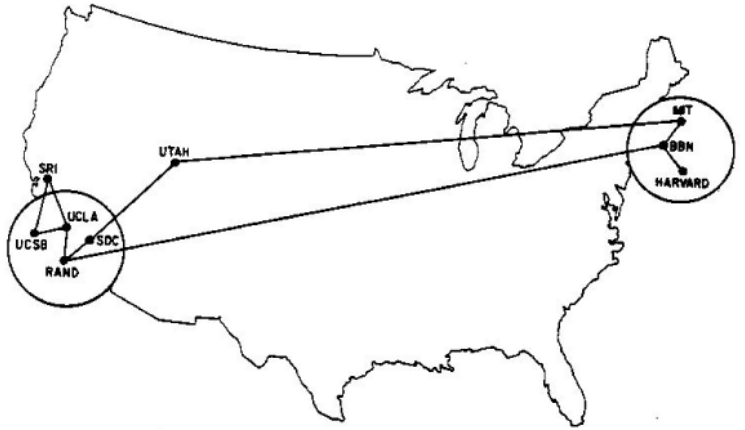
Everybody gets a Gig

My Goal:
Put broadband in every conversation around Maine's economy.

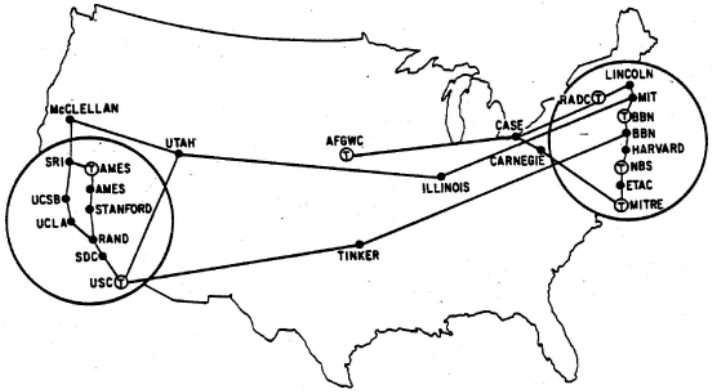
- Build stronger community partnerships.
- Expand the understand of the potential of broadband
- How we build this stuff is important.
- Who owns it is important.
- Get real data on economic impact.
- Everybody gets a GIG! (bit)

Where it Started

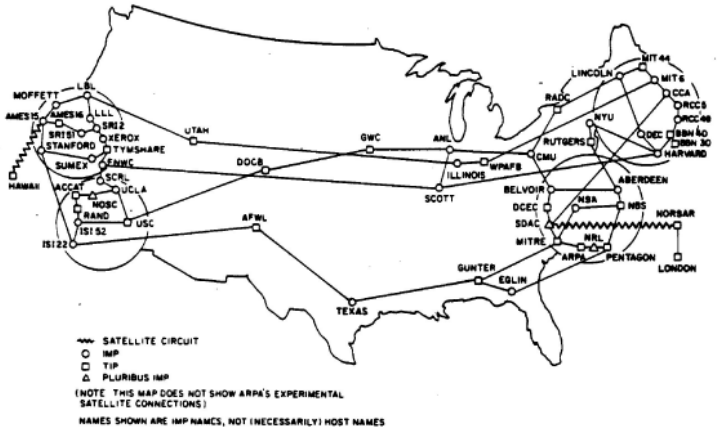
1969



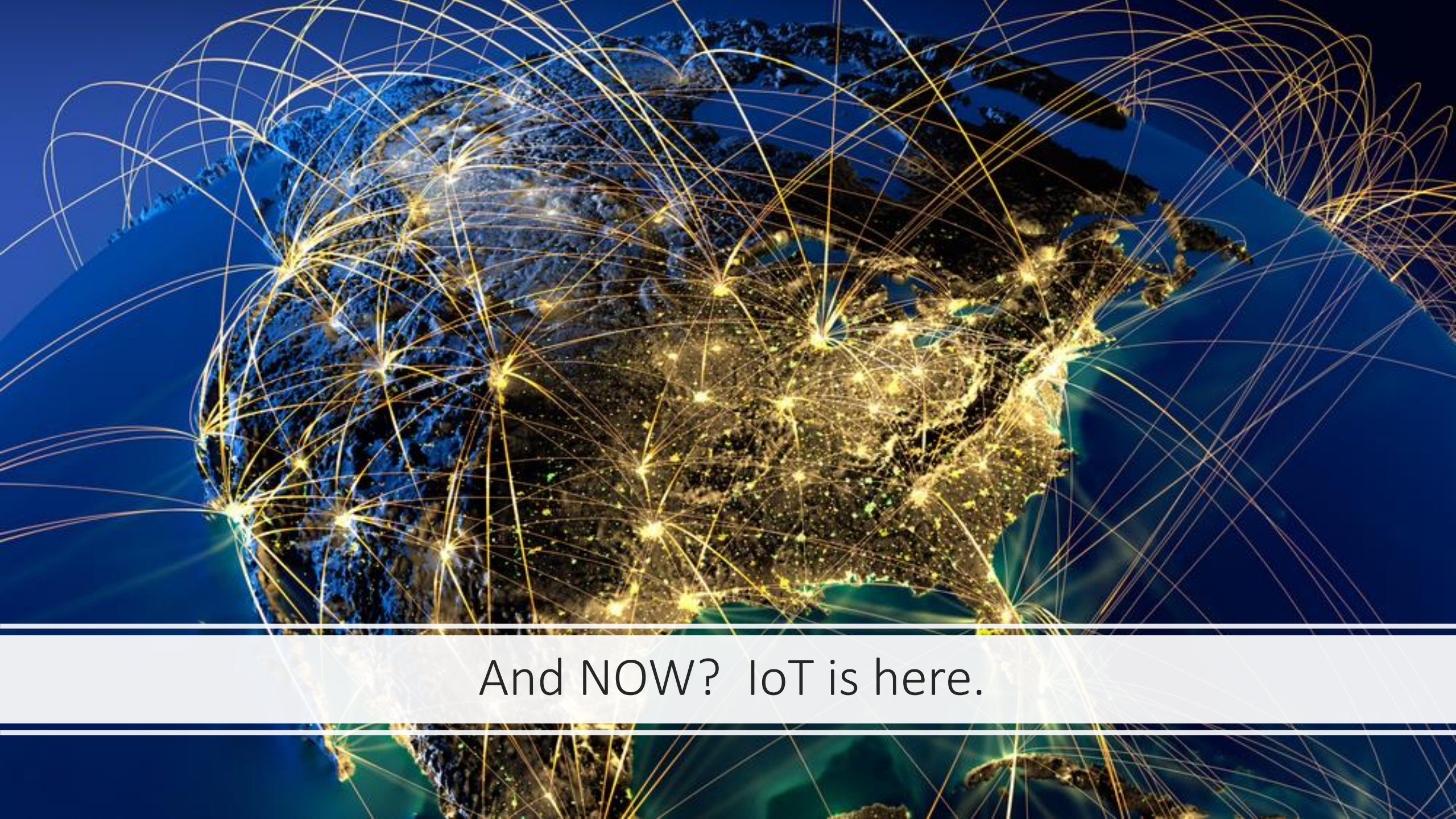
1970



1972



1977



And NOW? IoT is here.

