Designing an Adaptive Workforce for a Stronger Economic Future

East Valley Partnership

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Mesa, Arizona
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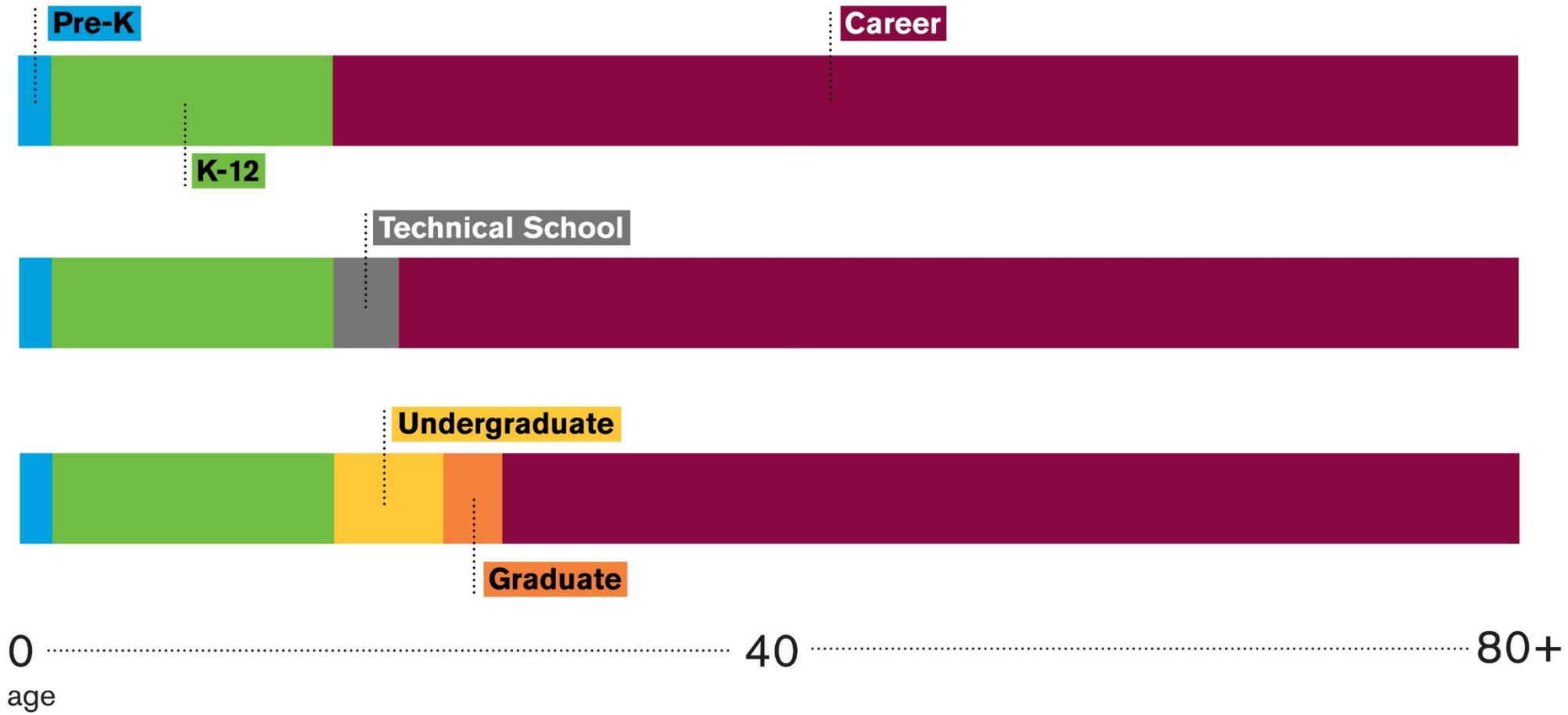
