

Digital Inclusion for Economic Mobility

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DIGITAL INCLUSION

Digital Inclusion Dallas Summit • August 6, 2019



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The views expressed are my own and do not necessarily reflect official positions of the Federal Reserve System.

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“The dogmas of the quiet past are inadequate for the stormy present... As our case is new, so we must think anew, and act anew.”
— A. Lincoln 1862

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The Fourth Industrial Revolution: The Future of Work is Here

- Technological advancements are transforming work
- Growth of automation & technological complexity are changing required job skills (i.e., manufacturing)
- E-commerce and the disruptions in brick and mortar retail
- Artificial intelligence advancements (augment labor → replace labor)
- Remote models for provision of services (i.e., Telemedicine, Banking)
- Growth in contingent workforce (i.e., gig economy)
- Algorithms, 3D printing, self-driving vehicles, Blockchain . . .

What is the Digital Divide?

- The gap between people who have access to broadband services and know how to use the internet and those who do not have such access or knowledge.
- *Who's on the wrong side of the digital divide?* Low-income people, rural populations, those with less formal education, the elderly and minorities.
- For households with a broadband subscription across multiple devices (desktop or laptop *and* smartphone or tablet), incomes above \$150,000 per year have a rate of 80 percent and households with incomes under \$25,000 per year, the rate is 20 percent (U.S. Census, ACS, 2016).