We are using more. LOTS MORE. That is only going to increase.

- World Wide Users:
- 12/1995 – 16 M 3/2019 – 4,346M (up 33M since 12/ 2018)
- Average monthly data use for households grew from:
  - **2017: 201.6 gigabytes**
  - **2018: 268.7 gigabytes in 2018**
  - **Growth rate of 33**
  - **An increase of 67.1 gigabytes in just a YEAR**
  - **EVERYBODY NEEDS ACCESS TO A GIG(bit)**

What Is the Difference Between Upload and Download Speed?

Download speed: how quickly your Internet connection can retrieve data from the Internet (web pages, video, cat photos, etc.)

Upload speed: how quickly your Internet connection can send data from your devices up to the Internet (uploading video to YouTube, sending documents via email, etc.)

Download is how the world talks to Maine.
Upload is how Maine talks to the world.

Satellite

PROS:

- Not based on a network connection.
- Can reach places where there is nothing for miles.

CONS:

- Latency issues
- Low speeds
- Data Caps.

Future?

Many companies launching LOTS more satellites,

But many, many, many more are required

Technology: DSL

Digital Subscriber Line (DSL)

Used primarily by traditional telephone system operators to deliver Internet services over twisted pair copper telephone wires.

Speed depends on closeness to the digital subscriber line access multiplexer (DSLAM) . Generally seen as 10/1, but can be higher.

Very High data rate Digital Subscriber Line (VDSL). An extremely fast connection, VDSL is asymmetric, but only works over a short distance using standard copper phone wiring. Can be as high as 52/16, but distance to the DSLAM is the deciding factor on speed.

Hybrid Fiber / Coax - network architecture utilized by the cable system operators here in Maine.

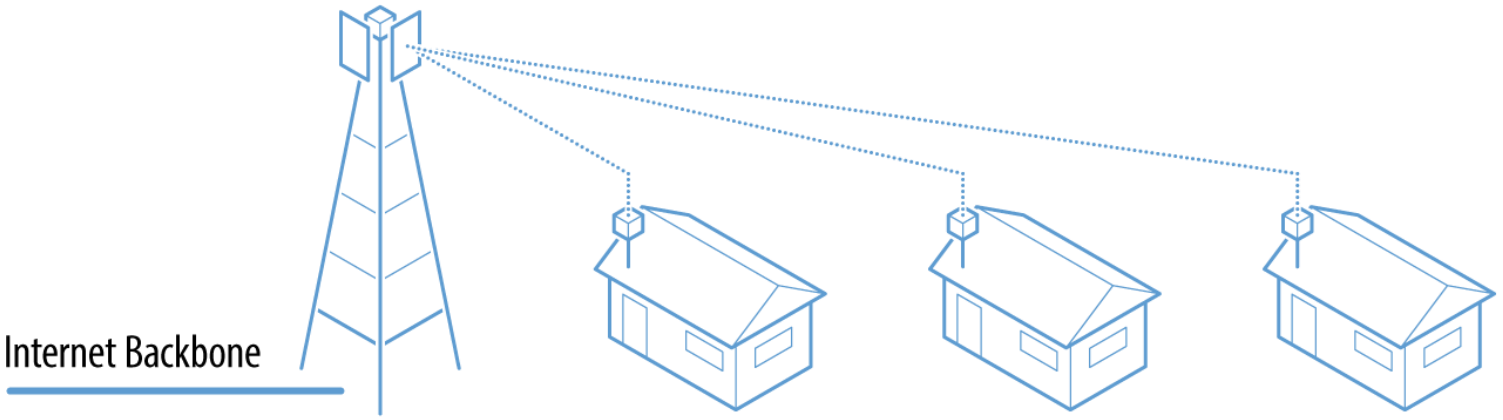
Fiber-optic trunk lines provide adequate bandwidth for future expansion.

- Community Level: an optical node translates the signal from a light beam to an electrical signal, and sends it over coaxial cable lines for distribution to subscriber residences.

Data over Cable Service Interface Specification (DOCSIS)

- DOCSIS 3.1, is capable of supporting Internet speeds of up to 10 Gbps, but most providers are currently offering speeds of 1 Gbps or less for residential users.

Fixed Wireless



- Wireless broadband wireless devices or systems used to connect two fixed locations with a radio or other wireless link.
- Often a cost effective alternative to laying or leasing fiber
- Line-of-sight is usually necessary
- Speed limits are based on spectrum used, but can be similar to DSL or Cable.

Fiber-to-the-Premise (FTTP)

A network utilizing fiber optic cables (Glass) directly to the home or business and is capable of offering virtually unlimited symmetrical bandwidth.

Most FTTP networks can offer 1 Gbps of bandwidth in both download and upload directions, with some providers offering 2 Gbps and even 10 Gbps service capacity (or more)

Maine Assets

- 3 Ring Binder
- Maine School Library Network
- Great Local providers/Vendors
- Maine Broadband Coalition ☺
- ConnectME ☺
  - Community Planning
  - Infrastructure
- Momentum

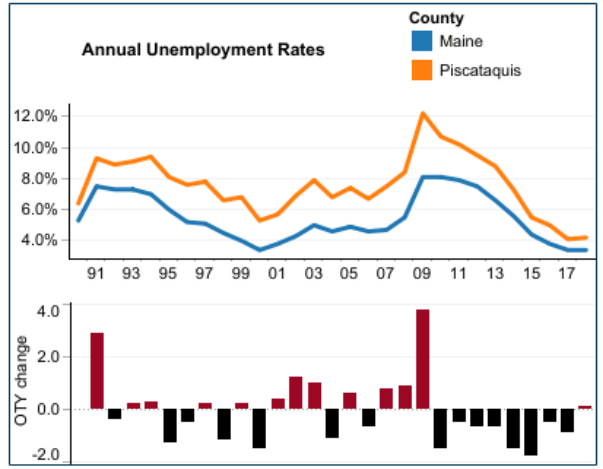
MAINE HOUSEHOLD DATA 25/3 MBPS			
County	Total households	Households with less than 25/3 Mbps	% of households with less than 25/3 Mbps
Maine	722,106	83,144	11.5
Piscataquis	7,572	5,826	76.94
Franklin	11,684	6,196	53.03
Hancock	23,748	8,290	34.91
Waldo	16,820	5,395	32.07
Washington	14,065	4,399	31.28
Oxford	20,723	5,498	26.53
Somerset	21,376	4,917	23.00
Aroostook	29,852	5,080	17.02
Lincoln	15,021	1,385	9.22
Penobscot	61,787	5,461	8.84
Sagadahoc	15,613	1,366	8.75
Knox	16,813	1,276	7.59
Kennebec	50,829	1,047	2.06
York	82,588	972	1.18
Cumberland	117,871	1,068	0.91
Androscoggin	44,747	318	0.71

