



Broadband and Health in Texas

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Our history...



Rural

Long distances

Low population densities



Interdependencies.....

Computer...
or other device



A connection...

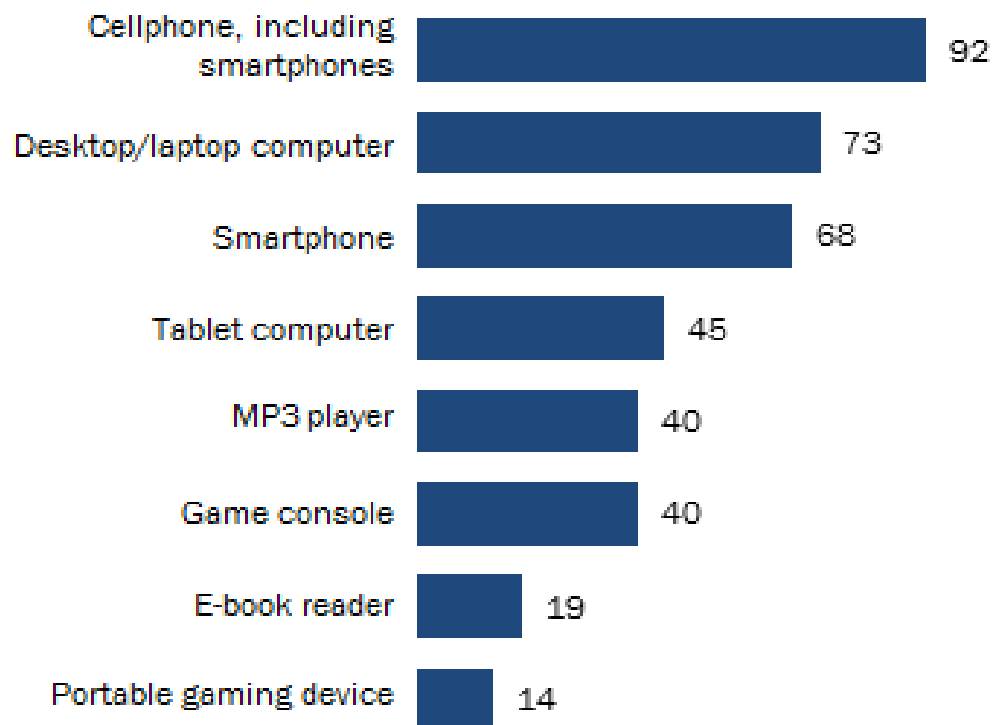


Digital literacy.....



Cellphones, Computers Are the Most Commonly Owned Devices

% of U.S. adults who own each of the following devices



Source: Pew Research Center survey conducted March 17-April 12, 2015. Smartphone data based on Pew Research survey conducted June 10-July 12, 2015.



As of January 2014:

- 90% of American adults have a cell phone
- 58% of American adults have a smartphone (up to 64% in 2015)
- 32% of American adults own an e-reader
- 42% of American adults own a tablet computer

What might these statistics mean for healthcare, and mental health specifically?



Use Cell phones for...

Send/receive texts (81%)

Send/receive email (52%)

Access the Internet (60%,
often for health info)

Apps (50%)

But lower cellphone adoption among...

People over 65

HS grad or less

Income of less than \$30,000

And ~50% often cancel/suspend service
for financial reasons



The social life of health information

Among internet users in each group, the % who have interacted with their health online in the following ways

| In the past 12 months, have you... | No chronic conditions | 1 chronic condition | 2+ chronic conditions |
|---|-----------------------|---------------------|-----------------------|
| | (a) | (b) | (c) |
| Signed up to receive email updates or alerts about health or medical issues? | 8 | 15 ^a | 14 ^a |
| Read or watched someone else's commentary or experience about health or medical issues online? | 25 | 29 ^c | 21 |
| Gone online to find others who might have health concerns similar to yours? | 15 | 19 ^c | 13 |
| Downloaded forms online or applied for health insurance online, including private insurance, Medicare, or Medicaid? | 11 | 12 | 13 |
| Posted a health-related question online or shared your own personal health experience online in any way? | 6 | 9 | 11 ^a |
| Used the internet to do any of these | 40 | 45 | 39 |

Source: Pew Internet Health Tracking Survey, August 07 – September 06, 2012. N=3,014 adults ages 18+. Interviews were conducted in English and Spanish and on landline and cell phones. Margin of error is +/- 3 percentage points for results based on all internet users.



