MaineEARNS Technical Documentation

Content

Section 1: About MaineEARNS & MPSO

Maine Education and Attainment Navigation System (MaineEARNS) is a unique data series designed to shed light on the effect of education program completions and other economic events on earnings over time. MaineEARNS refers to the data series and its governing organization comprised of data-contributing organizations. MaineEARNS partners include the Maine Department of Labor's Bureaus of Unemployment Compensation, Rehabilitation Services and Employment Services, the Maine Community College System (MCCS), the University of Maine System (UMS) and the Maine Department of Education. MaineEARNS is actively recruiting new partner organizations to provide more information for consumers and additional tools for program evaluation.

The Maine Post-Secondary Outcomes (MPSO) Report is a MaineEARNS product featuring aggregate wage and employment outcomes of graduates from UMS and MCCS.

Metrics displayed include number of graduates, percentage who are employed in Maine, median wages (among graduates working full-time), industry of employment and average age at graduation. These outcomes are available by school, credential, area of study, outcome year and industry**.**

The information is intended to help a wide range of stakeholders, including students, educators, administrators, parents and policy makers, better understand the relationship between education credentials and labor market outcomes.

The Maine Department of Labor's Center for Workforce Research and Information developed MaineEARNS and the MPSO report with grant funding from the U. S. Employment and Training Administration's Workforce Data Quality Initiative, the Maine Department of Education's Statewide Longitudinal Data System and with General Funds allocated by the Maine State Legislature. Partnerships and collaboration with UMS and MCCS were essential in developing this tool.

In the future, MaineEARNS seeks to expand its partnerships, extend the longitudinal data series to examine earnings over time; and add metrics of interest to partners and

stakeholders. MaineEARNS relies on the continued interest, support and participation of partners and stakeholders to maintain and further develop this unique data series.

Section 2: Technical Definitions

Average Annual Wage

Average Annual Wages are calculated using the average value for the range of wages earned in a given outcome year by qualifying graduates in an academic year group. The unit underlying the average is the credential date rather than unique graduate. This metric only displays if greater than 10 students earned full-time Maine wages.

Age at Graduation

Is calculated by taking the difference between the person's birthdate and graduation date. Note: birthdays were not collected for all graduate records. Average Age at graduation is only calculated for graduates between 16 and 64 at the time of graduation. This metric is only displayed if greater than 10 graduates are included in the aggregated count.

Adjusted Wages

To enable a comparison of Maine graduates over time, the MPSO report adjusts the wages of graduates in the reference year for inflation to reflect the current price level. Wages are adjusted for inflation using the Consumer Price Index (CPI) as follows:

$$Adjusted\ Wage = Nominal\ Wage * \frac{CPI_{Current\ Year}}{CPI_{Reference\ Year}}$$

The CPI used is the average annual CPI for all urban U.S. areas obtained from the U.S. Bureau of Labor Statistics.

Broad field of study

Academic programs are classified using a taxonomy developed by the U.S. Department of Education's National Center for Education Statistics (NCES), called the Classification of Instructional Programs (CIP). Schools routinely classify their programs by CIP code for regulatory and reporting purposes. The MPSO report uses the CIP family, the broadest CIP classification, and groups CIP families together into broad fields of study, modeled after a similar project in Kentucky. (2-digit CIP family groups).

Cohort

Grouping of graduates by years of graduation. The academic calendar runs from July 1 of the previous year through June 30 of the following. Except for the most recent cohort, cohorts consist of three academic years. The most recent cohort will consist of as many years as there are available, up to three. For example, as of this writing in October 2024, the most recent cohort was 2021 - 2022 (consisting of graduates of the classes of 2021 and 2022). 2023 was not yet available.

Credential Type

The credential obtained (for example: Bachelor's Degree, Master's Degree, ect.).

Industry

Maine employers covered by the state unemployment insurance system are classified using the North American Industry Classification System (NAICS). The NAICS code represents the business activity of the employer. Graduates are assigned to an industry based on the NAICS code of the employer who paid the most wages to the graduate during the reference period.

If a graduate is working in more than one industry during the outcome year, indicating multiple or sequential job holding, the highest paying job will determine that graduate's industry assignment. For example, if a graduate's primary source of income is derived from a nursing job at a hospital and earns secondary income coaching hockey part-time, they will be counted as working in healthcare and social assistance and not educational services. The MPSO reports the sum of wages earned at all covered jobs during the quarter. This metric is only displayed if greater than 10 graduates are included in the aggregated count.

