The Path Forward

Office of the Future of Work

COLORADO
Department of
Labor and Employment
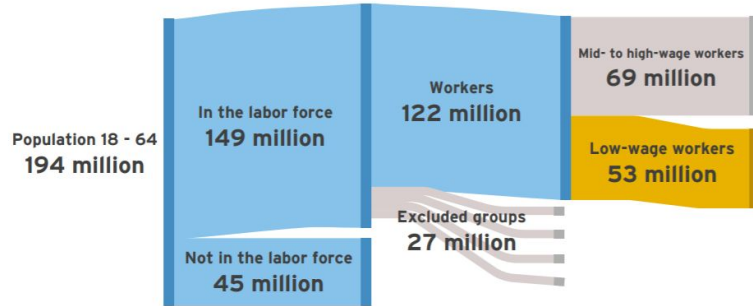
Hello! I am Katherine Keegan.

Director of the Office of the Future of Work
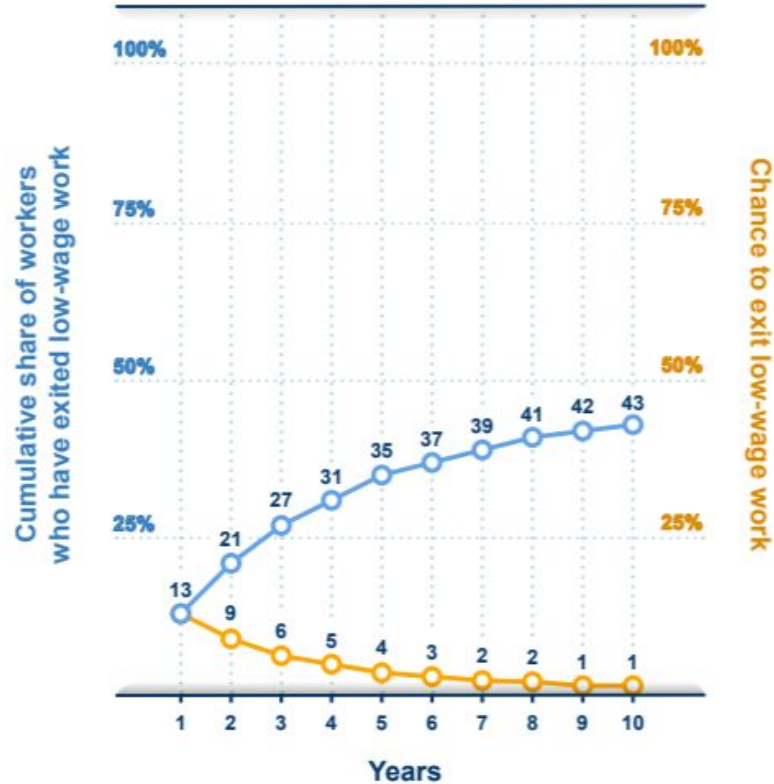**You can find me at katherine.keegan@state.co.us**

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Low-wage work across the U.S.

Illustration of how we identified low-wage workers

Population 18 - 64
194 million

In the labor force
149 million

Not in the labor force
45 million

Workers
122 million

Excluded groups
27 million

Mid- to high-wage workers
69 million

Low-wage workers
53 million

Source: Brookings analysis of 2012-2016 American Community Survey 5-year Public Use Microdata Samples

	Percentage of low-wage workers	Percentage change in jobs	Percentage change in earnings	Median annual earnings 2017
Boulder	43%	13.10%	-5.30%	$32,689
Colorado Springs	46%	12.70%	-4.70%	$34,806
Denver-Aurora-Lakewood	40%	19.90%	-3.80%	$37,633
Fort Collins	46%	23.60%	-16.60%	$30,420
Grand Junction	47%	-2.80%	-8.00%	$31,639
Greeley	46%	31.90%	5.00%	$32,324
Pueblo	47%	7.10%	-1.90%	$31,744

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https://www.brookings.edu/research/meet-the-low-wage-workforce/

A worker's chances of leaving low-wage work fall dramatically for each additional year on the job