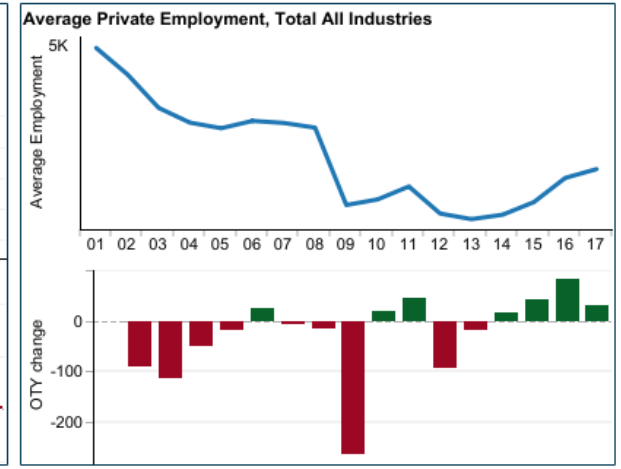
- Dramatic gap between rural and urban counties
- Developed using FCC Form 477 data which assumes that if one address in a census block is covered the entire block is covered so the availability is overstated.
- Information is accurate from a directional perspective and is aligned to what the FCC will use to make their decisions.

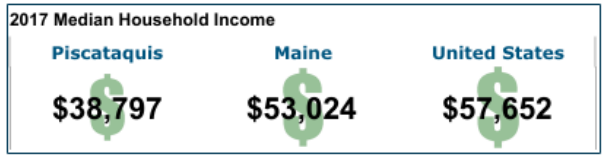
CONNECTME

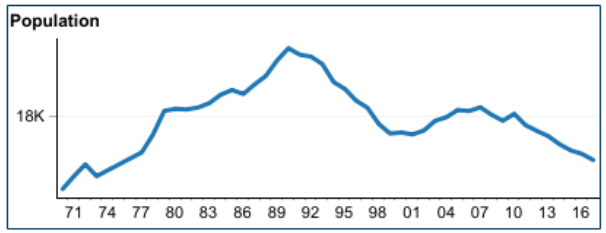
- Androscoggin
- Aroostook
- Cumberland
- Franklin
- Hancock
- Kennebec
- Knox
- Lincoln
- Oxford
- Penobscot
- Piscataquis
- Sagadahoc
- Somerset
- Waldo
- Washington
- York