Median Annual Wages

Median Annual Wages are calculated using the median value for the range of wages earned in a given outcome year by qualifying graduates in an academic year group. To qualify, a graduate must have earnings that meet the definition of full-time wages (see Number of Completers with a Full Year of Maine Wages). The unit underlying the median is credential rather than unique graduate. An individual's earnings, calculated in reference to graduate date(s), may contribute more than once if that individual earned more than one credential within that category as the unit underlying the median is credential rather than graduate. This includes all earners across all covered jobs held by the graduate during the outcome year. This metric only displays if greater than 10 students earned full-time Maine wages.

Number of Graduates

A unique count of graduates in a category (for example: a program, a school, ect.).

Number of Completers with a Full Year of Maine Wages

A unique count of graduates who worked in a job covered by Maine's Unemployment Insurance program and earned a full-time equivalent wage (FTEW). The FTEW threshold used is the equivalent to working 32 hours per week at the state minimum wage for the entire 13 weeks in a quarter. If a graduate worked in multiple jobs during the quarter, then wages are summed together to determine full-time equivalence. This metric is only displayed if greater than 10 graduates are included in the aggregated count.

Number of Completers with Maine Wages

A unique count of graduates who had wages of any amount in a given outcome year, working in a job covered by Maine's Unemployment Insurance program. An individual need not have wages

in every quarter to be included. This metric is only displayed if greater than 10 graduates are included in the aggregated count.

Outcome Year

The Outcome Year refers to the time elapsed since the attainment of a credential. The MPSO report begins the outcome year calculation two quarters after graduation to account for time spent in searching for work following the completion of an academic credential. Outcome Year 1 refers to quarters 3 through 6 after graduation. Outcome Year 3 refers to quarters 11 through 14 after graduation. Outcome Year 5 refers to quarters 19 through 22 after graduation.

Percentage (%) Working Full-Time in Maine

The percentage of all graduates meeting the definition of Completers with a Full Year of Maine Wages. This metric is only displayed if greater than 10 graduates are included in the aggregated count.

Percentage (%) Working Full or Part-Time in Maine

The percentage of all graduates who worked in a job covered by Maine's Unemployment Insurance program in any quarter during the outcome year. This metrics is only displayed if the number of graduates is greater than 10 students.

Program Name

The specific name given to a course of study leading to a credential by the school that offers it.

School Name

Name of the school (example: University of Maine Farmington, Northern Maine Community College, ect.).

School Type

Name of the institution (example: Maine Community College System).

Section 3: Caveats and Limitations

Can MaineEARNS wage outcomes be used to measure the causal effect of education on earnings?

No. What the graduates of Maine's degree programs earn may reflect many factors other than the degree programs that they completed. Some degree programs attract people who already have high earning power. Others may attract people with high natural ability, whose subsequent earnings reflect their natural ability as much as or more than the effect of the degrees or credentials they earn. Graduate earnings data cannot necessarily be interpreted *causally,* in other words, it cannot be concluded that these individuals earned this much *because* they got this degree. The MaineEARNS databased does not employ statistical techniques that can be used to infer causality. No effort has been made here to control for other factors that influence wage outcomes described in part above.

Additional Limitations

Wage outcomes in areas of study with small numbers of completers may be affected by outliers, that is, by graduates with unusually high or low wages, thus rendering them misleading as predictors of the wages that most graduates can expect.

Methods for calculating and reporting graduate earnings are not nationally standardized, and similar statistics calculated by other states may not be validly comparable to those reported here.

Why might graduate wage records be missing from the MaineEARNS database?

The MaineEARNS databased only includes those graduates that have employment records in the Maine unemployment insurance (UI) database. The absence of a wage record match does not necessarily indicate that a graduate is not working. Graduates with no wage records may be employed in another state, may earn wages not covered by the state UI system, they may be self-employed, or employed by the federal government. Moreover, graduates that re-enrolled in education programs may not work or may not earn covered wages. While most of the graduates in the cohorts were accounted for in the Maine wage record system, an expanded data set that includes out-of-state earnings, self-employment earnings, and federal government earnings, would indicate a higher share of graduates with earnings.