Cumulative share of workers who have exited low-wage work

Chance to exit low-wage work

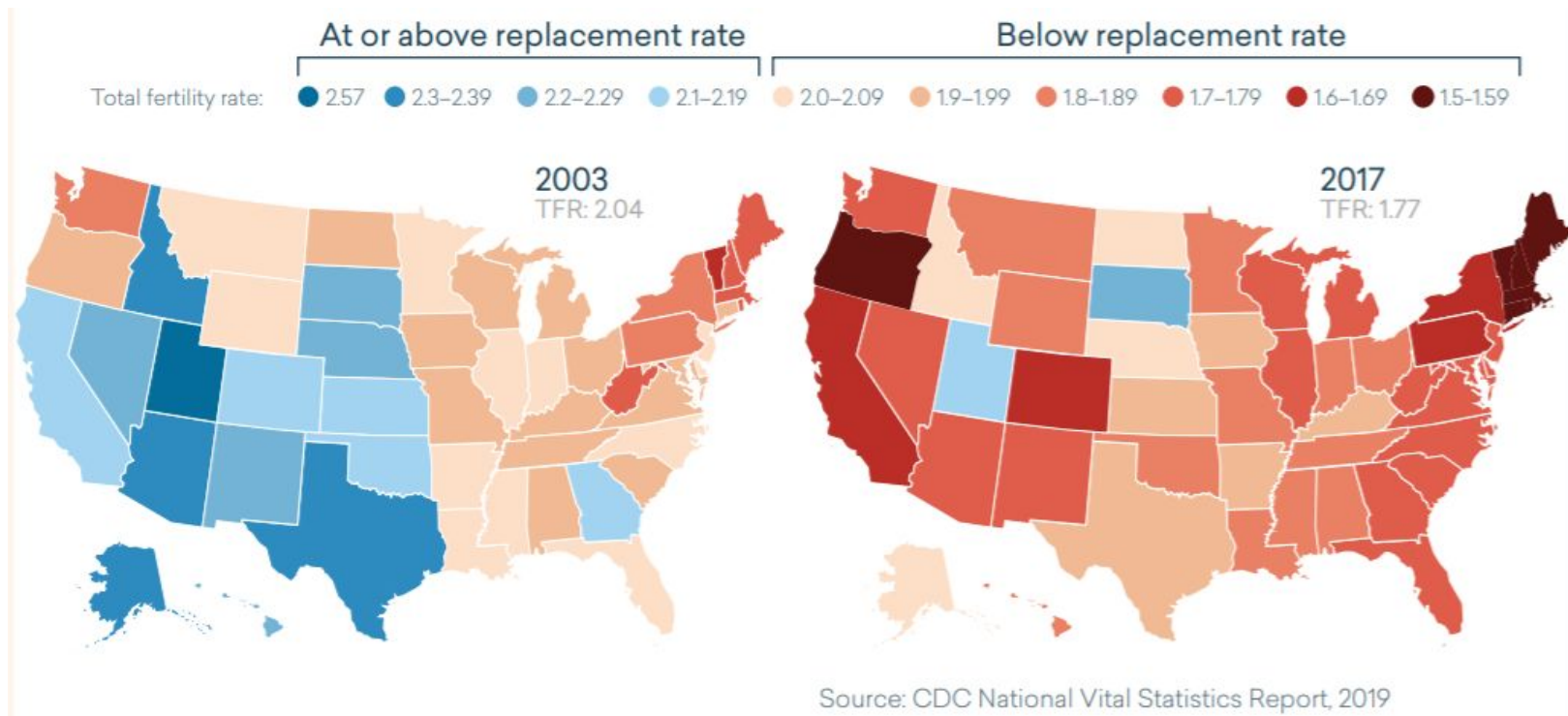| Years	Cumulative share	Chance to exit
1	13	13
2	21	9
3	27	6
4	31	5
5	35	4
6	37	3
7	39	2
8	41	2
9	42	1
10	43	1

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https://www.brookings.edu/research/moving-up-promoting-workers-upward-mobility-in-a-time-of-change/

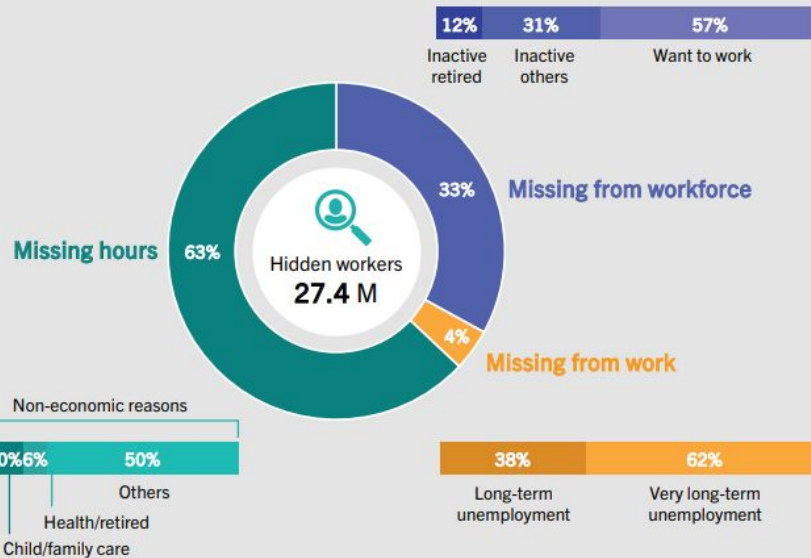The proportion of freelancers has risen to an all-time high since tracking began in 2014

Proportion of Freelancers
(% calculated out of total U.S. workers)

2014	2015	2016	2017	2018	2019	2020	2021	2022
34%	34%	35%	36%	35%	35%	36%	36%	39%

https://www.upwork.com/research/freelance-forward-2022

Demographic Drought

At or above replacement rate | Below replacement rate

Total fertility rate: 2.57 | 2.3–2.39 | 2.2–2.29 | 2.1–2.19 | 2.0–2.09 | 1.9–1.99 | 1.8–1.89 | 1.7–1.79 | 1.6–1.69 | 1.5–1.59

2003
TFR: 2.04

2017
TFR: 1.77

Source: CDC National Vital Statistics Report, 2019

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Hidden Workers

Artificial Intelligence

Computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition or decision-making.

