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The Whole Picture: Where America's Broadband Networks Really Stand

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■ Motivation for the Report

- European Commission VP Neelie Kroes says U.S. is pulling ahead:
 - *High speed networks now pass more than 80 percent of U.S. homes, a figure that quadrupled in three years*
 - *Though the public sector can help, the real heavy lifting must be done by private investment*
- American critics say we're falling behind:
 - *U.S. is 22nd and falling in broadband – Susan Crawford*
 - *U.S. in 29th place and falling fast – David Cay Johnson*
- Who's right?

■ **Four Dimensions of Broadband Policy**

- **Deployment:** What share of postal addresses does the network cover?
- **Adoption:** What share of households subscribe?
- **Performance:** How fast are downloads and uploads?
- **Price:** What does it cost to use the service?

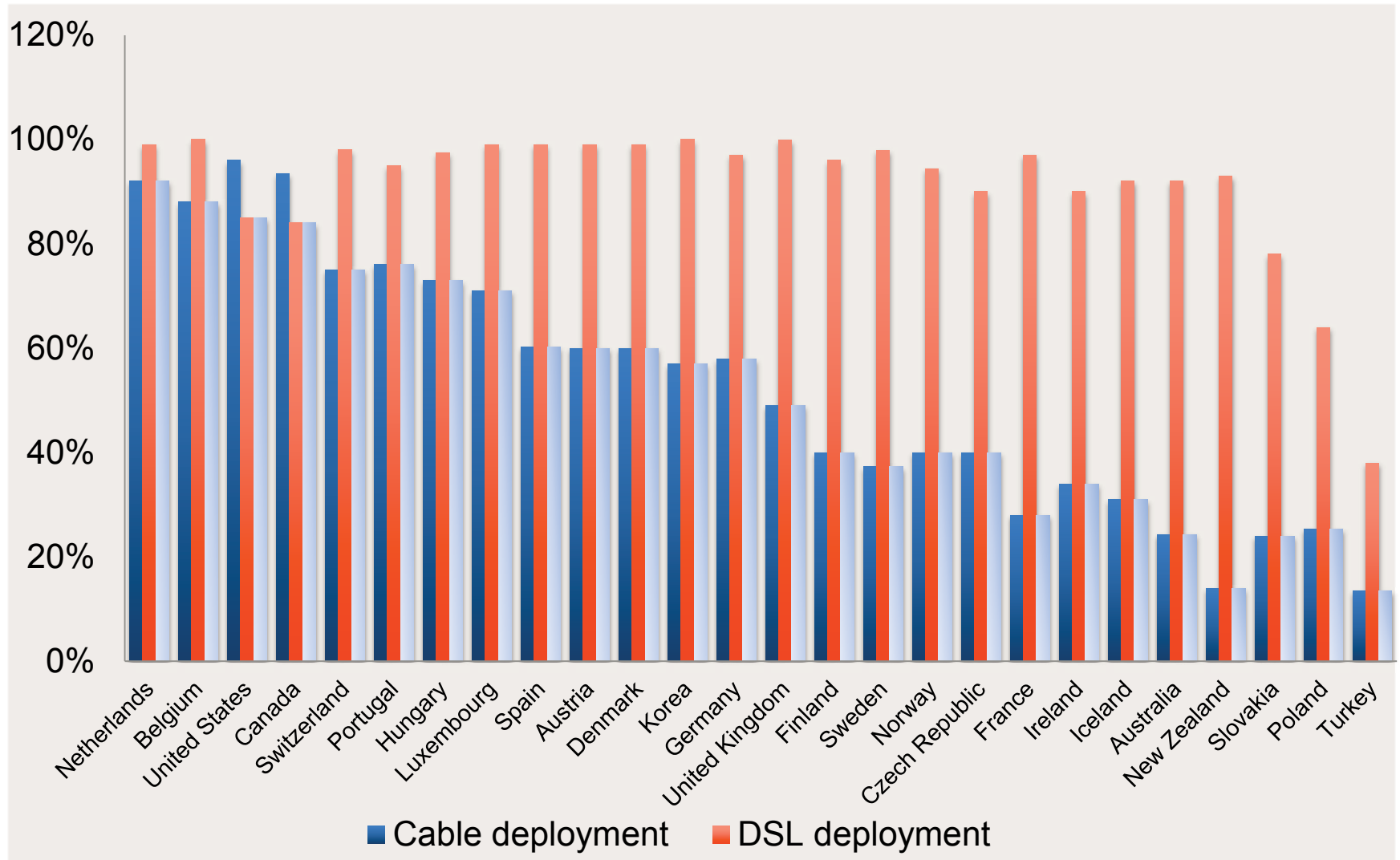
■ America's Circumstances

- Long copper loop PSTN
- Cable TV system alongside the PSTN
- Low population density, especially in urban areas
- Plethora of entertainment choices, but low computer ownership
- Close to most key Internet resources
- Technology-flexible mobile policy

