

Rural Economy in the Digital Age

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Presented at the 2018 USDA Agricultural Outlook meeting, Arlington, VA

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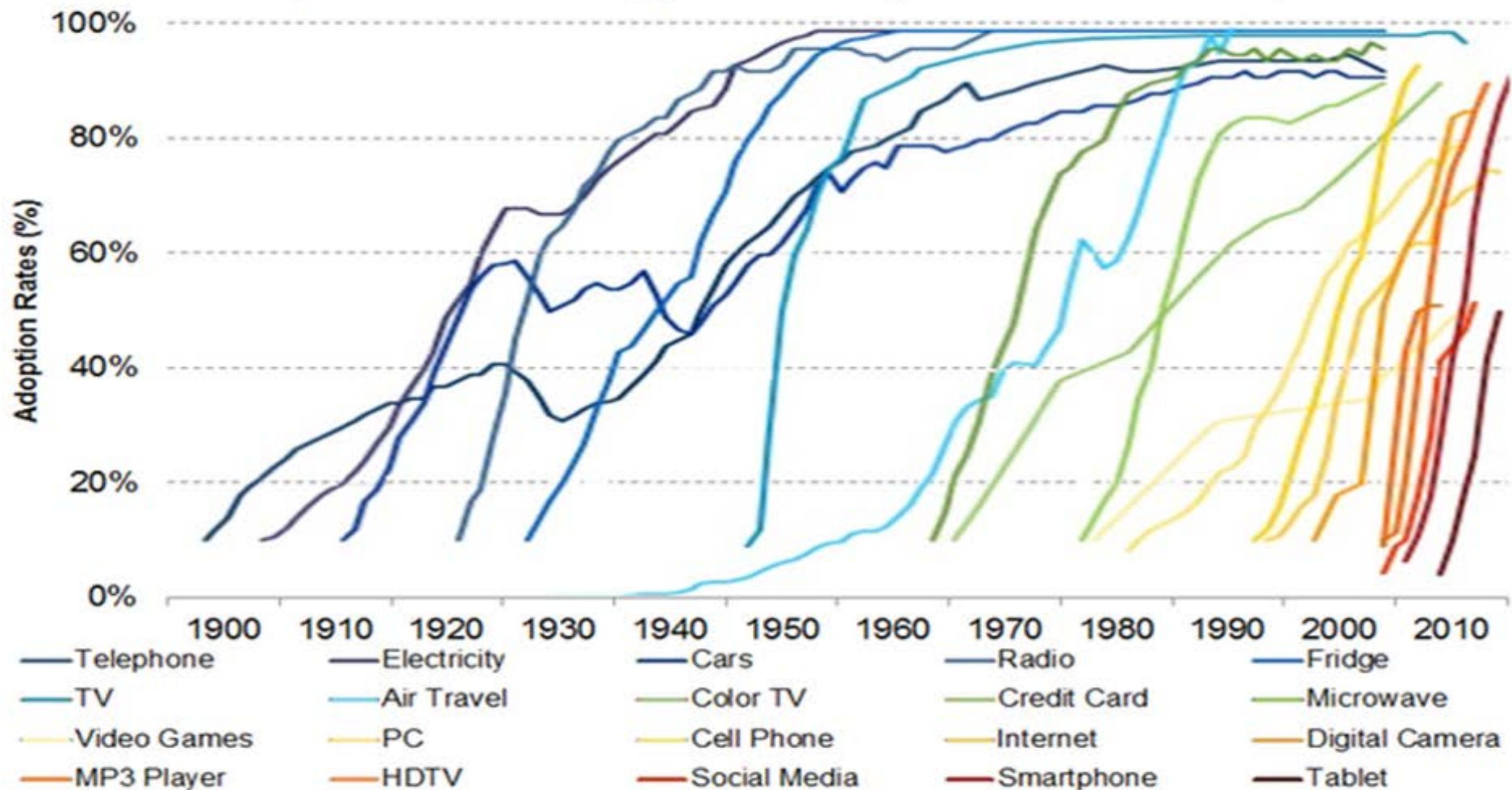


Introduction

- Two issues
 - Does everybody choose to use the Internet?
 - Is it available to everyone?