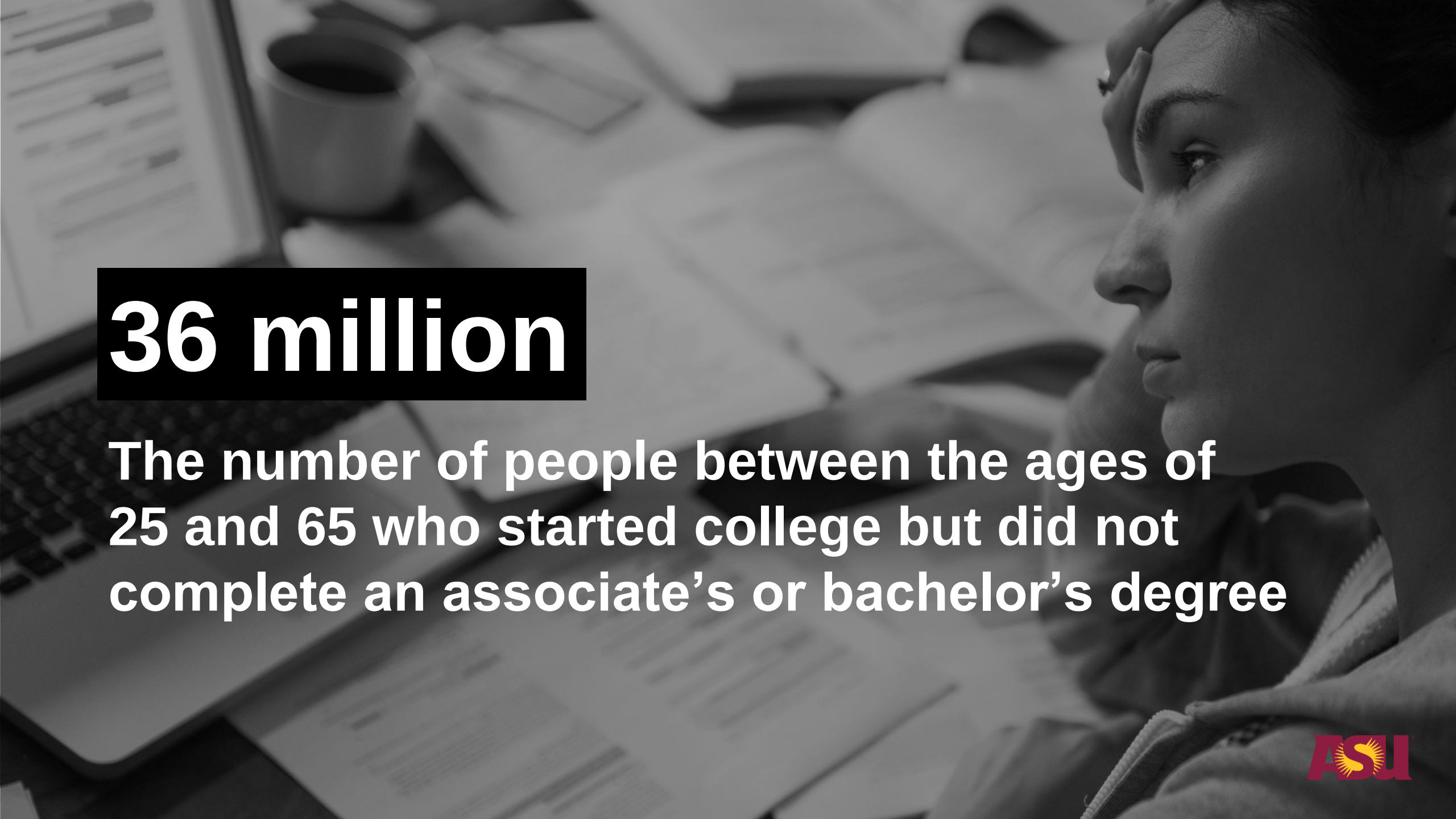
“One of the biggest myths is that in order to foster economic development, a community must accept growth. The truth is that growth must be distinguished from development: growth means to get bigger, development means to get better”