■ Broad Deployment of DSL and Cable

- 96.3 percent have access to some form of wired broadband
 - ~96 percent have access to cable modem
 - ~85 percent have access to DSL
 - ~18 percent have access to fiber

■ DSL and Cable in OECD



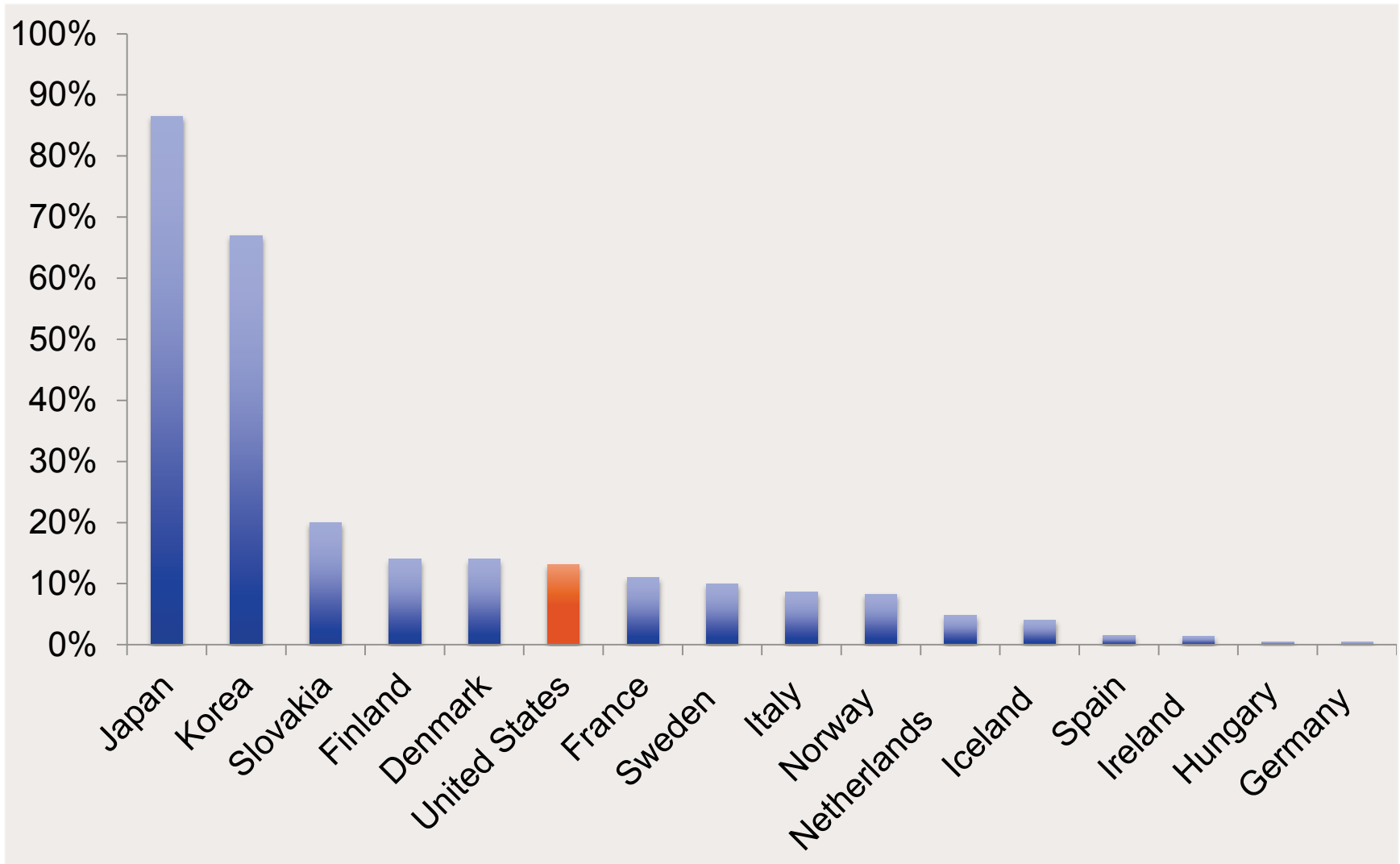
■ Broad Deployment of DSL and Cable

- Third highest rate of wired intermodal competition in OECD (behind Belgium and Netherlands)
 - Fiber-based broadband (FiOS and U-verse) is growing faster than cable modem
 - Long-loop DSL is losing subscribers
 - Market share is 57% cable, 43% telco