Allows for non-human decision-making, some forms of analysis and process management

Automation

Use of technology to reduce the level of human activity needed to complete a particular task by replacing or augmenting labor

Because automation occurs at the task level, it often changes jobs partially rather than eliminating them
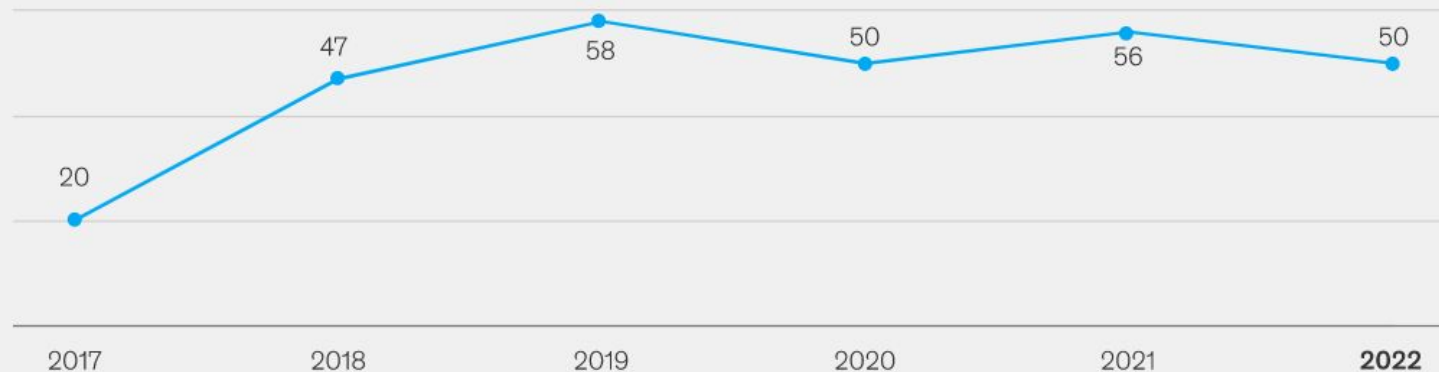

Digitalization

The use of various digital technologies to change/update business or operational processes

Often used to optimize a variety of communication, management, design and logistics tasks (i.e. the use of a GPS tracking system to optimize fleet operations

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State of AI

While AI adoption globally is 2.5× higher today than in 2017, it has leveled off over the past few years.

Share of respondents who say their organizations have adopted AI in at least one business unit or function, %
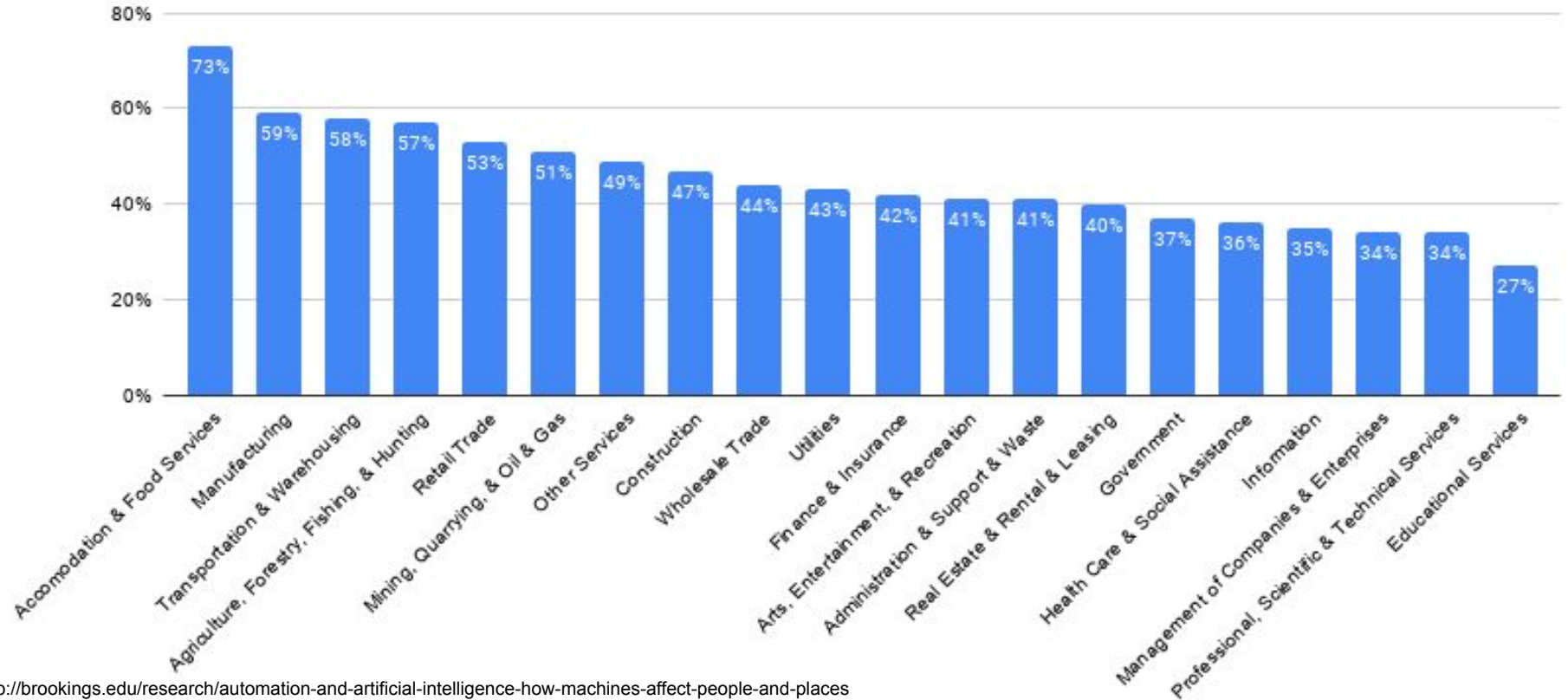
2017	2018	2019	2020	2021	2022
20	47	58	50	56	50