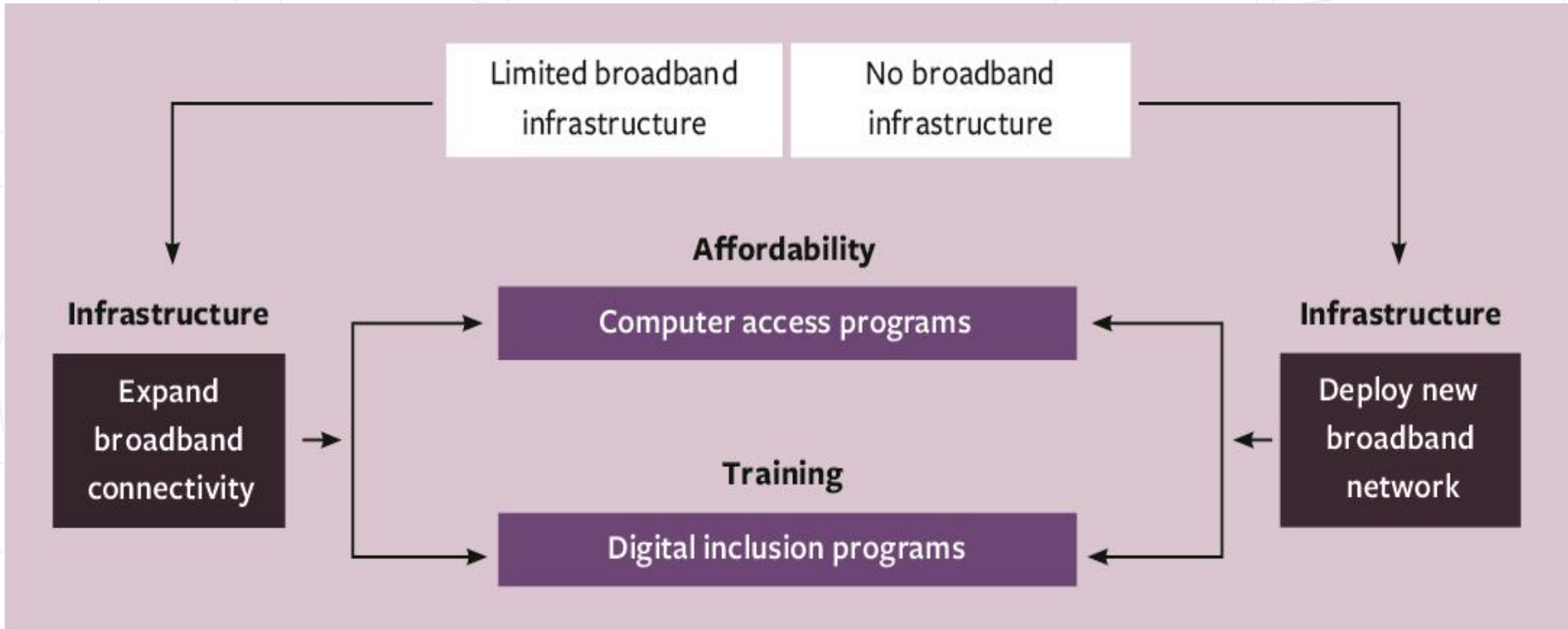
U.S. Cities with 100,000+ Households Ranked by 'Worst Connection': Median Household Income vs. Percent of Households With No Fixed-Broadband Connection											
Rank	City	Median Household Income	% of households with no fixed internet access	Rank	City	Median Household Income	% of households with no fixed internet access	Rank	City	Median Household Income	% of households with no fixed internet access
1	Detroit, Michigan	\$26,249	57.3%	26	Arlington, Texas	\$53,574	34.7%	51	Tampa, Florida	\$45,874	27.7%
2	Memphis, Tennessee	\$36,975	49.9%	27	Oklahoma, Oklahoma	\$50,070	34.0%	52	Long Beach, California	\$55,151	27.6%
3	Cleveland, Ohio	\$26,583	49.2%	28	St. Paul, Minnesota	\$50,820	33.7%	53	Columbus, Ohio	\$47,156	26.8%
4	Miami, Florida	\$31,642	47.6%	29	Phoenix, Arizona	\$49,328	33.6%	54	Lincoln, Nebraska	\$51,126	25.9%
5	New Orleans, Louisiana	\$37,488	43.1%	30	Tucson, Arizona	\$37,973	33.6%	55	Orlando, Florida	\$44,007	25.5%
6	Dallas, Texas	\$45,215	42.3%	31	Fort Worth, Texas	\$54,876	33.3%	56	Boston, Massachusetts	\$58,516	25.2%
7	Buffalo, New York	\$33,119	42.2%	32	Atlanta, Georgia	\$49,398	32.4%	57	Charlotte, North Carolina	\$55,599	25.2%
8	Milwaukee, Wisconsin	\$36,801	42.1%	33	Mesa, Arizona	\$50,615	32.2%	58	St. Petersburg, Florida	\$48,183	25.0%
9	Baltimore, Maryland	\$44,262	41.6%	34	Jacksonville, Florida	\$48,256	32.0%	59	Denver, Colorado	\$56,258	24.7%
10	Indianapolis, Indiana	\$43,101	40.8%	35	Fort Wayne, Indiana	\$44,449	31.8%	60	Lexington-Fayette, Kentucky	\$50,661	24.4%
11	Greensboro, North Carolina	\$42,802	39.4%	36	Los Angeles, California	\$51,538	31.6%	61	Austin, Texas	\$60,939	24.3%