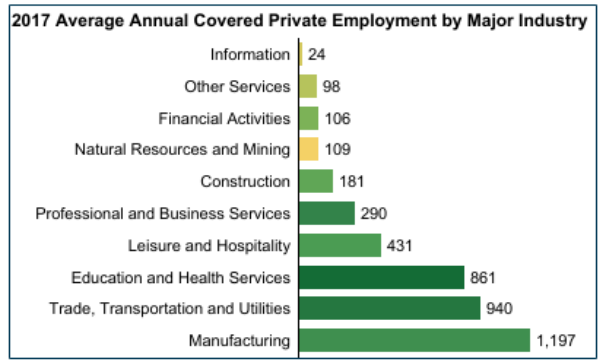
Piscataquis County

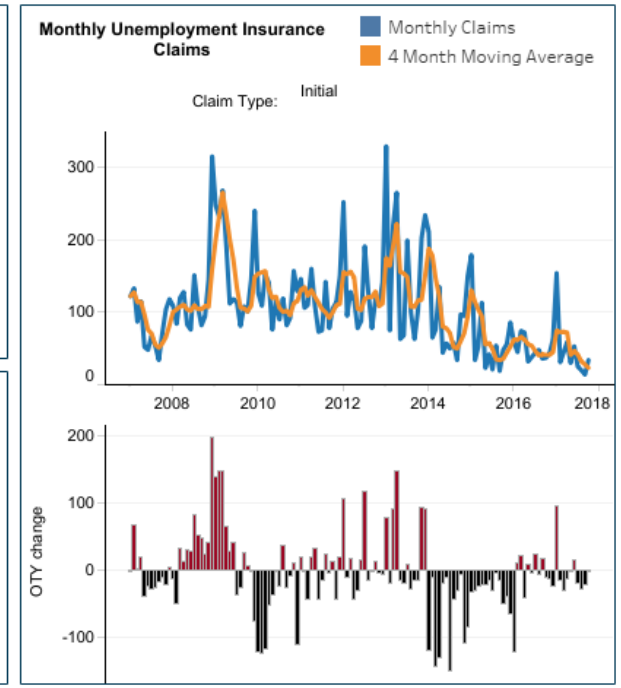


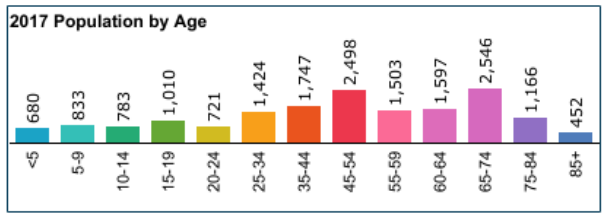


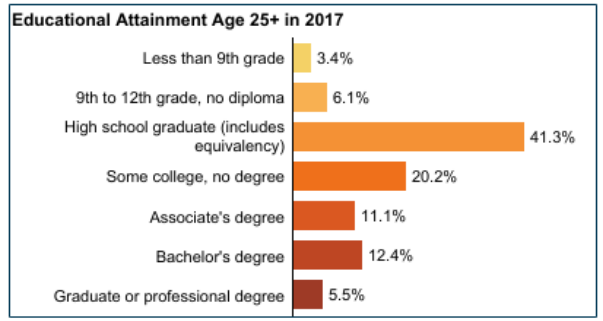


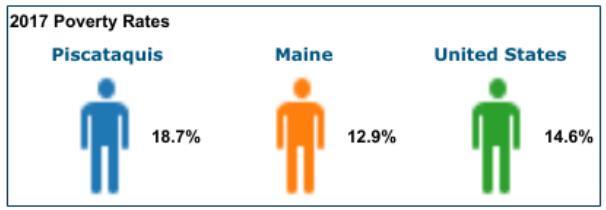












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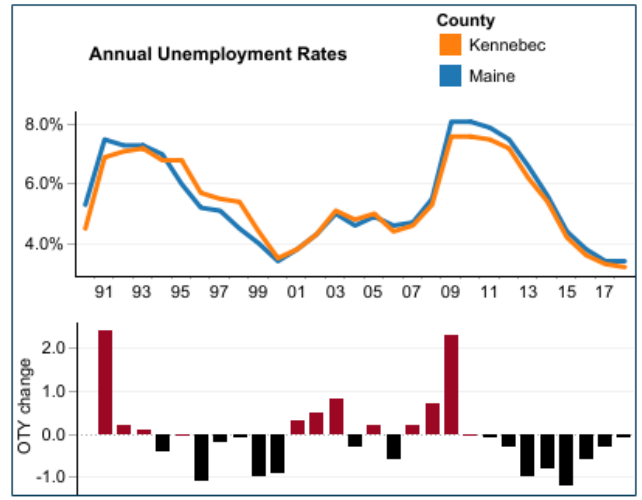
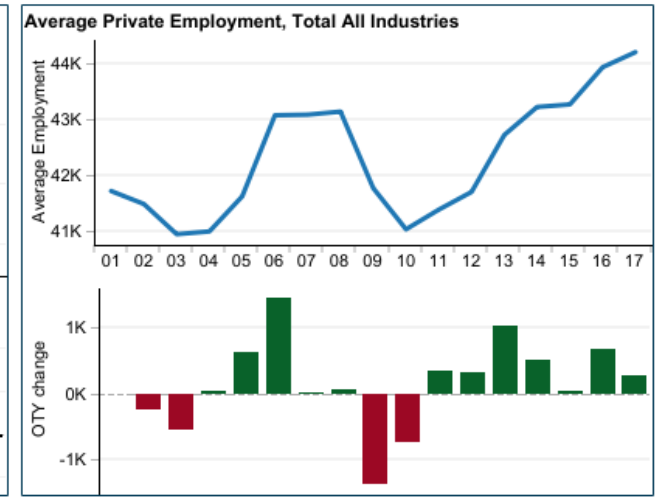
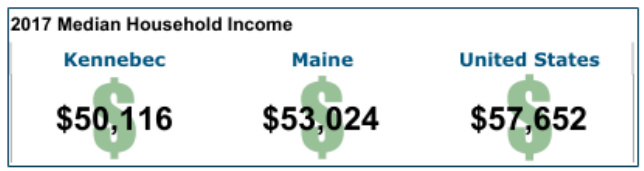
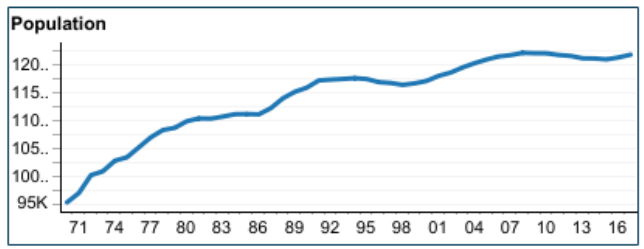
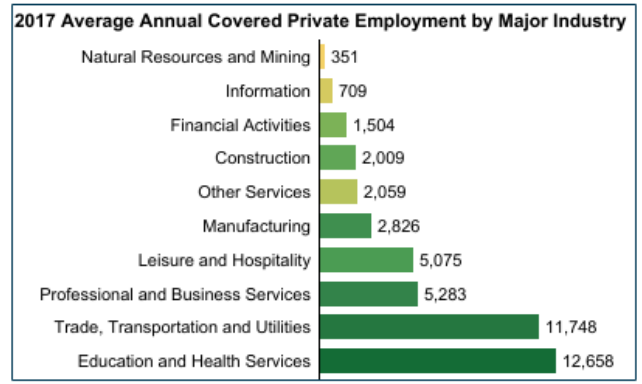
Kennebec County

