DECISION THEATER - COMPANION NOTEBOOK SERIES - WORKFORCE - 2025

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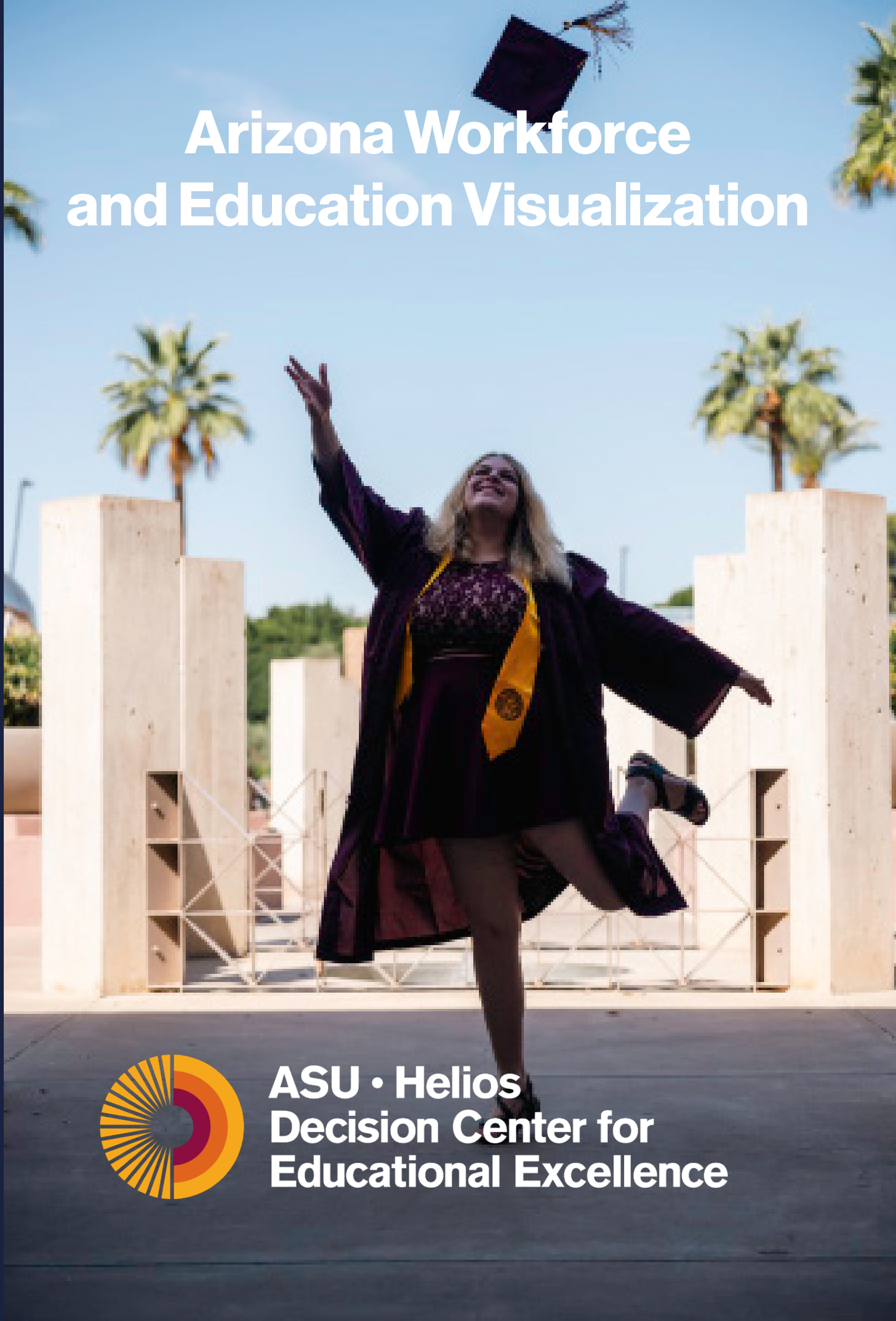
Arizona Workforce and Education Visualization



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Arizona Education and Workforce Visualization

The **Arizona Education and Workforce Visualization** dynamically communicates how our economy is evolving, and what that means for Arizona's workers and learners. Participants can view current and projected growth in industries and occupations as well as pathways to better jobs by industry within counties and the state as a whole. They can also see how well students are being prepared by the education system.

Given the increasing complexity of our economy and the difficulty of obtaining and integrating reliable data, it can be challenging for policymakers, business and education leaders to have a common understanding of economic development trends. The **Arizona Education and Workforce Visualization** delivers this information directly to decision-makers so they can better plan for the future.

By 2034, Arizona will need

180,000+

skilled workers in

high-skill, high-growth, high-wage

sectors — a 24% increase over the original 2030 projection and 35% higher than the 2033 forecast.

Joseph O'Reilly, director of the Decision Center is presenting the Arizona Education and Workforce Visualization

The Visualization in Action

The Pinal County economic development team is working to forecast the skilled workforce needed to support the county's growing high-tech and advanced manufacturing sector by 2034. Using the visualization, they find that skilled manufacturing jobs are projected to increase by 38% (adding 713 positions) under current trends. This marks a 2-percentage-point gain, or 270 additional jobs, compared to projections for 2030, fueled by emerging industries such as electric vehicles and semiconductors.