Trends

- Mobile access
- Social media and benefits of online connections
 - Social support
 - Information seeking & sharing



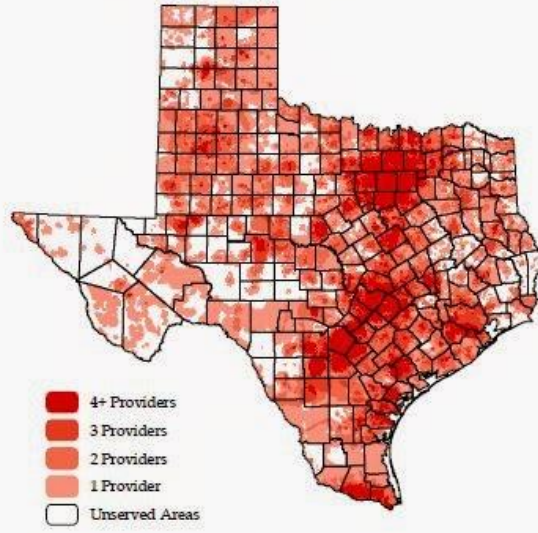
Health facilities

- Location is key
- Resources

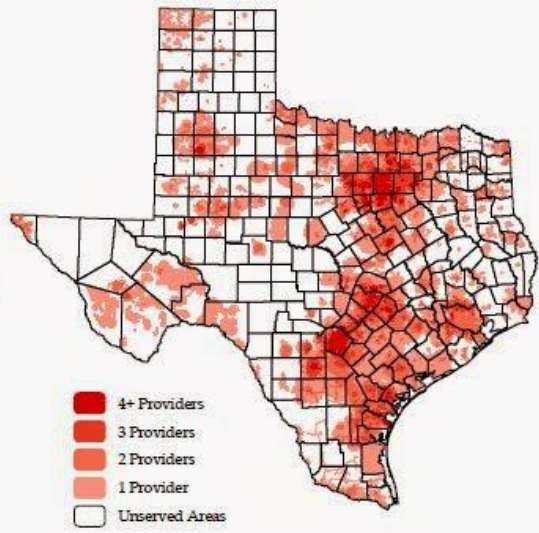


Fixed Broadband Competition by Speed of Service Advertised Speeds as of June 2014

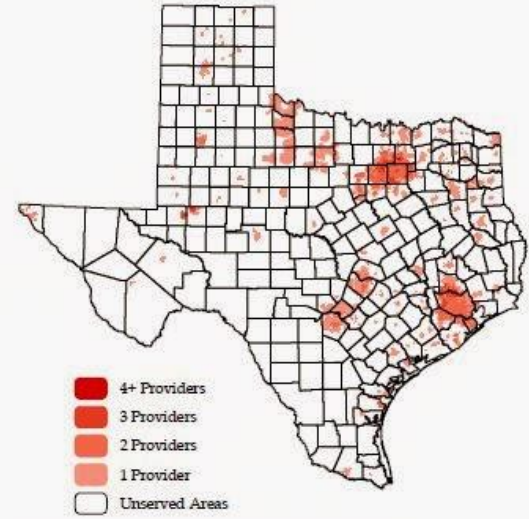
At Least 3 Mbps Downstream
and 768 Kbps Upstream



At Least 10 Mbps Downstream
and 1.5 Mbps Upstream



At Least 25 Mbps Downstream
and 3 Mbps Upstream



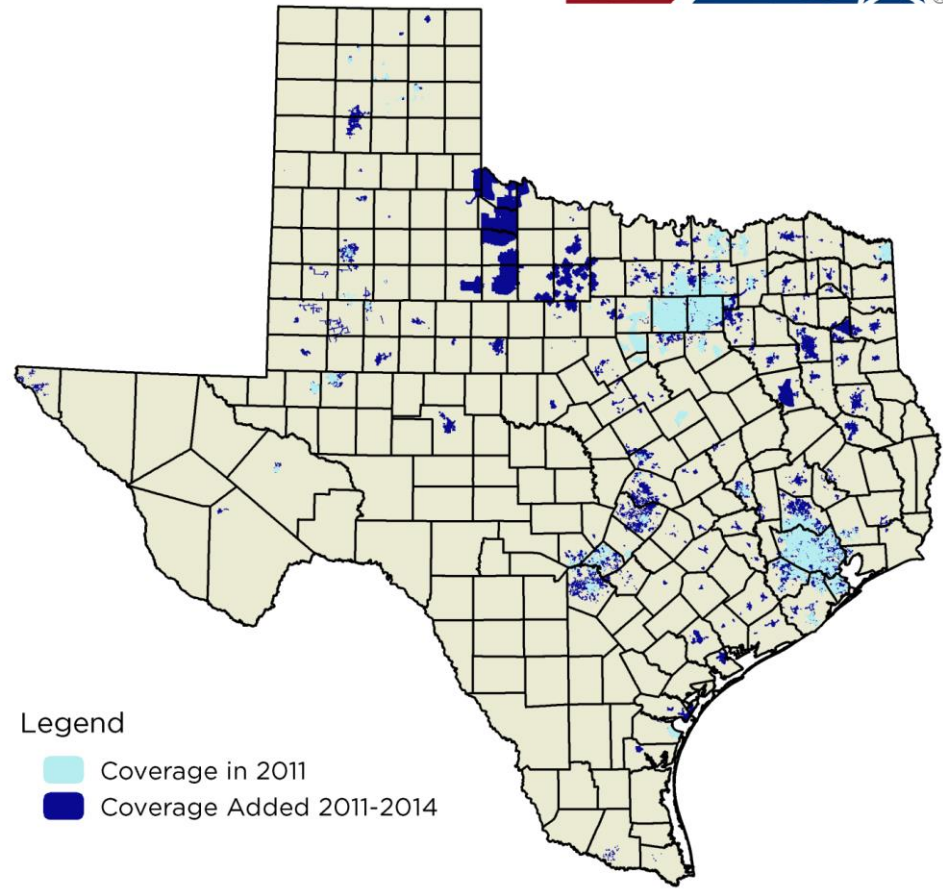
| Number of Facilities-Based Broadband Providers | Households Served 3 Mbps/768 Kbps | Households Served 10 Mbps/1.5 Mbps | Households Served 25 Mbps/3 Mbps |
|--|-----------------------------------|------------------------------------|----------------------------------|
| 4+ Providers | 3,933,561 | 1,197,657 | 295 |
| 3 Providers | 2,113,180 | 1,961,709 | 61,153 |
| 2 Providers | 1,755,476 | 2,768,957 | 919,728 |
| 1 Provider | 857,908 | 2,166,510 | 3,989,343 |
| Unserved | 262,808 | 828,101 | 3,952,413 |