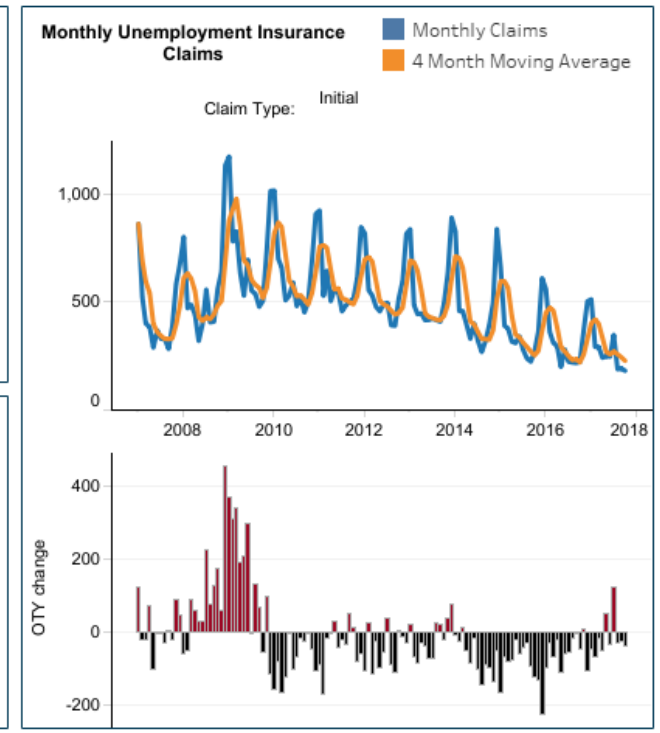


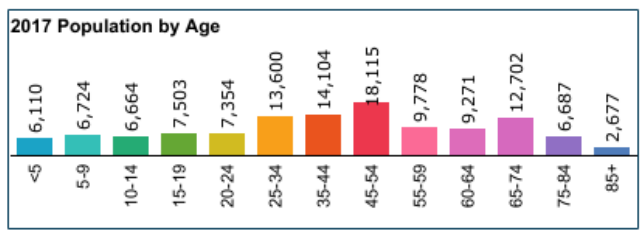


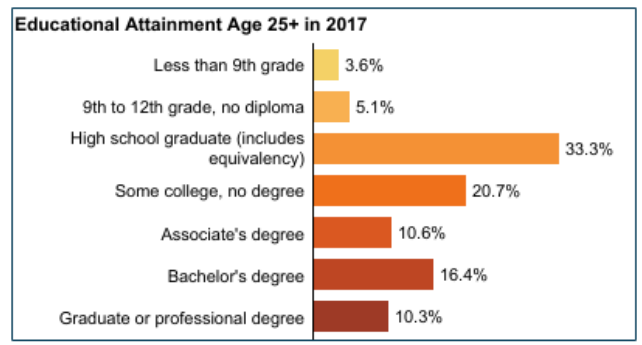


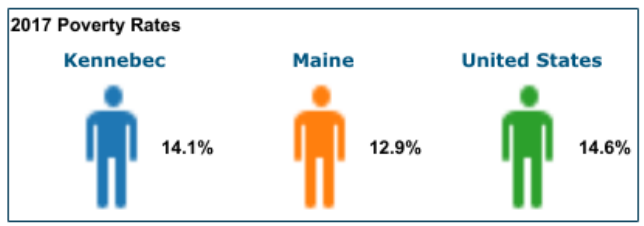




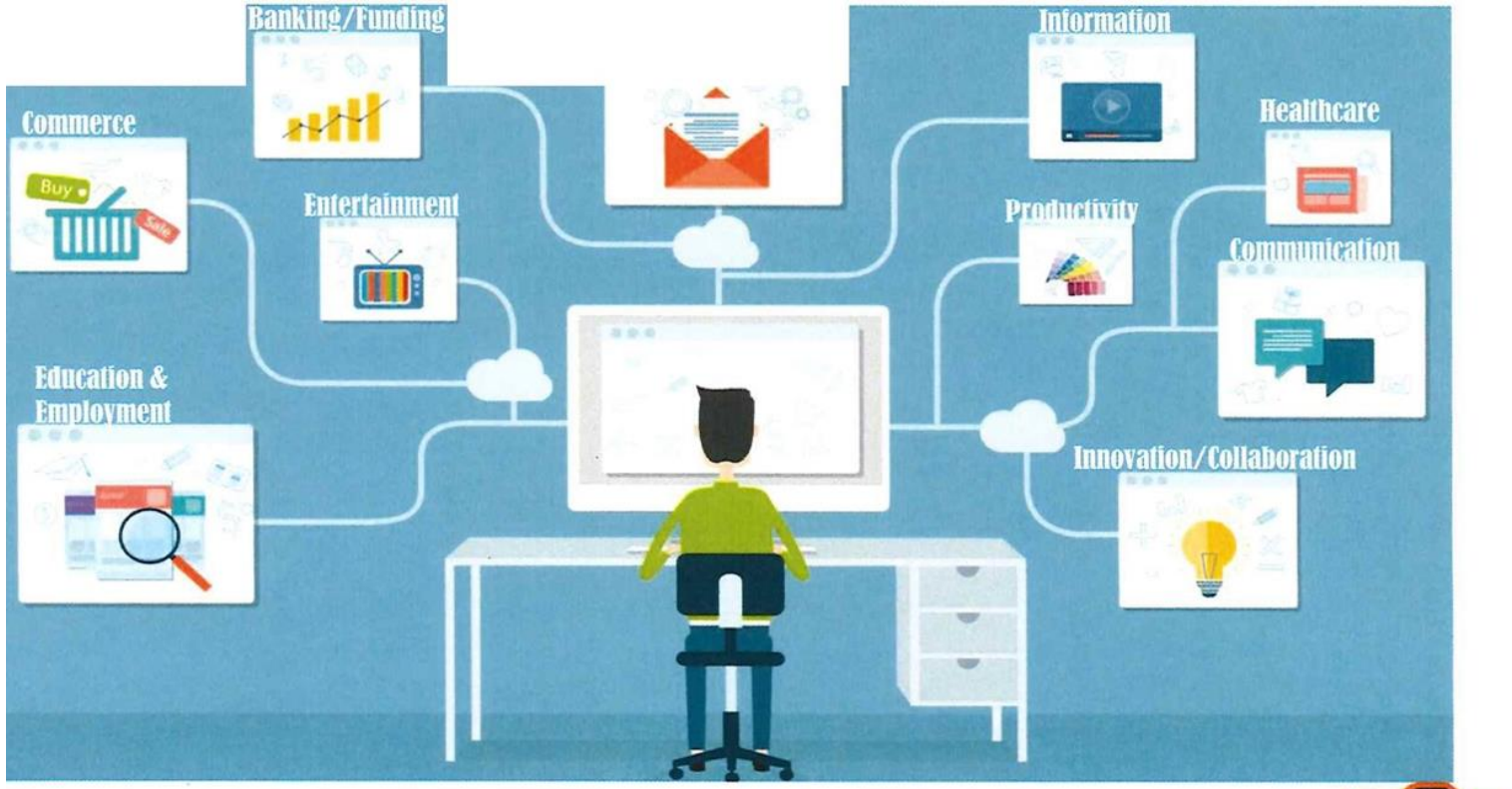








Digital Age Makes Possible:



2017 Digital Economy in the US

2006-2016 Growth Rates:

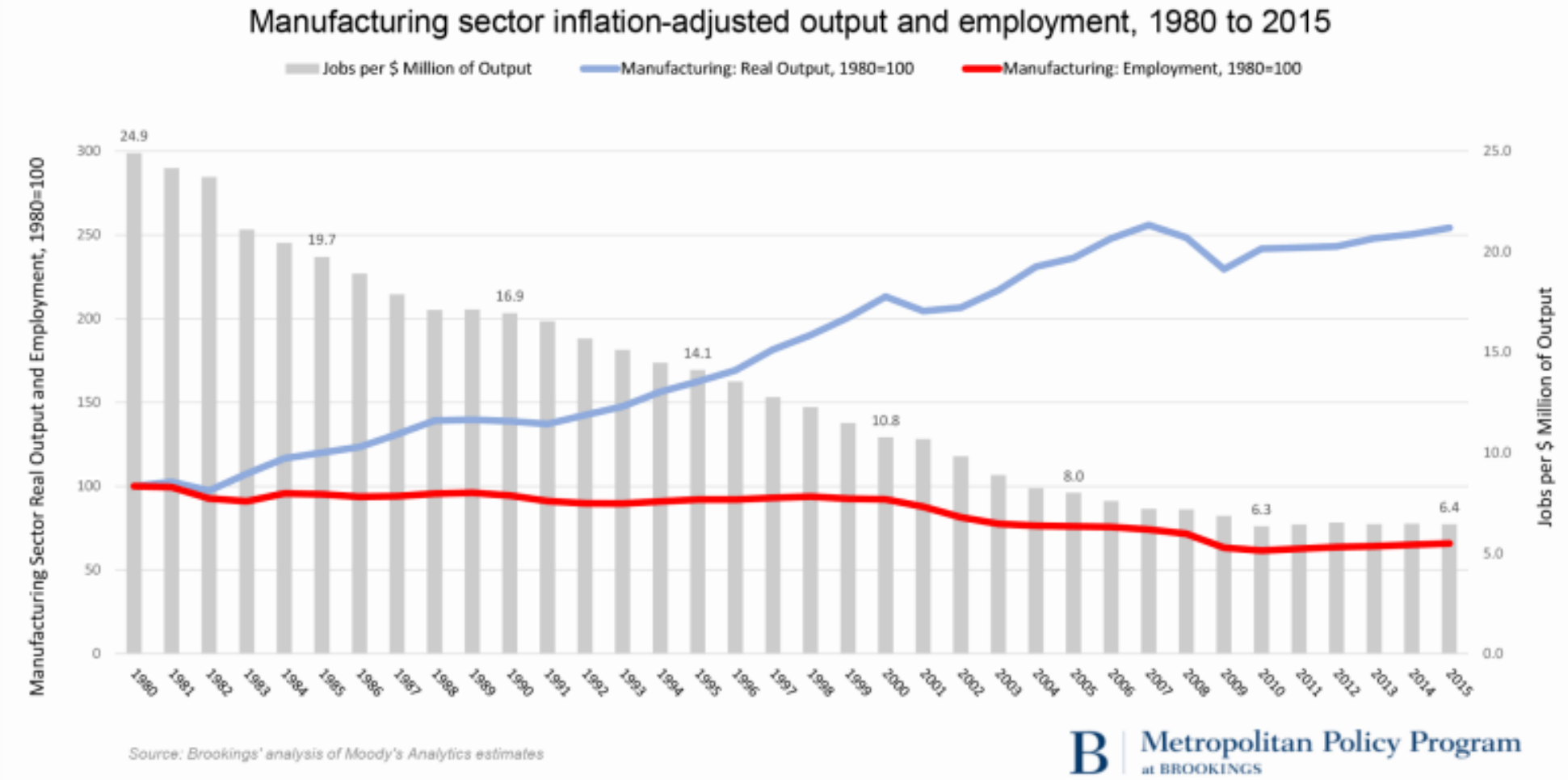
Digital Economy 5.6%

Overall Economy 1.5%

- 5.1 Million Jobs
- 6.9% of GDP ($1.35 Trillion)
- $132,223 in average compensation

BUT GUESS WHAT? You need to be connected to a fast, reliable network

Jobs vs. Productivity



CONNECTME

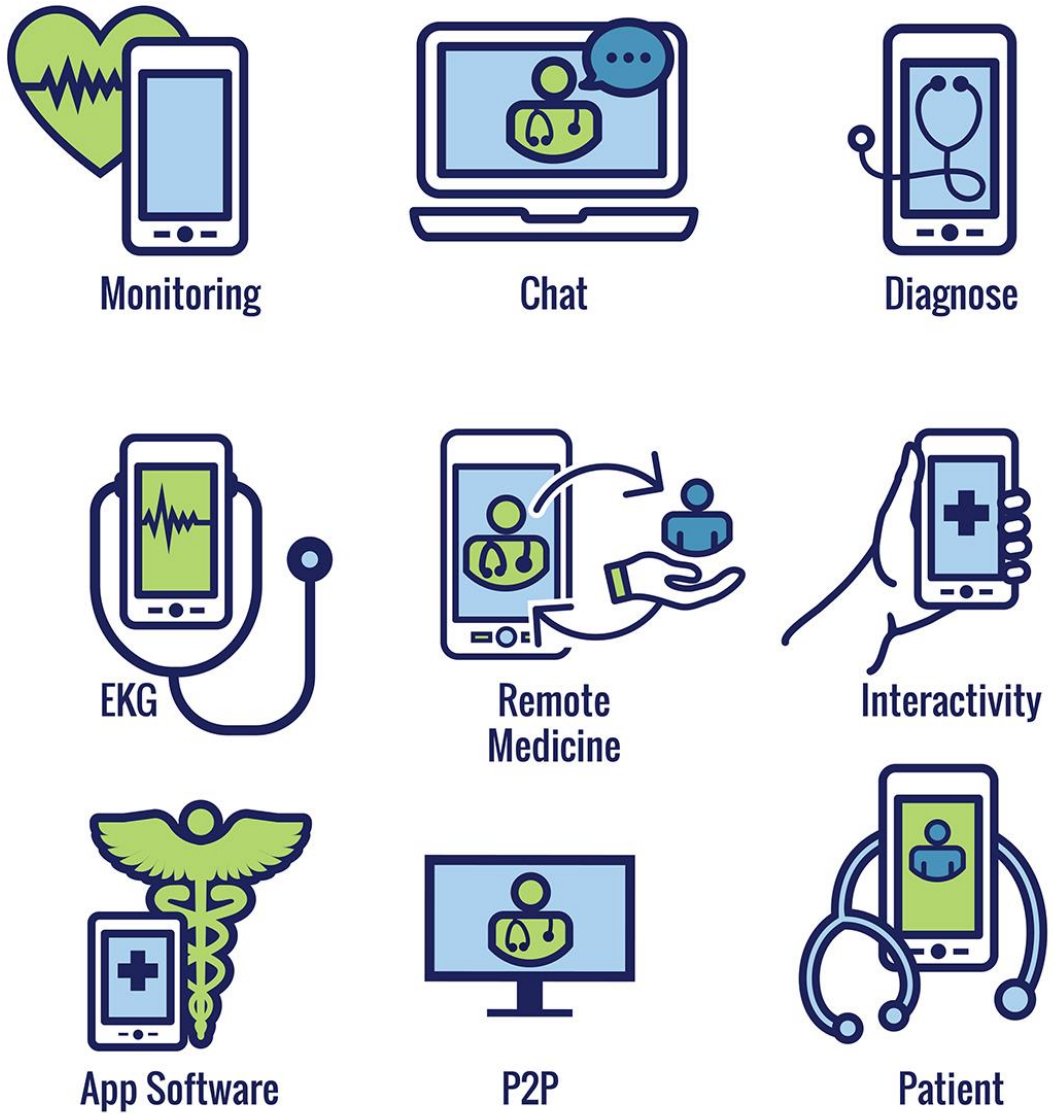
Significant Changes in workforce are here

- Up to 54 million workers in the US (one-third of workers) in 2030 may need to switch occupational categories
- Google, Apple and 12 other companies no longer require a B.A
- 82% of middle-skill jobs require digital skill, and increase of 4% since 2015 (46% of all jobs)

sources: McKinsey Global Institute (2017) Capital One; Burning Glass, and Glass Door

Telehealth

Most significant innovation in modern Health care Mobile health is a $23B industry, expected to grow to $102B by 2022.