The tool highlights key occupations expected to experience the highest demand, including industrial engineers, industrial machinery mechanics, mechanical engineers, and software developers. Recognizing that the local talent pipeline will fall short of future needs, the team can take proactive measures to attract workers from neighboring Maricopa and Pima counties, expand regional training programs, and offer upskilling opportunities for the existing workforce.

Statewide Takeaways

The Arizona Education and Workforce Visualization empowers users to understand their local landscape within the context of the state's evolving economy. This dynamic tool reveals insights that can drive strategic decisions and foster sustainable growth across communities.

Arizona is Poised for Growth and Opportunity

Arizona's economy is expanding rapidly across most industries, generating high-quality jobs and attracting skilled workers from around the globe. By 2034, we anticipate significant job creation in key sectors:

38K	22K	19K	15K	10K+
Health Care	Construction	Prof. & Scientific	Finance	Manufacturing

Are Opportunities Available to All?

Despite Arizona's rapid growth, opportunities are not evenly distributed across regions or people. The visualization helps users identify disparities and target interventions. For example:

High-skill, high-wage and high-demand jobs are overrepresented in Maricopa County by +11% and underrepresented in Pinal County by -5%, relative to population distribution.

Pathways to Better Jobs

For workers in lower-wage or high-automation-risk roles, there are clear pathways to better jobs that build on their existing skills. The visualization highlights these opportunities — for instance, entry-level fabricators who pursue advanced training in specific skills could qualify for roles with **$21K higher annual wages.**

Preparing Arizona's Future Workforce

The majority of high-quality jobs emerging in Arizona require advanced skills and education, yet the state doesn't currently produce enough degree or certificate holders to fill these roles. To meet future demand, Arizona must strengthen its education and training systems. Currently, many industries with the largest growth potential rely on workers relocating from states like California, Washington, Illinois, Nevada, and Oregon. By investing in local talent development, **Arizona can ensure its children are ready to lead the state's future economy.**

What's Next?

The Arizona Education and Workforce Visualization is a powerful tool for shaping the future:

- **Policymakers** can identify opportunities to create high-wage jobs, even for workers without advanced degrees, and develop programs for those at risk of automation displacement.
- **Community college leaders** in rural areas can see which skills are most in demand locally and align programs to meet those needs.
- **Business owners** can assess whether a region's workforce can support their expansion plans and pinpoint institutions that help workers develop critical skills.

This visualization provides a roadmap to guide Arizona through economic change — creating a more inclusive, resilient, and prosperous future for all.

Ready to see for yourself?
Schedule a visit.

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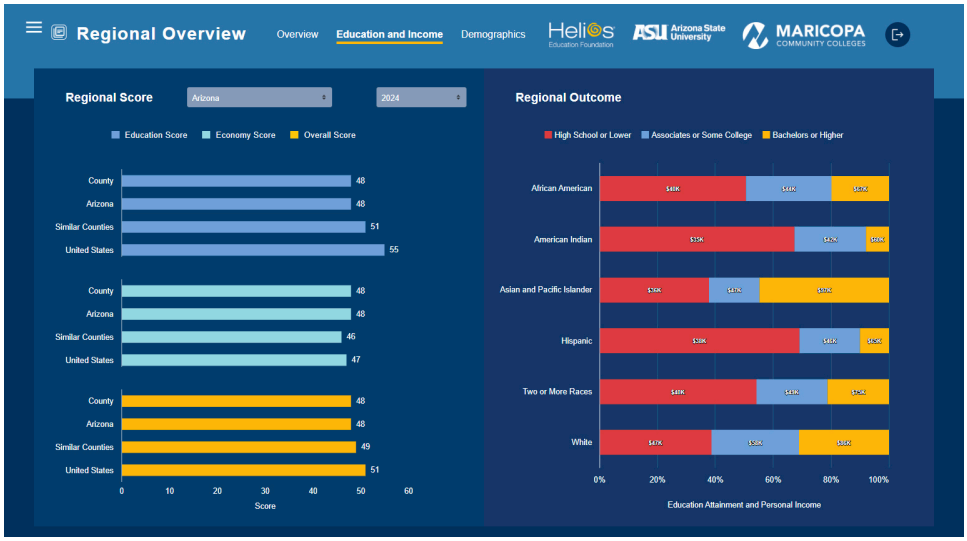
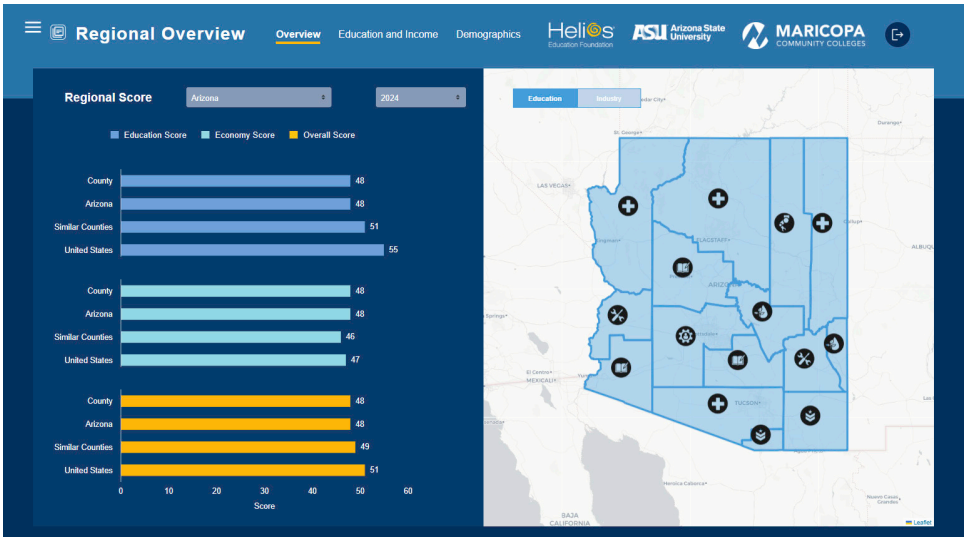
Arizona State University

