



2023 MULTI-STATE POSTSECONDARY REPORT

Technical Notes

The Multi-State Postsecondary Report (MSPSR) is produced by the Kentucky Center for Statistics (KYSTATS) utilizing data from the Administrative Data Research Facility (ADRF) in partnership with the Coleridge Initiative, the Center for Human Resources Research (CHRR) at the Ohio State University in collaboration with Ohio's state workforce and education agencies, the Indiana Commission for Higher Education, and the Indiana Department of Workforce Development. Tennessee approved access to state employment and wage records critical to the creation of this report.

The ADRF contains data from the Kentucky Longitudinal Data System (KLDS), the Ohio Longitudinal Data Archive (OLDA)¹, the Indiana Commission for Higher Education (CHE), the Indiana Department of Workforce Development (DWD), and the Tennessee Department of Labor and Workforce Development (TDLWD). KLDS data leveraged for this report include data from the Kentucky Council on Postsecondary Education (CPE) and from the Kentucky Unemployment Insurance (UI) system. OLDA data leveraged for this report include data from the Ohio Higher Education Information system (HEI) and the Ohio Unemployment Insurance system.

Occasionally, data from one source will not conform to data from another source because of differences in cohorts, how variables are defined, the treatment of missing data, and other factors. This means that data published in this report may not be comparable to data published in other reports. For specific details about metric formulas, please refer to Appendix A. Some values are redacted to preserve individual privacy and conform to state laws. Redaction rules can be found in Appendix B.

This report looks at credential completions across the 2007 through 2017 academic years (AY) followed to post completion employment in Indiana, Kentucky, Ohio, and Tennessee. The report is divided into three main dashboards: (1) *Employment by Institution*, (2) *Employment by Demographic*, and (3) *Employment by Major*.

Questions these dashboards are answering:

1. What percentage of completers are employed after completion? What percentage are leaving the state for employment?
2. How much are completers earning in-state and out-of-state?
3. How do employment outcomes differ by institution, major, credential, student origin, and demographic?
4. How do employment outcomes differ across years post completion?

¹ The Ohio Longitudinal Data Archive is a project of the Ohio Education Research Center (oerc.osu.edu) and provides researchers with centralized access to administrative data. The OLDA is managed by CHRR at The Ohio State University (chrr.osu.edu) in collaboration with Ohio's state workforce and education agencies (ohioanalytics.gov), with those agencies providing oversight and funding. [Here is more sponsor information for OLDA.](#)

The MSPSR allows the display of aggregated data by the following groups:

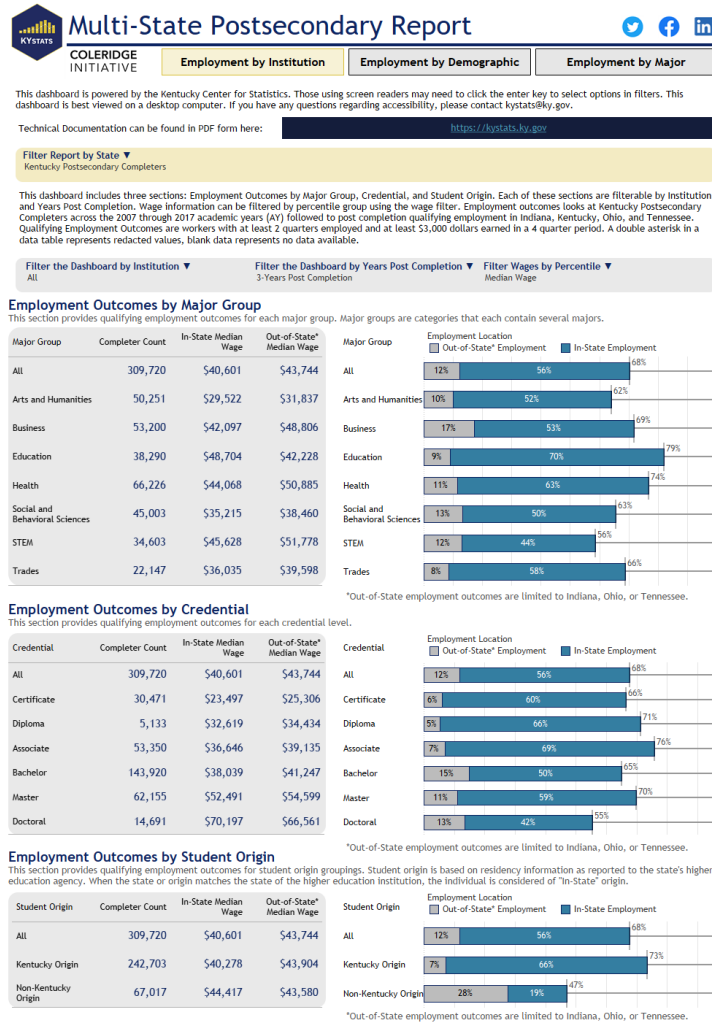
- State (of Postsecondary Completion)
 - Indiana: Encompasses all 2-Year Public and 4-Year Public institutions.
 - Kentucky: Encompasses all 4-Year Private (Association of Independent Kentucky Colleges and Universities [AIKCU]), 2-Year Public (KCTCS), 4-Year Public Comprehensive, and 4-Year Public Research institutions. Proprietary institutions are not included in this report due to a lack of data.
 - Ohio: Encompasses all 2-Year Public and 4-Year Public institutions.
- Postsecondary Institution Type (see Appendix D)
- Specific Postsecondary Institution
 - Indiana: Institution Name split by campus (aligns to CHE reports²)
 - Kentucky and Ohio: Institution Name, regardless of campus
- Credential Level (Highest Credential Earned within timeframe, see Appendix E)
- Major Group
 - Classification is based on 2-digit 2010 CIP code of the primary major of highest credential earned. For a full list of 2-digit 2010 CIP codes within these groups, see Appendix F.
 - Final categories: Arts and Humanities, Business, Education, Health, Social and Behavioral Sciences, STEM, Trades, and All Groups
- Specific Major
 - Classification is based on the 6-digit 2010 CIP code of the primary major of highest credential earned. When a given individual earned multiple highest credentials during the same year and term, an arbitrary credential was assigned as the credential of record. As such, specific major classification by person may differ between iterations of this report.
- Student Origin (in-state versus out-of-state)
 - A student can be classified as of “In-State” origin or “Out-of-State” origin, with students classified as “In-State” only when the state of origin matches the state of the postsecondary institution.
 - The dashboard labels student origin more specifically based on the state such that Ohio postsecondary completers would be classified as either “Ohio Origin” or “Non-Ohio Origin”.
- Demographic Groupings (for more information, see metrics in Appendix A):
 - Age Group (not an eligible filter for Indiana due to data limitations within the ADRF)
 - Non-Traditional (ages 25+) versus Traditional (ages 16 to 24)
 - Ethnicity (not a separate filter for Ohio or Indiana)
 - Gender
 - Race Group (see Appendix G):
 - Indiana Groupings: “White”, “Black”, “Hispanic”, “Other Race”
 - Kentucky Groupings: “White”, “Black”, “Other Race”
 - Ohio Groupings: “White”, “Black”, “Hispanic”, “Foreign National”, “Other Race”
 - Underrepresented Minority (URM): Classifications differ based on state definitions of URM. For more information, see Appendix G.
- Employment Type (only a filter in “Employment by Demographics”)

² See, Indiana College Completion Reports (<https://www.in.gov/che/college-completion-reports/>). Specific data notes for the 2022 College Completion Reports can be found at: https://www.in.gov/che/files/2022_College_Completion_Report_Data_Notes_10_03_2022.pdf

- Any Employment: Workers with at least 1 quarter of positive wages in a 4-quarter period.
- Qualifying Employment: Workers with at least 2 quarters employed and at least \$3,000 earned in a 4-quarter period.

Dashboard 1: Employment by Institution

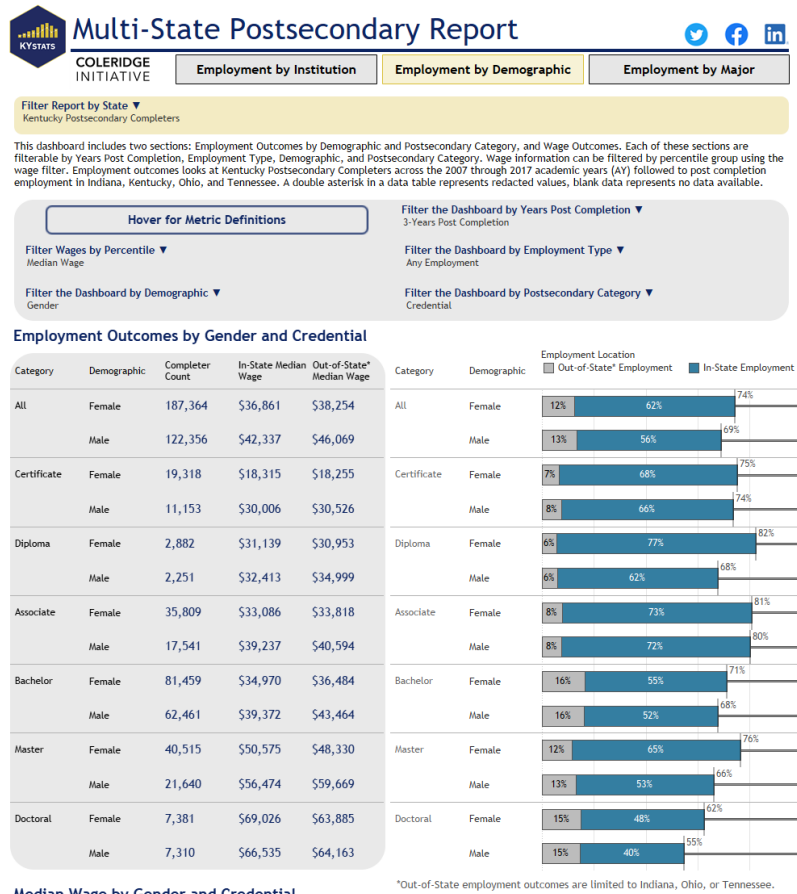
The 'Employment by Institution' dashboard is divided into three sections: Employment Outcomes by Major Group, Employment Outcomes by Credential, and Employment Outcomes by Student Origin. Each dashboard includes the 'State' filter at the top and allows users to select which state the cohort of students completed. Utilize the three filters on this dashboard to modify the data within each section. Users can filter by Postsecondary Institution, Years Post Completion, and Wage Percentile.