- **Intense Fiber Installation**

- America is installing more fiber optic cable than all of Europe

■ OECD Fiber Deployment



■ **America Leads in 4G/LTE**

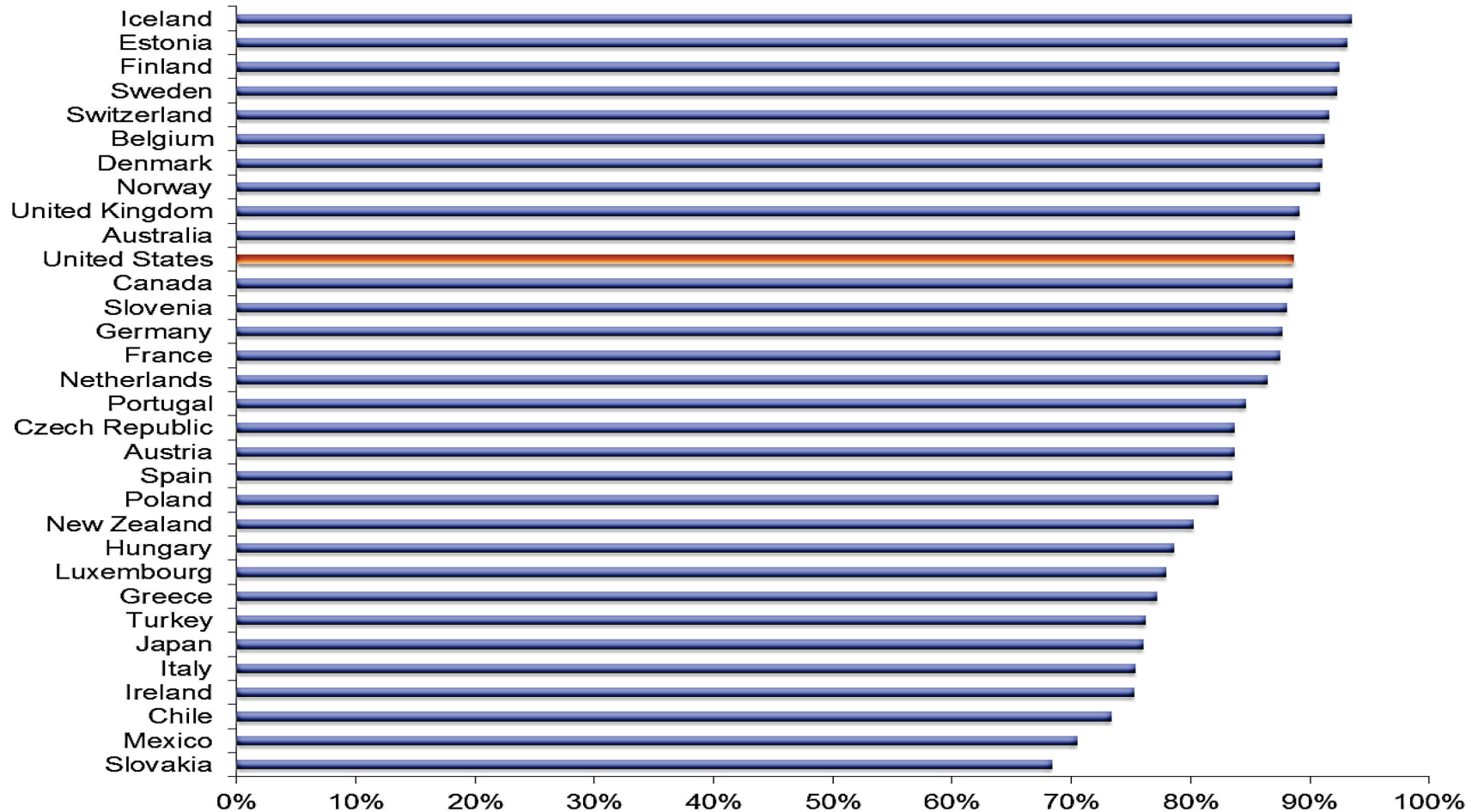
- America leads the world in the adoption of 4G/LTE mobile broadband
- Only Korea is close
- Very helpful for rural broadband

