OPPORTUNITY DATA · METHODOLOGY NOTE

AI Exposure of Academic Programs by State

Sources, construction, and interpretive notes for opportunitydata.org/ai-exposure-states.html

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What the index measures

The state AI exposure score is a single number, between 0 and 1, summarizing the composition of a state's educational output. It is the completion-weighted average AI exposure of the academic programs a state's graduates complete. A higher score means a state graduates proportionally more students in fields whose work is more reachable by software. It is not a measure of economic strength, educational quality, or the prospects of any individual graduate; it describes a portfolio, and provides a baseline for asking how advances in AI may affect the long-term value of different educational mixes.

Program-level exposure (the AI Exposure Index)

Each academic program receives a composite exposure score from the Opportunity Data AI Exposure Index, which scores 1,786 academic programs (six-digit CIP 2020) and the 772 occupations they feed. The composite combines three dimensions, each built from O*NET work characteristics and weighted by BLS national employment: digital intensity (how much of the work is reachable by software), the human-interaction shield (real-time care, persuasion, and coordination that resist automation), and the physical anchor (work tied to objects, places, and bodies). Program scores range from about 0.23 to 0.83. See the index methodology for construction.

Completion weights (IPEDS 2023)

Weights are program completions from the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS Completions), 2023 award year (file C2023_A), retrieved June 2026. Each completion is counted once: first majors only (MAJORNUM = 1), institution grand-total rows (CIP 99) removed, and only granular award-level rows retained so the published aggregate rollups (award-level codes 1 and 12 through 15) are not double counted. The result is roughly 5.3 million credentials awarded across all levels.

State assignment (IPEDS directory)

Each institution's UNITID is mapped to its state through the IPEDS institutional directory (file HD2023, field STABBR), giving full coverage of all 50 states and the District of Columbia. Because completions are reported by every Title IV institution, no state is missing.

The state index

For each state, the score is the completion-weighted mean of program exposure:

$$\text{score} = \Sigma\ (\ \text{completions}_p \times \text{exposure}_p\ ) \div \Sigma\ \text{completions}_p$$

summed over every program p completed at every institution in the state. A field with 5,000 completers pulls the average five times harder than one with 1,000.

Joining completions to exposure

Completions are joined to exposure on the six-digit CIP code. Where a completion's exact six-digit program is not scored, it inherits the average exposure of its four-digit CIP family. About one completion in eight is in a program the index does not score at all, because no occupational crosswalk exists for it.

Treatment of unscored programs

Rather than drop unscored completions, the index keeps them in the denominator at the national average exposure (0.542, the completion-weighted national mean), so they neither raise nor lower a state's score. This keeps every completion in the count while leaving unscored fields neutral.

Credential mix

The credential shares shown for each state are the same completions, grouped into five tiers by IPEDS award level. Shares are rounded by the largest-remainder method so each state sums to exactly 100 percent.

TIER	AWLEVEL	INCLUDES
Certificate under 1 year	20, 21	Less than 12 weeks; 12 weeks to under 1 year
Certificate 1 to 2 years	2, 4	At least 1 but under 2 years; at least 2 but under 4 years
Associate	3	Associate's degree
Bachelor's	5	Bachelor's degree
Graduate	6, 7, 8, 17, 18, 19	Postbac cert., master's, post-master's cert., doctorates

Aggregate award-level rollup rows (codes 1 and 12 through 15) are excluded so credentials are counted once.

Reading the map

State scores cluster in a narrow band, from 0.500 to 0.588 across the 51 jurisdictions, around a national mean near 0.540. The standard deviation across states (about 0.016) is roughly one-sixth of the standard deviation across individual programs (about 0.096), because every state enrolls students across the full range of fields and the within-state variation averages out. The compression is a genuine result, not an artifact. To keep the gradient visible despite the narrow range, the map's single-hue color scale is stretched to the observed minimum and maximum rather than to the full 0-to-1 range, and the ranked bars are scaled within that same window; both should be read as relative position, not as large absolute gaps.

Limitations

Three limits are worth stating plainly. First, exposure is a property of the field of study, not of the job a graduate actually takes; the index describes educational supply, not employment outcomes or local labor markets. Second, the score reflects program mix only, so it should not be read as a ranking of state economies or institutions. Third, exposure is forward-looking and uncertain: it marks where the question of how a credential holds its value is most live, not a prediction that any specific job will be automated.

Sources

Opportunity Data AI Exposure Index (O*NET 28.3 work characteristics, BLS OEWS employment weights). NCES IPEDS Completions, 2023 award year (C2023_A), and Institutional Characteristics directory (HD2023). U.S. national CIP 2020 taxonomy. All inputs are public; the page and this note are reproducible from them.

Citation

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