JOBS OF THE FUTURE VS. JOBS OF THE PAST

The 10 fastest growing occupations

- Solar photovoltaic installers: 105%
- Wind turbine service technicians: 96%
- Home health aides: 47%
- Personal care aides: 39%
- Physician assistants: 37%
- Nurse practitioners: 36%
- Statisticians: 34%
- Physical therapist assistants: 31%
- Software developers, applications: 31%
- Mathematicians: 30%

The 10 fastest declining occupations

- Locomotive firemen: -79%
- Respiratory therapy technicians: -56%
- Parking enforcement workers: -35%
- Word processors and typists: -33%
- Watch repairers: -30%
- Electronic equipment installers and foundry mold and coremakers: -26%
- Pourers and casters, metal: -24%
- Computer operators: -23%
- Telephone operators: -23%

TREND: APPLICATIONS USING ROBOTICS INCREASING

- ROBOT BARISTA AT CAFÉ X
- ROBOT BARTENDER AT TIPSY ROBOT
- AUTOMATED DELIVERY AT WOW BAO
- AUTOMATED MCDONALD’S KIOSK
- BURGER FLIPPING ROBOT AT CALIBURGER
TREND: ARTIFICIAL INTELLIGENCE EXPANDING

- **Startups Developing AI Systems**
  - Graph showing an upward trend in the number of active startups developing AI systems from 1995 to 2015.

- **Share of US Jobs Requiring AI Skills (Indeed.com)**
  - Graph illustrating the share of jobs in the US market requiring AI skills from 2013 to 2019, showing a significant increase.

Sources: Crunchbase, VentureSource, Sand Hill Econometrics (for startups) and Indeed.com (for job market share).
CHALLENGE: WORKERS POTENTIALLY DISPLACED BY AUTOMATION

BASED ON RECENT MCKINSEY ANALYSIS, UP TO 33 PERCENT OF THE U.S. WORKFORCE MAY NEED TO CHANGE OCCUPATIONS BY 2030

NUMBER OF U.S. WORKERS DISPLACED BY AUTOMATION BY 2030
(in rapid automation scenario)

Source: McKinsey Global Institute, December 2017
PREPARING WORKERS FOR THE 21ST CENTURY ECONOMY

WORKERS NEED ACCESS TO TRAINING THAT IS...

- QUALITY
- AFFORDABLE
- SKILLS-BASED
U.S. WORKFORCE TRAINING SYSTEM HAS THREE MAIN COMPONENTS

1. TRADITIONAL EDUCATION
2. BUSINESS INVESTMENT
3. GOVERNMENT INVESTMENT
EMPLOYER-PROVIDED TRAINING AND TRADITIONAL FOUR-YEAR COLLEGES REPRESENT OVER 85% OF THE TOTAL $1.1 TRILLION INVESTED IN POSTSECONDARY WORKFORCE EDUCATION & TRAINING

ENTRY-LEVEL HOURLY WAGES FELL BY OVER 5 PERCENT FOR COLLEGE GRADUATES FROM 2000 TO 2013

DECLINING EMPLOYER INVESTMENT IN WORKFORCE TRAINING

PERCENT OF U.S. WORKERS RECEIVING JOB-RELATED TRAINING

Note: Fraction of workers ages 18-65 receiving training of any duration last year.
Source: Census Bureau, Survey of Income and Program Participation (Employment and Training Topical Module); CEA calculation
TRAINING BY EDUCATION LEVEL

SHARE OF FORMAL TRAINING SPENDING BY EDUCATIONAL ATTAINMENT OF TRAINEE, 2013

- **Bachelor's degree or higher**: 58%
- **Some college**: 25%
- **High school diploma or less**: 17%

LOW PUBLIC INVESTMENT IN WORKFORCE TRAINING

Between 1985 and 2016, spending on workforce training programs fell as a percentage of GDP from 0.14% to 0.03% in the United States.

LOW PUBLIC INVESTMENT IN WORKFORCE TRAINING

PUBLIC EXPENDITURE ON WORKER TRAINING AS A PERCENTAGE OF GDP, 2015

Expenditure as percent of GDP

Source: Future of Work Initiative analysis of OECD data.
WHERE DO WE GO FROM HERE?

WE NEED A 21ST CENTURY TRAINING SYSTEM THAT:

• Focuses on teaching in-demand skills
• Encourages lifelong learning
• Provides an alternative to college
• Incorporates – but is not dependent on – employers
TWO APPROACHES TO WORKER TRAINING

ENCOURAGE BUSINESSES TO INVEST

- **Worker Training Tax Credit**: Establish a tax credit that could be used by small and large businesses to invest in training for their low- and middle-income workers.
- **Corporate Accounting**: Reform corporate accounting practices to treat training as an investment rather than expense.
- **Worker Representation**: Corporate boards should worker representatives that are elected by the employees of the corporation.

HELP WORKERS GET TRAINING OUTSIDE OF EMPLOYERS

- **Lifelong Learning & Training Accounts**: Establish accounts that would be funded by workers, employers, and government, and could be used by workers to pay for education and training opportunities.
- **JOBS Act**: Expand Pell Grant eligibility to cover high-quality and rigorous short-term job training programs.
- **Income Share Agreements (ISAs)**: Student receives education funding in exchange for an agreed upon percentage of post-graduation income over a defined number of years.
CONTACT INFORMATION

Ethan.Pollack@aspeninstitute.org
@EthanPollack
@AspenFutureWork
www.aspeninstitute.org/futureofwork