Screen 1: Regional Overview

The first screen provides information on the country or state selected.





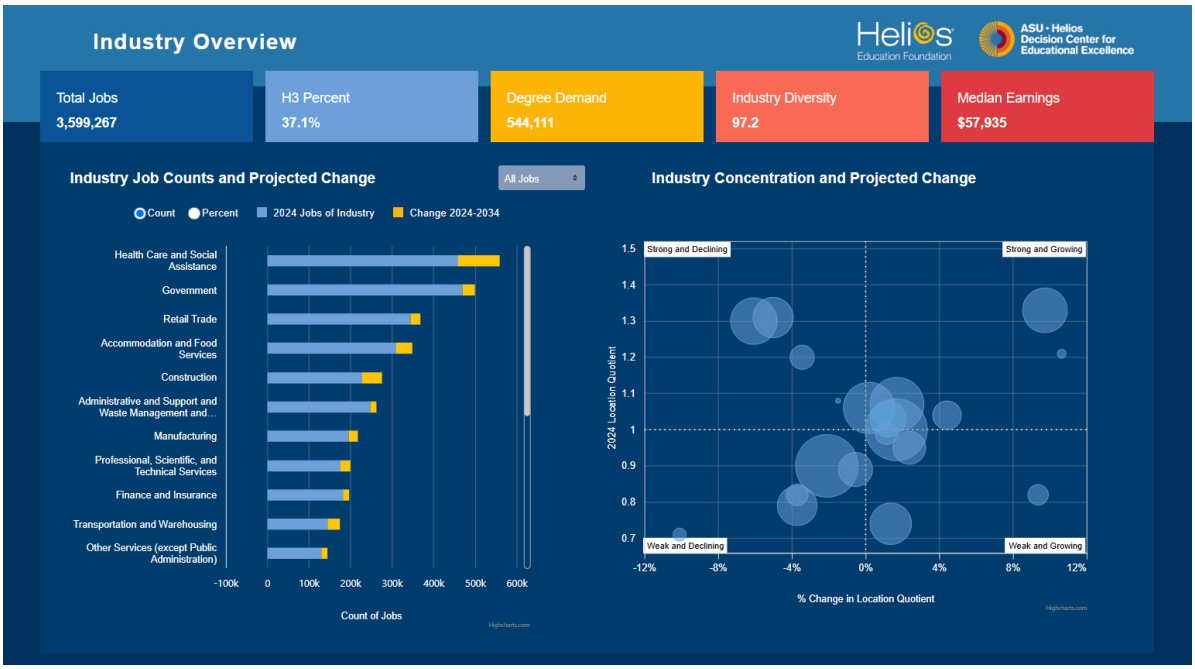
Guiding Questions

- How does our area compare to similar areas and the US?
- What are the differences in education and income?
- Is the population younger? Older? What are the workforce implications?
- What are the implications of the county characteristics for workforce development?

Notes

Screen 2: Industry Overview

Screen 2 provided information on the major industry categories for the selected area - number of H3 jobs, industry growth, degree needed, and how the local economy compares to the US as a whole.