12	Philadelphia, Pennsylvania	\$39,770	39.4%	37	Omaha, Nebraska	\$50,827	31.5%	62	Portland, Oregon	\$58,423	23.7%
13	Toledo, Ohio	\$34,548	38.8%	38	Las Vegas, Nevada	\$50,882	31.3%	63	Colorado Springs, Colorado	\$56,227	23.4%
14	Houston, Texas	\$47,010	38.2%	39	Louisville/Jefferson, Kentucky	\$46,881	31.2%	64	Henderson, Nevada	\$64,277	22.6%
15	San Antonio, Texas	\$48,183	38.2%	40	New York, New York	\$55,191	30.7%	65	San Diego, California	\$68,117	21.6%
16	St. Louis, Missouri	\$36,809	37.8%	41	Nashville-Davidson, Tennessee	\$49,891	30.6%	66	San Francisco, California	\$87,701	20.8%
17	Cincinnati, Ohio	\$34,629	37.3%	42	Pittsburgh, Pennsylvania	\$42,450	30.6%	67	Madison, Wisconsin	\$56,464	19.7%
18	El Paso, Texas	\$43,322	37.1%	43	Bakersfield, California	\$58,669	30.1%	68	Anchorage municipality, Alaska	\$80,862	19.4%
19	Tulsa, Oklahoma	\$43,045	36.3%	44	Oakland, California	\$57,778	30.1%	69	Virginia Beach, Virginia	\$67,719	19.3%
20	Fresno, California	\$41,842	36.1%	45	Washington, District of Columbia	\$72,935	29.7%	70	San Jose, California	\$90,303	18.2%
21	Chicago, Illinois	\$50,434	35.9%	46	Aurora, Colorado	\$55,303	29.6%	71	Raleigh, North Carolina	\$58,641	18.1%
22	Kansas, Missouri	\$47,489	35.6%	47	Honolulu, Hawaii	\$63,361	29.5%	72	Seattle, Washington	\$74,458	17.4%
23	Albuquerque, New Mexico	\$48,127	35.3%	48	Sacramento, California	\$52,071	29.4%	73	Scottsdale, Arizona	\$76,543	16.5%
24	Corpus Christi, Texas	\$52,154	35.3%	49	Minneapolis, Minnesota	\$52,611	28.5%	74	Plano, Texas	\$85,085	15.9%
25	Wichita, Kansas	\$46,775	34.9%	50	Durham, North Carolina	\$52,115	28.4%	75	Arlington, Virginia	\$108,706	15.6%
Source: US Census, American Community Survey, 2016. Jordana Barton, Federal Reserve Bank of Dallas.											