Each section provides completion and employment outcomes. From left to right the dashboard includes Completer Counts, In-State Wages, Out-of-State Wages, and Employment Percentage by Employment Location. Wages and Employment include the completers with UI-covered employment in Indiana, Kentucky, Ohio, and Tennessee. For Out-of-State Employment percentage, hovering over the bar chart will display the top state of Out-of-State employment in the tooltip.

Dashboard 2: Employment by Demographic

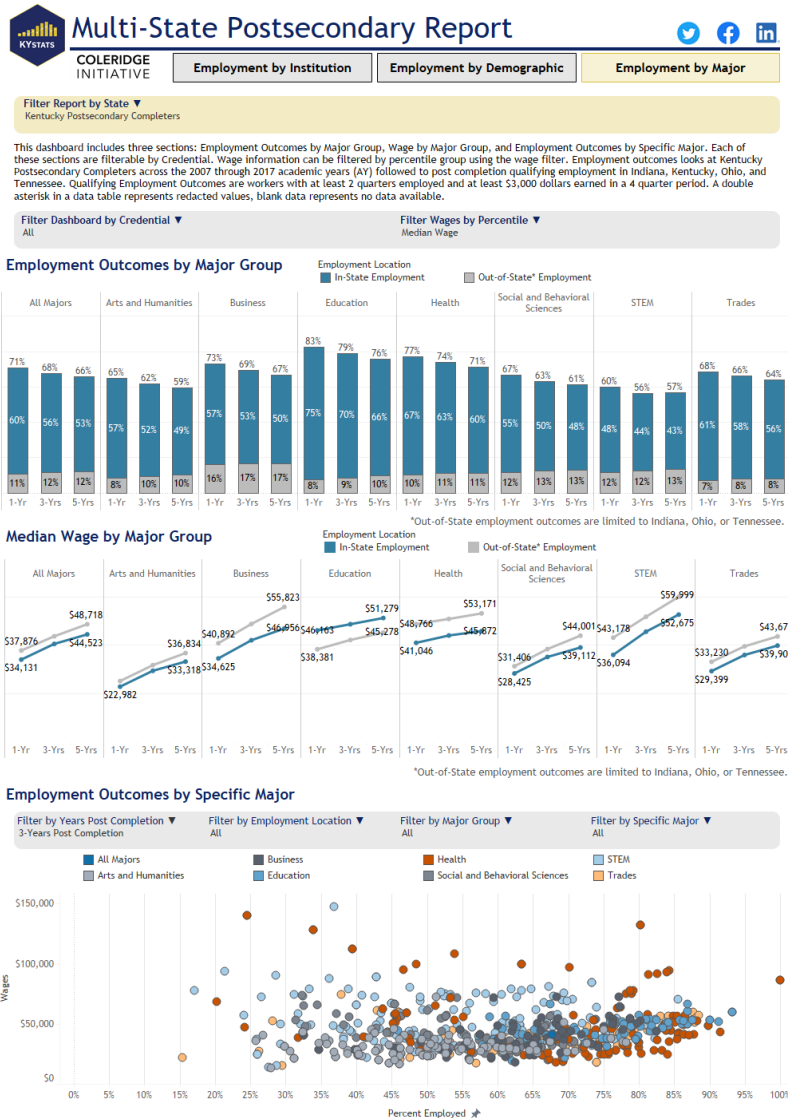
The 'Employment by Demographic' dashboard is divided into two sections: Employment Outcomes by 'Demographic' and 'Postsecondary Category', and Wage Percentile 'Demographic' and 'Postsecondary Category'. Each dashboard includes the 'State' filter at the top and allows users to select which state the cohort of students completed. Utilize the five filters on this dashboard to modify the data within each section. Users can filter by Years Post Completion, Wage Percentile, Employment Type, Demographic, and Postsecondary Category.



Employment Outcomes by 'Demographic' and 'Postsecondary Category' provides completer counts, In-State Wages, Out-of-State Wages, and Employment Percentage by Employment Location. Wages and Employment include the completers with UI-covered employment in Indiana, Kentucky, Ohio, and Tennessee. Wage Percentile by 'Demographic' and 'Postsecondary Category' provides a chart comparison of In-State and Out-of-State Wages.

Dashboard 3: Employment by Major

The 'Employment by Major' dashboard is divided into three sections: Employment Outcomes by Major Group, Wage Percentile by Major Group, and Employment Outcomes by Specific Major. Each dashboard includes the 'State' filter at the top and allows users to select which state the cohort of students completed. Utilize the two filters on this dashboard to modify the data within each section. Users can filter by Credential, and Wage Percentile.



Employment Outcomes by Major Group provides Employment Percentages by Employment Location across years post completion. Wage Percentile by Major Group provides a line chart of wages by Employment Location across years post completion. Employment Outcomes by Specific Major provides a dot plot of employment percentage by wages. This section includes the additional filters: Years Post Completion, Employment Location, Major Group, and Specific Major. Utilize these filters to change the data for this section.

APPENDIX A: METRIC FORMULAS

Data Sources:

Higher Education Records: State systems for postsecondary institutions vary in coverage and data collected; however, these systems encompass critical and commonly used information for institutions such as enrollments, degrees, student demographic information, and details of course enrollments. Despite variance in type of postsecondary institutions covered, the information considered important for programmatic and policy decisions is broadly similar.

- **Indiana Commission for Higher Education (CHE):** Provides data from the CHE data submission system (CHEDSS). This system contains student-level information for Indiana’s public colleges and universities. The subset of data used for this report includes in-state public postsecondary enrollment and completion information.
- **Kentucky Council on Postsecondary Education (CPE):** Provides data from the Kentucky Postsecondary Education Data System (KPEDS). This system contains comprehensive information on postsecondary enrollments, coursework, grades, and degrees earned for all in-state postsecondary students that attend one of the following institution types: 4-Year Private (Independent), 2-Year Public (KCTCS), 4-Year Public Comprehensive, and 4-Year Public Research. In-state proprietary and out-of-state institutions are not included in this data system.
- **Ohio Department of Higher Education (ODHE):** Provides data from the Ohio Higher Education Information (HEI) system. This system is a comprehensive relational database that includes student enrollment, course, financial aid, personnel, facilities, and finance data submitted by Ohio’s public colleges and universities. Private and proprietary institutions are not included within this database. These data are used for a variety of purposes that include reporting on higher education outcomes, funding formula and financial aid program support, policy analysis, and strategic planning.

Unemployment Insurance (UI) Wage Records: State UI systems provide information on employees, firms, and wages for all “UI-covered employment”. The overarching legislation detailing the requirements of a state UI system is codified in CFR Title 20 Chapter V, Part 602, Subpart B, Section 602.10³. Within these legal requirements, each state administers and mandates the program and requisite data elements. Wage record coverage will vary slightly by state, with UI-covered employment typically encompassing private-sector employment, state government employment, and local government employment⁴.

- **Kentucky Unemployment Insurance (KY-UI):** This system contains information on all wages and employment covered by the Kentucky Unemployment Insurance System. This is estimated to cover 90% of employment in Kentucky.
- **Ohio Department of Job and Family Services (ODJFS):** Provides data from the Ohio Unemployment Insurance (OH-UI) system. This system contains information on all wages and employment covered by the OH-UI System. This system excludes out-of-state employment, the self-employed, and federal employees.
- **Indiana Department of Workforce Development (DWD):** Provides data from the Indiana Unemployment Insurance (IN-UI) system. This system contains information on all wages and employment covered by the IN-UI system. Wage records are employer quarterly UC-5 filings. This is estimated to cover 97-98% of all Indiana employees.
- **Tennessee Department of Labor and Workforce Development (TDLWD):** Provides

³ Pena, C. (2018). *Making wage data work: Creating a federal resource for evidence and transparency* (ED603089). ERIC. <https://eric.ed.gov/?id=ED603089>

⁴ https://lehd.ces.census.gov/applications/help/onthemap.html#!data_sources

data from the Tennessee Unemployment Insurance (TN-UI) system. This system contains information on all wages and employment covered by the TN-UI System.