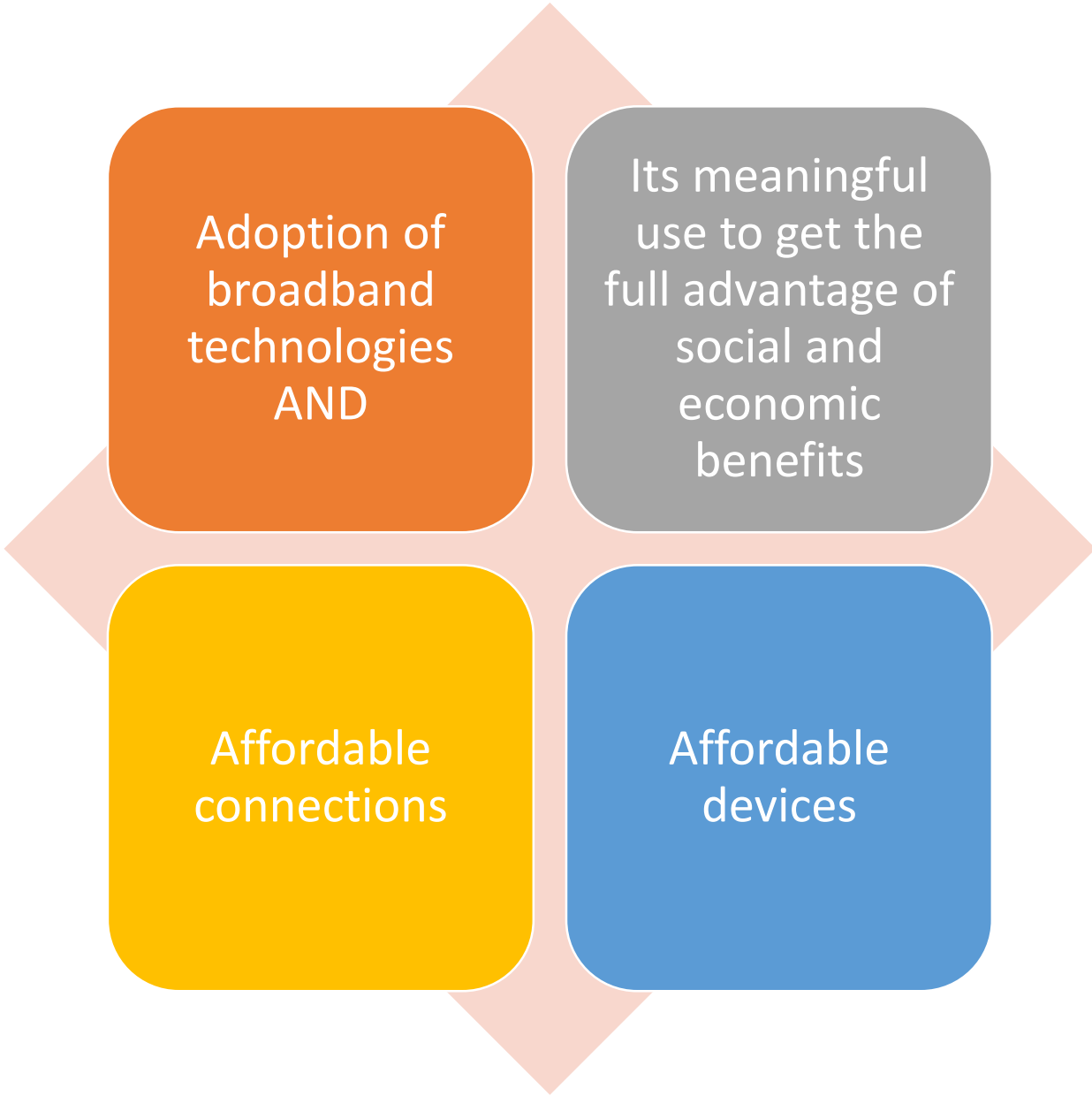


Telework: 21st Century Economic Development

50% of US workforce hold jobs that are compatible with Telework

- Teleworkers can save $4000 per year by not commuting
- Companies can save $2000 a year per employee
- Increased productivity and reduces turn over
- Environmental savings from less transportation, smaller building, less heat and air conditioning.

Digital Inclusion – taking advantage of the promise of the internet



What are the required components

- Affordable and Robust high speed connection
- Internet Enabled devices that meet the needs of the user
- Digital literacy training
- Quality technical support
- Applications and online content that encourage self-sufficiency, participation and collaboration
- source:National Digital Inclusion Alliance

Economic Benefit – Justifying the Funding

County (MN)	Public Investment	Annual Econ Benefit*	Real Estate Increase**
Beltrami	$1,432,000	$38,631,700	$102,593,266
Crow Wing	$15,123,450	$67,412,150	$214,662,149
Goodhue	$542,262	$32,774,600	$104,825,572
Lake	$83,418,170	$13,695,550	$38,547,421
Sibley	$9,850,011	$8,604,350	$20,162,085

Formulating Broadband Value

There are some formulas available that help quantify the value of broadband at the individual level:

1.Using numbers from an earlier study by Ohio State University Swank Program, Roberto Gallardo at Purdue Extension determined that a rural home without broadband misses out on $1,850 in economic benefits per year.

2.FTTH Council released a study showing access to fiber-delivered Internet boosts home values by up to 3.1 percent.

Using those formulas, here are the loosely calculated potential annual economic benefits realized by the counties:

** – Determined number of households served based on percent of broadband coverage and multiplied by $1,850*

*** – Determined number of households served based on percent of broadband coverage and multiplied that by 3% of average house sale amount in county*

CONNECTME

Some Data Points

Strategic Networks Group: studies from North Carolina, Virginia, Kentucky, Illinois, and Nebraska show:

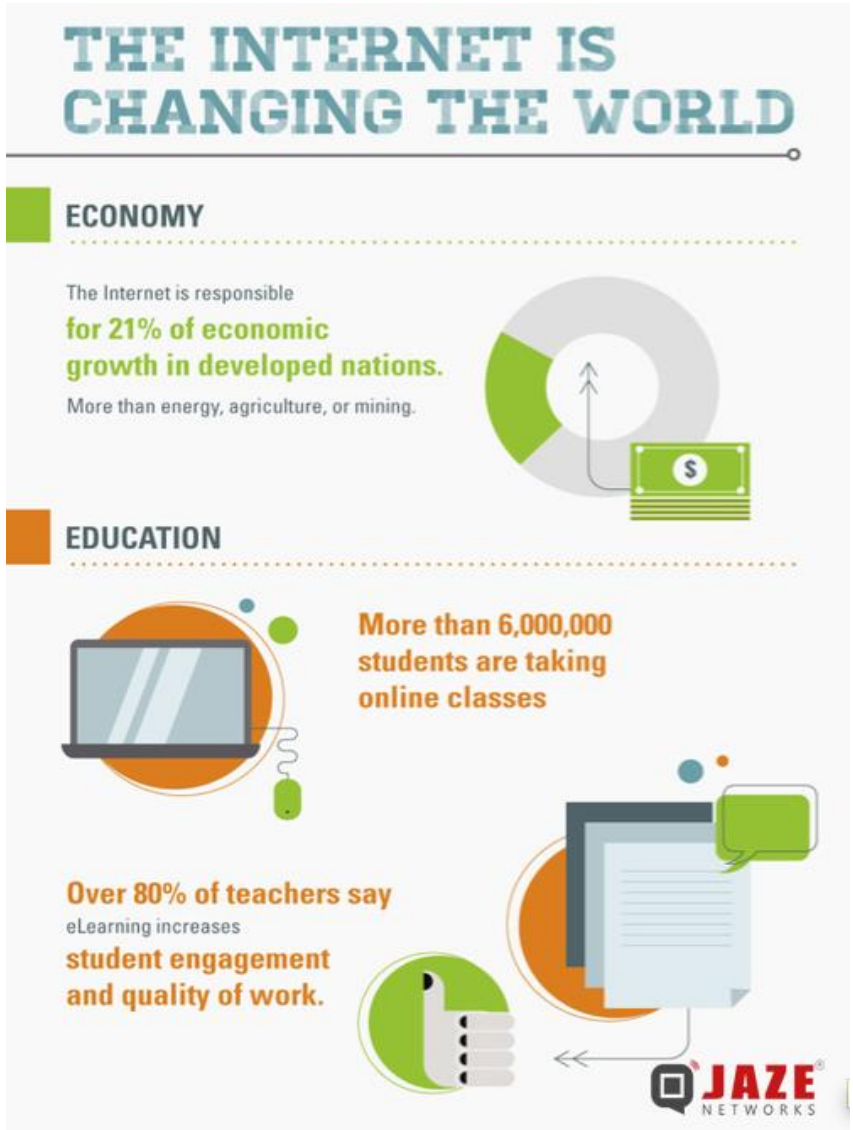
- $5 million economic development impact for every 1,000 broadband passes installed.
- 23.4 percent of all new jobs created directly attributable to broadband.

