Developing a Comprehensive Return on Investment Measure for Arkansas

SHEEO
Higher Education Policy Conference
August 12, 2025

HCM STRATEGISTS

The Charge

(E)(i) Beginning in the 2026-2027 academic year, incorporation of a **return on investment metric** into the productivity-based funding model.

(ii) The return on investment metric under subdivision (a)(2)(E)(i) of this section shall be **defined by rule of the Division of Higher Education.**

(iii) The Division of Higher Education shall ensure that the return on investment metric required under subdivision (a)(2)(E)(i) of this section is aligned with state economic and workforce needs;

Team

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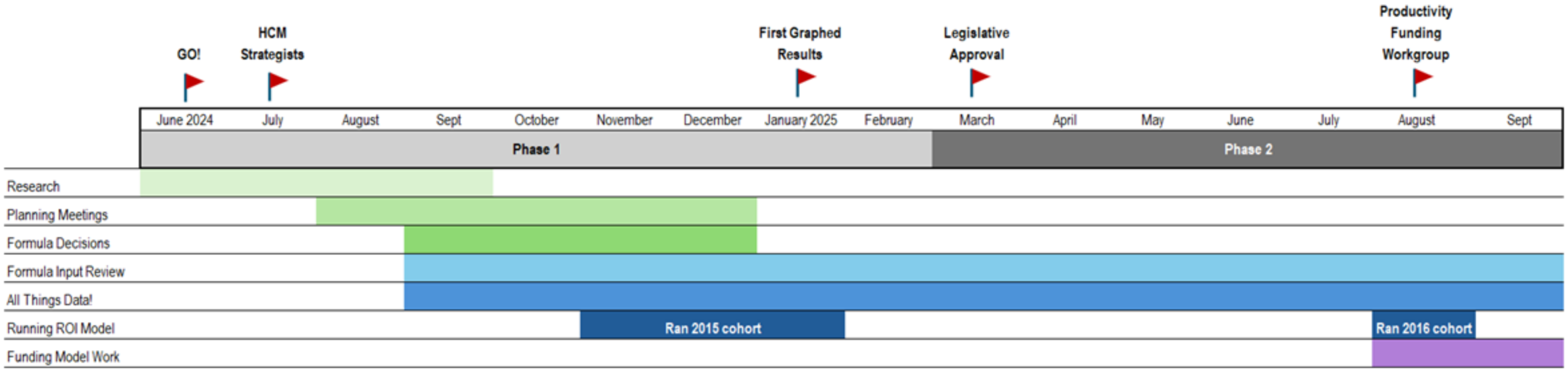
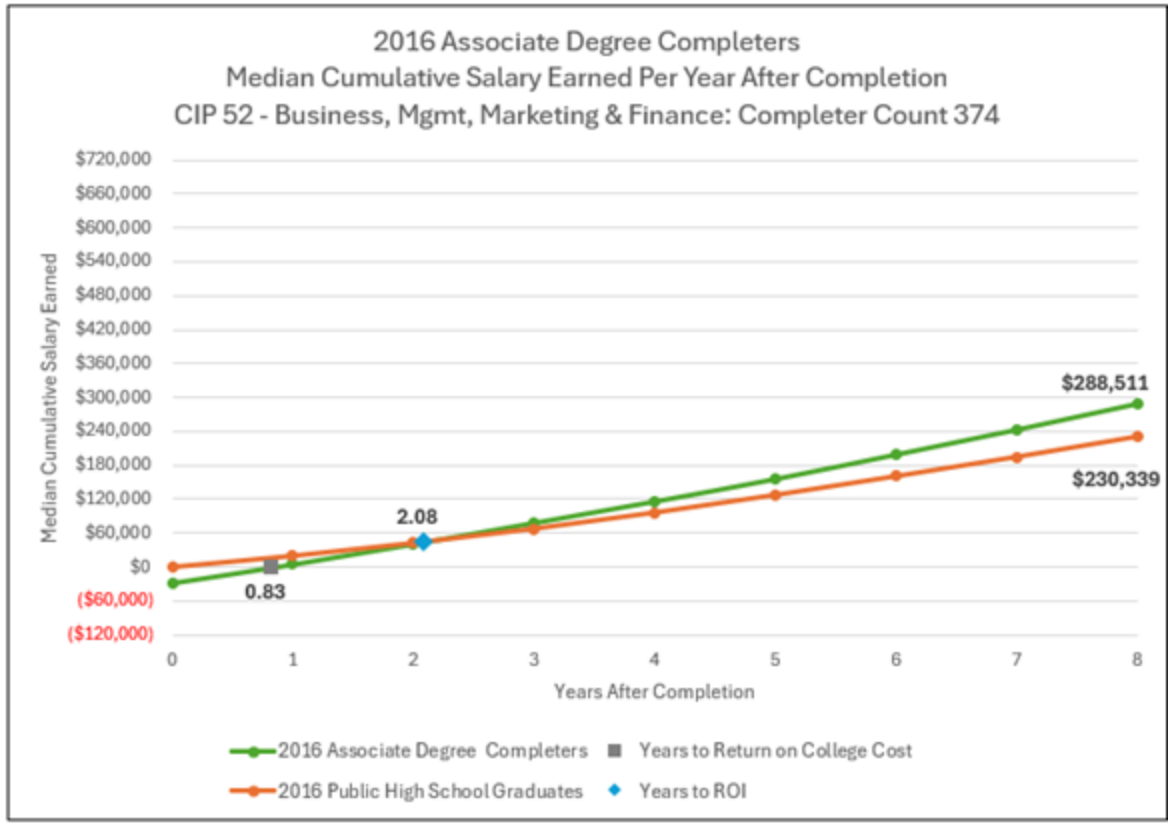
Our ROI Timeline