—Local Government Commission, 2004

The Traditional Design: Linear Learning Stages





36 million

The number of people between the ages of 25 and 65 who started college but did not complete an associate's or bachelor's degree


$33,800
Average annual earnings of people who started college, but did not earn a bachelor’s degree


$67,700
Average annual earnings of people who hold a bachelor’s degree or higher

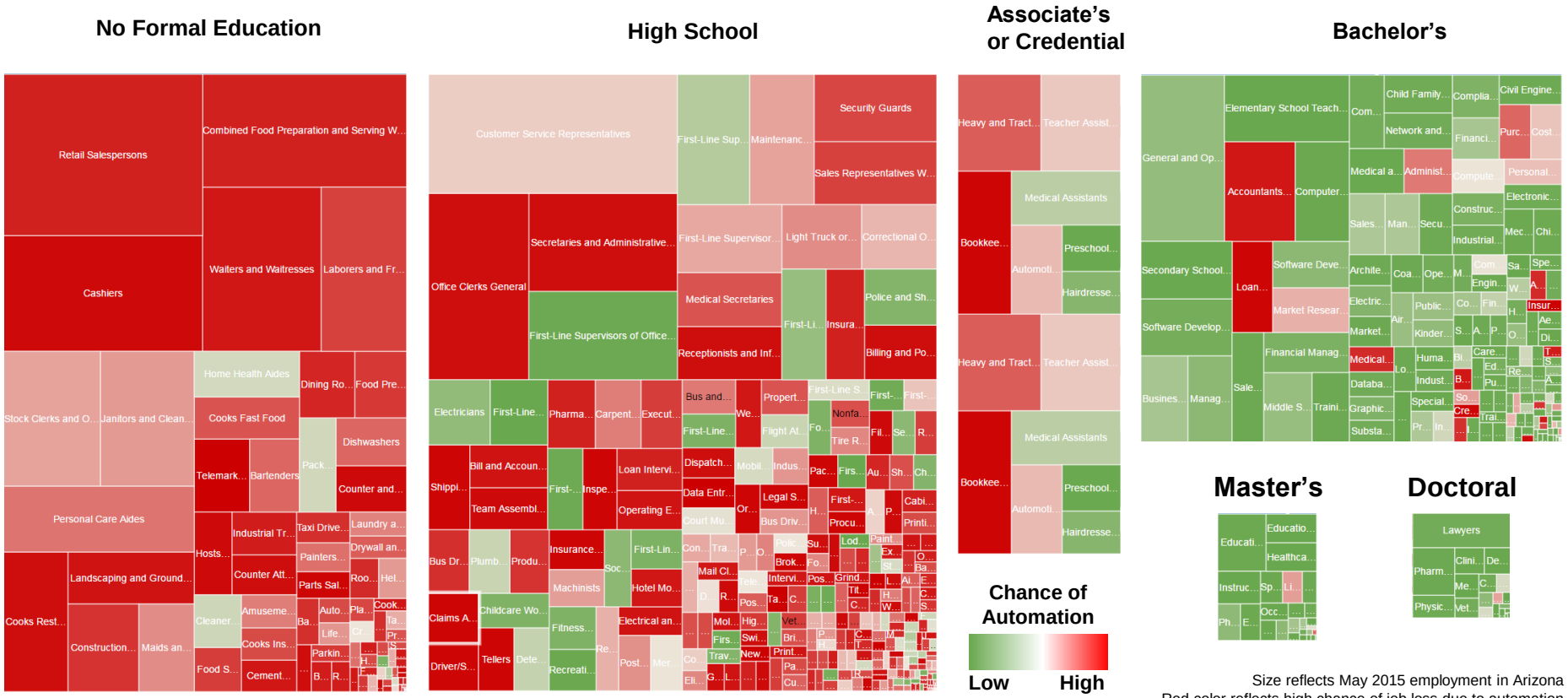
69%

Percentage of people who started college, but did not earn a bachelor's degree who work for a for-profit company


65%
of children entering primary school today will ultimately end up working in completely new job types that don’t yet exist.

The future economy will need higher educational attainment

AZ Employment by Occupation, Minimum Education Required & Probability of Job Loss Due to Automation



Size reflects May 2015 employment in Arizona
Red color reflects high chance of job loss due to automation
Data: BLS and Frey and Osborne (2013)

Fragile

“The quality of being easily broken or damaged”

—The Oxford Dictionary

Resilient

“the capacity of a system to absorb disturbance and re-organize while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks”