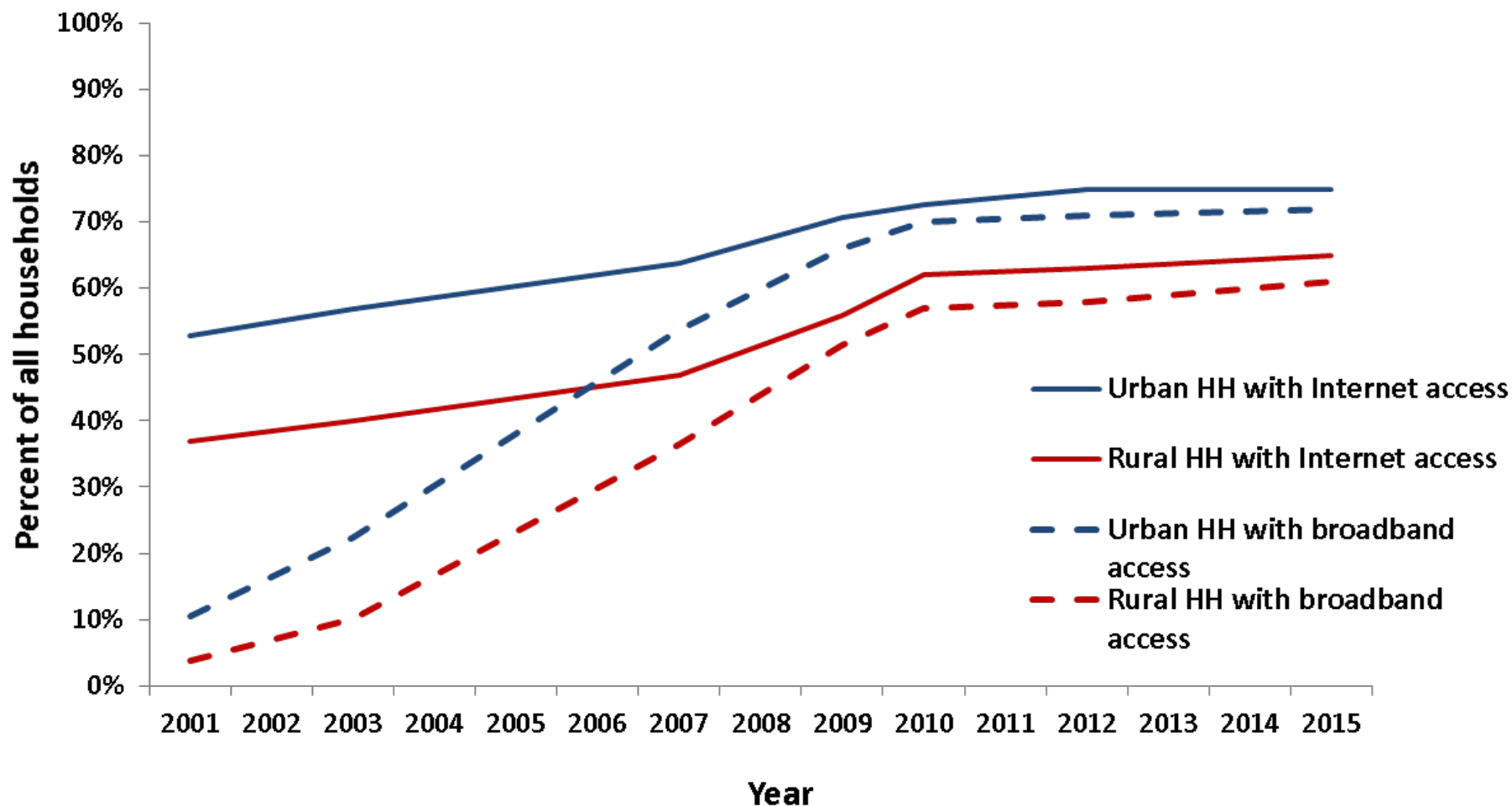
Adoption of Technology in the US (1900 to the Present)