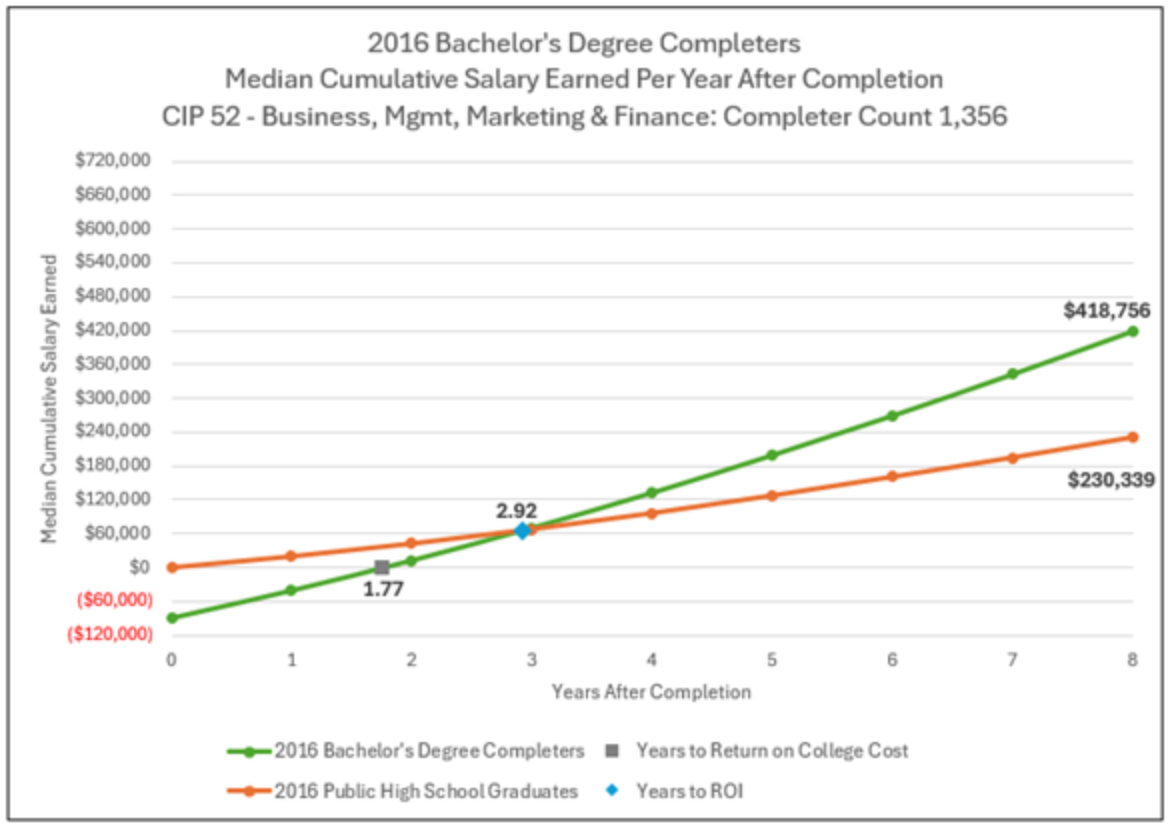


ROI Main Points

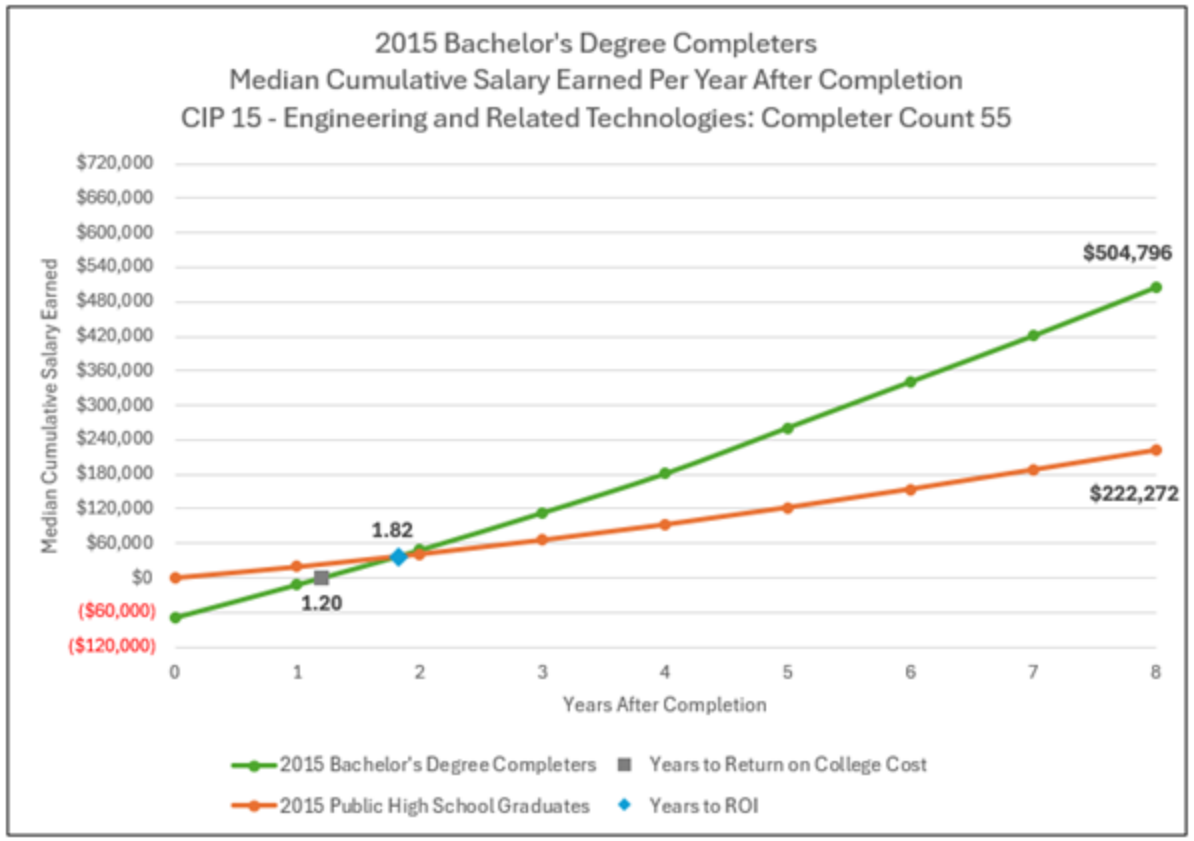
- Looking at statewide ROI by degree level at the CIP Program Level (2-digit code)
- Comparing median cumulative earnings of high school graduates to college completers
- Started with Bachelor's and Associate degrees
- Used 8 years as our ROI threshold due to data availability