Can multiple job holders be distinguished from graduates transitioning between jobs?

No. The MaineEARNS database contains information about quarterly wages of workers in employment covered by Maine’s UI program. Graduates might have more than one wage record in any given quarter for various reason including working multiple jobs simultaneously, transitioning from one job to another during the quarter or working for an employer that has multiple UI tax accounts.

Section 4: Frequently Asked Questions

How are graduates earning a double major or multiple credentials counted? How are graduates counted if they return to school and earn an additional degree or credential?

Each graduate is assigned a warehouse ID and a wage ID, a combination of the warehouse ID and graduation date. The count of graduates is a unique count of warehouse IDs in a group. Because wages earned include a time component (calculated based on quarters from a graduation date), they are calculated using the wage ID.

To avoid double counting an individual graduate in larger rollups (while still evaluating all programs), the wage ID is used to calculate median and average wage outcomes. The wage ID will be the same for a person if they earned two degrees or credentials on the same day, but different if it is earned on separate days.

At their most granular level, the count of warehouse IDs and wage IDs are the same. When combined into a larger category, they may be different if an individual has earned multiple degrees/credentials at different graduation dates.

See the example in table 1. Student A completed a double major earning two bachelor's degrees, one in May and another in December. Since the graduate earned the degrees on different dates, they would have two different wages in the first outcome year and is assigned two wage IDs.

Table 1 Example of student in 2 graduating classes

Student	Graduation Date	Wage ID	Credential	Annual Earnings in Outcome Year 1
Student A	5/1/2013	A201305	Bachelor's Degree in Business Administration	$34,000
Student A	12/1/2013	A201212	Bachelor's Degree in Political Science	$44,000
Student B	5/1/2013	B201305	Bachelor's Degree in Nursing	$39,000

Adding Student B and rolling up their wages for all students who earned a bachelor's degree, there would be two students who earned a bachelor's degree (a unique count of students) at an average wage would be $39,000.

If student A earned both bachelor's degrees in May, they would be assigned a single credential ID (so Student A is not assigned more weight than student B).

Table 2 Example of a double major

Student	Graduation Date	Wage ID	Credential	Annual Earnings in Outcome Year 1
Student A	5/1/2013	A201305	Bachelor's Degree in Business Administration	$34,000
Student A	5/1/2013	A201305	Bachelor's Degree in Political Science	$34,000
Student B	5/1/2013	B201305	Bachelor's Degree in Nursing	$39,000

The number of graduates with a bachelor's degree is still two, but at an average wage would instead be $36,500.

How does adjusting wages for inflation impact the full-time equivalent wage threshold? How do increases in Maine's minimum wage impact the full-time equivalent wage threshold?

Graduates are considered employed full-time in Maine if they have four consecutive quarters of Maine wages above the full-time equivalent wage (FTEW) during the reference year.

If a graduate has earned covered wages in Maine but does not meet the FTEW threshold, they are counted as working in Maine. However, their wages do not count towards the annual wage calculation.

Wages are calculated on a quarterly basis. If during an outcome year the minimum wage changes, the threshold changes. For example:

Table 3 Example of the Full Time Equivalent Wage (FTEW) calculation

Graduate	Quarter	Minimum Wage	Full-Time Equivalent Wage	Actual Wage	Meets FTEW threshold (Y/N)
Graduate A	1	$10	$4,160	$4,500	Y
Graduate A	2	$10	$4,160	$4,500	Y
Graduate A	3	$11	$4,576	$4,500	N
Graduate A	4	$11	$4,576	$4,500	N

In the table above, graduate A does not meet the FTEW threshold. Although they earned wages for four consecutive quarters, when accounting for the minimum wage change, they did not earn more than the FTEW during the entire outcome year.

The FTEW is calculated using nominal (unadjusted) wages during the reference quarter. Wages are only adjusted for inflation after meeting the FTEW threshold. The minimum wage used in the FTEW calculation is the minimum wage during the reference quarter. In other words, for a graduate with earnings records in 2010, the FTEW calculation utilizes Maine's 2010 nominal minimum wage of $7.50 per hour though Maine's minimum wage has since increased to $12.15 per hour.

How does MaineEARNS protect data using deidentification?