Mobile and satellite broadband services not included.

Published January 26, 2015
www.connectednation.org/fcc-maps



Texas' Progression of 25 Mbps Download Broadband



Legend

-  Coverage in 2011
-  Coverage Added 2011-2014

Households served at speeds of at least 25 Mbps download increased from 41.7% in 2011 to 58.6% in 2014.



Texas BB Availability & Adoption

- Access lags the national average
 - 55.7% of hhs have access to 25 Mbps
 - Most regions lacking access are in rural regions



Texas BB Availability & Adoption

- **Access** lags the national average
 - 62% of Texas hhs *have* access to 25 Mbps download/3 Mbps upload (compared to ~83% nationally)
 - Most regions lacking access are in rural regions
- **Adoption:**
 - As of 2014, 26% of Texans (5 million) do not have home broadband;
 - 48% use mobile broadband, and about **one quarter** of them use it instead of fixed bb access (as of 2012 Connected TX data)



Reasons for No Home BB

- Broadband is not important / relevant
- Affordability
- Lack of skills



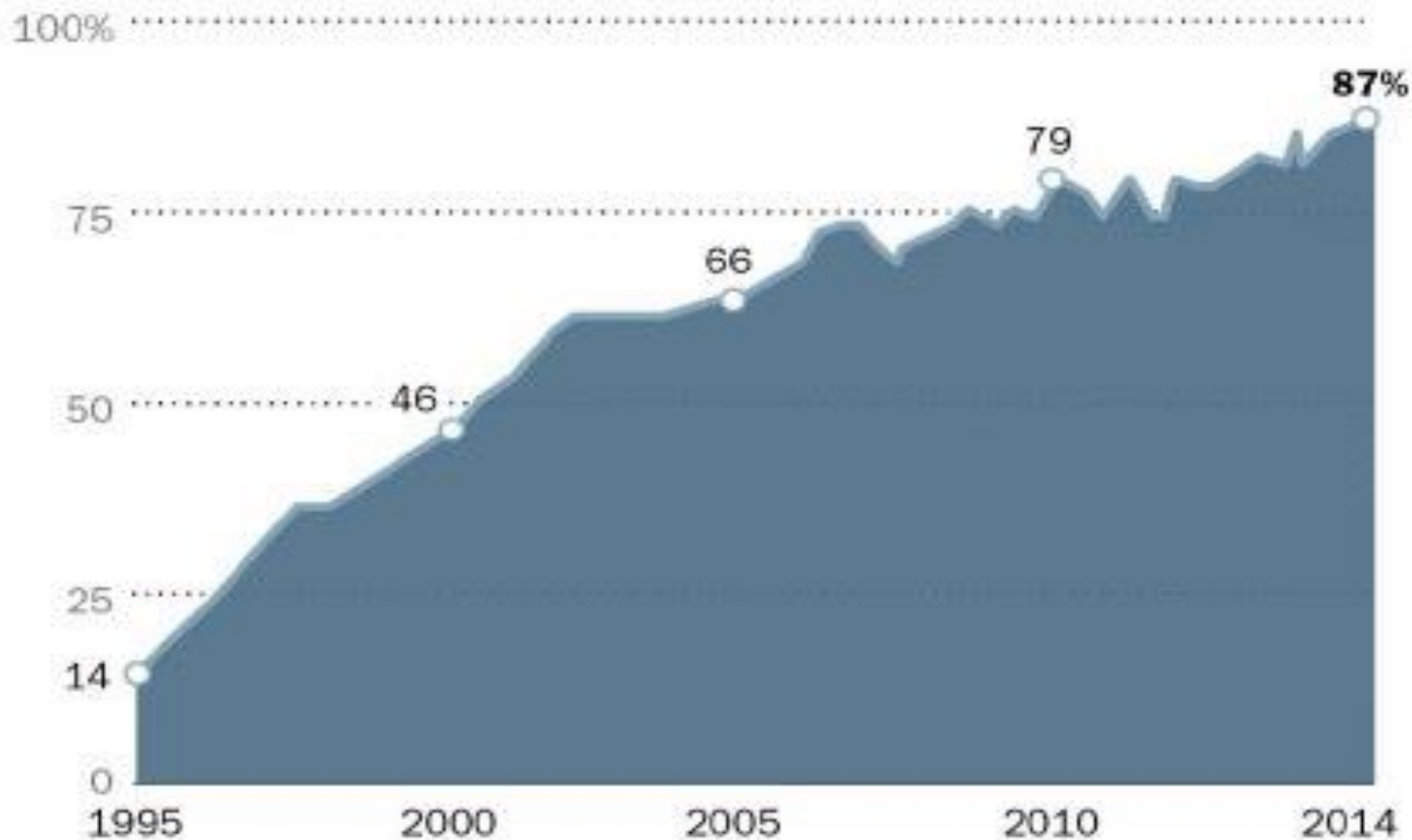
Broadband Adoption Factors

- Age (-)
- Education (+)
- # of children at home (+)
- Race/ethnicity (- for African American, Hispanic)
- Income (+)