McKinsey & Company

Impact of Technological Advances by Industry

Task automation potential by industry (% of sector)

Bar chart showing task automation potential by industry:
- Accomodation & Food Services: 73%
- Manufacturing: 59%
- Transportation & Warehousing: 58%
- Agriculture, Forestry, Fishing, & Hunting: 57%
- Retail Trade: 53%
- Mining, Quarrying, & Oil & Gas: 51%
- Other Services: 49%
- Construction: 47%
- Wholesale Trade: 44%
- Utilities: 43%
- Finance & Insurance: 42%
- Arts, Entertainment, & Recreation: 41%
- Administration & Support & Waste: 41%
- Real Estate & Rental & Leasing: 40%
- Government: 37%
- Health Care & Social Assistance: 36%
- Information: 35%
- Management of Companies & Enterprises: 34%
- Professional, Scientific & Technical Services: 34%
- Educational Services: 27%

Automation

% change in hourly wages by educational background (1979-2018)

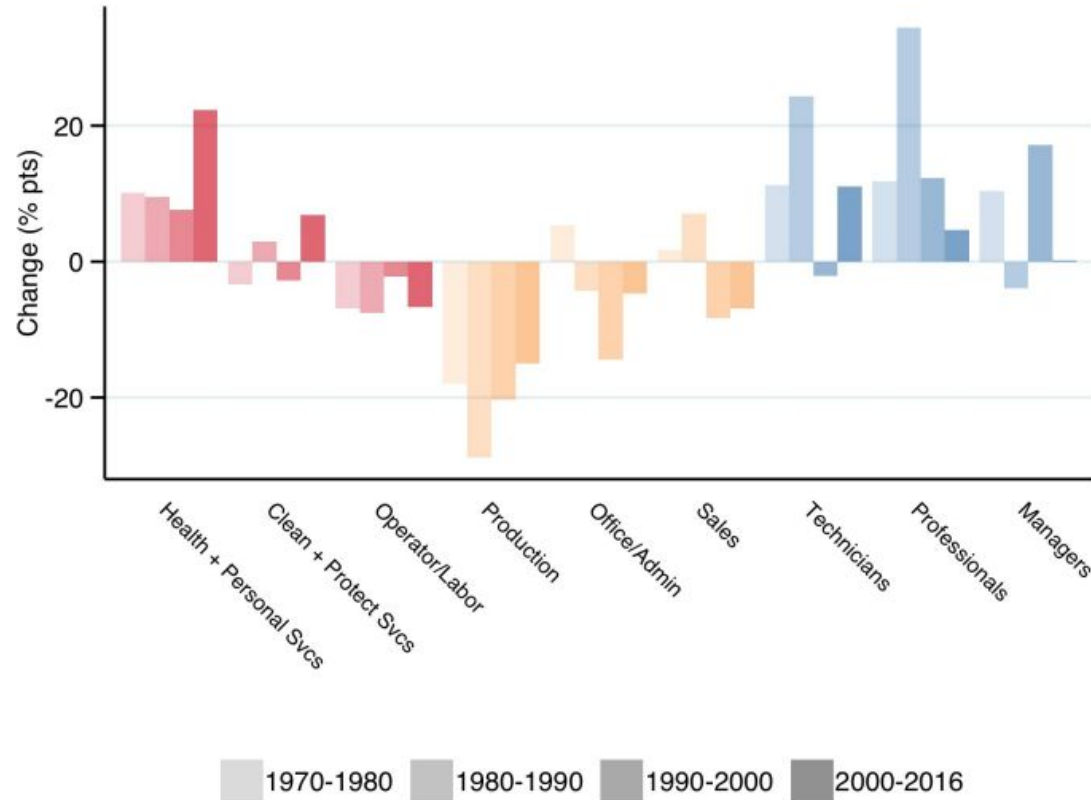|	
No high school diploma	-20
High school diploma	-13
Some college	-12
Bachelor's degree	9
Advanced degree	24
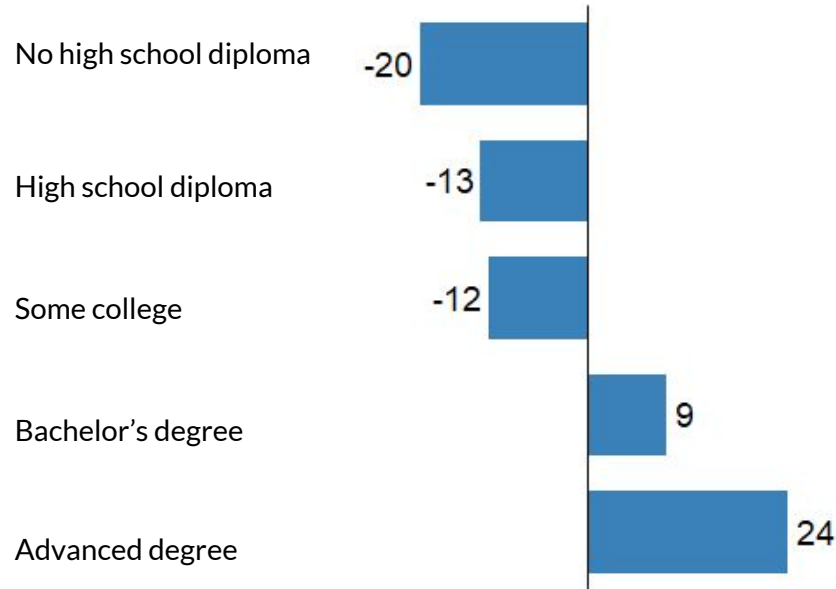
Workers without college degrees have seen significant drops in wages over the past 30-40 years

