



Definition of Broadband

CYBR 4400 / 5400: Principles of Internet Policy, Lecture 2-4

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Today's Lecture

- ❖ Field trip for next Monday class!
- ❖ Current Events
 - ❖ FCC Establishes Rural Broadband Fund
- ❖ Definition of Broadband lecture
- ❖ Complete lecture on Last Mile Technologies

Rural Digital Opportunity Fund

- ❖ \$20.4 billion over 10 years for gigabit speed broadband networks for unserved rural areas
 - ❖ Target census blocks where data shows no 25/3 Mbps service available with fixed broadband (6M rural homes and businesses)
 - ❖ Funds allocated through multi-round reverse auction that prioritize networks with higher speeds and low latency, greater usage allowances
- ❖ Phase II targets \$4.4 billion to partially served areas
- ❖ Connect America Fund and new program supported by Universal Service Fund
 - ❖ Provide rural America with the same opportunities as urban areas

Next Monday class (2/10)— meet at Silicon Flatirons Conference!

- ❖ Keynote Address — 9 - 9:30 am
 - ❖ Commissioner Michael O'Reilly, FCC
- ❖ Register online at siliconflatirons.org for Technology Optimism and Pessimism Conference (free!)
- ❖ Write up 1-2 page summary of the keynote (key concepts, your impression / critique of presentation)
- ❖ Distance students can view and hand-in when posted



Definition of Broadband

'brôd,band/, noun

a high-capacity transmission technique using a wide range of frequencies, which enables a large number of messages to be communicated simultaneously

Source: Google Dictionary

Broadband Progress Report

Background

- ❖ 2016: FCC found that “advanced telecommunications capability” was NOT being deployed to all Americans in reasonable and timely manner
- ❖ 2018: Prior finding was true, steps taken by FCC to remedy
 - ❖ Created Broadband Deployment Advisory Committee
 - ❖ Reformed legacy high-cost universal service program to allow new entrants through reverse auctions
 - ❖ Authorized new uses of wireless spectrum
 - ❖ Repealed “heavy-handed” Title II net neutrality order

2018/19 Broadband Progress Report

Discussion

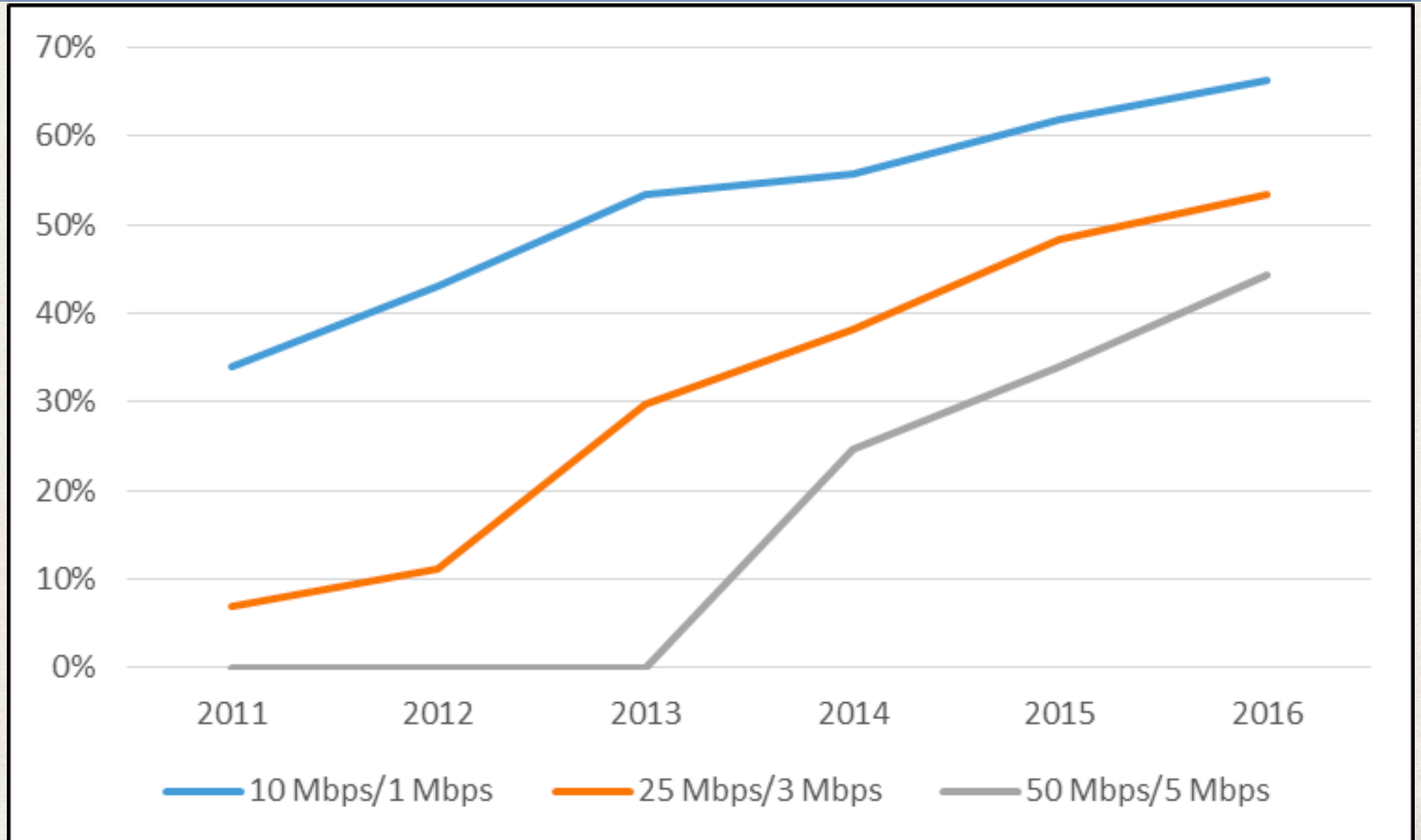
- ❖ What are the factors of broadband service considered to define “advanced telecommunications capability”?
 - ❖ Speed
 - ❖ Latency, usage allowances and price not considered
- ❖ 2018 / 19 reports conclude that “advanced telecommunications capability was being deployed to all Americans in reasonable and timely manner”
- ❖ Current 25 / 3 Mbps benchmark appropriate, rejects 1 Gbps
 - ❖ Support by usage trends (33% residential, fixed connections below benchmark)