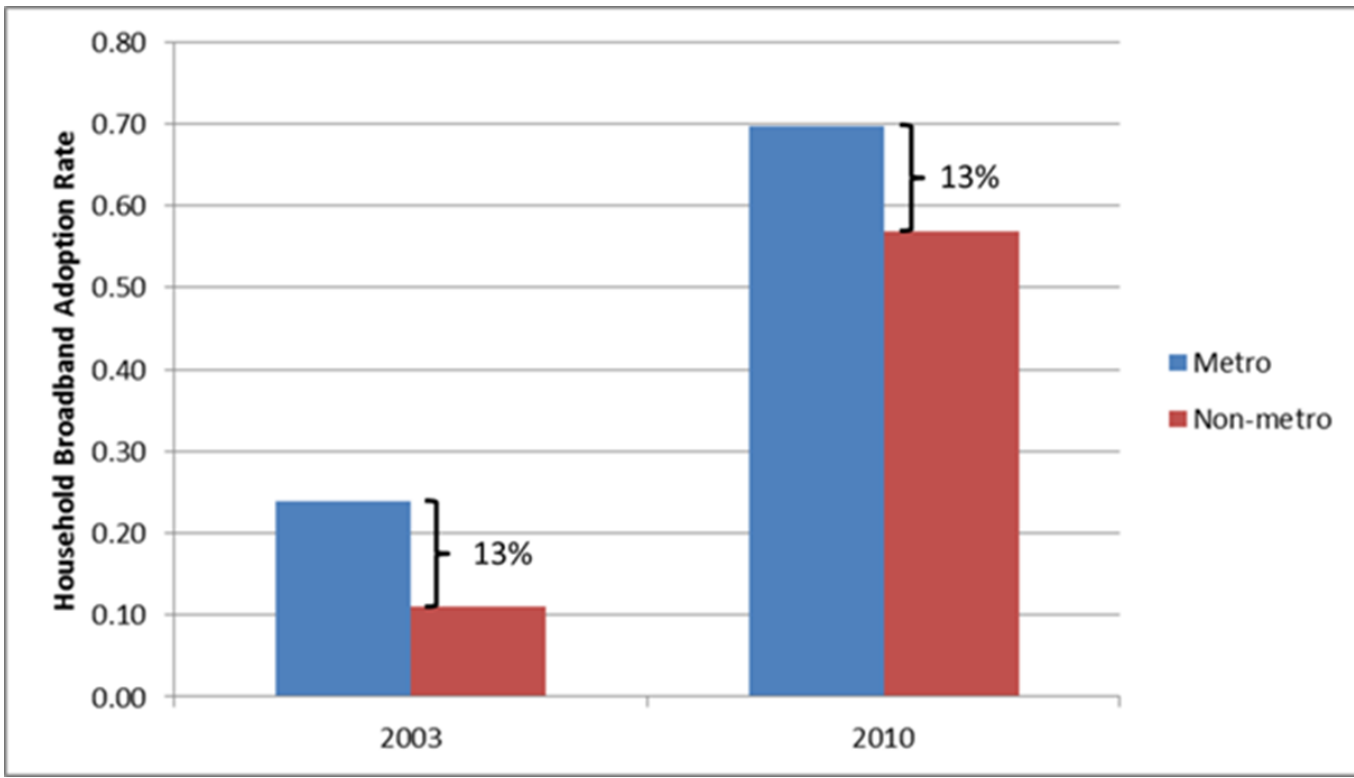
Internet use, 1995-2014

% of American adults who use the internet, over time