Small businesses (less than 20 employees) are especially dependent on high speed internet.

- 28 percent of new jobs are attributed to using the Internet.

* The SNG study, conducted between February and October 2010, revealed the potential of broadband for competitiveness and economic opportunity. http://sngroup.com/tag/broadband-economic-impacts/

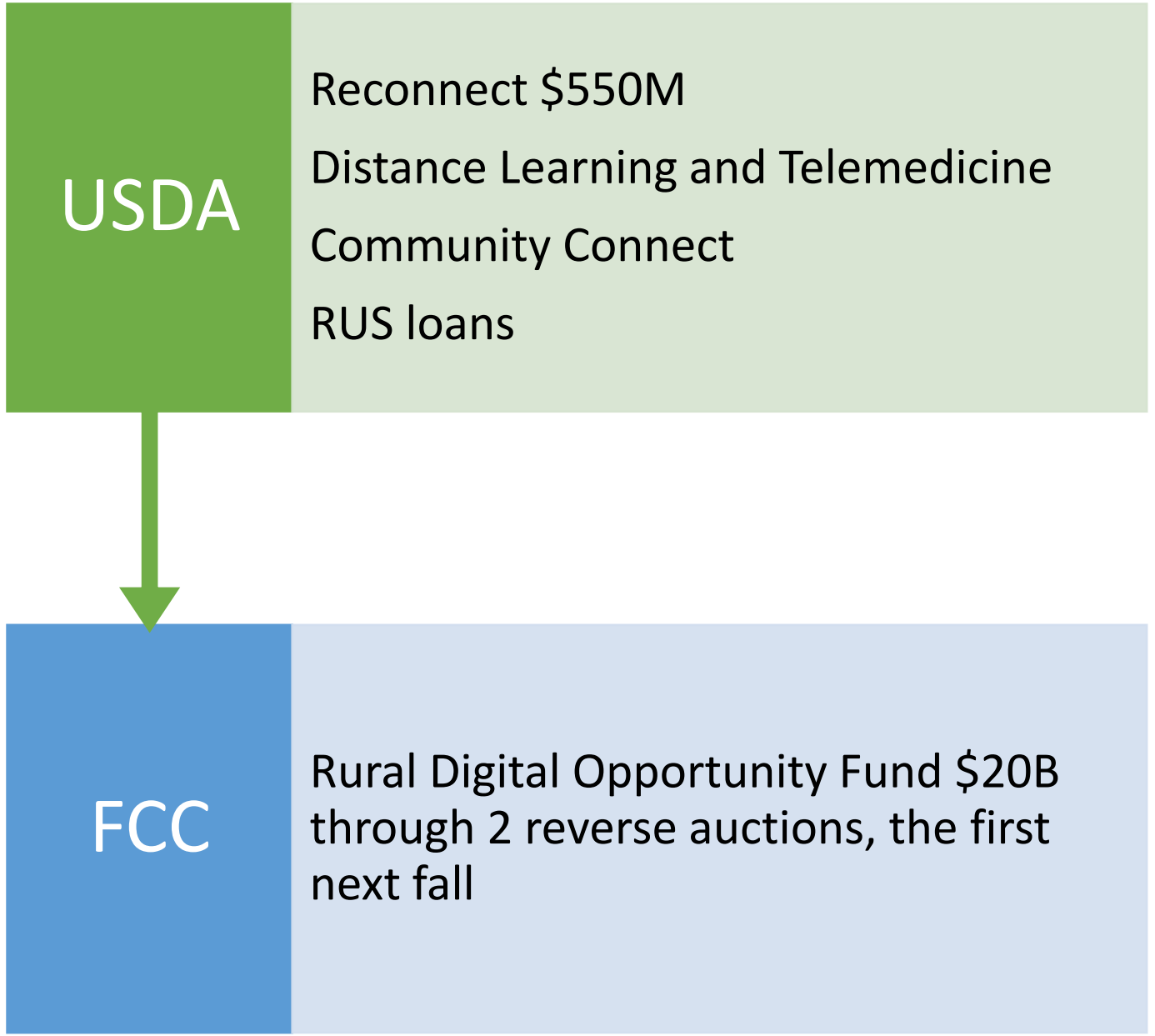
CONNECTME



What is happening now in Maine

- Community Planning
- Federal Funding - USDA
- Next round of grants
- FCC
- Maine Community Foundation
- Potential Telehealth initiative

Federal Funding



Funding: Where we are right now.

ConnectME Fund (.25% on landlines and broadband – about $900K)

$2m in the Governor's Budget

Bond bills. Infrastructure only, but can be used for engineering related to infrastructure build.

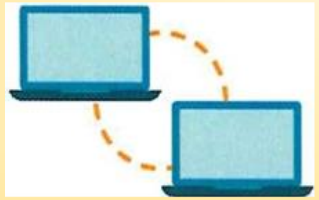
CMP Power Line?

Foundations (Libra) Other potential investors.

Unlocking Rural Maine's digital potential

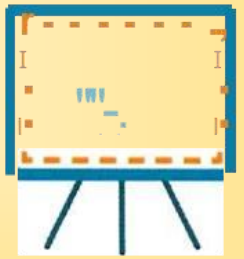
Broadband as an economic tool is cheap

- $47 B per year to GDP
- 360,000 jobs in the next three years
- 4:1 ROI on investment



Increase Connections in Rural Maine

Increase the talent pipeline of candidates trained in digital skills (cloud, digital marketing)



Increase adoption of digital training and digital tools by rural small businesses so they can scale their operations

What can you do?

Create or work	Create or work with your local Broadband Committee
Become	Become a broadband champion in your community
Push	Push for funding at the state level
Don’t stop	Don’t stop when you get connected