■ Adoption Remains an Issue

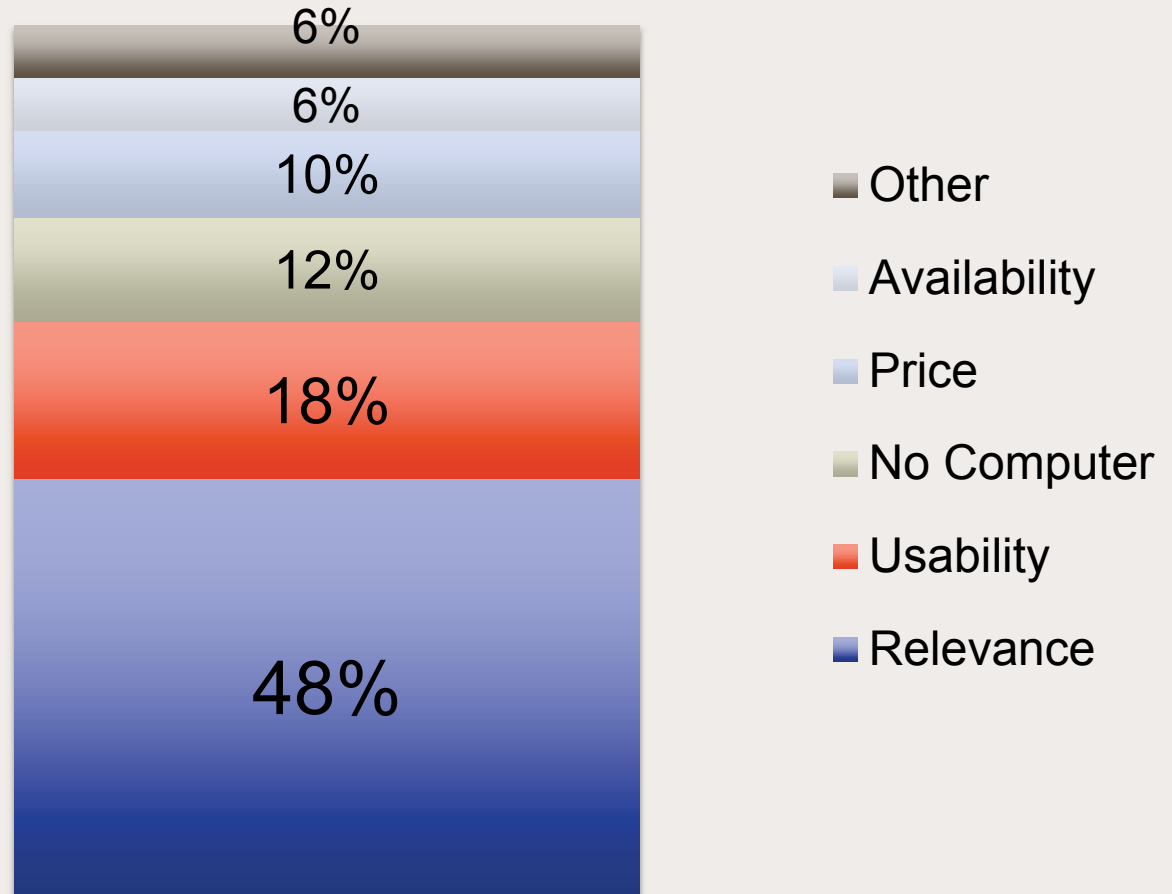
- Broadband adoption is not as high as we would like it to be, but:
 - U. S.: 68.2%
 - EU-15: 66.9%
- Adoption is best measured by computer-owning homes
 - U. S.: 88.6%
 - EU-15: 85.9%
- Spread between top nation Iceland and U.S. for computer homes is less than 5%

■ High Adoption by Computer Homes

- 88.6% adoption by U.S. computer-owning homes



■ Reasons for Non-Adoption



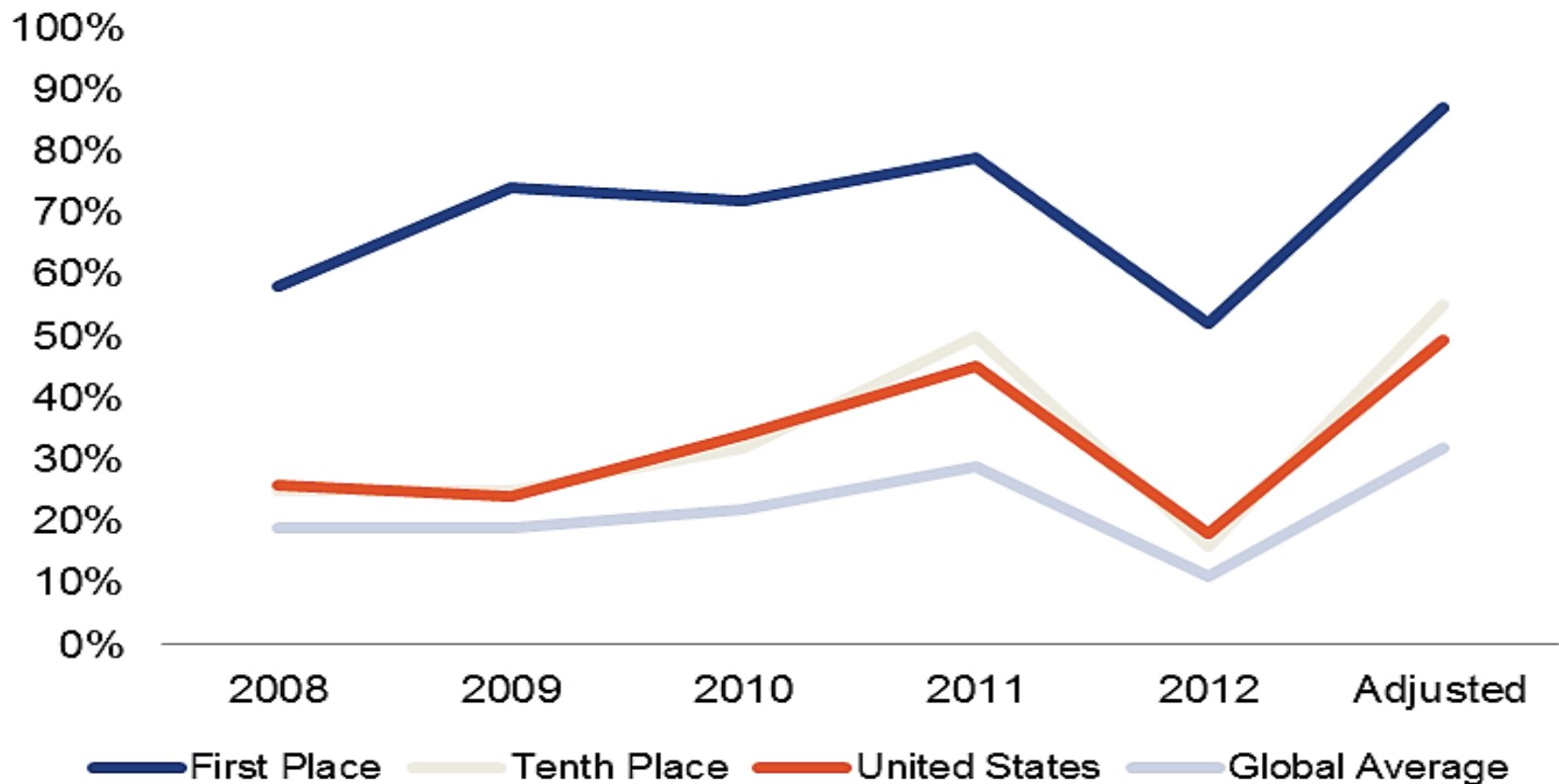
Source: Pew survey: Americans' main reasons for not using the Internet, 2010