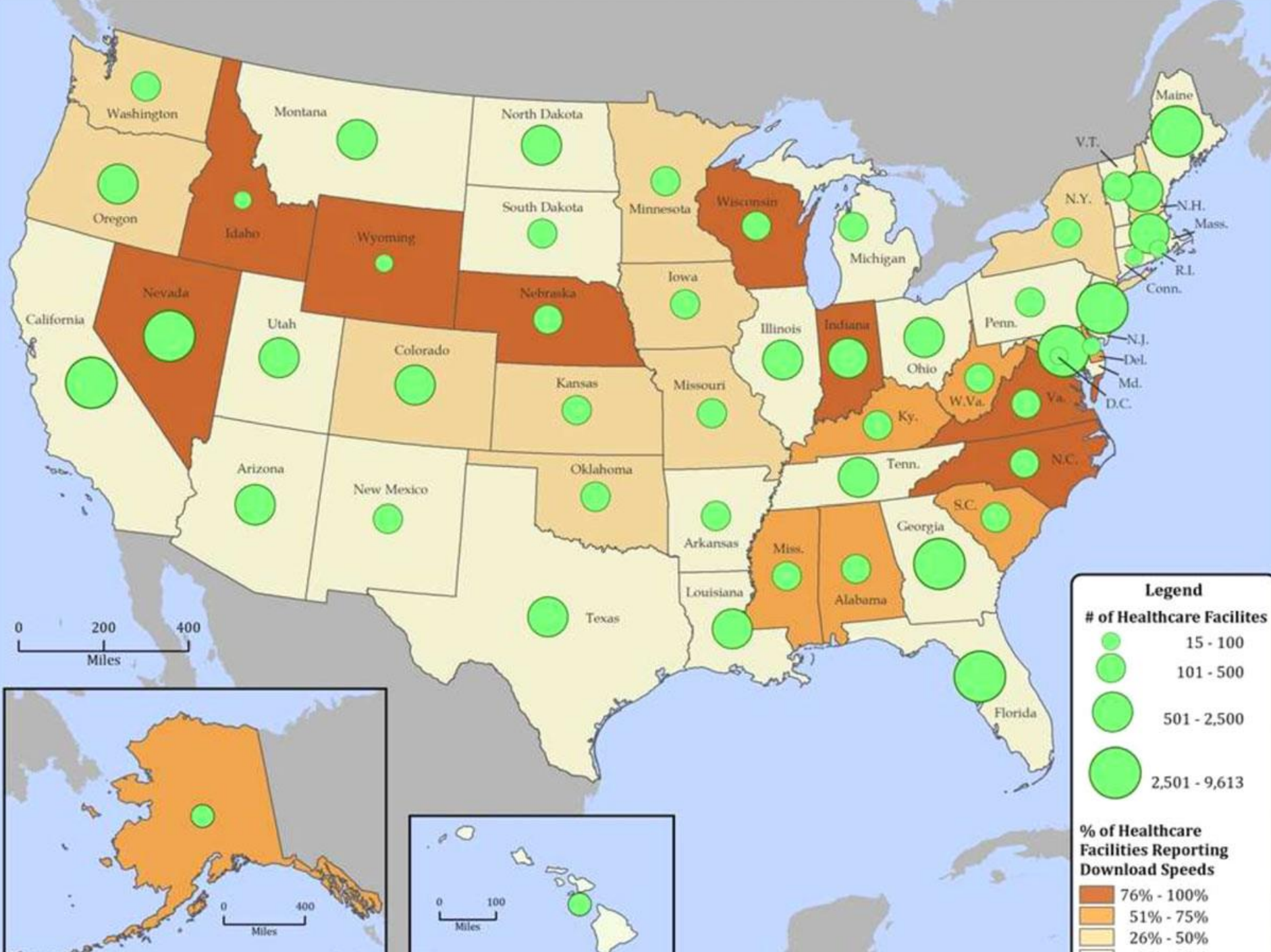


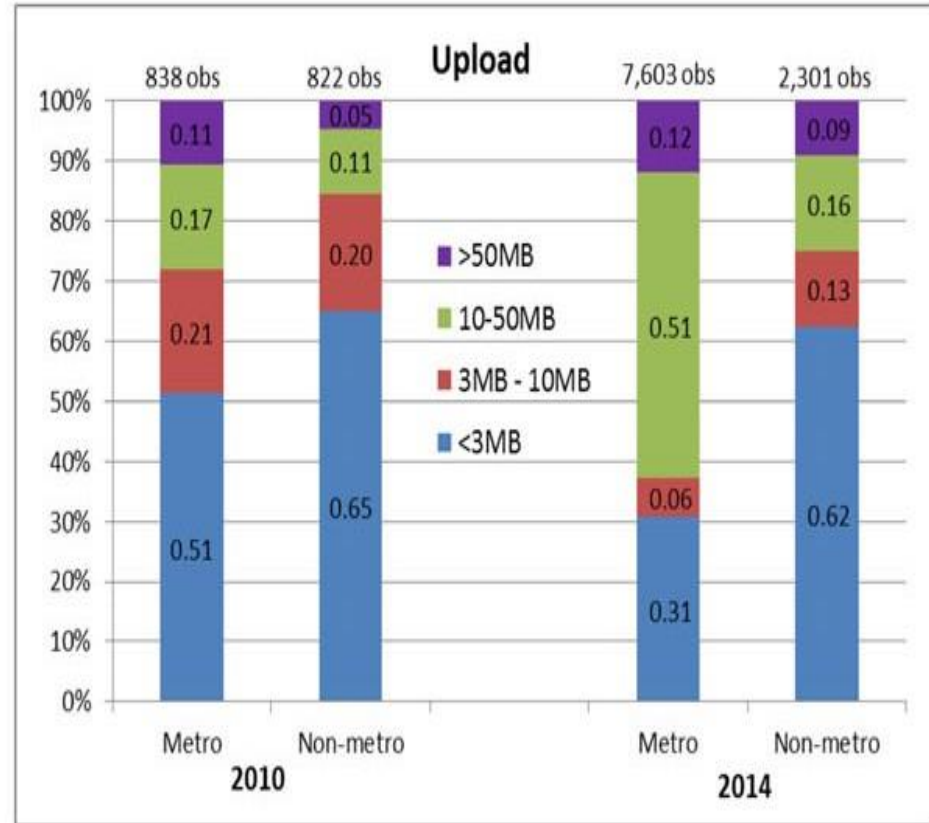
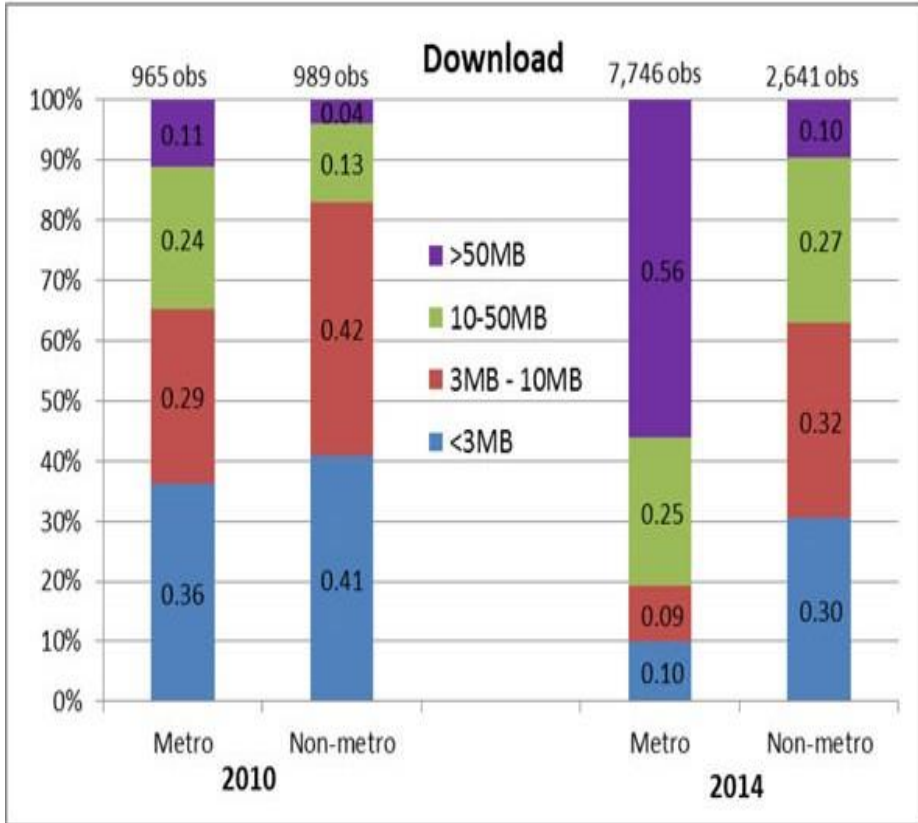