MaineEARNS deidentifies all Personally Identifiable Information (PII) by assigning graduates a random ID once they enter the data warehouse. The Maine Post-Secondary Outcomes (MPSO) Report aggregates all records and displays labor market outcomes of groups with at least 10 graduates, so no person is identifiable at the primary or secondary (where data is rolled up) level.

Why do older cohorts consist of three years while the latest consist of up to three?

Publishing a partial cohort (consisting of less than three years of graduate data) allows users to access the most recent information. If staff elected to only publish three years cohorts, the 2024-2026 cohort would not be available until the summer of 2028 due to the availability of records. By breaking down the more recent graduating classes into smaller cohorts, the 2024 data will become available in the summer of 2026 and the 2025 data will become available in the summer of 2027.

Cells from the most recent partial cohort are likely have less graduates than in older three-year cohorts. It is important the user is aware of the number of years in the cohort they are evaluating. For example, the 2018-2020 cohort consist of graduates from the class of 2018, 2019 and 2020. The 2021-2022 cohort will only have graduates from the class of 2021 and 2022.

A new academic year is published each fall. This new academic year will be added into an existing cohort, until the cohort contains three graduation years. The publishing of cohort data follows the publishing schedule in table 4.

Table 4: MaineEARNS publishing schedule 2023 through 2027

Graduation Year	Cohort	Data Available
2023	2021 – 2023 (3 Year)	Fall 2025
2024	2024 (1 Year)	Fall 2026
2025	2024 – 2025 (2 Year)	Fall 2027
2026	2024 – 2026 (3 Year)	Fall 2028
2027	2027 (1 year)	Fall 2029

Section 5: Appendix

Table 1: Broad Fields of Study (Source: Kentucky Postsecondary Feedback Report)

Broad Field of Study	2-Digit CIP Code	2-Digit CIP Family Description
Arts & Humanities	5	Area, Ethnic, Cultural, Gender, & Group Studies
Arts & Humanities	16	Foreign Languages, Literatures, & Linguistics
Arts & Humanities	23	English Language & Literature/Letters

Arts & Humanities	24	Liberal Arts & Sciences, General Studies & Humanities
Arts & Humanities	30	Multi/Interdisciplinary Studies
Arts & Humanities	38	Philosophy & Religious Studies
Arts & Humanities	39	Theology & Religious Vocations
Arts & Humanities	50	Visual & Performing Arts
Arts & Humanities	54	History
Business & Communication	9	Communication, Journalism, & Related Programs
Business & Communication	10	Communications Technologies/Technicians & Support Services
Business & Communication	52	Business, Management, Marketing, & Related Support Services
Education	13	Education
Health	51	Health Professions & Related Programs
Social & Behavioral Sciences & Health	19	Family & Consumer Sciences/Human Sciences
Social & Behavioral Sciences & Health	22	Legal Professions & Studies
Social & Behavioral Sciences & Health	25	Library Science
Social & Behavioral Sciences & Health	31	Parks, Recreation, Leisure, & Fitness Studies
Social & Behavioral Sciences & Health	42	Psychology
Social & Behavioral Sciences & Health	44	Public Administration & Social Service Professions
Social & Behavioral Sciences & Health	45	Social Sciences
STEM	1	Agriculture, Agriculture Operations, & Related Sciences
STEM	3	Natural Resources & Conservation
STEM	4	Architecture & Related Services
STEM	11	Computer & Information Sciences & Support Services
STEM	14	Engineering
STEM	15	Engineering Technologies & Engineering-related Fields
STEM	26	Biological & Biomedical Sciences
STEM	27	Mathematics & Statistics
STEM	28	Military Science, Leadership & Operational Art
STEM	40	Physical Sciences
STEM	41	Science Technologies/Technicians
Trades	12	Personal & Culinary Services
Trades	33	Citizenship Activities
Trades	43	Homeland Security, Law Enforcement, Firefighting & Related Protective Services
Trades	46	Construction Trades
Trades	47	Mechanic & Repair Technologies/Technicians
Trades	48	Precision Production
Trades	49	Transportation & Materials Moving

Section 6: Data Sources

Graduate records come from UMS and MCCS. Graduate records are linked to wage and employment data from Maine's unemployment insurance database, containing earnings from all covered Maine jobs (read about the caveats of these data here).

Program descriptions are from the National Center for Education Statistics.

The National Center for Education Statistics also provides the occupational crosswalk which is used to link programs to data from Maine's Occupational Employment Statistics.