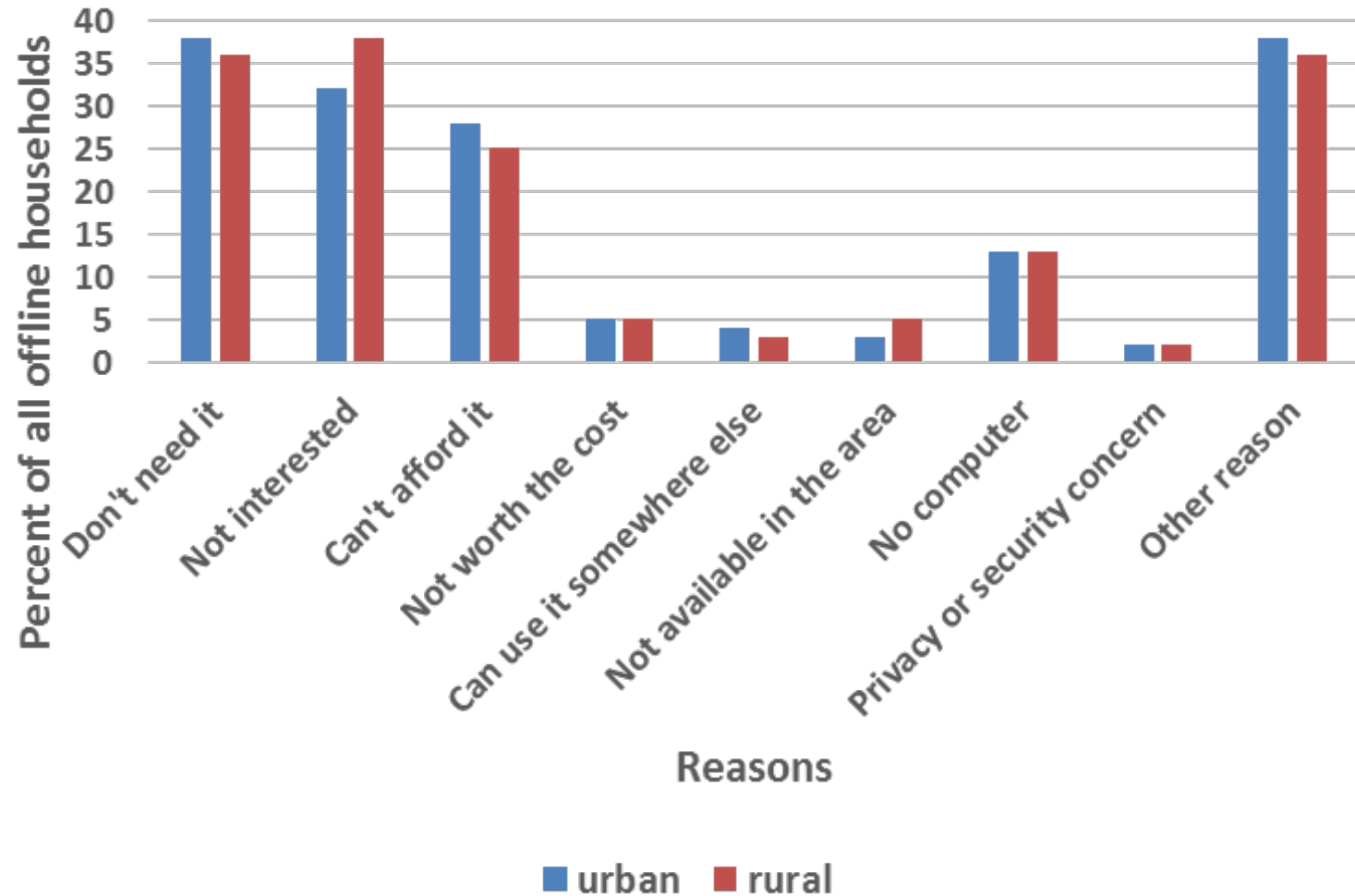
Source: BlackRock



Households with wired Internet Subscriptions over time