Globalization has played a significant role in this decline as U.S. workers compete with alternative labor sources from around the world
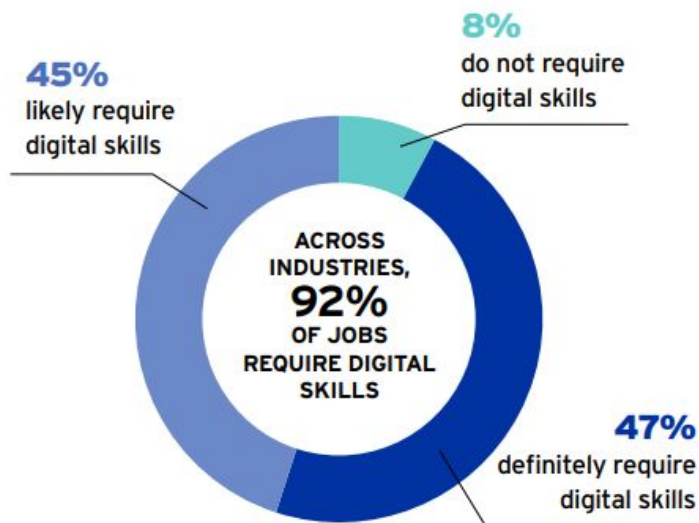
Real Wage Trends, 1979 to 2018, Congressional Research Service, July 23, 2019; *How to Save Globalization: Rebuilding America's Ladder of Opportunity,* Foreign Affairs, November / December 2019

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Impact of Technological Advances by Industry

Digital skills needed for work

8%
do not require
digital skills

45%
likely require
digital skills

ACROSS
INDUSTRIES,
92%
OF JOBS
REQUIRE DIGITAL
SKILLS

47%
definitely require
digital skills

Selected industries[24]	Percentage of workers with no digital skills	Percentage of workers with limited digital skills	Combined percentage of workers with limited or no skills*
Construction, transportation and storage	22%	28%	50%
Retail, wholesale, and auto repair	14%	23%	37%
Hospitality and other services	18%	18%	36%
Manufacturing	16%	19%	35%
Administrative and support services; arts, entertainment and recreation	13%	22%	35%
Health and social work	12%	21%	33%
Finance, insurance, and real estate (FIRE)	6%	14%	19%*
Education	5%	11%	15%*