Completions & Employment Outcomes - Methodological Overview:

The process of aligning data for common comparison required identifying critical variables for cohort creation and visual display. Once the overall variables were identified, data from each state needed to be mapped to common data definitions. Due to familiarity with the Kentucky Postsecondary Feedback Report (KY-PSFR), the primary data analyst for this project started with critical variables identified within Kentucky data and then identified the similar elements for Ohio data (see Appendix H for overall critical element mappings). CHRR staff were consulted to ensure that proposed mappings met a minimal standard for rigor for this iteration and to ensure that the proposed categories had utility for Ohio stakeholders.

Postsecondary Completion Cohort Definition: The KY-PSFR requires one record per person to indicate the highest credential earned by any given individual during the specified timeframe, the 2007 through 2017 Academic Years (AYs). Within the KLDS, a field exists to classify the rank of any given degree, easing the process of determining highest degree per person. Neither Ohio HEI nor Indiana CHE data had a degree ranking system in place by default. Values were mapped such that each individual with a credential conferred within the timeframe was assigned one record for highest credential. This record was selected by finding in order, the lowest degree rank (corresponding to the highest ranking degree), most recent academic year in which a degree of this rank was conferred, most recent calendar year of conference, most recent term of conference, and then highest level of primacy⁵ when handling Ohio data. Highest most recent completion for Indiana CHE data was based on assigned degree rank and most recent degree conferred date: ties were determined randomly and may change between iterations. See Appendix E for more detailed degree level/rank mappings by state and Appendix K for a subset of Academic Year mappings by state.

With the addition of demographic grouping data, the postsecondary completion cohort had additional inclusionary restrictions. Completers with unknown values on critical demographic variables were excluded from the overall cohort to prevent rediscovery of sensitive information. Specifically, completers must have both a known birth year for calculating age at highest credential completion as well as an identified gender to be included. Unknown race values are grouped with the 'Other Race' group for display purposes, rendering a missing value a non-issue. Due to a large proportion of unknown birthyear information in the earlier years of Indiana completion data, age group was not included as a demographic grouping for Indiana: missing birthyear did not cause exclusion from the analytic cohort due to removal of this filter.

⁵ Ohio data had a specific corner case that needed consideration. Kentucky data has both a primary academic major and secondary academic major for handling double majors (especially common with Bachelor level degrees). In this instance, the primary academic major CIP code is used to classify the Major Group (larger subject area) for the highest degree. Ohio had only one column for degree CIP code, leading to two rows of the exact same degree rank, academic year, calendar year and term when a double major was achieved. In this instance, the Ohio data appeared to have one record with both the enrollment and degree information populated while the other record had only the degree information populated. A series of primacy rules and values were developed as follows: 1) if the enroll subject and the degree subject 6 digit CIP code matches for a row, assign a primacy of 1, 2) else if the 2-digit enroll subject and 2-digit degree subject match, assign a primacy of 2, 3) else if the enroll and degree subjects are both populated but differ, assign a primacy of 3, 4) else if not yet classified, assign a primacy of 4. Primacy was only used if a tie still existed in record of assignment after all other factors were accounted for. Even with a primacy label, a small number of ties with different 2-digit classifications existed and should be discussed prior to future iterations. The tie was determined arbitrarily for this iteration, as no strong evidence existed for further prioritization.

Years Post Completion Definition: Years Post Completion depends on the AY affiliated with the highest completion. Postsecondary completers form cohorts of completers based on academic year of highest completion. Not all included cohorts are eligible for inclusion across all Federal Fiscal Years (FFY) Post Completion. For example, the 2007 cohort of completers can be followed out 1-year (2008 FFY), 3-years (2010 FFY), and 5-years (2012 FFY) for employment and wage outcomes. In contrast, the 2017 cohort of completers can only be followed out 1-year (2018 FFY) for employment and wage outcomes due to limited wage data within the ADRF across the included states. (Appendix I provides additional details on which completer cohorts are eligible for outcomes by year post completion.)

Employment Definition: Much like determining one highest degree record per completer, location of employment was pared down to one state per person per FFY. Wages were calculated using information from all included state UI wage record systems and assigned a primary state of employment based on the state with the highest UI-covered wages earned for a given FFY.

- **In-State Employment:** Employment was classified as in-state when the state of postsecondary credential completion matched the primary state of employment for a given FFY.
- **Out-of-State Employment:** Employment was classified as out-of-state when the state of postsecondary credential completion differed from the primary state of employment for a given FFY.

Wages Definition: Wages will always include all UI-covered wages across the states included in this report. All wages will be attributed to the state determined as primary location of employment, regardless of where the wages were earned. As such, a plurality of attributed wages will be earned in the state of wage attribution even in the instance where a majority of wages is not earned in this state.

Completions & Employment Outcomes - Specific Elements:

Credential Completion: This indicates that at least one credential was completed in the timeframe. As discussed previously, each individual is assigned the highest credential earned within the timeframe.

Data Sources: 2007 through 2017 AYs inclusive (see Appendix K for Academic Year mappings and Appendix E for degree rank/classification mappings)

- Indiana: CHE; completions (6-digit CIP code is not null and is affiliated with a label)
- Kentucky⁶: CPE; KPEDS_degree table
- Ohio: ODHE; hei_long table (degcert_level is not null and degcert_level <> (15 or 17))

Student Origin: A student can be classified as of “In-State” origin or “Out-of-State” origin, with students classified as “In-State” only when the state of origin matches the state of the postsecondary institution. State of origin derives from each state’s respective higher education data systems. Data structure differs between states, with Ohio including state of origin in a distinct residency table and Kentucky retaining this information in the higher education enrollments data. As such, classification works as follows:

- **Indiana:** Location was contained within both enrollments and completions data. The first enrollment record was used to classify student origin with values between 1 and

⁶ Two institutions that have since been closed are included within the “All” institution filter, St. Catharine College and MidContinent University. These institutions have been omitted from the specific institution dropdown.

92 as well as 114 were considered within state origin. If two records existed for the first record of enrollment, any in-state origin was prioritized. First origin from completions was used if no enrollment records existed for a completer with comparable prioritization rules.

- **Kentucky:** This section followed standard protocols as implemented in the Kentucky [Postsecondary Feedback Report](#) (KY-PSFR), finding first enrollment for an individual and assigning the student as in-state origin if and only if the `kpeds_statecountryoforigin = 'Kentucky'`. Individuals with no known residency status for the first enrollment were assigned as out-of-state origin.
- **Ohio:** Ohio data had a specific residency table with two columns, a person identifier and a residency column. Examination of this table revealed two corner cases that needed handling: 1) multiple unique residency locations assigned to the same individual, and 2) no listing of residency for a person. In consultation with CHRR staff, a tentative business rule solution was implemented for this report. An individual was assigned in-state origin if origin was ever recorded as Ohio in the residency table. The rationale is that the primary purpose of looking at outcomes by student origin is based on already extant ties to the state making in-state employment more likely post completion.

Data Sources:

- Indiana: enrollments, completions, higher_ed_codes
- Kentucky: KPEDS_enrollments table
- Ohio: hei_state table

Percent Employed 1/3/5 Years Post Completion (ANY employment): An individual is considered employed in a FFY if the individual had at least one quarter of positive UI-covered earnings in any of the 4 state-UI systems during the requisite FFY post completion. In-state versus out-of-state employment is based on whether the plurality of wages was earned in the same state as credential completion for a given FFY. Any employment is only displayed on the “Employment by Demographic” dashboard.

Data Sources: IN-UI, KY-UI, OH-UI, TN-UI

Data Elements: wages

Percent Employed 1/3/5 Years Post Completion (QUALIFYING employment): An individual is considered employed in a FFY if the individual had at least two quarters of positive UI-covered earnings and earnings of at least \$3,000 across the 4 state-UI systems during the requisite FFY post completion. In-state versus out-of-state employment is based on whether the plurality of wages was earned in the same state as credential completion for a given FFY. Wage threshold is assessed after inflation adjustment is applied by quarter and wages are summed by respective FFY. (Appendix J provides inflation adjustment details.)

Data Sources: IN-UI, KY-UI, OH-UI, TN-UI

Data Elements: wages

Wages: Annualized wages are based on the FFY, which runs from October 1st through September 30th. For instance, the 2018 FFY encompasses the time period of October 1, 2017 through September 30, 2018. Wages will include all UI-covered wages regardless of the state in which the wage was earned. No individual wages are reported. Wages for groups of individuals are used to calculate fuzzy wage percentiles so long as neither hard nor suppressive redaction is needed. Wages are only included in calculations when the thresholds are met for ANY employment or QUALIFYING employment, dependent on which outcome metric is being displayed, respectively.