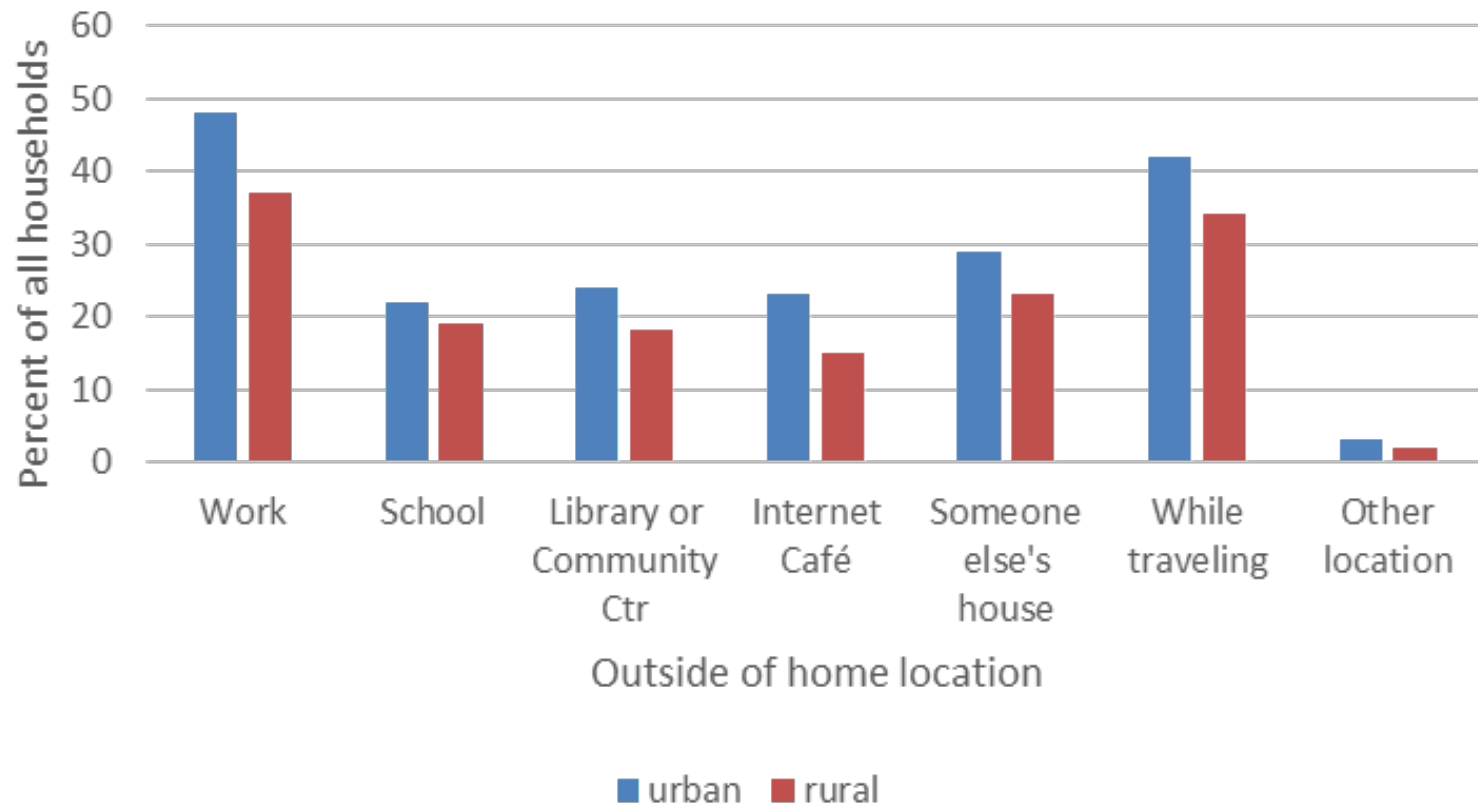
Reasons for no Household Internet Subscription, 2015



Source: ERS using CPS data.