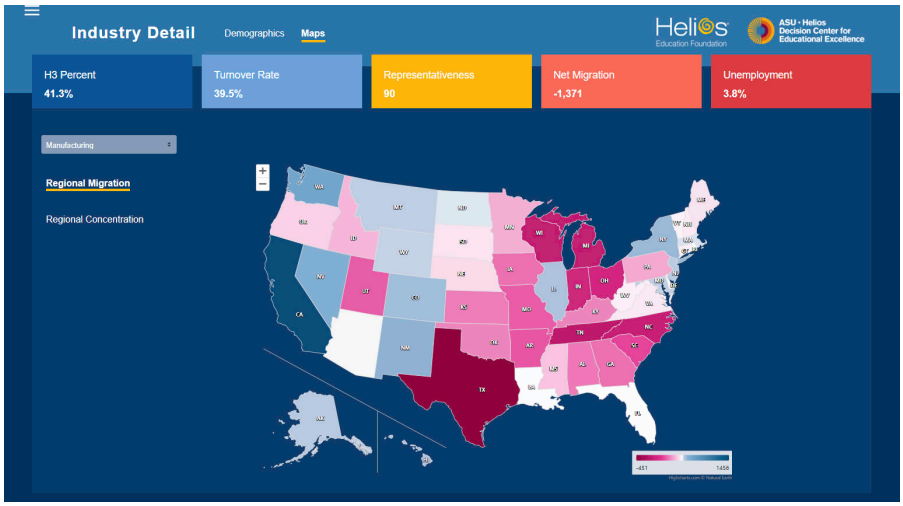
Guiding Questions

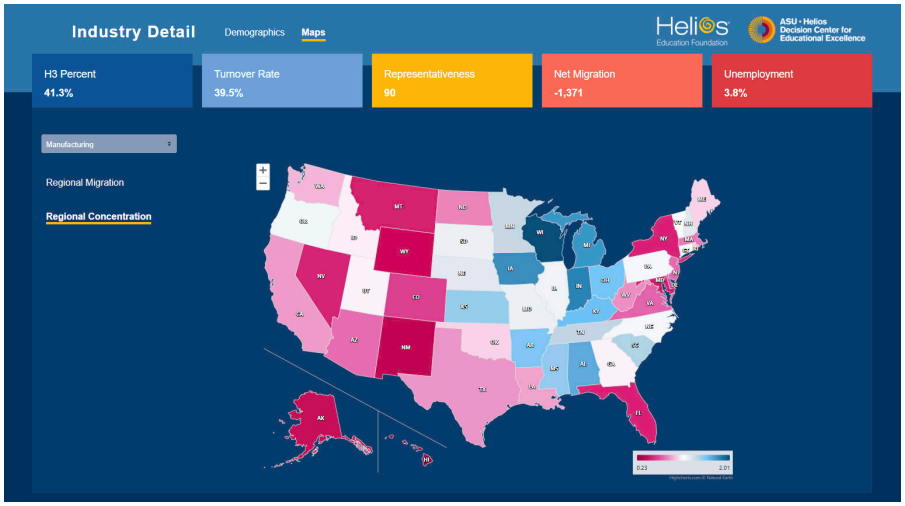
- What are the growing industries overall? For H3 jobs?
- How many degrees well be needed to satisfy the job demand?
- Compared to the US economy, what industry are stronger? What industries are a smaller part of the economy (weak areas on the graph)?

Notes

Screen 3: An Industry in Detail

Screen 3 goes into detail about the selected industry. What are the characteristics of the workforce? How many jobs are high wage, high demand, and high skill? Is the workforce representative of the county? Are we importing workers, or are we developing our local workforce for this industry?





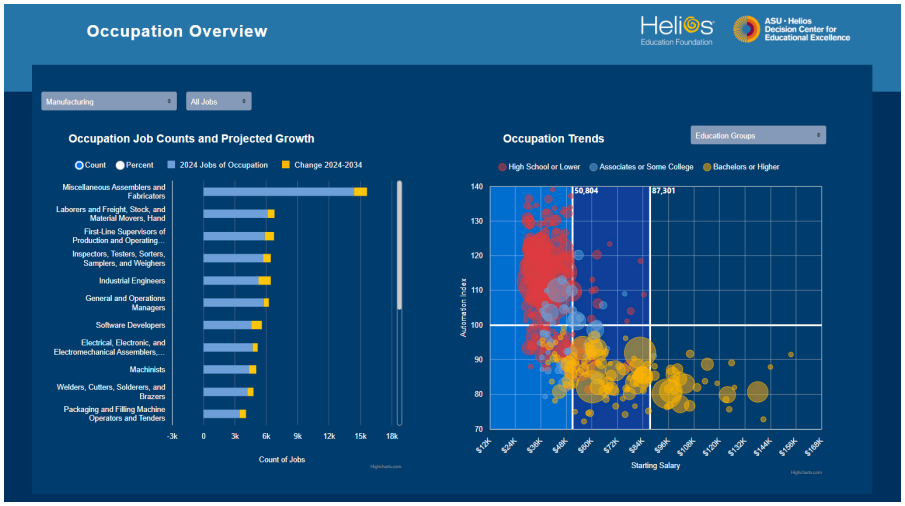
Guiding Questions

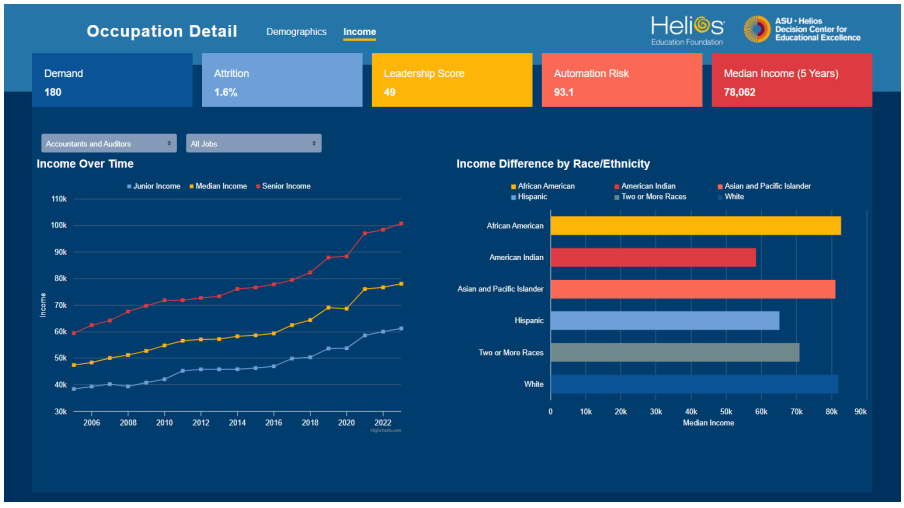
- What are the workforce characteristics of the industry I chose?
- How many jobs are high wage, high demand, and high skill?
- What are the industries with high emigration? What about immigration?