—Walker et al., *Ecology and Society*, 2004

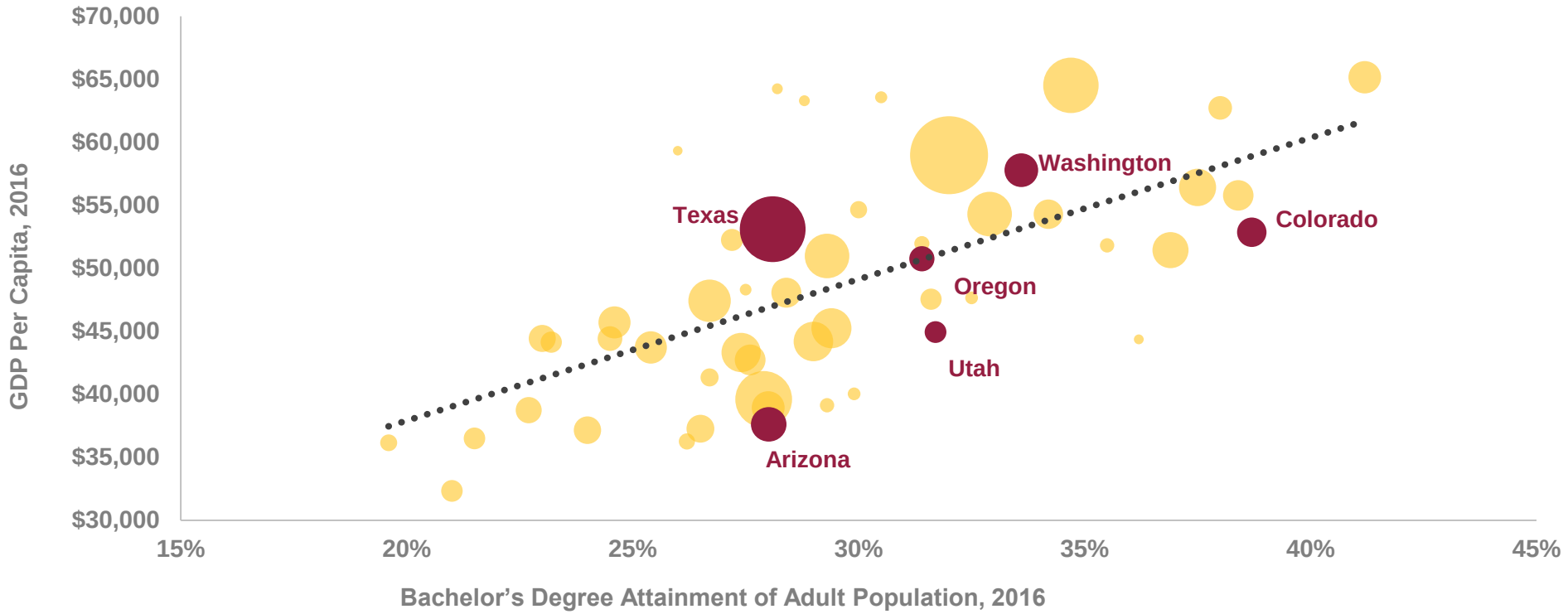
Antifragile

Something that "thrives and grows when exposed to volatility, randomness, disorder, and stressors and loves adventures, risk, and uncertainty"

—Nassim Taleb, author of *The Black Swan,* 2007

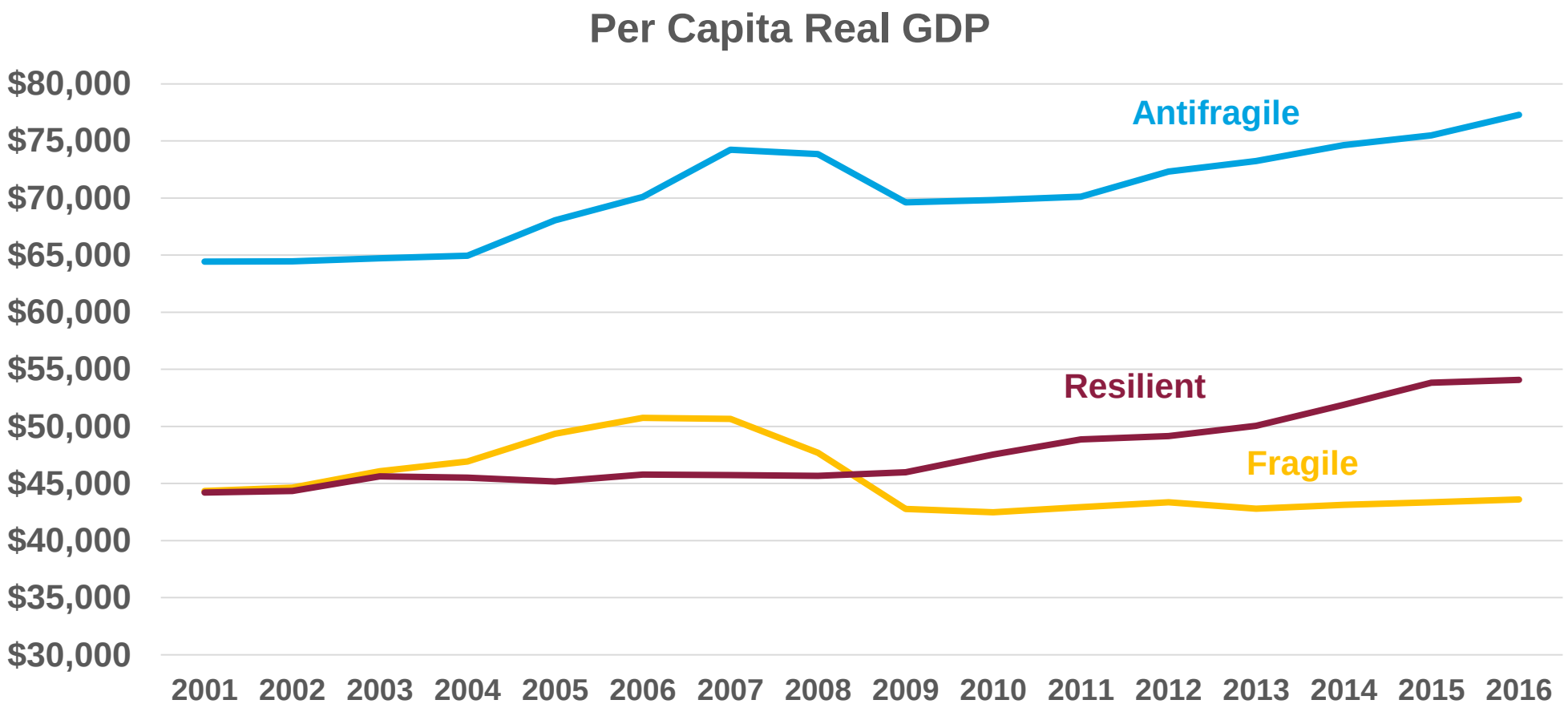
Per capita GDP correlates with educational attainment