Data Sources: IN-UI, KY-UI, OH-UI, TN-UI

Data Elements: wages

Fuzzy Percentile (25th, 50th [Median], 75th)⁷ Wages 1/3/5 Years After Completion:

Completion year is determined through postsecondary degree information, with each individual assigned the highest acquired credential and affiliated degree year during the given timeframe. Wages are inflation-adjusted to 2019 FFY dollars prior to summing wages across quarters to create a total amount earned in UI-covered dollars for a given FFY post completion (see Appendix J for inflation adjustment calculations). Individual wages for the FFY are used to calculate fuzzy 25th, 50th, and 75th percentile wages by various grouping variables. For example, a fuzzy 50th percentile would be calculated by averaging the true 45th and 55th percentile. Only inflation adjusted wages that meet the criteria for ANY or QUALIFYING employment are included in fuzzy percentile calculation based on the respective employment metric selected.

Data Sources: IN-UI, KY-UI, OH-UI, TN-UI

Data Elements: wages

Demographic Elements-Methods and Calculations:

Demographics derive from the demographic table in the Ohio higher education data, the enrollment and completion tables in the Indiana higher education data, and the master person table in the Kentucky data. For Ohio, individuals who do not appear in the demographic table were excluded from the entire analysis. For both Ohio and Kentucky, individuals who had an unknown or implausible birth year (preventing age group classification) were removed from the analysis. Across all postsecondary data, individuals with unknown gender were excluded from analysis: unknown gender represented a small fraction of overall exclusions.

Age Group: Approximate age is calculated by subtracting birth year from the calendar year in which highest credential completion occurred. The resulting value is binned into the following groups: Non-traditional (25 +) and Traditional (16-24). Individuals with a missing birth year, an indeterminate birth year, or highest completion prior to the age of 16 were excluded from the overall cohort for all analyses. Indiana CHE data was not classified by age due to large percentages of missingness in earlier cohorts.

Data Sources: Ohio HEI demographics table, Kentucky KLDS master person table

Race Group: Race is defined as a person's self-identification with one or more racial groups. Data differed in structure and coding between Ohio and Kentucky. As a result, the grouping of identified race to race groups differs. See Appendix G for more information.

Data Sources: Indiana CHE enrollments and completions data along with the higher education codes table, Kentucky KLDS master person table, and the Ohio HEI demographics table

- **Indiana:** Race and Ethnicity are contained within the same data element for Indiana. As such, Hispanic is a grouping within race rather than contained within an ethnicity filter.
- **Kentucky:** In 2017 KYSTATS converted race to align with CEDS: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, Two or More Races, and White. CEDs race was translated to racial groups as

⁷ Medians (50th percentile) are selected rather than means to account for the traditional positive skew found in wages. Fuzzy percentiles are created by averaging two equally bounded percentiles, such that fuzzy 50th percentile wages are created by summing the 45th and 55th percentiles for a group and dividing by 2. A comparable approach is used when calculating additional fuzzy percentiles.

detailed in Appendix G.

- **Ohio:** Race and Ethnicity are contained within the same data element for Ohio. As such, Hispanic is a grouping within race rather than contained within an ethnicity filter.

Ethnicity: This variable is a separate filter only for Kentucky completers. Ethnicity indicates whether a person has identified as of Hispanic origin or not. For this reason, ethnicity is broken out in two categories, Hispanic and Not Hispanic. Within Kentucky data, Hispanic individuals may report as any race.

Data Source: Kentucky KLDS master person table

Underrepresented Minority Status (URM): URM is defined at the state level based on identified race and ethnicity. The meaning of URM is state specific. See Appendix G for more information.

Data Sources: Indiana CHE enrollments and completions data along with the higher education codes table, Kentucky KLDS master person table, Ohio HEI demographics table

- **Indiana:** A person is considered an underrepresented minority for postsecondary if the student was reported as Black or Hispanic. For individuals who have multiple distinct race/ethnicities indicated, the individual is classified as URM if any of the records indicate a race/ethnicity classified as URM. When an individual is labeled as “Multiracial” in the data with no additional detail, the individual was imputed as non-URM.
- **Kentucky:** An individual is considered URM if the individual identifies as Hispanic or as a member of one or more of the following racial groups: American Indian, Black, Hawaiian, or Other Race. Multiracial persons are also considered URM, regardless of ethnicity. A person is not an underrepresented minority (non-URM) if the person is both non-Hispanic and **one** of the following racial groups: White, Asian, or Unknown Race.
- **Ohio:** A person is considered an underrepresented minority for postsecondary if the student was reported as African American, Native American (coded as American Indian), or Hispanic. For individuals who have multiple distinct race/ethnicities indicated, the individual is classified as URM if any of the records indicate a race/ethnicity classified as URM. When an individual is labeled as “Two or More Races” in the data with no additional detail, the individual was imputed as URM.

Gender: Person has identified as Male or Female. Individuals with unknown gender were excluded across all states.

Data Sources: Indiana CHE enrollments and completions data along with the higher education codes table, Kentucky KLDS master person table, Ohio HEI demographics table

APPENDIX B: REDACTION RULES

Redaction Rules

KYSTATS and the Coleridge Initiative follow strict redaction and suppression guidelines to ensure the privacy of all individuals. The following rules were applied to the MSPSR report to redact or mask some of the data based on the small cell-size counts that could be used to identify individuals or employers. Please be aware that masking data with small cell-size counts may entail redacting groups that are much larger to prevent additional secondary redaction. In general, categories must have a base denominator of 10 to be present in the report. If two categories are exhaustive (ex: males and females) and either group has less than 10 students, both groups are redacted. All rules apply across all levels of grouping variables.

For all redaction, there are two stages for consideration: 1) hard (or primary) redaction refers to a number that must be redacted because it failed to meet the appropriate criteria in terms of sufficient count of completers, sufficient count of employed people, sufficient count of employers, or a failure to demonstrate a lack of employer dominance, 2) suppressive (or secondary) redaction refers to the process of redacting cells to prevent the rediscovery of information that was removed through hard redaction.

Hard Redaction criteria that **MUST** be satisfied to display information for a specific selection of grouping variables:

- **Completers and Employment/Wage Information:**
 - There must be at least 10 credential earners (completers) in this group.
- **Employment/Wage information only:**
 - There must be at least 10 individuals employed.
 - The difference between the number of completers and the number of employed cannot be between 1 and 9 inclusive.
 - No single employer (denoted by SEIN) can be attributed to 80% or more of wage records for a given time period and group. This would show employer dominance and could reveal confidential information about wages from that employer.
 - At least 10 employers need to be represented in the employment information for a group. The more restrictive Kentucky requirement was applied across all states for this iteration.

Redaction was processed separately by state of postsecondary completion and year of post completion employment. A series of criteria had to be met to allow for the display of aggregated results. Redaction was performed in the following series of steps:

1. **Count of Completers by Groups (both hard and suppressive redaction):**
 - a. Data was assessed for sufficient count of completers (10 or more) in any possible year of employment post completion by aggregation group. Completer count varied by year of potential post completion employment due to usage of rolling cohorts (see Appendix I).
 - b. All possible grouping variables were used to implement suppressive redaction based on count of completers by grouping variables.
2. **Employer Counts and Dominance Assessment by Groups (hard redaction):**
 - a. Data was assessed for count of distinct employers and proportion of quarterly wage records across the year tied to the same employer by Group. Groups were

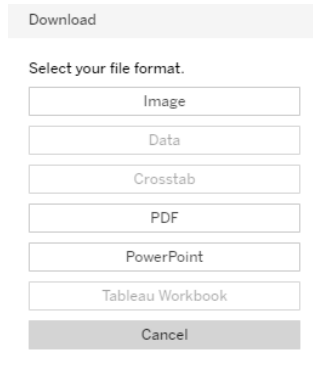
- flagged as needing hard redaction for failure to demonstrate sufficient employer count or failure to show lack of employer dominance.
- b. Suppressive redaction at the completer stage now becomes hard redaction fed into the employment stage. If the count of completers was redacted for either suppressive purposes, no additional information is shown for this group.
3. Count of Employed by Groups (hard redaction and suppressive redaction using all prior redaction flags):
 - a. Percentage of employed (and affiliated fuzzy wage percentiles) require at least 10 employed individuals in a group as well as the knowledge that the display of this information will not allow for the rediscovery of an otherwise redacted value. Redaction flags from step 1 (hard and suppressive) as well as hard redaction flags from step 2 were fed into step 3 to ensure groups already determined as needing redaction were appropriately redacted.
 - b. All grouping combinations were checked for both hard (based on count of employed completers) and suppressive redaction and flagged for final redaction.
 - c. For the demographics tab, there was an additional component to employment redaction: the difference between the ANY and QUALIFYING employment metrics could not be between 1 and 9 inclusive.
 4. Top State of Employment for Out-of-State Employment (hard and suppressive redaction) by Groups:
 - a. Both total out-of-state employment and largest count of employment for out-of-state state were calculated for each series of grouping variables.
 - b. For all groups, the employed count, lack of employer dominance, and employer count were used to hard redact employment for the top state of out-of-state employment.
 - c. If all tests were passed, the record for this group was checked for suppressive redaction requirements, ensuring that the difference between the top state of employment count and out-of-state employment count is not between 1 and 9.