Notes

Screens 4-5: Occupation Overview and Detail

The next screens allow you to explore jobs within industries. Screen 4 shows jobs overall in an industry, and screen 5 shows details for a specific occupation.





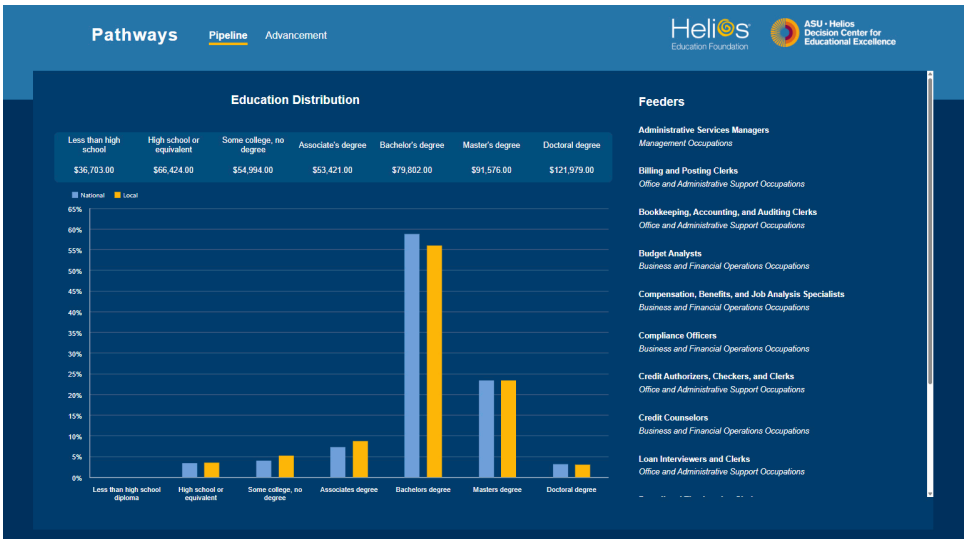
Guiding Questions

- Which jobs are projected to grow the most overall? In US jobs?
- What jobs are most at risk of automation? Least?
- What jobs are not paying a living wage? What is the education requirements and demographic of most jobs?
- For the industry and job you selected, what are the characteristic of the current workforce?
- How have wages changed over time for the selected job? Are workers demographically like the leadership (managers, supervisors) in that industry?
- Is the selected job projected to have increased demand in the future?

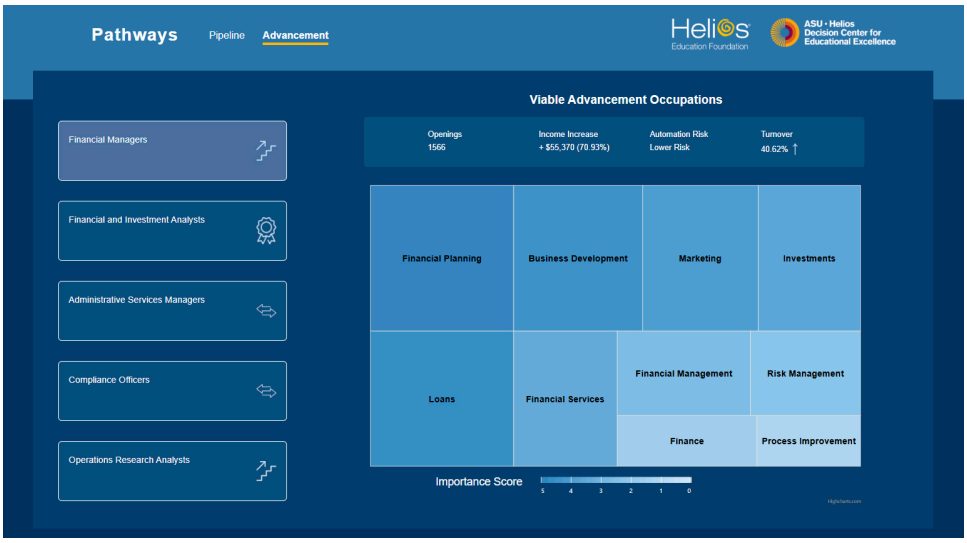
Notes

Screen 6: Pathways

Screen 6 shows the pathways into jobs and from one jobs to a better job, also shows the additional skills needed to get a better job.



Feeders jobs are career pathways that possess the skills for both next-step and feeder jobs so that workers can seek out training to close that gap.