■ Speed: Overall

- Traditional Speed leaders:
 - Korea, Japan, Hong Kong, Netherlands, and Denmark
- U. S. average network (peak) rate is **29.6 Mbps**
- Top 10 Nations are less than 10 Mbps ahead
 - Average peak for the other Top 10 nations is **37.9 Mbps**
 - American speeds are improving faster than world-leading speeds.

■ Speed: High Speed Adoption

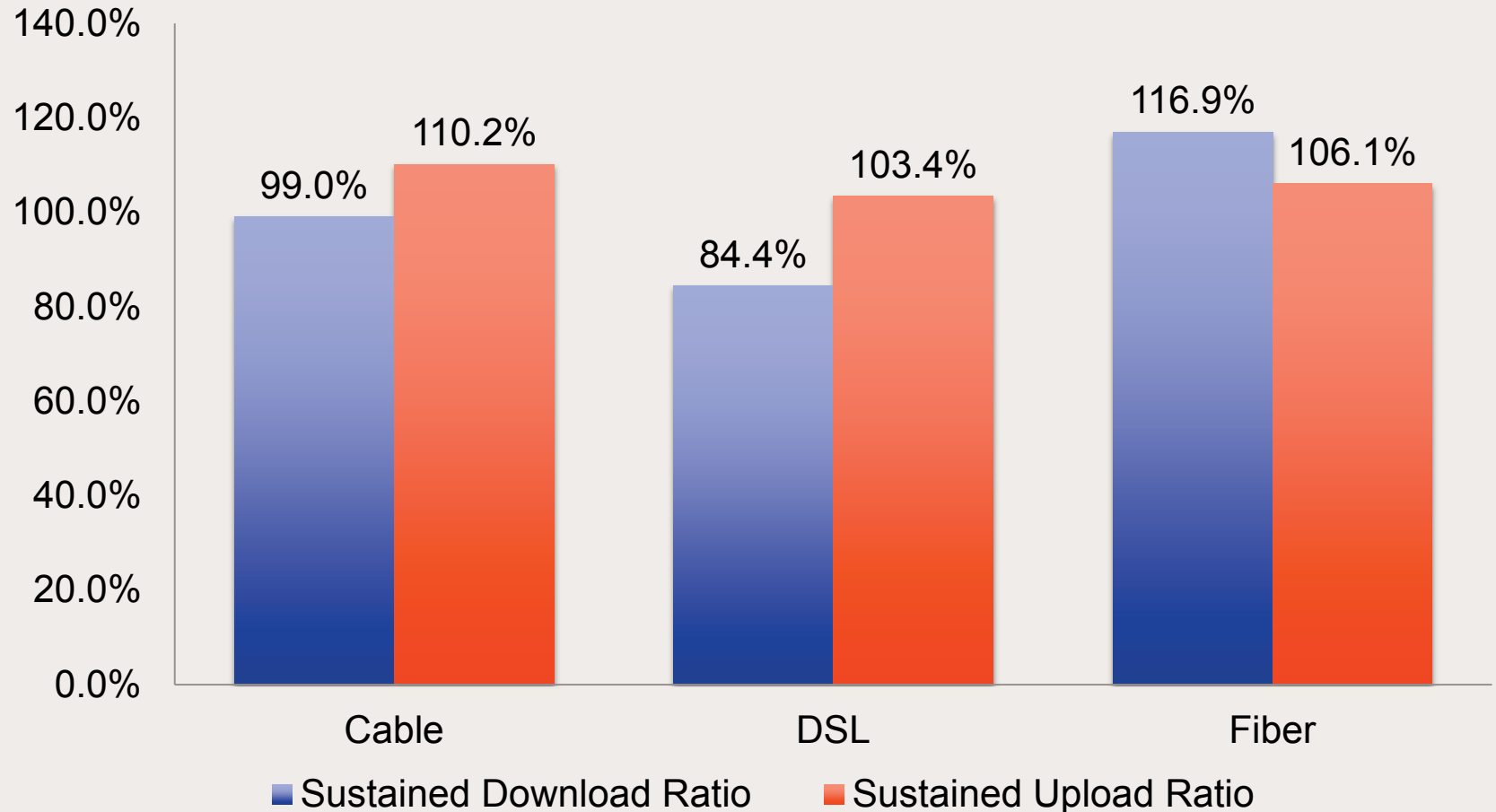
- 7th in the world and 6th in OECD in percentage of users with connections faster than 10 Mbps