APPENDIX C: PRINTING

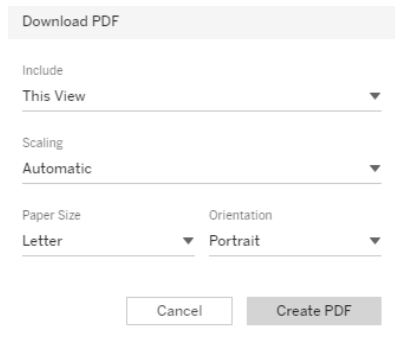
Printing - Download a dashboard to PDF



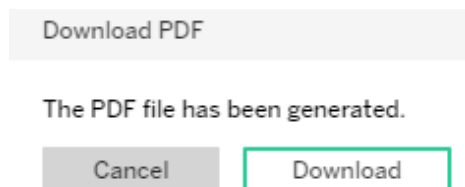
1. Click Download
2. On the Download screen - click PDF



3. On the Download PDF screen. Set what you want to include, the scaling paper size, and orientation, **then click create PDF.**
This View under Include, prints the current page.
Specific sheets from this dashboard (the displayed page) allows you to select specific sheets.
Specific sheets from this workbook (select from all dashboards) allows you to select specific workbooks.



4. Once your PDF has been generated. Click **Download.**



APPENDIX D: CLASSIFICATION OF INSTITUTION INTO SECTORS

Institution type (or sectors) vary in terminology across states. Classifications are delineated separately by state.

Indiana: Institution types used are those identified by the Indiana Commission for Higher Education⁸. Terminology was abbreviated by KYSTATS for the purposes of this report. The breakdown can be seen below:

2-Year Public Institutions

This education sector includes the following Indiana 2-Year Public Institutions: Ivy Tech Community College and Vincennes University.

4-Year Public Institutions

This education sector includes Indiana 4-Year Public Institution Main Campuses: Ball State University, Indiana State University, Indiana University-Bloomington, Purdue University-West Lafayette, and University of Southern Indiana.

This education sector also includes Indiana 4-Year Public Institution Non-Main Campuses: Indiana University-East, Indiana University-Kokomo, Indiana University-Northwest, Indiana University-South Bend, Indiana University-Southeast, Indiana University-Purdue University Indianapolis, Indiana University-Purdue University-Fort Wayne, Purdue University-Northwest, Purdue University-North Central, Purdue University-Calumet, and Purdue University-Polytechnic.

Kentucky: Institution types used are those identified by The Council on Postsecondary Education. The breakdown can be seen below:

4-Year Private (Independent)

AIKCU (Association of Independent Kentucky Colleges and Universities)

This education sector includes all Kentucky 4-Year Independent Institutions: Alice Lloyd College, Asbury University, Bellarmine University, Berea College, Brescia University, Campbellsville University, Centre College, Georgetown College, Kentucky Christian University, Kentucky Wesleyan College, Lindsey Wilson College, Midway University, University of Pikeville, Spalding University, Thomas More College, Transylvania University, Union College, and University of the Cumberlands.

2-Year Public KCTCS (Kentucky Community and Technical College System)

This education sector includes all Kentucky 2-Year Public Institutions: Ashland Community & Technical College, Big Sandy Community & Technical College, Bluegrass Community & Technical College, Elizabethtown Community & Technical College, Gateway Community & Technical College, Hazard Community & Technical College, Henderson Community College, Hopkinsville Community College, Jefferson Community & Technical College, Maysville Community & Technical College, Madisonville Community College, Owensboro Community & Technical College, Somerset Community College, Southeast Kentucky Community & Technical College, and West Kentucky Community & Technical College.

⁸ Broad groupings were aligned to the data notes affiliated with the most recent Indiana CHE Completions reports. See, https://www.in.gov/che/files/2022_College_Completion_Report_Data_Notes_10_03_2022.pdf

4-Year Public Comprehensive

This education sector includes all Kentucky 4-Year Public Comprehensive Institutions: Eastern Kentucky University, Kentucky State University, Morehead State University, Murray State University, Northern Kentucky University, and Western Kentucky University.

4-Year Public Research

This education sector includes all Kentucky 4-Year Public Research Institutions: University of Kentucky and University of Louisville.

Ohio: Institution types used are those identified by the Ohio Department of Higher Education. Terminology was abbreviated by KYSTATS for the purposes of this report. The breakdown can be seen below:

2-Year Public Institutions (At least 2 but less than 4 years)

This education sector includes all Ohio 2-Year Public Institutions: Belmont College, Central Ohio Technical College, Cincinnati State Technical & Community College, Clark State Community College, Columbus State Community College, Cuyahoga Community College, Edison State Community College, Hocking Technical College, James A. Rhodes State College, Eastern Gateway Community College, Lakeland Community College, Lorain County Community College, Marion Technical College, North Central State College, Northwest State Community College, Owens State Community College, Rio Grande Community College, Sinclair Community College, Southern State Community College, Stark State College of Technology, Terra State Community College, Washington State Community College, and Zane State College.

4-Year Public Institutions (Four or more years)

This education sector includes all Ohio 4-Year Public Institutions: Bowling Green State University, Central State University, Cleveland State University, Kent State University, Medical University of Ohio, Miami University, Northeast Ohio Medical University, Ohio State University, Ohio University, Shawnee State University, University of Akron, University of Cincinnati, University of Toledo, Wright State University, and Youngstown State University.

APPENDIX E: CLASSIFICATION OF DEGREE LEVELS

Indiana Mappings:

Mapped Categories		Indiana Data Elements	
Degree Rank	Credential Category	Degree Level Label	Degree Level Code
1	Doctoral	Doctor's degrees - professional practice	18
2	Doctoral	Doctor's degrees - research/scholarship	17
3	Master	Master's degrees	07
3	Master	Post-Master's certificate/specialist	08
4	Bachelor	Post Baccalaureate certificates	06
5	Bachelor	Bachelor's degrees	05
6	Associate	Associate degrees	03
6	Associate	Awards at least 2 but less than 4 academic years	04
8	Certificate	Awards at least 1 but less than 2 academic years	02
9	Certificate	Awards of less than 1 academic year	01

Notes: There were no categories that appeared to map directly to a diploma for Indiana: this credential level will be missing from the dashboard for Indiana credential completers. Notable exclusions from completion are those with an unknown degree level (degree_level_code = '00'), non-degree seeking individuals from enrollments, and unclassified undergraduates/graduates. All codes affiliated with unclassified degree levels derive from enrollments data.

Kentucky Mappings:

Mapped Categories		Kentucky Data Elements	
Degree Rank	Credential Level	Long Description	Short Description
1	Doctoral	Doctor's Degree - Professional Practice	Doct Prof
1	Doctoral	Doctor's Degree Professional Practice	Doct Prof
2	Doctoral	Doctor's Degree - Other	Doct Other
2	Doctoral	Doctor's Degree - Research/Scholarship	Doct Rsch/Schl
2	Doctoral	Doctor's Degree Research/Scholarship	Doct Rsch/Schl
2	Doctoral	Post-Doctors Certificate (Post First Professional Certificate)	PostDoc Cert
3	Master	Institutionally-Defined Graduate Certificate	Inst-Def Grad Cert
3	Master	Master's	Master's
3	Master	Master's degree	Master's
3	Master	Post-Master's Certificate	Post-Mast Cert
3	Master	Specialist's degree	Specialist
3	Master	Specialist	Specialist
4	Bachelor	Post-Baccalaureate Certificate	Post-Bacc Cert
5	Bachelor	Baccalaureate	Bachelor

Mapped Categories		Kentucky Data Elements	
Degree Rank	Credential Level	Long Description	Short Description
5	Bachelor	Baccalaureate degree (four or five years).	Bachelor
6	Associate	Associate	Associate
6	Associate	Associate degree for curriculum of at least two years, but less than four years.	Associate
7	Diploma	Diploma 1 - 2 Years	Diploma 1-2 Yr
7	Diploma	Diploma 2 - 4 Years	Diploma 2-4 Yr
8	Certificate	Undergraduate Certificate < 1 Year	Cert < 1 Yr
8	Certificate	Undergraduate Certificate 1 - 2 Years	Cert 1-2 Yr
8	Certificate	Undergraduate Certificate 2 - 4 Years	Cert 2-4 Yr
8	Certificate	Certificate for curriculum of at least two years, but less than four years, with work wholly or chiefly creditable toward a baccalaureate degree.	Cert 2-4 Yr B
8	Certificate	Undergraduate Certificate less than 9 semester credit hours	Undergrad Cert <9 sem credit hrs
8	Certificate	Undergraduate Certificate 9-29 semester credit hours	Undergrad Cert 9-29 sem credit hrs

Ohio Mappings:

Mapped Categories		Ohio Data Elements	
Degree Rank	Credential Level	Description	Level
1	Doctoral	Doctor's Degree - Professional Practice	13
2	Doctoral	Doctoral degree	9
2	Doctoral	First-professional degree	10
2	Doctoral	First-professional certificate (post-degree)	11
2	Doctoral	Doctor's Degree - Research/Scholarship	12
2	Doctoral	Doctor's Degree - Other	14
2	Doctoral	A9 Second Doctoral Major	26
3	Master	Master's Degree	7
3	Master	Post-master's certificate	8
3	Master	A7 Second Master's Major	24
3	Master	A8 Second Post-Master's Major	25
4	Bachelor	Post-baccalaureate certificate	6
4	Bachelor	A6 Second post-baccalaureate major	23
5	Bachelor	Bachelor's degree	5
5	Bachelor	A5 Second Bachelor's Major	22
6	Associate	Associate's degree	3
6	Associate	A3 Second Associate's Major	20