U.S. Rural – Urban Digital Divide



Source: Whitacre, Stover, Gallardo, Telecommunications Policy, 2014

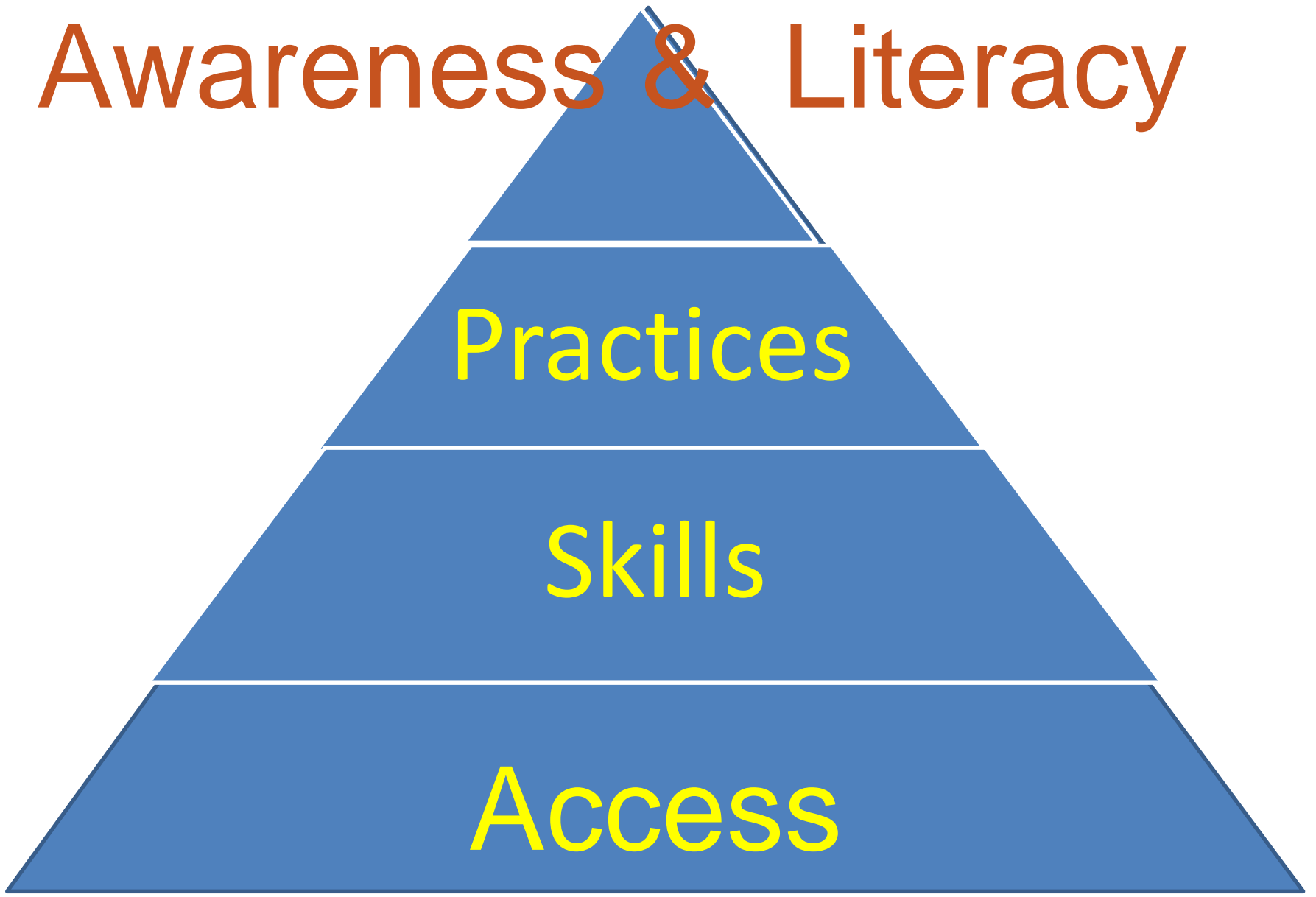




Up- and download speeds for Non-hospitals



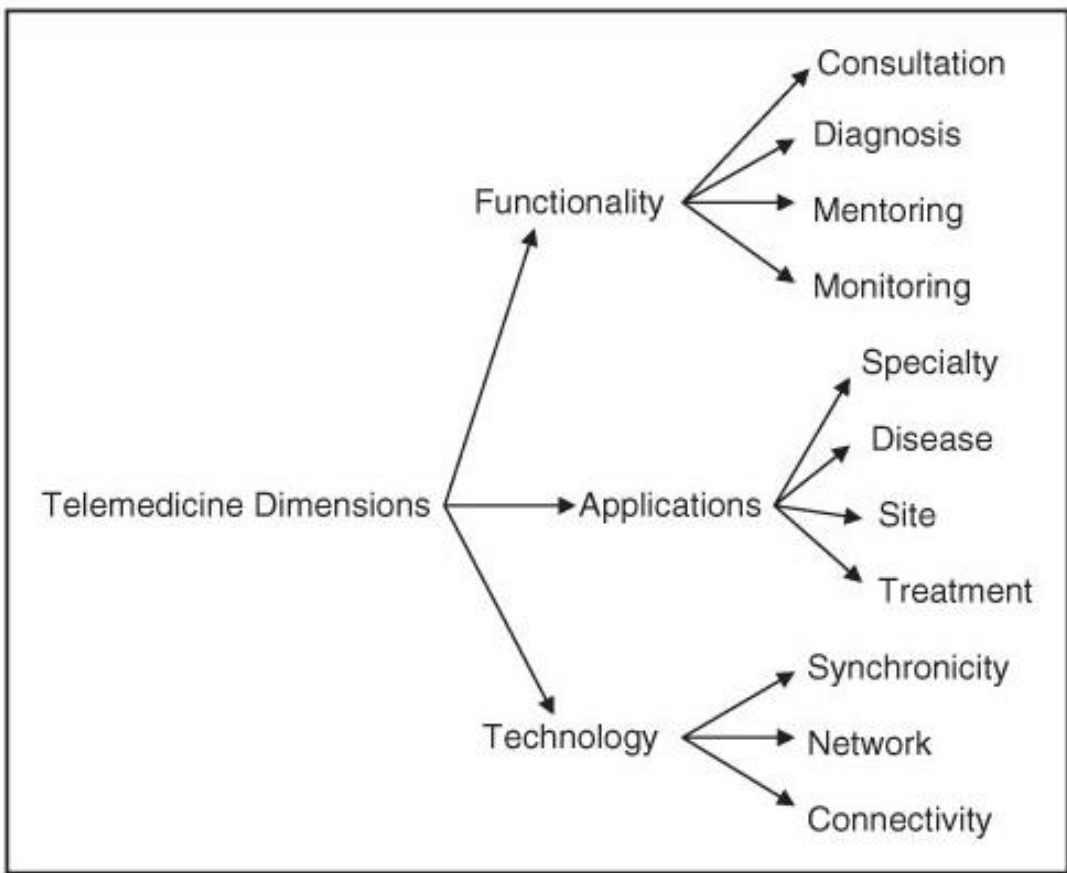
Awareness & Literacy



Practices

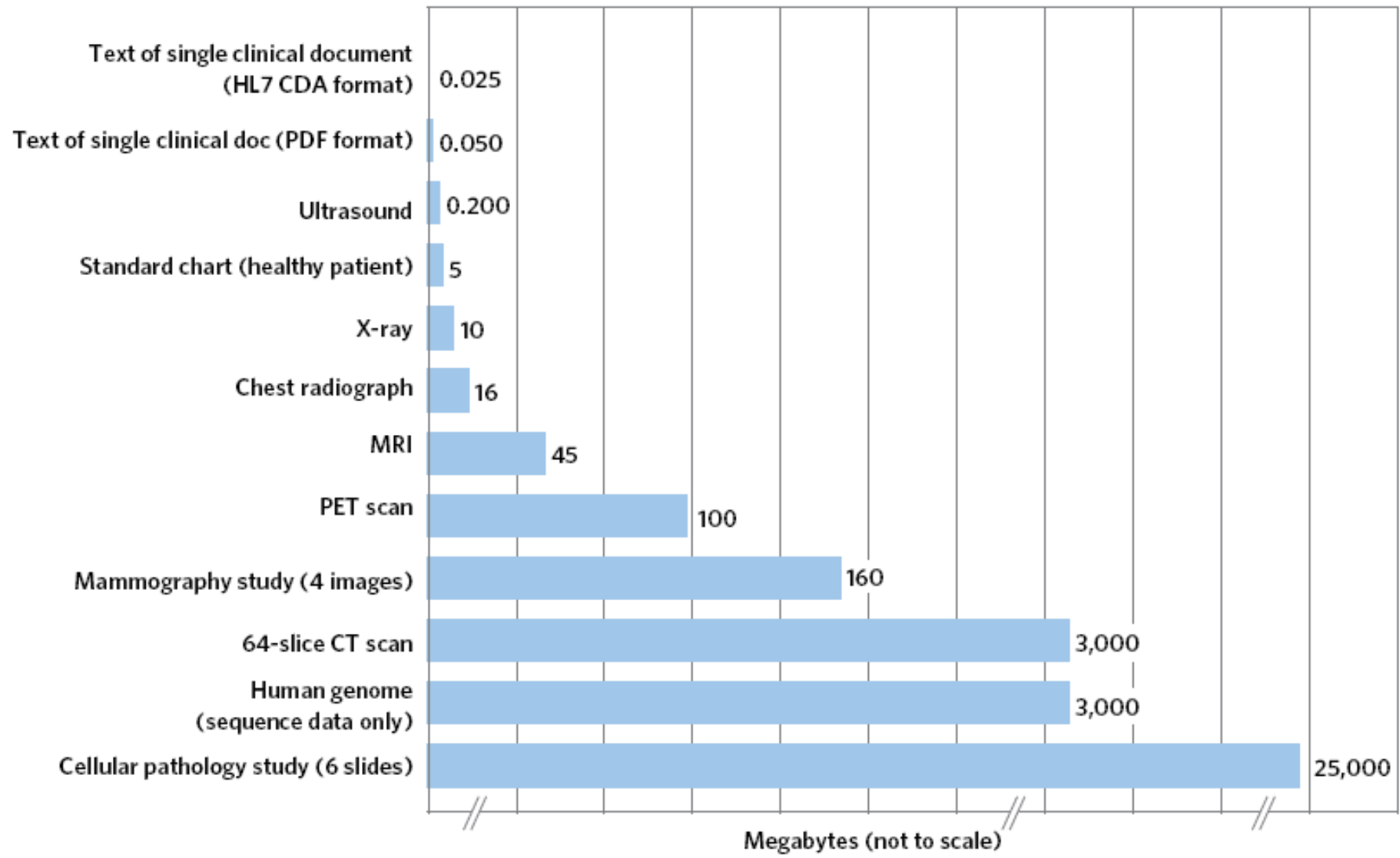
Skills

Access





Example file sizes for different types of files (Megabytes)



FCC National Broadband Plan, 2010



Issues

Access to fixed/mobile BB coverage for providers & users, esp.

Rural usage patterns among rural facilities? Among rural populations?

Bandwidth constraints for medical applications/services

BB adoption gaps

Privacy and interoperability

Mobile health domain – cost effectiveness? Usability?

Insurance reimbursement & incentives

Inter-agency/unit messaging and communication – security, authentication & encryption practices



Health + Infrastructure: Change is tough!

- * For 60% of doctors, fax machine was “dominant clinician communication” as of 2010
- * Growing % of MD’s use smartphone for work
- * Electronic Health Records technology - rapid growth;
- * BUT - EHR adoption is lower among providers serving minority patients, uninsured, Medicaid; also lower in small practices (disproportionately rural)
- * Issues of workflow for staff & disincentives



Measurement/Evaluation Issues

- Lots of information on attitudes – individual level
- Anecdotal information and case studies on specific applications
- Little randomization or comparative studies, limiting causal claims
- Limited methodological approaches to institutional facets (size, settings, etc.)



Measurement/Evaluation Issues

- Documenting connectivity needs of all providers, especially rural, including *pricing*
- Tracking improvement of BB services for rural health care providers
- Demonstrating the utility of the “meaningful use” policy & broadband: specific outcomes?
- HIT and BB: where should our studies and assessments begin and end?
- What are the outcomes of user-initiated and web-supported care systems?
- Institutional arrangements: which outcomes are achievable under which arrangements?
 - FCC Pilot programs and beyond...huge testbed potential