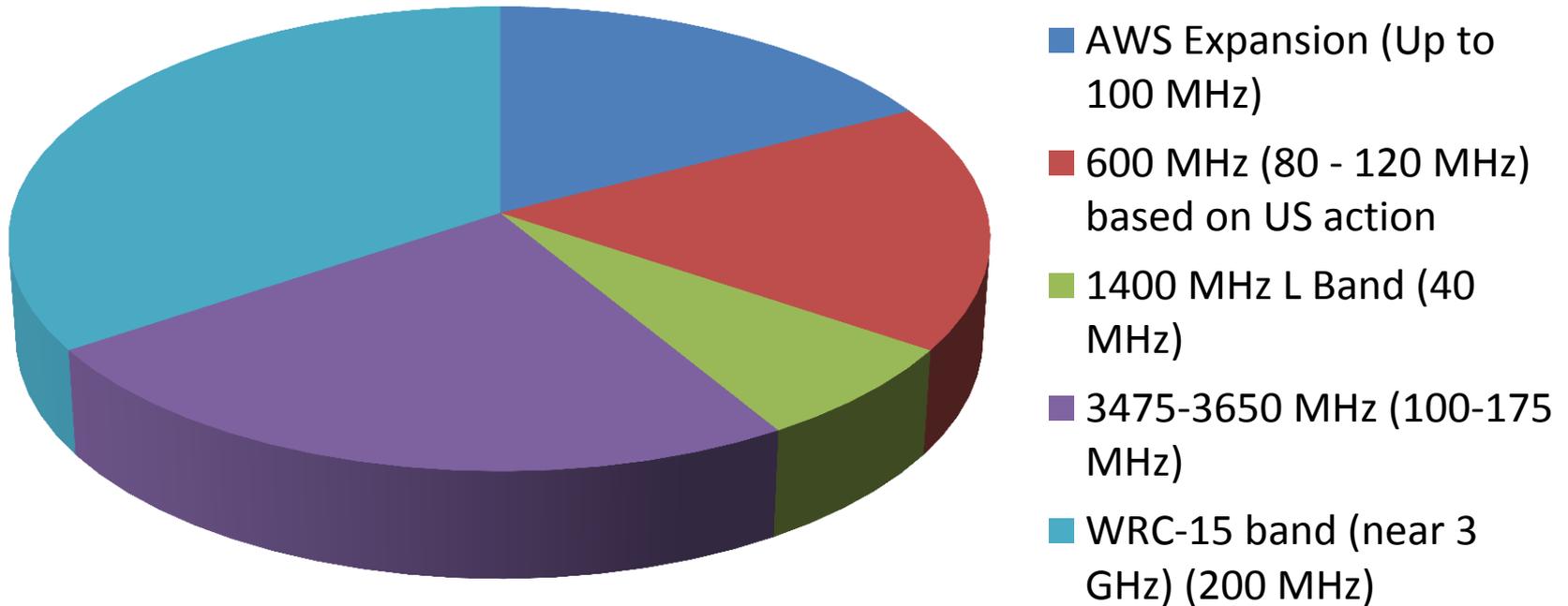
Mobile Spectrum in Canada by 2015



Once the upcoming auctions are completed, Canadian mobile spectrum will double from 270 MHz to 528 MHz (even up to 548 MHz)

Possible Spectrum for Release in Canada by 2022

Up to 635 MHz



- 1915-1920 / 1995-2000 MHz for AWS-2 (PCS H block – 10 MHz)
- 1755-1780 / 2155-2180 for AWS-3 (50 MHz)
- 2000-2020 MHz / 2180-2200 MHz for AWS-4 based on U.S. Actions
- L-band depending on the outcome of WRC-15

Future Mobile Spectrum

- By 2015, Canadian mobile spectrum will double from 270 MHz to 528 MHz
- Industry Canada's objective is to have 1000 to 1100 MHz in the Canadian market by 2022.
- Industry Canada has opened large blocks of spectrum in the 70/80/90 GHz range and new bands in the 28 GHz range for backhaul equipment
- Wi-Fi reallocation to 5850 - 5925 MHz is also considered, in consultation with WRC

Summary

- There are few distinct characteristics in the Canadian wireless scenario
 - Large geographical area with scarce population
 - Small telecom market controlled by few players
 - Relatively pricey services (because infrastructure cost)
 - Available spectrum will quadruple by 2022
- Spectrum sharing is encouraged by policy makers.
- It is done at multiple levels among the wireless operators to share the infrastructure cost rather than the spectrum scarcity

The Canadian Spectrum Summit

May 2, 2013, Ryerson University, Toronto, Canada

Confirmed Speakers include:

- **Wolter Lemstra** (Delft University).
- **Bernard Lord** (Canadian Wireless Telecommunications Association)
- **Michael Marcus** (Virginia Tech)
- **Phillipa Marks** (Ofcom) who advised the New Zealand government on creating the first ever national market in spectrum in 1989.
- **William Melody** (Technical University of Denmark): Dr. Melody was Senior and Chief Economist, FCC
- **Rita Trichur** (Globe and Mail)