Mapped Categories		Ohio Data Elements	
Degree Rank	Credential Level	Description	Level
8	Certificate	At least one- but less than two-year award	2
8	Certificate	At least two- but less than four-year award	4
8	Certificate	WI Certificate/Degree of one year or less paid partially or in full by the Workforce Investment Act	16
8	Certificate	A2 Second at least one- but less than two-year major	19
8	Certificate	A4 Second at least two- but less than four-year major	21
8	Certificate	G2 General Certificate	28
8	Certificate	GB Second General Certificate	30
8	Certificate	T2 Technical Certificate	32
8	Certificate	TB Second Technical Certificate	34
9	Certificate	Less than one-year award	1
9	Certificate	A1 Second less than one-year major	18
9	Certificate	G1 General Short Term Certificate	27
9	Certificate	GA Second General Short Term Certificate	29
9	Certificate	T1 Technical Short Term Certificate	31
9	Certificate	TA Second Technical Short Term Certificate	33

Notes: There were no categories that appeared to map directly to a diploma for Ohio, so this credential level will be missing from the dashboard for Ohio credential completers. Ohio also had an abundance of terms that appeared to correspond to certificates. As a response to the distinction made in the Ohio data between short term certificates and other certificates, an additional degree rank of “9” was created for Ohio: this allowed the regular certificates to be ranked higher than short-term certificates when determining highest credential earned. Both degree rank 8 and 9 still map to the same credential category of certificate.

Ohio had two non-degree indicators in `oh_hei_long.degcert_level`, 15 and 17, which mapped to ‘TM Transfer Module’ and ‘XX Does not lead to degree’ respectively. These were excluded when calculating highest degree. Additionally, records where `degcert_level` was null were also excluded.

APPENDIX F: CLASSIFICATION OF ACADEMIC MAJORS INTO MAJOR GROUPS

Major Group	2-Digit CIP Code	2-Digit CIP Family Title
Arts & Humanities	05	Area, Ethnic, Cultural, Gender, & Group Studies
	16	Foreign Languages, Literatures, & Linguistics
	23	English Language & Literature/Letters
	24	Liberal Arts & Sciences, General Studies & Humanities
	30	Multi/Interdisciplinary Studies
	38	Philosophy & Religious Studies
	39	Theology & Religious Vocations
	50	Visual & Performing Arts
Business & Communication	54	History
	09	Communication, Journalism, & Related Programs
	10	Communications Technologies/Technicians & Support Services
Education	52	Business, Management, Marketing, & Related Support Services
	13	Education
Health	34*	Health-Related Knowledge and Skills
	51	Health Professions & Related Programs
Social & Behavioral Sciences & Human Services	19	Family & Consumer Sciences/Human Sciences
	22	Legal Professions & Studies
	25	Library Science
	31	Parks, Recreation, Leisure, & Fitness Studies
	35*	Interpersonal and Social Skills
	42	Psychology
	44	Public Administration & Social Service Professions
45	Social Sciences	
STEM	01	Agriculture, Agriculture Operations, & Related Sciences
	03	Natural Resources & Conservation
	04	Architecture & Related Services
	11	Computer & Information Sciences & Support Services
	14	Engineering
	15	Engineering Technologies & Engineering-related Fields
	26	Biological & Biomedical Sciences
	27	Mathematics & Statistics
	28	Military Science, Leadership & Operational Art
	29*	Military Technologies
	40	Physical Sciences
	41	Science Technologies/Technicians
Trades	12	Personal & Culinary Services
	33	Citizenship Activities
	43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services
	46	Construction Trades
	47	Mechanic & Repair Technologies/Technicians
	48	Precision Production
	49	Transportation & Materials Moving

Note: The asterisk (*) refers to categories that were mapped specifically to accommodate additional 2-digit CIP codes present for Indiana, Kentucky, or Ohio public postsecondary completers during the time period. All other mappings derive from mappings utilized by Zaback et al. (2012).⁹

⁹ Zaback, K., Carlson, A., & Crellin, M. (2012). Postsecondary degrees: A state and national level analysis (ED540267). ERIC. <https://files.eric.ed.gov/fulltext/ED540267.pdf>

CIP codes for this report were the 2010 CIP codes. Completion records with a 2010 CIP code of '000000' or a null 2010 CIP code in the Indiana completions data were removed prior to determining highest most recent degree completion.

APPENDIX G: CLASSIFICATION OF DEMOGRAPHICS, RACE-ETHNICITY-URM

Aligning demographic variables across states depends on common data structures and classifications. ADRF demographic data currently differs in structure between states, leading to differences in display. While the Kentucky data treats race and ethnicity as orthogonal constructs, the current Indiana CHE and Ohio OLDA data within the ADRF environment has these constructs combined. As such, the dashboard from the Ohio and Indiana perspectives has Hispanic as a group broken out within the Race filter whereas the dashboard from the Kentucky perspective has a separate Ethnicity filter.

Indiana:

Indiana provided race and ethnicity with every record in both the postsecondary enrollments and completions data. All distinct person*race*ethnicity combinations were considered when determining the authoritative race/ethnicity to ascribe to a person in the Indiana data. A combination of Race and Ethnicity was used to determine URM status for Indiana such that individuals who were Black or Hispanic were considered an underrepresented minority¹⁰. Individuals who were indicated as Two or More Races without indicating which races or ethnicities were classified as non-URM.

Distinct Race/Ethnicity by Person Considering all Enrollments and Completions	Possible Races	Race Group	URM Status	Rationale
Only one Race/Ethnicity indicated	American Indian	Other Race	non-URM	
Only one Race/Ethnicity indicated	Asian	Other Race	non-URM	
Only one Race/Ethnicity indicated	Black	Black	URM	
Only one Race/Ethnicity indicated	Hawaiian	Other Race	non-URM	
Only one Race/Ethnicity indicated	White	White	non-URM	
Only one Race/Ethnicity indicated	Two or More	Other Race	non-URM	
Only one Race/Ethnicity indicated	Hispanic	Hispanic	URM	
Only one Race/Ethnicity indicated	Unknown	Other Race	non-URM	
More than one distinct race/ethnicity indicated when considering all enrollment and completion records	Multiple distinct races indicated	Other Race	Dependent on the indicated races: this only applies to the subset of people with at least two distinct races indicated across all enrollments/completions.	URM status is applied if any of the rows affiliated with this unique id indicated the person as Black or Hispanic. Thus, an individual with two rows in the demographics table, one indicating the individual as White and the other indicating the individual as Asian, would be classified as non-URM. If an individual with two rows in the demographics table was indicated as both White and Hispanic, this individual would be classified as URM.

¹⁰ The definition for URM in Indiana was derived from the 2022 Indiana College Completion Report (https://www.in.gov/che/files/2022_College_Completion_Report_10_03_2022.pdf). Handling of corner cases may differ between the Indiana College Completion Report and the current MSPSR.

Kentucky:

Kentucky maps race and ethnicity to the Common Education Data Standards (CEDs). A combination of race and ethnicity is used to determine Kentucky CPE-defined URM status such that a person is not an underrepresented minority (non-URM) if the person is both non-Hispanic and **one** of the following racial groups: White, Asian, or Unknown Race. The full breakdown of possible combinations for Kentucky is in the table below.

CEDs Race	CEDs Ethnicity	Kentucky URM status
American Indian	Hispanic	URM
American Indian	Not Hispanic	URM
Asian	Hispanic	URM
Asian	Not Hispanic	non-URM
Black	Hispanic	URM
Black	Not Hispanic	URM
Hawaiian	Hispanic	URM
Hawaiian	Not Hispanic	URM
Other Race	Hispanic	URM
Other Race	Not Hispanic	URM
Two or More	Hispanic	URM
Two or More	Not Hispanic	URM
Unknown	Hispanic	URM
Unknown	Not Hispanic	non-URM
White	Hispanic	URM
White	Not Hispanic	non-URM

Ohio:

In Ohio’s State Share of Instruction calculations, URM encompasses any student who was reported as African American, Native American (American Indian), or Hispanic. Students with multiple race/ethnicities reported were classified as URM if any of the above classifications were affiliated with that student. This definition was used as the pilot definition for URM in this report. The data structure in the ADRF from the higher education demographics table was pivoted from long to wide to determine the best classification of race and URM status based on distinct race/ethnicity classifications indicated for a distinct hashed unique identifier. After this data transformation, classifications were determined as follows:

Distinct Race by Unique ID frequency in the Demographics Table	Indicated Races	Race Group	Ohio URM Status	Rationale
Only one category selected	American Indian	Other Race	URM	
Only one category selected	Asian	Other Race	non-URM	
Only one category selected	Black	Black	URM	
Only one category selected	Hawaiian	Other Race	URM	
Only one category selected	White	White	non-URM	
Only one category selected	Two or More	Other Race	URM	The most likely combinations of races would involve at least one race classified as URM. Thus, we impute URM for individuals solely indicated as belonging to "Two or More" racial groups.
Only one category selected	Foreign National	Foreign National	non-URM	
Only one category selected	Hispanic	Hispanic	URM	
Only one category selected	Unknown	Other Race	non-URM	
No categories selected but present in demo table	No Indicated Race/Ethnicity	Other Race	non-URM	
More than one distinct category selected (multiple rows in the demographics table for one unique id with different race categories indicated)	Multiple distinct races indicated	Other Race	Dependent on the indicated races: this only applies to the subset of people with multiple rows indicating at least two distinct races.	URM status is applied if any of the rows affiliated with this unique id indicated the person as Black, American Indian, Hispanic, or Two or More Races. Thus, an individual with two rows in the demographics table, one indicating the individual as White and the other indicating the individual as Asian, would be classified as non-URM. If an individual with two rows in the demographics table was indicated as both White and Two or More Races, this individual would be classified as URM.