Bachelor's Degree Attainment and Real Per Capita GDP by State (2016)



Data: US Census Bureau, ACS, S1501 and Bureau of Economic Analysis, Regional Economic Accounts

Fragile, Resilient, and Antifragile in Metro Economies



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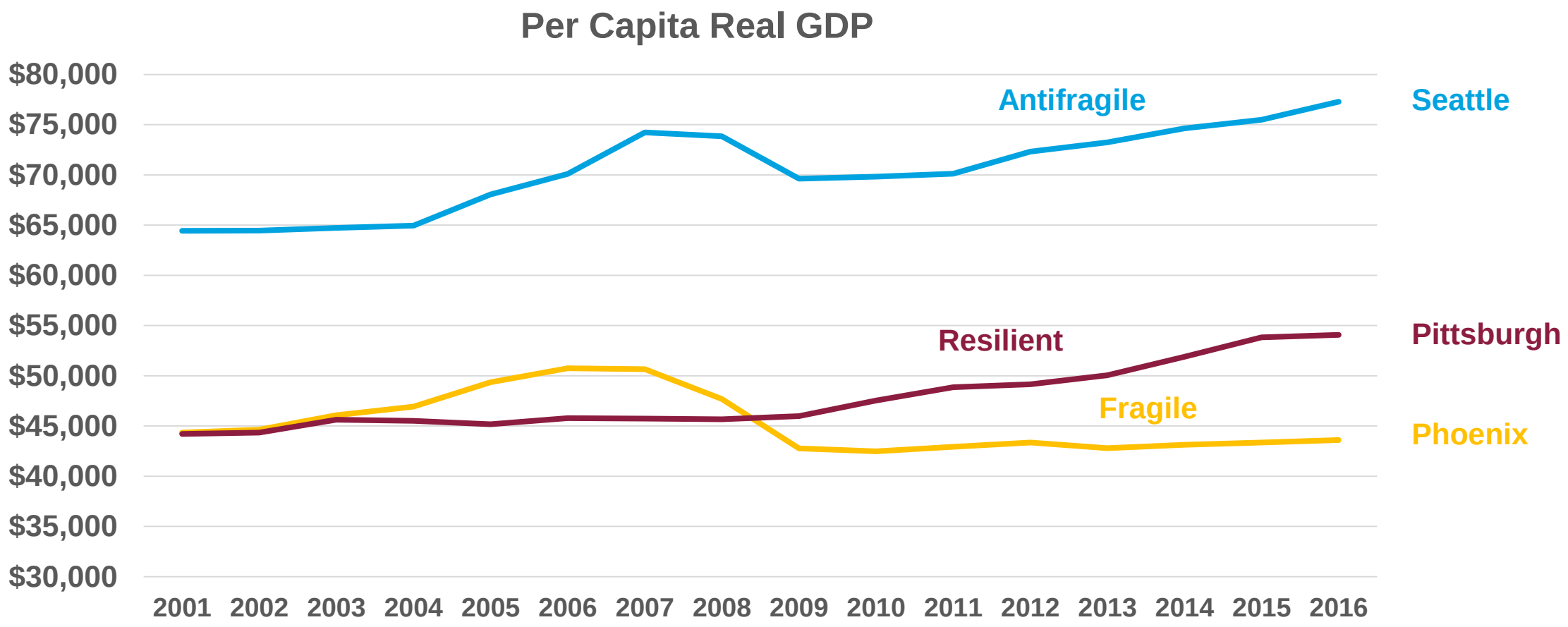