Broadband: A Platform for all Areas of CRA and Community Development

- Essential Infrastructure
- Workforce Development and Education
- Access to Financial Services
- Small Business Development
- Civic Engagement
- Affordable Housing/Essential Infrastructure
- Health Care
- Disaster Recovery/Resilience

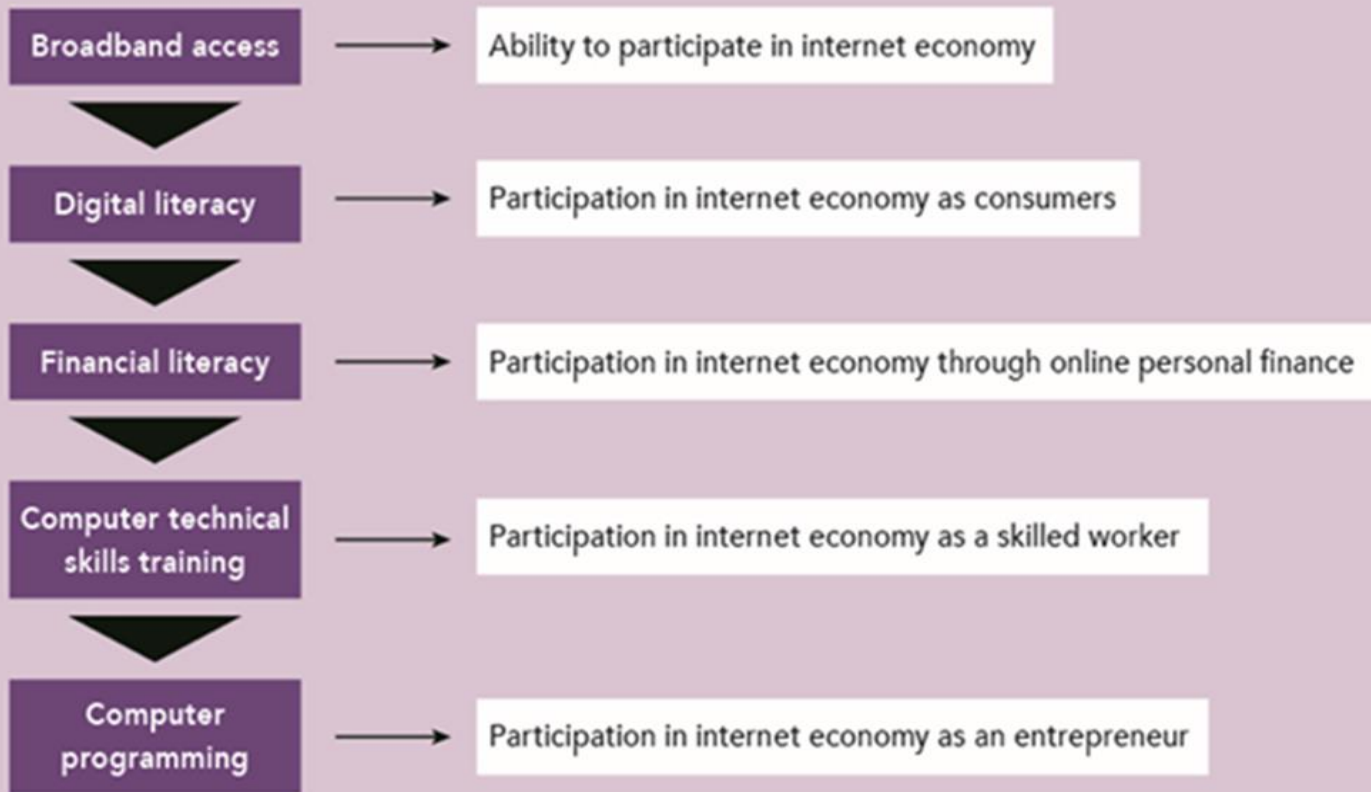


Three Legs of the Stool of Broadband Adoption



SOURCE: Federal Reserve Bank of Dallas.

The Digital Economy and the Workforce



The Homework Gap

- 1/3 of households with incomes below \$50,000, with school age children, do not have high speed internet access at home (40% of all families with school-age children)
- Only 8% of households with incomes of \$50,000 or more lack broadband at home



Attracting Business for Job Creation

- Broadband infrastructure and workers who have digital skills are necessary to attract business and industry, i.e., jobs to underserved communities
- Broadband Infrastructure and digital inclusion: The ecosystem for entrepreneurship
- Small business has been responsible for about 65 percent of job gains over the past 25 years (U.S. Bureau of Labor Statistics 2017)
- The key to growing entrepreneurship in the digital economy is to promote the expansion of broadband networks
- The intelligence of the network is now on the periphery—with a person and their computer (and a little knowledge of coding)
- Business platforms, efficiencies, and the expansion of the customer base