Note: URM stands for under-represented minority and is a State Higher Education Executive Office defined term.

APPENDIX H: OVERALL MAPPINGS TO CRITICAL ELEMENTS

Indiana:

Needed Elements				Indiana	
Element	Possible Values	Type	Usage	Source Table	Source Elements
Academic Year	2007 through 2017	numeric	Restricting timeframe for highest degree. Determining the most recent Academic Year of Highest Ranking Degree Completion. Degree Completion Year when determining Employment/Wages in various years post completion.	completions	degree_conferred_date
Degree Rank	1-9, with 1 being the highest rank of degree possible	numeric	Determining the highest ranked degree earned within the timeframe.	completions, higher_ed_codes	completions: degree_level_code higher_ed_codes: code, label (where field = 'DegreeLevelCode')
Credential Category	Certificate, Diploma, Associate, Bachelor, Master, Doctoral	text	Grouping variable for displaying employment and wage outcomes.	completions, higher_ed_codes	degree_level_code, label (where field = 'DegreeLevelCode')
Major Group	Arts and Humanities, Business, Education, Health, Social and Behavioral Sciences, STEM, Trades	text	Grouping variable for displaying employment and wage outcomes.	completions, cipcodes, cipcodes_2digit	completions: cip_2010_six_digit_code cipcodes: cipcode, left(cipcode, 2) cipcodes_2digit: cipcode
Specific Major	-----	text	Grouping variable for displaying employment and wage outcomes.	completions, cipcodes	completions: cip_2010_six_digit_code cipcodes: cipcode, ciptitle
Student Origin	In-State Origin, Out-of-State Origin	text	Grouping variable for displaying employment and wage outcomes.	enrollments, higher_ed_codes, completions Note: First enrollment location was used unless the individual was never found within the enrollments table.	enrollments: reporting_year, location_code higher_ed_codes: code, label (where field = 'LocationCode') completions: reporting_year, location_code

Needed Elements				Indiana	
Element	Possible Values	Type	Usage	Source Table	Source Elements
Postsecondary Institution	-----	text	Grouping variable for displaying employment and wage outcomes.	completions, campuscodes	completions: checampusunitid campuscodes: che_campus_unit_id, cheinstitutionname
Postsecondary Institution Sector	Varies by state (Appendix D)	text	Grouping variable for displaying employment and wage outcomes.	completions, campuscodes	completions: checampusunitid campuscodes: che_campus_unit_id, cheinstitutionname
Race Group	Varies by state (Appendix G)	text	Grouping variable for displaying employment and wage outcomes.	enrollments, higher_ed_codes, completions	enrollments: ethnicity_code completions: ethnicity_code higher_ed_codes: code, label (where field = 'EthnicityCode')
Ethnicity	Hispanic, Non-Hispanic	text	Grouping variable for displaying employment and wage outcomes.	-----	-----
URM Status	URM versus non-URM, definition varies by state (Appendix G)	text	Grouping variable for displaying employment and wage outcomes.	enrollments, higher_ed_codes, completions	enrollments: ethnicity_code completions: ethnicity_code higher_ed_codes: code, label (where field = 'EthnicityCode')
Age Group	Traditional (16-24), Non-Traditional (25+)	text	Grouping variable for displaying employment and wage outcomes.	-----	-----
Gender	Male, Female	text	Grouping variable for displaying employment and wage outcomes.	enrollments, higher_ed_codes, completions	enrollments: gender_code completions: gender_code higher_ed_codes: code, label (where field = 'GenderCode')

Kentucky:

Needed Elements				Kentucky	
Element	Possible Values	Type	Usage	Source Table	Source Elements
Academic Year	2007 through 2017	numeric	Restricting timeframe for highest degree. Determining the most recent Academic Year of Highest Ranking Degree Completion. Degree Completion Year when determining Employment/Wages in various years post completion.	kpeds_degree	kpeds_degree_year
Degree Rank	1-9, with 1 being the highest rank of degree possible	numeric	Determining the highest ranked degree earned within the timeframe.	kpeds_degree	degreerank (rank is based on kpeds_degreeLevelShort Desc)
Credential Category	Certificate, Diploma, Associate, Bachelor, Master, Doctoral	text	Grouping variable for displaying employment and wage outcomes.	kpeds_degree	degreerank
Major Group	Arts and Humanities, Business, Education, Health, Social and Behavioral Sciences, STEM, Trades	text	Grouping variable for displaying employment and wage outcomes.	kpeds_degree	KPEDS_CIP_2Digits
Specific Major	-----	text	Grouping variable for displaying employment and wage outcomes.	kpeds_degree	KPEDS_Major1
Student Origin	In-State Origin, Out-of-State Origin	text	Grouping variable for displaying employment and wage outcomes.	kpeds_enrollments	AcadYr, KPEDS_SemesterYear, kpeds_statecountryoforigin (when the earliest enrollment value for kpeds_Statecountryoforigin is null or <> Kentucky then Out-of-State origin)

Needed Elements				Kentucky	
Element	Possible Values	Type	Usage	Source Table	Source Elements
Postsecondary Institution	-----	text	Grouping variable for displaying employment and wage outcomes.	kpeds_degree	
Postsecondary Institution Sector	Varies by state (Appendix D)	text	Grouping variable for displaying employment and wage outcomes.	kpeds_degree, kpeds_inst_xwalk	kpeds_institution, inst_code, sector
Race Group	Varies by state (Appendix G)	text	Grouping variable for displaying employment and wage outcomes.	master_person	ceds_race
Ethnicity	Hispanic, Non-Hispanic	text	Grouping variable for displaying employment and wage outcomes.	master_person	ceds_ethnicity
URM Status	URM versus non-URM, definition varies by state (Appendix G)	text	Grouping variable for displaying employment and wage outcomes.	master_person	ceds_race, ceds_ethnicity
Age Group	Traditional (16-24), Non-Traditional (25+)	text	Grouping variable for displaying employment and wage outcomes.	master_person, kpeds_degree	birth_year, kpeds_degree_year
Gender	Male, Female	text	Grouping variable for displaying employment and wage outcomes.	master_person	gender

Ohio:

Needed Elements				Ohio	
Element	Possible Values	Type	Usage	Source Table	Source Element
Academic Year	2007 through 2017	numeric	Restricting timeframe for highest degree. Determining the most recent Academic Year of Highest Ranking Degree Completion. Degree Completion Year when determining Employment/Wages in various years post completion.	hei_long	degcert_yr_earned, degcert_term_earned

Needed Elements				Ohio	
Element	Possible Values	Type	Usage	Source Table	Source Element
Degree Rank	1-9, with 1 being the highest rank of degree possible	numeric	Determining the highest ranked degree earned within the timeframe.	hei_long	degcert_level
Credential Category	Certificate, Diploma, Associate, Bachelor, Master, Doctoral	text	Grouping variable for displaying employment and wage outcomes.	hei_long	degcert_level
Major Group	Arts and Humanities, Business, Education, Health, Social and Behavioral Sciences, STEM, Trades	text	Grouping variable for displaying employment and wage outcomes.	hei_long, subject_codes_lkp (to map to the 2010 CIP code based on 'subject_code_hei')	degcert_subject_upd mapped to subject_code_2010_2 (note: enroll_major_field was used to determine primacy between equivalent highest degree in the same academic year, calendar year, and term)
Specific Major	-----	text	Grouping variable for displaying employment and wage outcomes.	hei_long, subject_codes_lkp	subject_code_2010_6
Student Origin	In-State Origin, Out-of-State Origin	text	Grouping variable for displaying employment and wage outcomes.	hei_state	business rule was implemented to account for corner cases
Postsecondary Institution	-----	text	Grouping variable for displaying employment and wage outcomes.	hei_long, hei_institution_lkp	
Postsecondary Institution Sector	Varies by state (Appendix D)	text	Grouping variable for displaying employment and wage outcomes.	hei_long, institution_lkp	degcert_inst, institution_num
Race Group	Varies by state (Appendix G)	text	Grouping variable for displaying employment and wage outcomes.	demo	race_ethnic_code
Ethnicity	Hispanic, Non-Hispanic	text	Grouping variable for displaying employment and wage outcomes.	-----	-----