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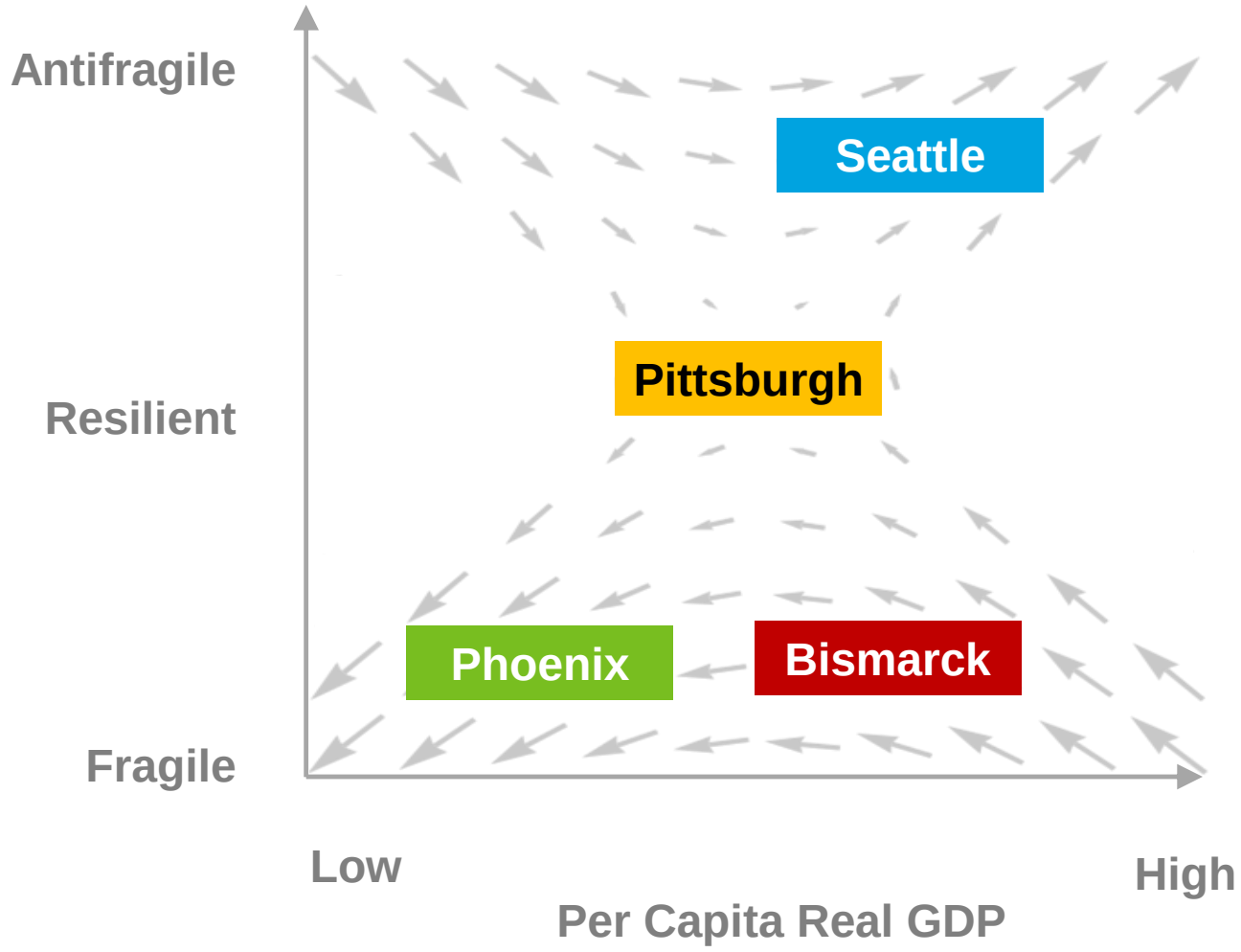


Transforming Regional Economic Development Requires:

Human Capital

- High-performing education system available to learners of every age
- Skilled and entrepreneurial workforce

Assets

- Entrepreneurial, risk-taking and collaborative public organizations
- World-class and nation's largest engineering school
- Modern, reliable and sustainable infrastructure and built environment

Economic Environment

- Risk-taking and collaborative economic culture anchored to technology development
- Networked clusters of related firms
- Diverse ecosystem of business partners

Transforming Regional Economic Development Requires:

Advance a world-class engineering school

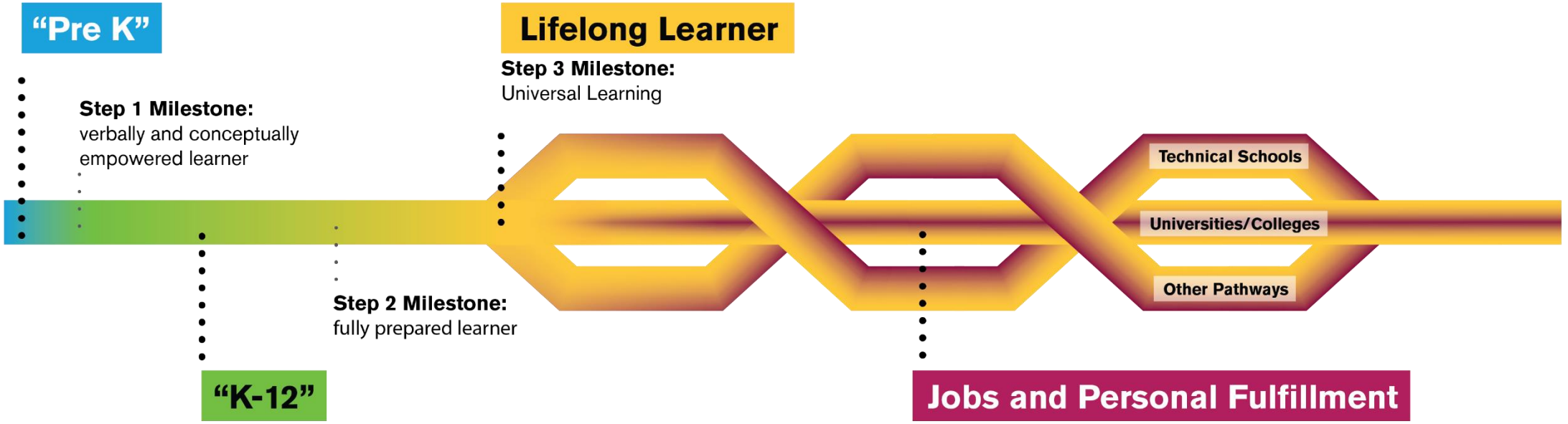
Support technology development through Science and Technology Centers

Enhance foreign-direct investment

Universal Learning at ASU

Evolving a model capable of being of service to all learners, at all stages of work and learning, from all socioeconomic backgrounds, through educational, training, and skill-building opportunities.

The New Design: ASU Universal Learning™



ASU evolves the universal learning initiative

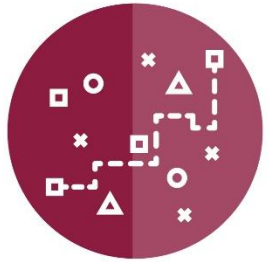
ASU is currently designing demonstration projects with corporate and nonprofit partners to test the bundling of learning enterprise assets to meet their needs and engage new types of learners. These projects will:

1. **Forge industry partnerships to remove barriers to learning**

Hub for network of learning providers connecting employers and their employees directly with in-demand skills training and credentials.

2. **Develop technology to advance and scale personalized learning**

Flexible and rigorous online offerings and offer high school courses through a direct-to-learner model



3. **Create new pathways to expedite learning**

Translate informal learning to shorten time-to completion with college level courses starting with the MAT 117 College Algebra and Problem Solving course

4. **Reimagine delivery models**

Pilot learning centers that serve as in-person hubs to augment digitally delivered undergraduate degrees with a suite of student support services such as success coaching

Connecting the workforce to lifelong learning opportunities will require large-scale partnerships between universities and workplaces that understand access to education is a social imperative to national success.

Innovation Zones at ASU

Six ASU locations that offer significant on-site connections to the ASU community, resources and programs and space for integrated collaboration with corporate partners of all kinds.

ASU Polytechnic

ASU West

Arizona Health Solutions Corridor

ASU Research Park

Novus Innovation Corridor

SkySong

ASU grows the Fulton Schools of Engineering

School of Biological and Health Systems Engineering	School of Computing, Informatics, and Decision Systems Engineering	School of Electrical, Computer and Energy Engineering	School for Engineering of Matter, Transport and Energy	School of Sustainable Engineering and the Built Environment	The Polytechnic School
918 Students 759 Undergraduate 159 graduate	**6,735 Students** 5,276 Undergraduate 1,459 graduate	**3,324 Students** 2,340 Undergraduate 984 graduate	**3,820 Students** 3,154 Undergraduate 666 graduate	**1,734 Students** 1,321 Undergraduate 422 graduate	**5,454 Students** 5,088 Undergraduate 366 graduate
• Biomedical Engineering • Biological Design	• Computer Engineering • Computer science • Computer systems Engineering • Engineering Management • Industrial engineering • Informatics • Robotics • Software Engineering	• Electrical Engineering • Computer Engineering • Robotics	• Aerospace Engineering • Chemical Engineering • Materials Science and Engineering • Mechanical Engineering • Robotics • Solar Energy Engineering and Commercialization	• Civil Engineering • Construction Engineering • Construction Management • Environmental Engineering • Sustainable Engineering	• Aviation Programs • Engineering Programs • Environmental and Resource Management • Global Technology and Entrepreneurship • Graphic Information Technology • Human Systems Engineering • Information Technology • Robotics • Management of Technology • User Experience