Job paths are categorized as:

Similar is a job that pays a comparable salary and is within the same occupation.

Lateral transition is a job that pays a comparable salary but requires a transition to a new occupation.

Lateral advancement is a job that pays more but requires a transition to a new occupational group.

Advancement is a pathway that pays more and is within the same occupation group as the picked occupation.

Occupations are also ranked using relevant scores, calculated based on how closely aligned the skills are between the focus and the listed comparison occupations.

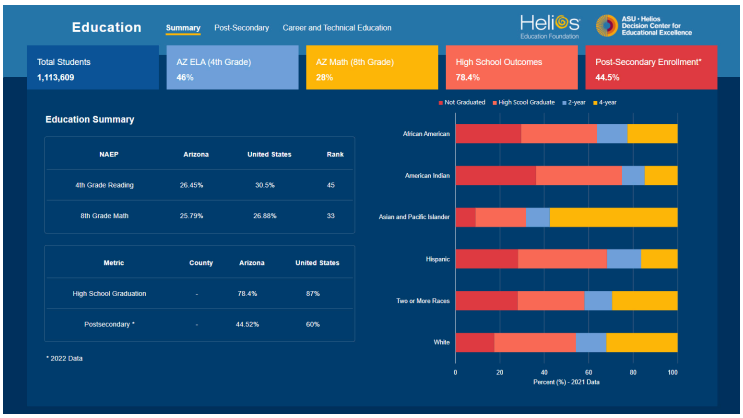
Guiding Questions

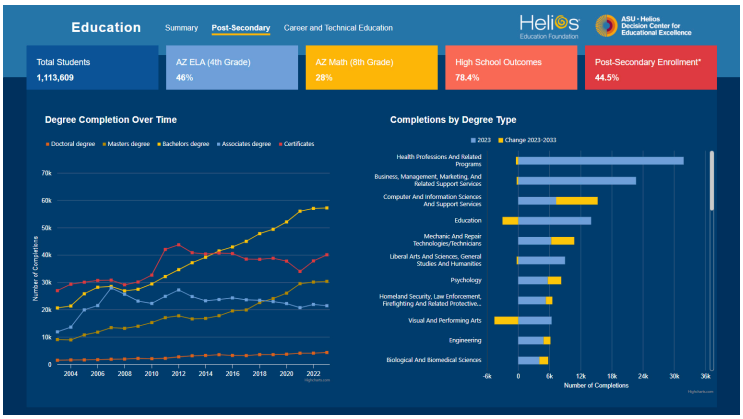
- What are the education levels typical for current workers?
- What prior jobs did workers have before the selected job?
- What are the pathways to better paying and more stable jobs for these workers?
- What skills will these workers need to add to get a better job?
- How well workers develop those skills needed for a better job?

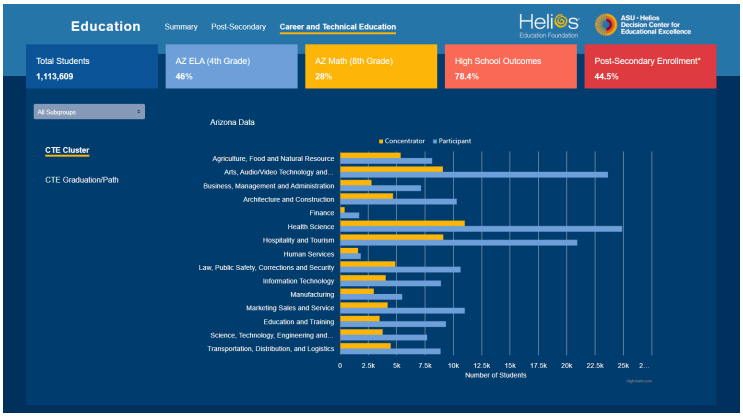
Notes

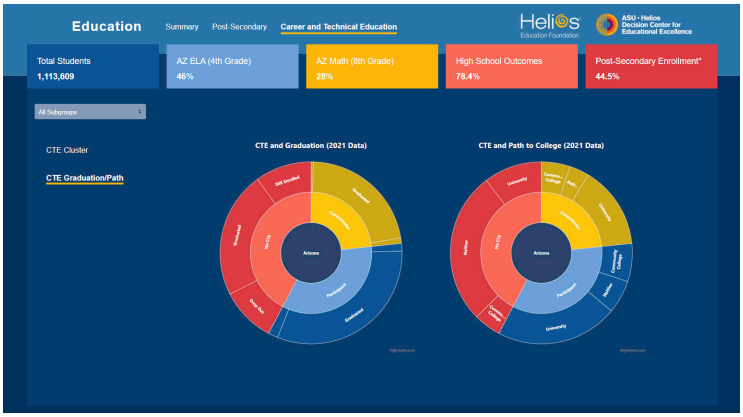
Screen 7: Educational Outcomes

Are people going prepared for the opportunity of the economy and workforce demand? Are they developing needed language and other skills? Are they obtaining the education and degrees or certificates?









Guiding Questions

- Are high school graduates academically prepared for the demand of jobs of the future?
- Is the younger generation obtaining more post-secondary degrees than current adults (screen 1) in each ethnic group?
- Is Arizona producing enough college degree holders for future jobs, or will we have to impact them?
- How many students are being exposed to careers through CTE?