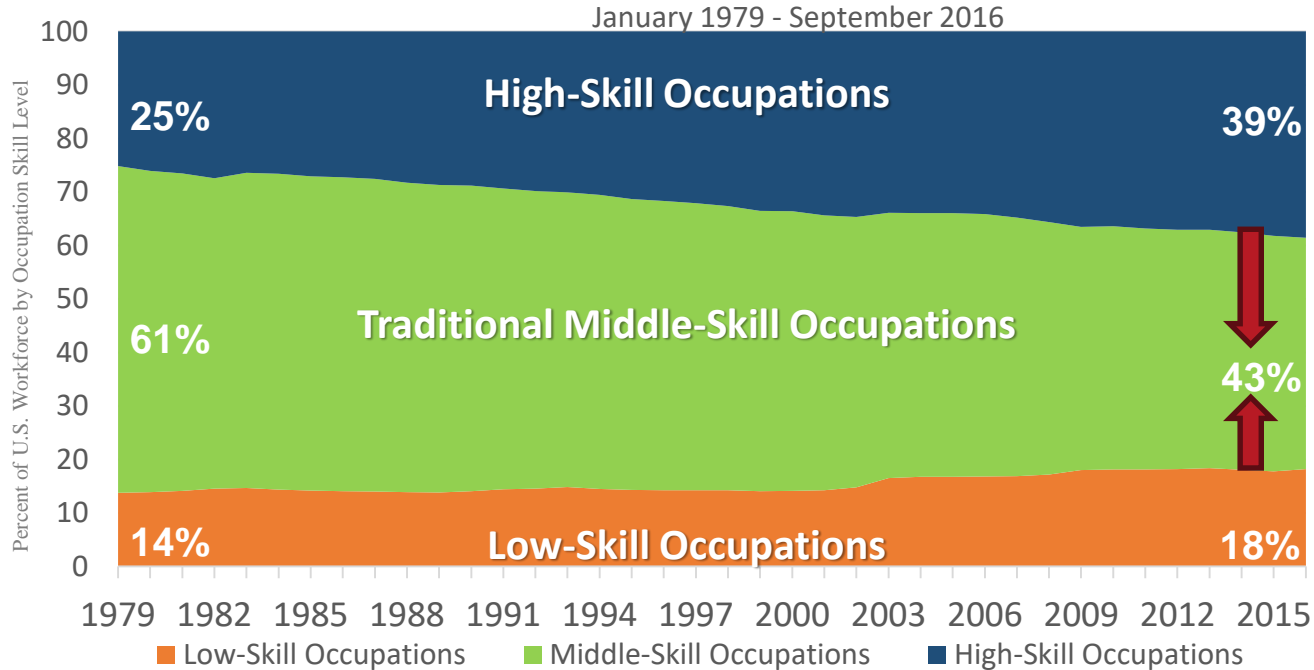
Workforce Development

- Digital skills & access to broadband required for accessing jobs & training
- 80% of jobs are posted online
- Job training programs increasingly offered online
- Digitally-intensive middle skills jobs have grown twice as fast as other middle skills jobs in the past decade (higher wages); 82% of middle skills jobs require digital skills
- Automation, e-commerce, digital skills gap, digital divide → the shrinking middle class and job polarization



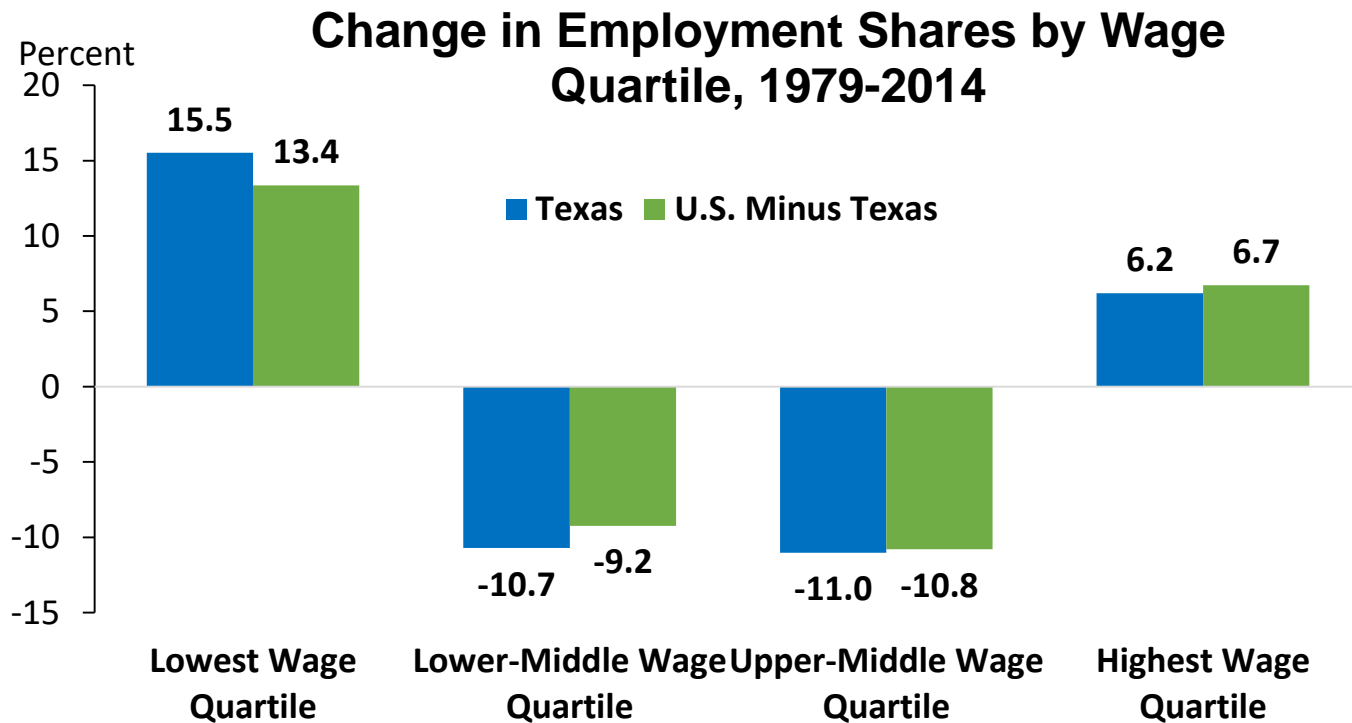
The Shrinking Middle Class: Job Polarization in the United States