■ Speed: 100 Mbps Proliferation

- 82% of American homes are passed by DOCSIS 3
 - Capable of 100 – 160 Mbps
 - DOCSIS 3.1 will be even faster
- Vectored DSL may soon bring a second 100 Mbps service to the market
- LTE Advanced is another possible 100 Mbps pipe

■ Speed: US Advertising Claims Accurate

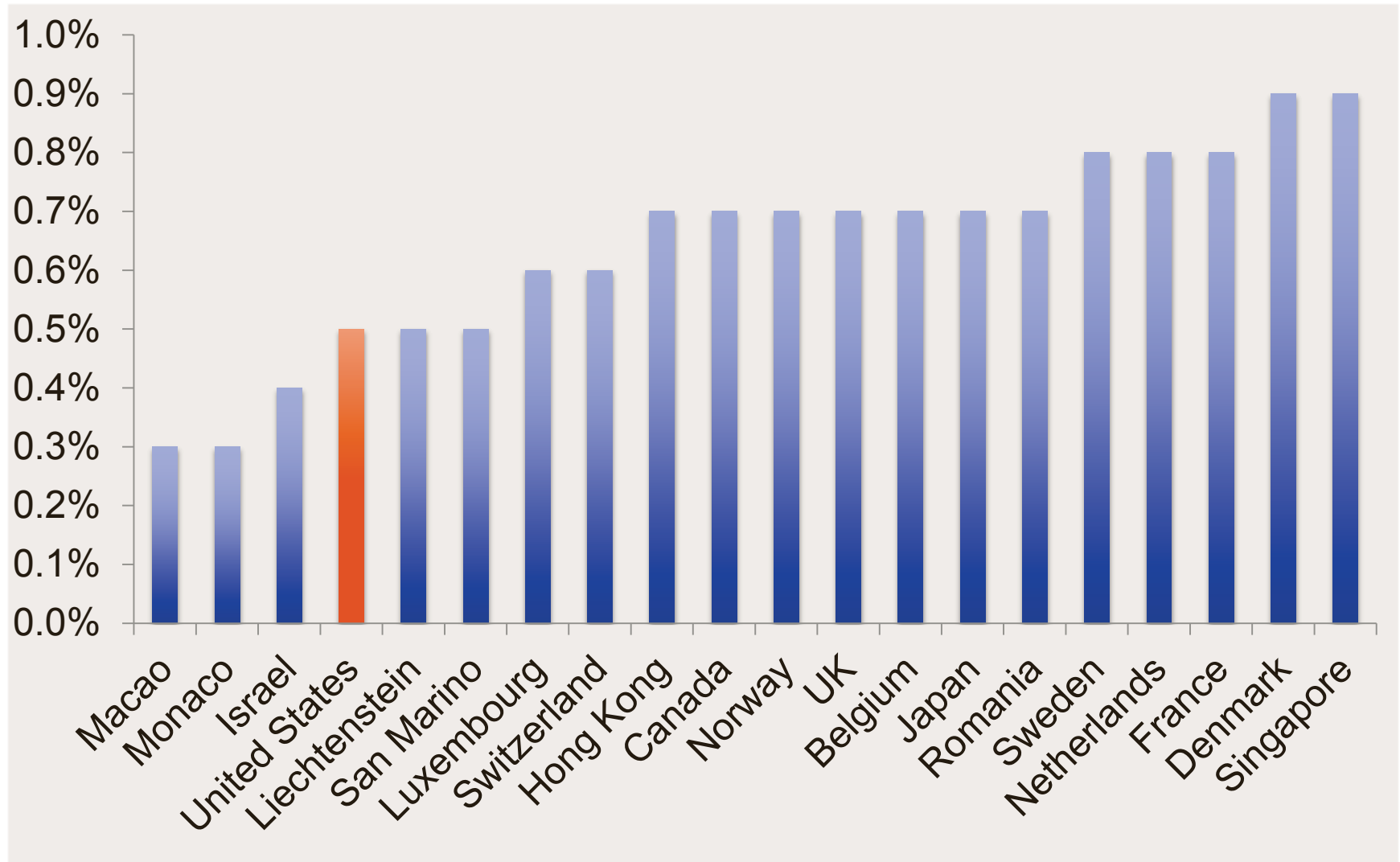


Advertised vs. Actual Speeds, per FCC, 2012

■ Price: Overall

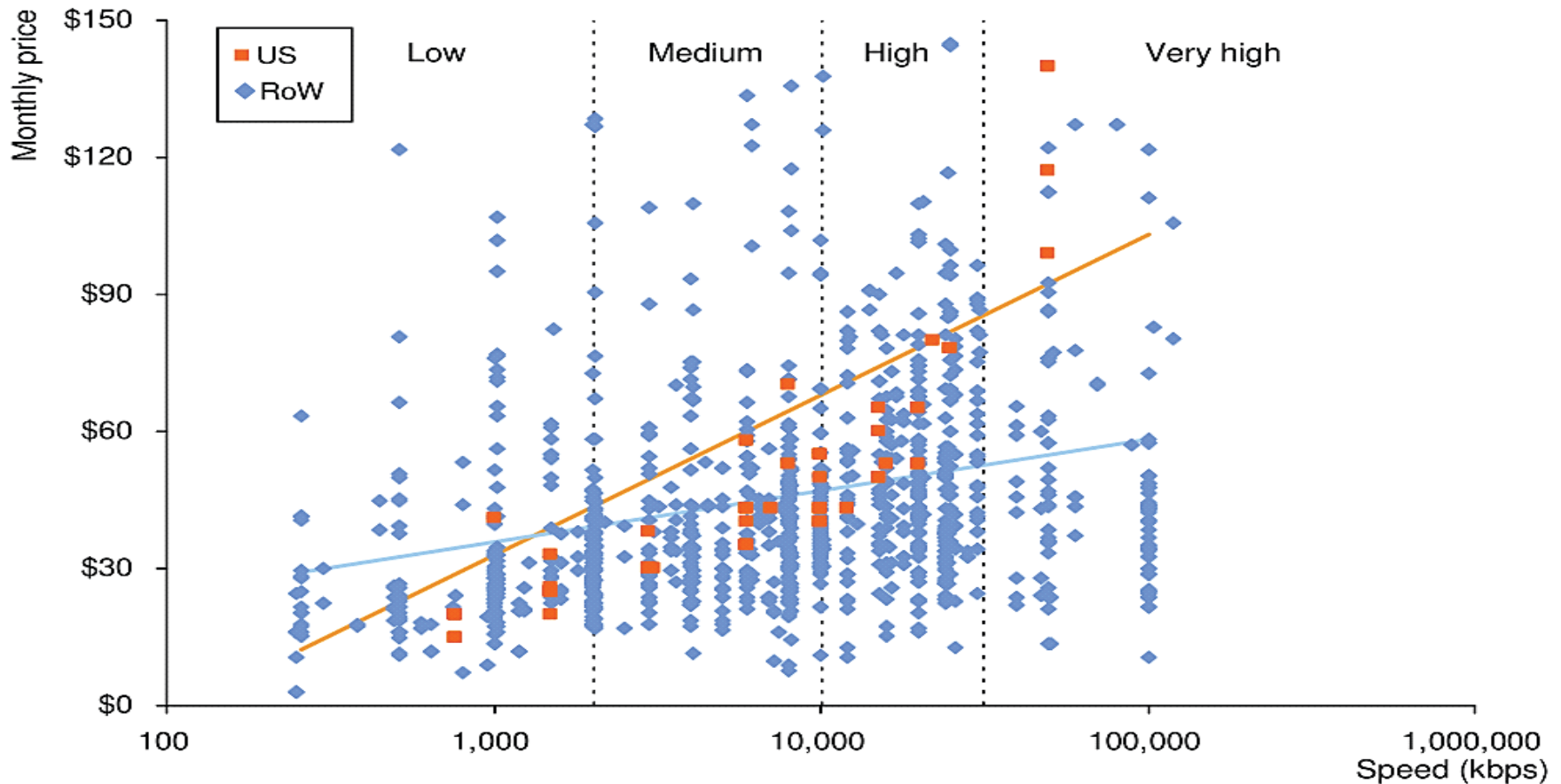
- Entry-level pricing for American broadband is the second lowest in the OECD and fourth lowest in ITU survey
- U.S. rank in prices for higher speeds is lower