Notes

14 - Data Definitions

Screen 1

Regional Score: Counties across the U.S. were grouped using k-means clustering based on demographic distribution (race/ethnicity, age, and gender), population size, and density.

Economy Score: Calculated using median household income, unemployment rate, and H3 growth rate.

Education Score: Based on high school graduation rate, college-going rate, and 4th grade reading and 8th grade math assessments.

Industry Map: Highlights the most concentrated industries in each county relative to national trends.

Demographics: Represents current-year data on race/ethnicity, age, and gender within the county.

Education And Income: Reflects the median sample-weighted income for each group, including all adults (ages 21 and older) employed full-time.

Screen 2

Total Jobs: The number of jobs reported in the current year.

H3 Percent: The percentage of H3 occupations — those classified as high-wage, high-skill, and high-demand. An occupation qualifies as H3 in each county if it ranks above the 50th percentile for wage and demand and falls within O*NET Zone 3 or higher for skill requirements.

Degree Demand: The projected number of associate degrees or higher (AA+) needed over the next ten years to meet economic demand. This includes new and replacement jobs in occupations where post secondary education is the typical entry requirement.

Industrial Diversity: A measure of how closely an area's economy mirrors the national economy, scored on a 100-point scale. A higher score indicates greater resilience to economic shocks.

Median Earnings: The median earnings for all residents within the region.

Industry Jobs & Projected Growth: Projected increase or decrease in overall jobs over the next ten years based on historical trajectory.

Industry Concentration & Projected Change: This visualization provides context for industry growth shown in the "Industry Job Counts and Projected Growth" bar graph by comparing regional trends to national patterns. The Y-axis represents the relative industry concentration (Location Quotient), while the X-axis shows the projected change in concentration over the next decade.

15 - Definitions

Screen 3

H3 Percent: High-wage, high-skill, and high-demand (H3) occupations with the industry.

Turnover Rate: Voluntary job separations. An industry with a significantly higher or lower turnover rate than the
regional average indicates an industry-specific driver worth exploring.

Representativeness: A 100-scale index that represents how similar an industry's workforce demographic makeup is to the working-age adult residents of the county.

Net Migration: The difference between the number of immigrants and emigrants in Arizona industry.

Unemployment: Percentage of the labor force in Arizona that was unemployed in 2023.

Screen 4

Occupation: Detailed occupation from the Standard Occupational Classification (SOC).

Specialized Occupations: Top relevant occupations by industry.

Automation Index: This highlights where occupations are concentrated in industries experiencing disruption and where workers' skills make nearby job options vulnerable to automation. Occupations with an automation index above 100 face a higher-than-average risk of automation, while those below 100 face a lower-than- average risk.

Starting Salary: The first quartile (25th percentile) of salary distribution for a given occupation, representing the lower end of earnings within the field.

Education Groups: Classifying educational requirements for entry into occupations.

Gender: Occupations are categorized as predominantly male if more than 50% of the workforce is male, otherwise is female.

Screen 5

Demand: Number of job openings.

Attrition: Voluntary and involuntary job separations. An industry that has a significantly higher or lower turnover rate than the regional average is indicative of an industry-specific driver worth exploring.

Leadership Score: A comparison of the demographics of a selected occupation with those of leadership-level positions within the given industry.

16 - Data Definitions

Screen 7

Total Students: The number of students enrolled at K-12 Public schools and any post-secondary institution in 2024.

AZ-ELA: Percent of 4th grade students attaining proficient or higher level in ELA Arizona Assessment in 2024.

AZ-MATH: Percentage of 8th-grade students attaining a proficient or higher level in Math Arizona Assessment in 2024.

High School Outcomes: Percentage of Cohort 2024 students who graduated in 4 Years.

Post-Secondary Enrollment: Percentage of Cohort 2021 student who graduated in 4 years and enrolled in a postsecondary program.

Summary Screen
Education 2024 NAEP scores

Education Summary table: HS graduation and Postsecondary Enrollment

Post-secondary Screen
Degree Completion: : 2003 to 2023 Arizona completions by award type and "ten-year projections" (2033).

Degree Completion by degree type: 2023 Arizona completions by program through 2033.

Education Ethnicity Table: Cohort 2021 HS 4Y graduation and Postsecondary Enrollment by race

Career and Technical Education Screen
In addition, the region choice provides ADE subgroups:

CTE Programs: 2024 Cohort students enrolled in a CTE program and classified as Participants or Concentrators.

CTE and Graduation: Students in the cohort 2021 are classified by enrollment status and CTE participation Data source: CTE and graduation data and public 4Y graduation data.

CTE and Readiness: Students in the cohort 2021 are classified by enrollment status (Graduated, Still enrolled and Dropout) and by readiness level (University readiness -fulfilled 16 ABOR course enrollment requirements, College readiness – fulfill 13 of the ABOR requirements, Not ready- less than 12 of the ABOR credits) .