Employment Shares by Skill Level



NOTE: Data are restricted to workers ages 16 to 64 who are not self-employed and are not employed in military or agricultural occupations. SOURCE: The original chart is from "The Vanishing Middle: Job Polarization and Workers' Response to the Decline in Middle-Skill Jobs," Didem Tuzemen and Jonathan Willis, Federal Reserve Bank of Kansas City, 2013. The original chart has been updated to begin in 1979 and end in September 2016. Data was provided by Didem Tuzeman.

Low Wage Jobs and the Shrinking Middle Class



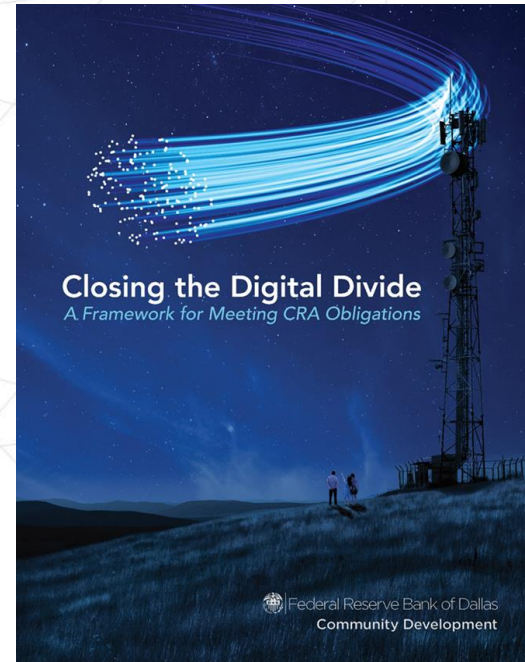
NOTES: Calculations include workers over age 15 with positive wages and exclude the self-employed. Quartiles based on the Texas and US wage distributions from the 1980 decennial census, which refers to 1979 wages. SOURCES: 1980 Census; 2015 ACS; "Employment Growth and Labor Market Polarization," Chapter 7, *Ten-Gallon Economy: Sizing Up Economic Growth in Texas* by Pia M. Orrenius [Jesús Cañas](#) and Michael Weiss, 2015.

Income and Wealth Inequality

- Income and wealth inequality are at the highest levels since the Great Depression. America's upper-income families have a median net worth that is nearly 70 times that of the country's lower-income families.
- The Digital Divide creates a structural barrier to closing the income and wealth gaps—and a barrier to LMI individuals' ability to move up the economic ladder.
- The Gatsby Curve: The finding that greater income inequality is associated with diminished intergenerational mobility.

Related Dallas Fed Publications

- Closing the Digital Divide: A Framework for Meeting CRA Obligations
- Preparing Workers for the Expanding Digital Economy
- Telehealth Initiatives Highlight Need to Close the Digital Divide



Presentation Sources

“Closing the Digital Divide” and “Preparing Workers for the Expanding Digital Economy” (unless otherwise noted)

- Available at dallasfed.org/cd

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