Percent of Households Going On-line Outside of the Home, 2015



Source: ERS using CPS survey data



Selected Household Characteristics and Internet Subscriptions, 2015

	Urban (Percent)	Rural (Percent)
All Households	75	65
Education		
No Diploma	46	35
High School Diploma	64	57
Some College	80	75
College Degree or more	87	85
Household Income		
less than \$25,000	53	46
\$25,000-49,999	71	65
\$50,000-74,999	83	79
\$75,000-99,999	87	84
\$100,000 and over	90	85



Broadband speeds typically needed in selected activities

Activity	Minimum Download Speed (Mbps)
Email	0.5
Web browsing	
Job searching, navigating government websites	0.5
Interactive pages and short educational videos	1
Streaming radio	Less than 0.5
Phone calls (VoIP)	Less than 0.5
Watching video	
Standard streaming videos	0.7
Streaming feature movies	1.5
HD-quality streaming movie or university lecture	4
Video conferencing	
Basic video conferencing	1
HD video conference and telelearning	4
Gaming	
Game console connecting to the Internet	1
Two-way online gaming in HD	4

Source: FCC, 2016 Broadband Progress Report.

Note: Mbps (Megabits per second) is the standard measure of broadband speed. It refers to the speed with which information packets are downloaded from, or uploaded to, the internet.



Percent of Americans with selected broadband access service levels

	5mbps/1 mbps LTE service		10 mbps/1 mbps fixed terrestrial service		25 mpbs/3mpbs fixed terrestrial service
	2012	2016	2012	2016	2016
Total	89.8	99.6	92.8	96.0	92.3
Rural areas	62.6	98.2	69.0	83.9	69.3
Urban areas	96.3	100	98.5	98.9	97.9
Tribal Lands	70.0	94.9	63.5	81.8	64.6

Based on U.S.
Population
(in millions)

313.4	322.5
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Source: FCC, 2018 Broadband Progress Report



Rural businesses and broadband

- 98 percent of rural and 99 percent of urban businesses use broadband. The difference is not statistically significant.
- 85 percent of rural and 90 percent of urban businesses were satisfied with their broadband service.
- What about e-purchase and e-sale behavior?
 - Rural and urban businesses were just as likely to make purchases on-line
 - 81 percent of rural and 82 percent of urban businesses (no significant statistical difference)
 - Urban businesses were more likely to conduct sales on-line
 - 45 percent of rural and 53 percent of urban businesses

Data source: ERS 2014 REIS survey of businesses in tradeable goods sector with 5 or more employees.



Primary Internet technology used by farms

	2009 (percent)	2013 (percent)	2017 (percent)
Share of all farms with Internet subscriptions	59	67	71
Among farms with Internet service, the share using a given technology as the primary method of access:			
Dial-up	23	5	2
DSL	36	35	29
Cable	11	13	15
Fiber optic	NA	NA	8
Satellite	13	17	21
Mobile	NA	NA	17
Other/unknown	17	30	8