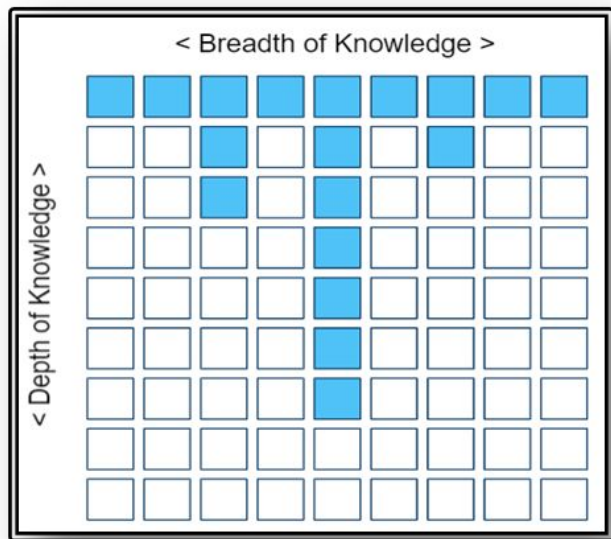The Office of the **Future of Work**

Skills, mindsets, and supports to succeed in the future of work
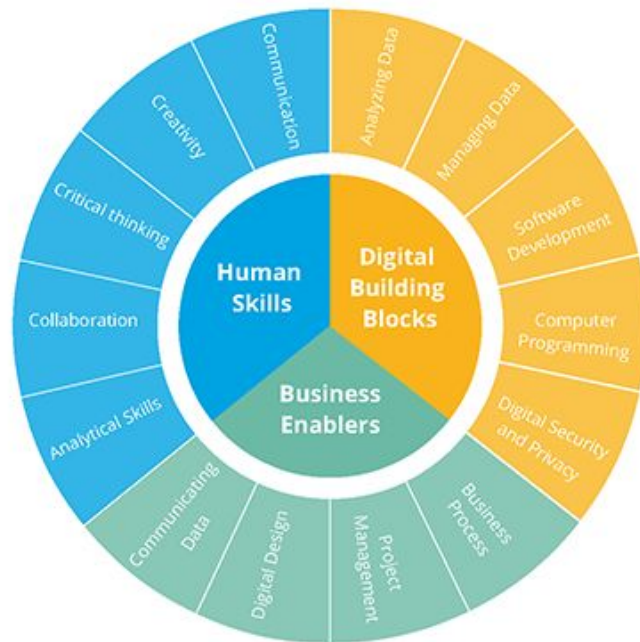
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Skills of the Digital Economy

"T-shaped" Workers

## The New Foundational Skills of the Digital Economy

These 14 skills, already in wide demand by employers, command salary premiums and are crucial for workers who want to keep pace with a changing job market.

© Burning Glass Technologies

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As a result of these impacts, Colorado must:

- Develop future-ready workers with lifelong learning mindset with digital, human, and business skills

- Create more viable pathways out of low wage work

- Tap into untapped talent pools

- Develop sustainable and strategic talent pipelines

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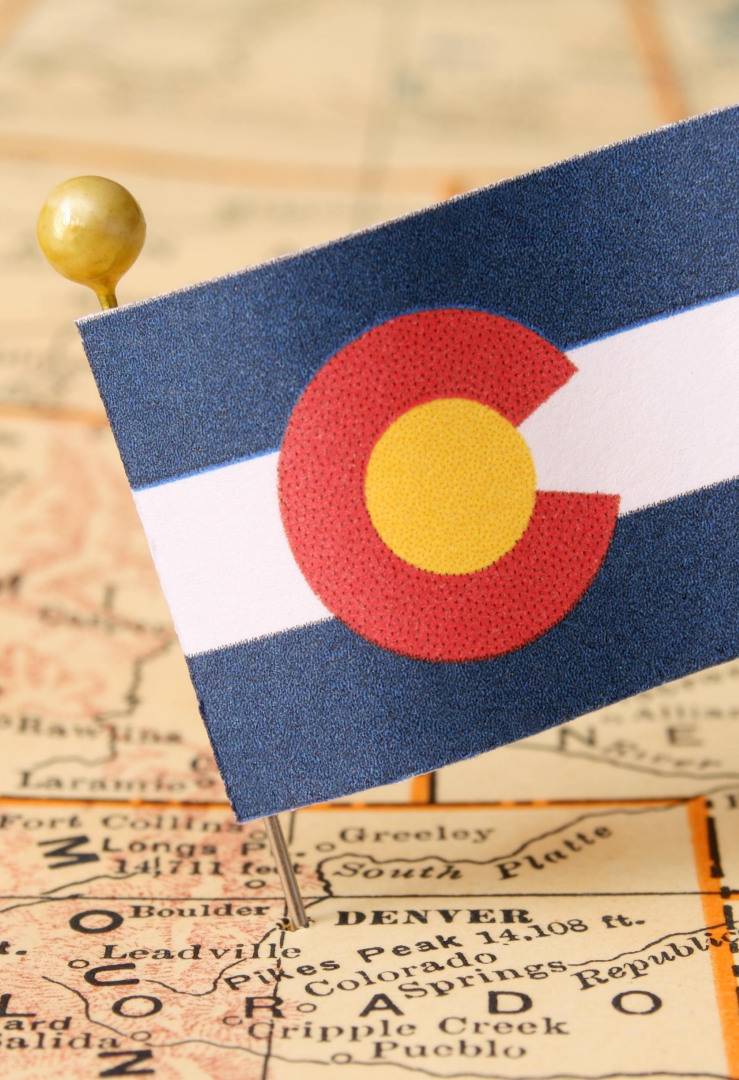
Office of Future of Work