17 - Data Sources

1. Lightcast™. June 2025 Source: Lightcast™ https://analyst.lightcast.io/login/login.php 2025. Products: Source: Lightcast™ Analyst 2025 & Lightcast™ API 2025 -Core LMI and the Career Pathways API

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6. Labor force participation rates: https://www.dol.gov/agencies/wb/data/county-state-labor-force-participation

7. Arizona Department of Education. Cohort 2021. Accountability https://www.azed.gov/accountability-research and Career Technical Education https://www.azed.gov/cte Data 2025

8. Amy K.Glasmeier, “Living Wage Calculator”, Massachusetts Institute of Technology, 2025. Accessed on February 10, 2025, https://livingwage.mit.edu/states/04/locations

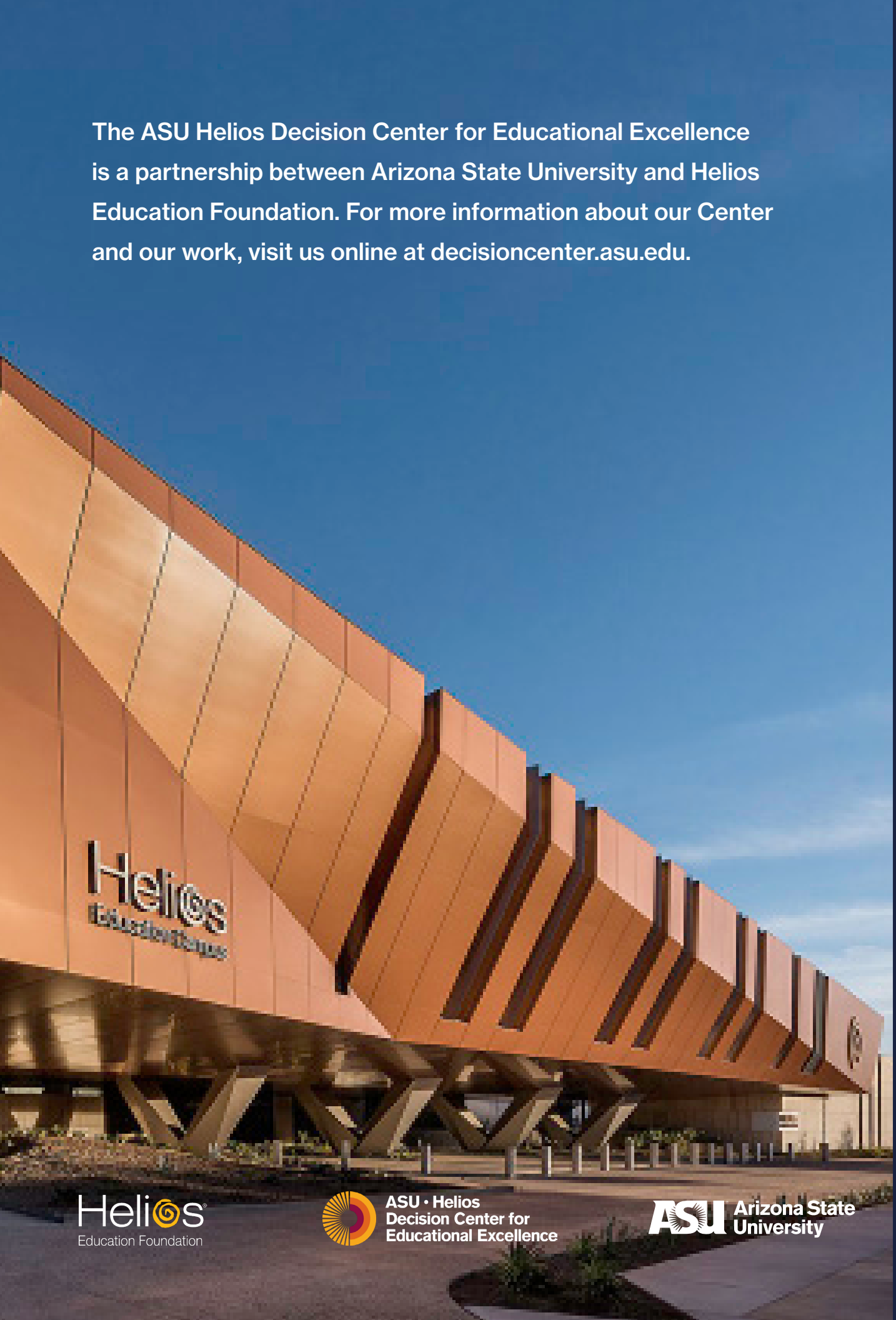
9. U.S. Bureau of Economic Analysis. Personal Income by County, Metro and Other areas. 2024-2024. Accessed on August 2025 https://www.bea.gov/data/income-saving/personal-income-county-metro-and-other-areas

10. IRS. Migration data 2021-2022. Accessed on May 2025 https://www.irs.gov/statistics/soi-tax-stats-migration-data

About the Cover Photo:

Annie Marie Foley, Spring 2025 graduate of Arizona State University. Bachelor of Fine Arts in Film and Media Production and Filmmaking Practices from the Sidney Poitier New American Film School.

The ASU Helios Decision Center for Educational Excellence is a partnership between Arizona State University and Helios Education Foundation. For more information about our Center and our work, visit us online at decisioncenter.asu.edu.



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