■ Price: Low Entry-Level Prices



■ Price: Benkler's Pricing Insight

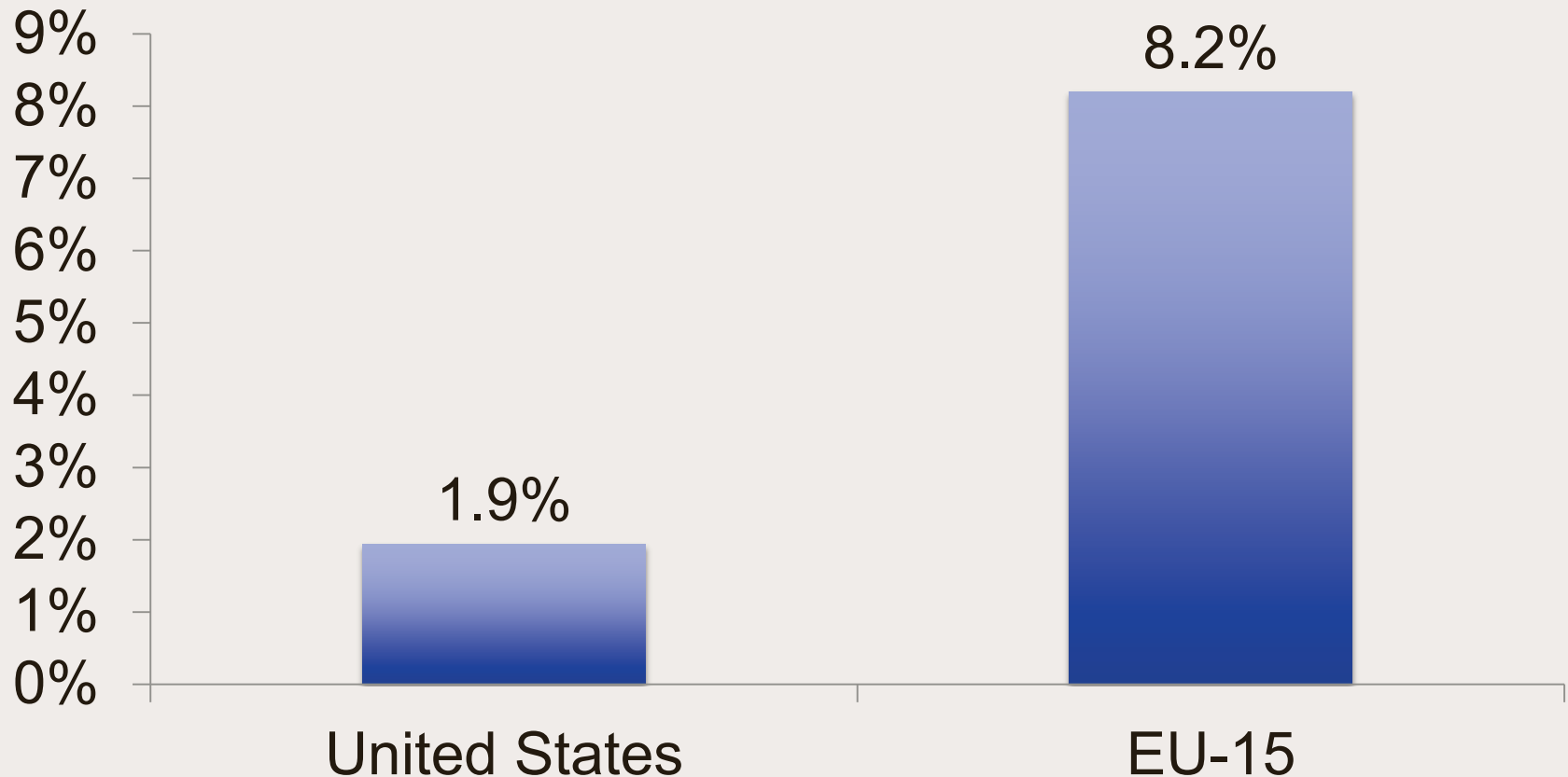
Figure 3.28. Firm-level offerings in OECD, by price tiers; US offers in orange



Source: OECD, TeleGeography, Point Topic
Note: Top 4 providers only

■ Factors for Price: NOT Excess Profits

- American broadband providers are less profitable than EU-15 providers



■ **Factors for Price: Low U.S. Subsidies**

- Low-price, high-speed nations have committed heavy subsidies to private firms
- Despite subsidized fiber, Japan's adoption level is no higher than ours

■ Factors for Price: High Costs

- America is an expensive nation to serve because of low overall urbanization and low-rise cities
 - U.S. has 27th lowest rate of urbanicity (urban density) in the OECD
 - Costs of broadband are Mbps/mile
 - U.S. has to spend many more dollars per capita on cable and electronics to produce speedup effects than Japan, Korea, or Hong Kong

■ The Policy Battle



The railroad corporations will either own the people or the people must own the railroads. —

Omaha
Platform, 1893

■ Conclusions

- U.S. is a facilities-based deployment leader in cable, fiber, and LTE
- Korea and Singapore are adoption leaders
- U.S. is isn't far behind for computer-owning homes

■ Conclusions – cont'd

- Korea, Japan, Hong Kong, Netherlands, and Denmark are consistent speed leaders
 - U. S. is in Top 10 and rising
- U.S. is a low-price leader at entry-level, but U.S. prices are higher at the high end than most OECD nations
 - Subsidies and urbanicity play a role, profits not so much

■ Issues to Tackle

- Internet engagement, digital literacy, computer ownership
- Subsidy programs for poor and rural residents, following Connect America model
- Use of smart auctions to allocate subsidies
- Spectrum remains scarce due to government over-allocation

■ Verdict

■ Neelie Kroes Wins

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