- Established in September 2019 through an Executive Order to raise awareness about the impact of the future of work on Colorado's communities and to identify policy and program solutions to create a skilled and resilient workforce and modernize worker protections.

- Key activities:

  - Conducting research to understand future of work trends and their impact

  - Sharing best practices, research, and data with the workforce development system

  - Leading key initiatives

  - Supporting and aligning with related efforts (e.g. Colorado Resiliency Framework, Talent Pipeline Report)

  - Informing legislature and other stakeholders

- Key initiatives:

  - State Apprenticeship Agency

  - Digital Literacy and Inclusion Initiative

About Apprenticeship Colorado

Apprenticeship Colorado is the State Apprenticeship Agency (SAA) housed in the Office of the Future of Work in the Colorado Department of Labor and Employment that has the responsibility for:

- Registering and overseeing apprenticeship programs
- Providing technical assistance to current and prospective sponsors
- Aligning the registered apprenticeship system with Colorado's workforce, education, and economic development priorities

Other duties as assigned in statute.

Apprenticeship Colorado Services

Program Development

Customized support for sponsors to build and expand a Registered Apprenticeship Program

Quality Assurance

Technical assistance and support to ensure compliance and delivery of a high quality Registered Apprenticeship Program

Diversity, Equity, Inclusion, & Accessibility

Training and support to develop inclusive practices for Registered Apprenticeship Programs

Post-Registration Support

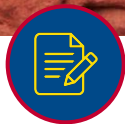Referrals to recruitment partners, resources to support apprentices, and more

Funding Opportunities

Funding opportunities to support current apprentices and launch or expand Registered Apprenticeship Programs

Apprenticeship Colorado Priorities

Quality

Designed for Colorado, integrated into the National Registered Apprenticeship System

Technical assistance for each program

Expansion

Prioritization of in-demand occupations and access to Registered Apprenticeship Programs (RAPs) in all corners of Colorado

500 new programs over the next 5 years

Equity

Focused strategies for increased participation and support of underrepresented Coloradans in RAPs

1:1 DEIA support for each program

Innovation

Development of a leading model built on multi-sector partnerships

Qualified intermediaries, youth apprenticeship, pre-apprenticeship

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Apprenticeship Colorado

Digital Equity, Literacy and Inclusion

Digital Equity is required for the future of work.

Digital skills, devices, and access to affordable internet are necessary to work, learn, and fully participate in daily life in the future of work.

The Office of Future of Work leads Colorado's Digital Literacy and Inclusion Initiative. While the Broadband Office focuses on infrastructure, the Office of Future of Work focuses on adoption.

151,000
households in Colorado with no computer

64,878
households in Colorado with inconsistent access to the internet for educational purposes

1/3
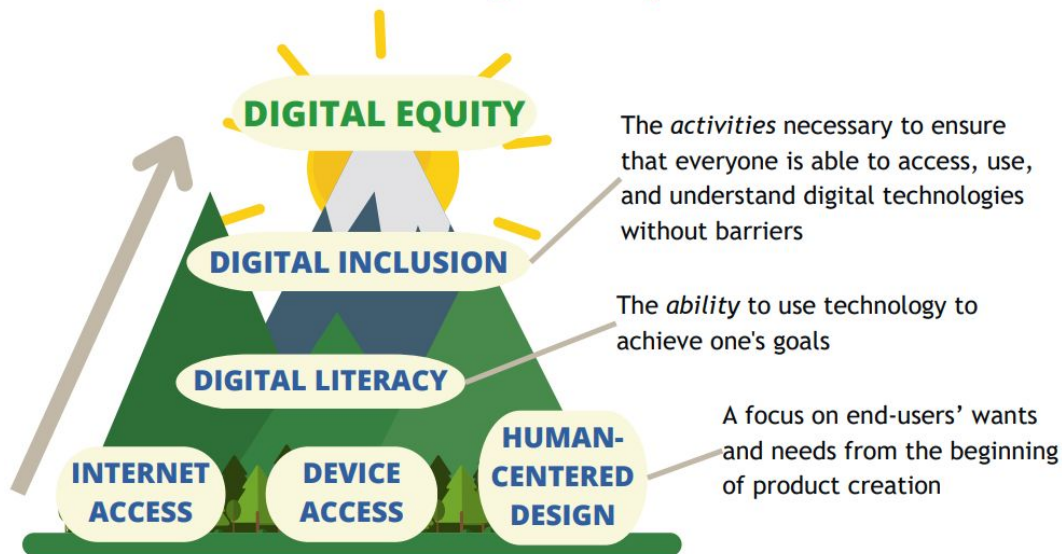of workers in the U.S. have limited or no digital skills