Mobile Services

- ❖ 2018 / 19 Reports conclude that mobile services are not “currently full substitutes for fixed service”
 - ❖ But do satisfy statutory definition of advanced telecom capability
- ❖ Single-speed bench mark “unworkable” given inherently variable actual speed of mobile
 - ❖ Performance varies by receive signal quality, cell traffic loading, local network capacity
- ❖ Use Form 477 LTE data with minimum advertised speeds of 5 / 1 Mbps
- ❖ Supplement with on-the-ground, crowd-sourced, speed test data from Ookla with median of 10 / 1 Mbps or higher

Increase in Adoption of Fixed Terrestrial Broadband Services from 2011 to 2016

Source: FCC, 2018 Broadband Deployment Report



America's Digital Divide

Deployment (Millions) of Fixed Terrestrial 25 Mbps/3 Mbps Services and Mobile LTE Based on a Minimum Advertised Speed of 5 Mbps/1 Mbps

	2013		2014		2015		2016		2017	
	Pop.	%	Pop.	%	Pop.	%	Pop.	%	Pop.	%
United States	261.977	83.0%	283.386	89.1%	287.387	89.7%	295.905	91.7%	304.149	93.4%
Rural Areas	27.776	45.5%	36.489	59.2%	37.840	60.8%	42.231	67.1%	46.709	73.2%
Urban Areas	234.200	92.0%	246.897	96.3%	249.547	96.7%	253.674	97.7%	257.440	98.3%
Tribal Lands	1.385	35.5%	2.206	56.1%	2.258	57.0%	2.491	62.4%	2.716	67.6%
Pop. Evaluated	315.596		317.954		320.289		322.518		325.716	

Source: FCC, 2019 Broadband Deployment Report

America's Digital Divide

Deployment (Millions) of Fixed Terrestrial 25 Mbps/3 Mbps Services and Mobile LTE with a Median Speed of 10 Mbps/3 Mbps

	2014		2015		2016		2017	
	Pop.	%	Pop.	%	Pop.	%	Pop.	%
United States	221.249	74.7%	230.561	77.4%	249.817	83.3%	259.926	85.8%
Rural Areas	22.634	48.8%	22.554	48.5%	24.961	53.1%	26.728	56.2%
Urban Areas	198.615	79.5%	208.007	82.7%	224.856	88.9%	233.198	91.3%
Pop. Evaluated	296.204	93.2%	297.899	93.0%	300.036	93.0%	302.940	93.0%

Deployment (Millions) of Mobile LTE with a Median Speed of 10 Mbps/3 Mbps¹²²

	2014		2015		2016		2017	
	Pop.	%	Pop.	%	Pop.	%	Pop.	%
United States	237.210	80.1%	245.843	82.5%	261.898	87.3%	269.494	89.0%
Rural Areas	32.638	70.3%	32.193	69.3%	32.962	70.1%	32.966	69.3%
Urban Areas	204.573	81.9%	213.650	85.0%	228.936	90.5%	236.528	92.6%
Pop. Evaluated	296.204	93.2%	297.899	93.0%	300.036	93.0%	302.940	93.0%

Source: FCC, 2019 Broadband Deployment Report

FCC's Steps in 2019 to Close the Digital Divide

- ❖ Reducing barriers to investment
 - ❖ Promoting small cell site deployment
- ❖ Universal service funding
- ❖ Access to spectrum
- ❖ Broadband deployment advisory committee