6 interdisciplinary programs

25 undergraduate programs

41 graduate programs

2 campuses + ASU Online

School 7

Advancing engineering design on a global scale

“The Engineering and Design Institute: London (TEDI)”

Produce new kinds of graduates:

- Creators and innovators
- Entrepreneurs and problem solvers
- Global citizens who are the engineers and technologists of the future

Attract new kinds of learners:

- Diverse
- International
- Attract students with the `engineering design mindset’ and build skills along their learning path

10 Years of FSE Progress

Total enrollment

6,407 Fall 2009

24,104 Fall 2019

Undergraduates

4,253 Fall 2009

19,132 Fall 2019

Graduates

2,154 Fall 2009

4,831 Fall 2019

Degrees granted

1,391 2008-2009

4,540 2018-2019

Research expenditures

$73M FY2009

$115M FY2019

T/TT faculty

214 Fall 2010

355 Fall 2019

ASU Polytechnic

- Over 300 acres available for private build-to-suit opportunities
- Integrated in one of the nation's leading polytechnic campuses, with expertise in aviation, advanced manufacturing, bio-fuels and robotics
- Adjacent to the Phoenix-Mesa Gateway Airport, site of "SkyBridge Arizona" the nation's first international air cargo hub to house both Mexican and United States customs
- Proximate to Eastmark, the region's new large-scale 3,200 acre residential community

Mesa Digital Innovation District

- Development of a hub that draws entrepreneurs, students, educators and residents to downtown Mesa for living, work and social opportunities
- Phase 1 open in 2021
- ASU is an anchor and investment partner
- Potential to draw 2,000 students and faculty to downtown Mesa

ASU Creative Futures Laboratory at Mesa City Center

ASU Creative Futures Laboratory at Mesa City Center

Collaboration between the City of Mesa and ASU to design a custom, 118,000 square foot facility located on the northwest corner of Pepper Street and Centennial Way.

Dedicated to the advancement of innovation, experience and storytelling
Will house programs offered by the **Herberger Institute for Design and the Arts** related to:

- digital and sensory technology
- experiential design
- gaming
- media arts
- film production
- entrepreneurial development and support

These programs will utilize augmented reality, virtual reality and 3D modeling and visualization to develop technology with the potential to impact industries as diverse as health care, aerospace, manufacturing and entertainment.

Place where the residents of Mesa and beyond can come together to imagine new futures.

Creating a future of universal learning will require new technologies, new policies and changes in cultural norms and expectations.

Technologies We Need

Full Immersion

21st century digital learning spaces

Artificial intelligence-based advising

Ubiquitous content delivery tools

Intelligent tutoring platform

Personalized learning at scale

Digital Immersion - Massively Open

Technologies that derive value from scale

Content and delivery for any life stage

Multi-organizational pathway mapping

Infinitely Scalable Learning

Infinitely scalable teaching

Seamless integration of individualized learning across life stages

Lifelong intelligent tutoring

Digital Immersion

Technology to support relationships and build organizational affinity

“Integrated” human-tutor interface

Real time assessment development-based assessment

Education Through Exploration

Virtual augmented reality for learning

Direct human cognition linkages

Conversation-based AI tutoring

Group learning tools

Math and science Mastery for all

Policies We Need

Federal

Creation of tax-advantaged employer-sponsored tuition savings accounts that allow employers and employees to contribute to educational expenses

Establishment of a new higher education classification system

Provision of direct operating support of national-scale universities

Collection of student-level performance data

State

Incentive structures for university social impact performance

Enterprise investment approaches for education

Employers

Treating access to education as a social imperative

Increased employee flexibility in the workplace

Cultural Norms and Expectations We Need

Employers

Creation of a culture of reward around education and learning

Recognition that employee upskilling improves enterprise competitiveness

De-commodification of labor

Higher Education

Increased clock speed in designing and launching courses

Active recognition of the emerging human development revolution

Adoption of entrepreneurial methods and mindsets

State

Active recognition of long-term regional and global labor market trends

Aspirational peer selection based on a broad set of public value outcomes

Society

Increased awareness that learning within formal organizations does not end at an arbitrary age

Arizona State University

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