150 million
technology-related jobs expected to be added globally over the next five years

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Apprenticeship Colorado

Colorado's Digital Equity Plan

The vision of Colorado's State Digital Equity Plan is that **every person in Colorado has the connectivity, devices, and skills they need to thrive in our digital society.**

DIGITAL EQUITY

The *activities* necessary to ensure that everyone is able to access, use, and understand digital technologies without barriers

DIGITAL INCLUSION

The *ability* to use technology to achieve one's goals

DIGITAL LITERACY

A focus on end-users' wants and needs from the beginning of product creation

INTERNET ACCESS   **DEVICE ACCESS**   **HUMAN-CENTERED DESIGN**

$897,000 to create plan

Planning ends 11/30/2023

Capacity funding expected Q1 2024

$20M expected to fund plan implementation

Implementation period ends 2028

Colorado's digital equity ecosystem established

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Covered Populations

Individuals who live in covered households

Veterans

Aging individuals

Individuals with a language barrier (i.e. English learners or people with low literacy levels)

Incarcerated individuals, other than individuals who are incarcerated in a Federal correctional facility
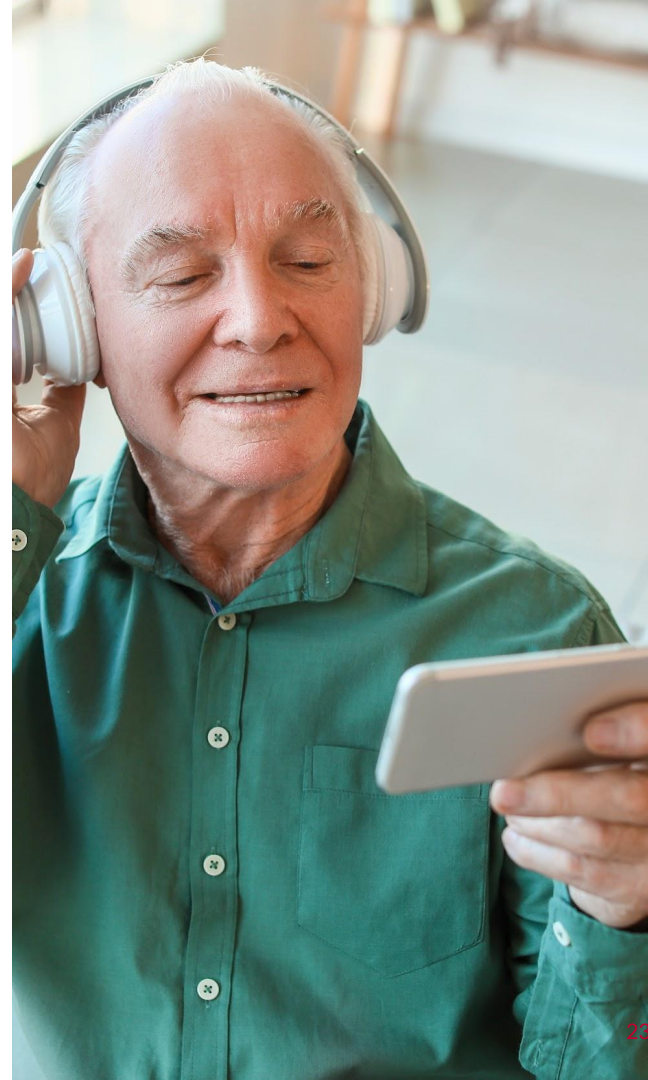
Members of a racial or ethnic minority group

Individuals with disabilities

Individuals who primarily reside in a rural area

Graphic: NDIA (digitalinclusion.org)

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Planning Funds

Measurable Objectives

- Affordability and availability of broadband
- Accessibility of public resources & services
- Affordability and availability of internet-enabled devices
- Digital literacy
- Cybersecurity

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How to get involved

- **Join one of our three working groups to contribute to the State Digital Equity Plan**

- **Learn more about how to partner on our digital navigator work**

- **Complete the [Digital Equity Ecosystem Map](#)**

- **Provide feedback on our draft workforce plan**

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Interested in learning more?

- **Apprenticeship**: Reach out to apprenticeship@state.co.us or visit apprenticeship.colorado.gov

- **Digital Equity**: Reach out to digitalequity@state.co.us or visit cdle.colorado.gov/digitalinclusion

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