Needed Elements				Ohio	
Element	Possible Values	Type	Usage	Source Table	Source Element
URM Status	URM versus non-URM, definition varies by state (Appendix G)	text	Grouping variable for displaying employment and wage outcomes.	demo	race_ethnic_code
Age Group	Traditional (16-24), Non-Traditional (25+)	text	Grouping variable for displaying employment and wage outcomes.	demo	birthdate_y
Gender	Male, Female	text	Grouping variable for displaying employment and wage outcomes.	demo	gender

APPENDIX I: CALCULATION OF WAGES

Academic Year	FFY for 1-year Post Completion Employment Outcomes	FFY for 3-year Post Completion Employment Outcomes	FFY for 5-year Post Completion Employment Outcomes
2007	2008	2010	2012
2008	2009	2011	2013
2009	2010	2012	2014
2010	2011	2013	2015
2011	2012	2014	2016
2012	2013	2015	2017
2013	2014	2016	2018
2014	2015	2017	-
2015	2016	2018	-
2016	2017	-	-
2017	2018	-	-

The common timeframe across Indiana, Kentucky, and Ohio for finding highest credential earned was the 2007 through 2017 AY. Please note that positive UI-covered wages earned in any quarter across the four state-UI systems considered will result in an indication of “any” employment for a completer: the pilot “qualifying” employment metric imposes additional criteria based on inflation-adjusted dollars. Fuzzy wage percentiles for a given FFY will encompass UI-covered wages across the four state systems; however, this wage is attributed to the primary state of employment as determined by state with the highest sum of earned UI-covered wages within the FFY. Classification of primary state of employment at the individual level and calculation of fuzzy wage percentiles at the group level occurs after wages are adjusted for inflation.

APPENDIX J: ADJUSTING EARNINGS FOR INFLATION

Adjustment of UI wages will leverage the data used in the BLS Consumer Price Index (CPI) Inflation Calculator (see, https://www.bls.gov/data/inflation_calculator.htm). Specifically, this adjustment will leverage the ‘All Urban Consumers (CPI-U)’ series, which “represents about 87% of the U.S. population¹¹.” The CPI-U series (not seasonally adjusted) is the same series of data that underlies the BLS inflation calculator¹². The table that this is pulled from is CUUR0000SA0: data were retrieved on August 2, 2021 at 8:48 am (Eastern Standard Time).

KYSTATS CALCULATIONS: Leveraging the BLS data series, we use the calendar year and quarter of each wage record to determine the CPI value at the time of wage earnings (Original Wage CPI). The ratio between the average CPI for the target year and the average CPI for the original wage quarter and calendar year will be used to adjust wages for inflation prior to collapsing wages across cohorts.

Determining the CPI index to be used for UI wage conversion (Original Wage CPI):

The most granular unit of analysis in the UI wage file is quarterly wages. As such, each quarter is independently adjusted based on the average CPI for the quarter. Quarterly CPI are calculated by taking the mean value of the CPI for the three months contained within the quarter. Quarters are determined as follows:

- Quarter 1 (Q1): January, February, March
- Quarter 2 (Q2): April, May, June
- Quarter 3 (Q3): July, August, September
- Quarter 4 (Q4): October, November, December

Determining the CPI to be used as the target for UI wage conversion (Target Wage CPI):

The PSFR reports wages on a Federal Fiscal Year (FFY) basis, with a given FFY defined as encompassing October of the prior year through September of the nominal calendar year. For example, the 2019 FFY runs from October 1 of 2018 through September 30 of 2019. Inflation adjustment to place wages on a common metric will move the quarterly wages to a common FFY metric. The CPI for the target FFY will be calculated as the average of the twelve months contained within the FFY. Each quarter of wages will be adjusted to the average for the target FFY.

Calculation will occur as follows: $\text{Unadjusted Wages} * (\text{Target CPI} / \text{Original CPI}) = \text{Adjusted Wages}$

¹¹ <https://www.dir.ca.gov/oprl/CPI/faqs.htm>

¹² https://www.bls.gov/data/inflation_calculator.htm

Example Subset of Calculations:

Selected raw subset from the CUUR0000SA0 (Series ID), “All items in U.S. city average, all urban consumers, not seasonally adjusted”:

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	HALF1	HALF2
2017	242.839	243.603	243.801	244.524	244.733	244.955	244.786	245.519	246.819	246.663	246.669	246.524	244.076	246.163
2018	247.867	248.991	249.554	250.546	251.588	251.989	252.006	252.146	252.439	252.885	252.038	251.233	250.089	252.125
2019	251.712	252.776	254.202	255.548	256.092	256.143	256.571	256.558	256.759	257.346	257.208	256.974	254.412	256.903
2020	257.971	258.678	258.115	256.389	256.394	257.797	259.101	259.918	260.280	260.388	260.229	260.474	257.557	260.065
2021	261.582	263.014	264.877	267.054	269.195	271.696							266.236	

Conversion of this to a CPI index for the smallest level of granularity present in UI wage data:

Note that each quarter is the average of the three months contained within it. Quarterly CPI index is used for the original wage CPI.

Year	Q1	Q2	Q3	Q4
2017	243.414	244.737	245.708	246.619
2018	248.804	251.374	252.197	252.052
2019	252.897	255.928	256.629	257.176
2020	258.255	256.860	259.766	260.364
2021	263.158	269.315		

Selected raw subset from the CUUR0000SA0 (Series ID), “All items in U.S. city average, all urban consumers, not seasonally adjusted”:

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017	242.839	243.603	243.801	244.524	244.733	244.955	244.786	245.519	246.819	246.663	246.669	246.524
2018	247.867	248.991	249.554	250.546	251.588	251.989	252.006	252.146	252.439	252.885	252.038	251.233
2019	251.712	252.776	254.202	255.548	256.092	256.143	256.571	256.558	256.759	257.346	257.208	256.974
2020	257.971	258.678	258.115	256.389	256.394	257.797	259.101	259.918	260.280	260.388	260.229	260.474
2021	261.582	263.014	264.877	267.054	269.195	271.696						

Conversion of raw subset to FFY CPI index for target of wage adjustment:

FFY	CPI Target
2018	249.749
2019	254.376
2020	258.014

Example Calculations:

Pretend we have the following wage histories for Individuals A (person_A) and B (person_B).

ID	Calendar_Yr	Quarter	Wage	CPI_Original	CPI_Target	Adj_Wage_Timeframe	Wage_Adj
Person_A	2010	4	100	218.898	254.376	FFY 2019	116.21
Person_A	2011	1	100	221.666	254.376	FFY 2019	114.76
Person_A	2011	2	100	225.531	254.376	FFY 2019	112.79
Person_A	2011	3	100	226.452	254.376	FFY 2019	112.33
Person_B	2018	4	100	252.052	254.376	FFY 2019	100.92
Person_B	2019	1	100	252.897	254.376	FFY 2019	100.58
Person_B	2019	2	100	255.928	254.376	FFY 2019	99.39
Person_B	2019	3	100	256.629	254.376	FFY 2019	99.12

APPENDIX K: MAPPING TO ACADEMIC YEARS (EXAMPLE SUBSET FROM 2013-2017)

Academic Year	Kentucky			Ohio		
	Degree Year	Semester Year	Semester	Calendar Year	Term	Term (numeric)
2013	2013	2012	Summer	2012	Autumn	1
	2013	2012	Fall	2012	Winter	2
	2013	2013	Spring	2013	Spring	3
	2013	2013	Summer	2013	Summer	4
2014	2014	2013	Summer	2013	Autumn	1
	2014	2013	Fall	2014	Spring	3
	2014	2014	Spring	2014	Summer	4
	2014	2014	Summer			
2015	2015	2014	Summer	2014	Autumn	1
	2015	2014	Fall	2015	Spring	3
	2015	2015	Spring	2015	Summer	4
2016	2016	2015	Summer	2015	Autumn	1
	2016	2015	Fall	2016	Spring	3
	2016	2016	Spring	2016	Summer	4
2017	2017	2016	Summer	2016	Autumn	1
	2017	2016	Fall	2017	Spring	3
	2017	2017	Spring	---	---	---

Note: The actual cohort runs from 2007 to 2017. Only a subset of this is displayed to provide an example of data to academic year mappings.

Indiana Note: Indiana data elements derive from the ‘degree_conferred_date’ in the completions data. The degree conferred date was used to categorize completions by academic year with a given academic year defined as completion between July 1st of the prior calendar year through June 30th of the current calendar year. For example, academic year 2017 is defined to encompass completions between July 1, 2016 through June 30, 2017.

Kentucky Note: Kentucky data elements derive from the KPEDS_degree table. The authoritative source for completion academic year is KPEDS_degree_year (Degree Year). KPEDS_Semester_Year (Semester Year) is used to indicate the calendar year of the term semester. As can be seen in the semester column, there are two summer sessions that can be

attributed to a single degree year across at least one included academic year. This is due to some institutions electing to have an early and late summer session with the early summer session belonging to the prior degree year and the late summer session belonging to the following degree year.

Ohio Note: Ohio data elements derive from the ohio_hei_long data table, leveraging the Ohio codebook for the term name corresponding to the numeric code (degcert_term_earned, 'Term (numeric)'). The calendar year derives from the column degcert_yr_earned. In Ohio, the winter session was eliminated after the 2013 academic year. Crucially, ADRF data did not contain the summer term for the 2017 calendar year, leaving the 2017 Academic Year incomplete.