Source: USDA-NASS, June Agricultural Survey, various years



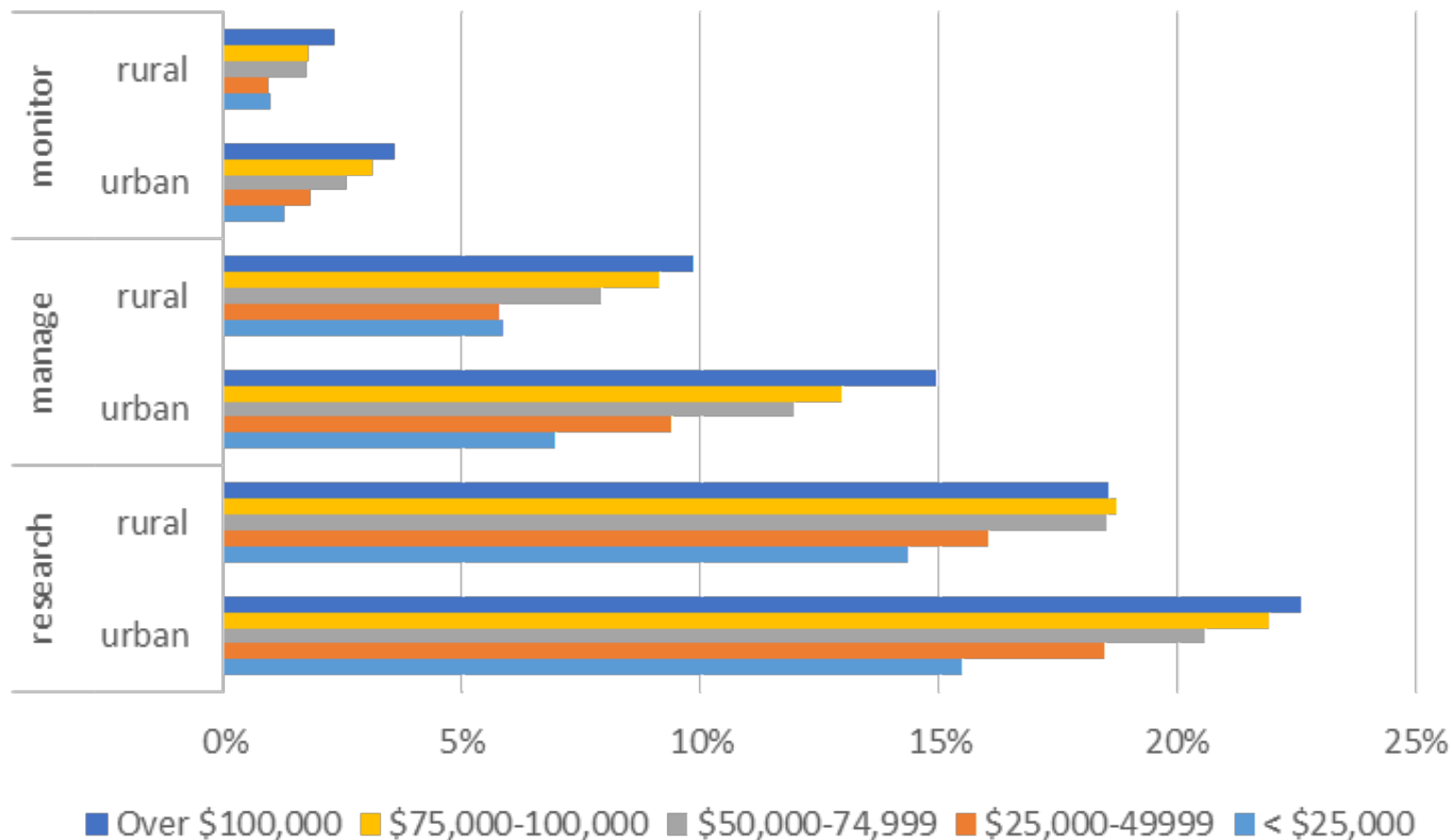
Percent of all Farms conducting business over the Internet

	2009 (percent)	2013 (percent)	2017 (percent)
Purchase agricultural inputs	13	16	23
Conduct agricultural marketing	11	14	18
Conduct business with USDA	5	6	10
Conduct business with other federal depts.	4	5	8
Conduct business with any non-agricultural website	33	40	44

Source: USDA-NASS, June Agricultural Survey, various years



Telehealth activity by household income, 2015



Source: ERS using CPS survey data



Conclusions

- Almost all rural businesses and most rural households have access to broadband services though many lack access at the higher speeds available in most urban areas.
- Rural households lag behind urban households in subscribing to broadband services. Lack of broadband availability, however, is not a major reason cited by households nor appear to be a major reason in the econometric analysis.
- Lack of interest in, or perceived need for, broadband are much more commonly cited reasons by households that do not subscribe to broadband services.
- The types of broadband services that are less available in rural areas are those required by high bandwidth users
- Some of those high demand applications may involve distance learning, telehealth, or telemedicine; thus broadband access with insufficient capacity may be a constraint to such applications.