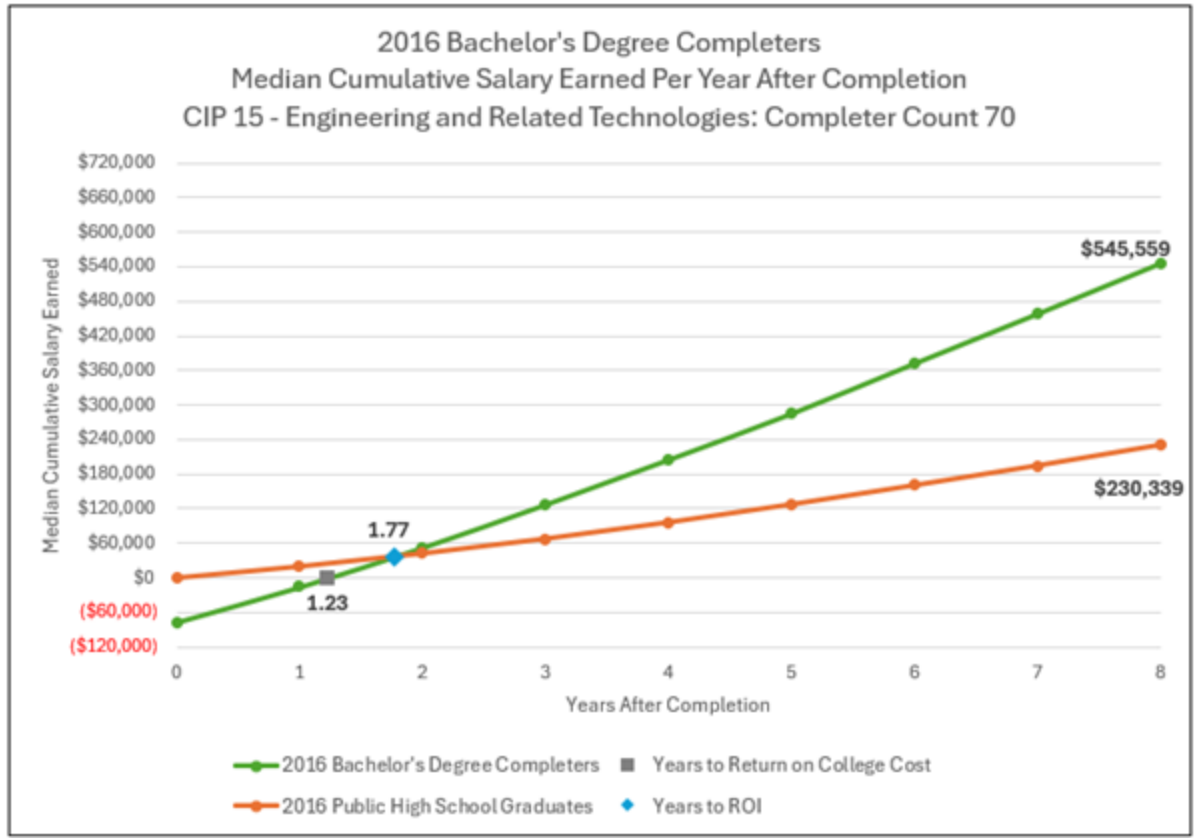
ROI Results – CIP Code 52



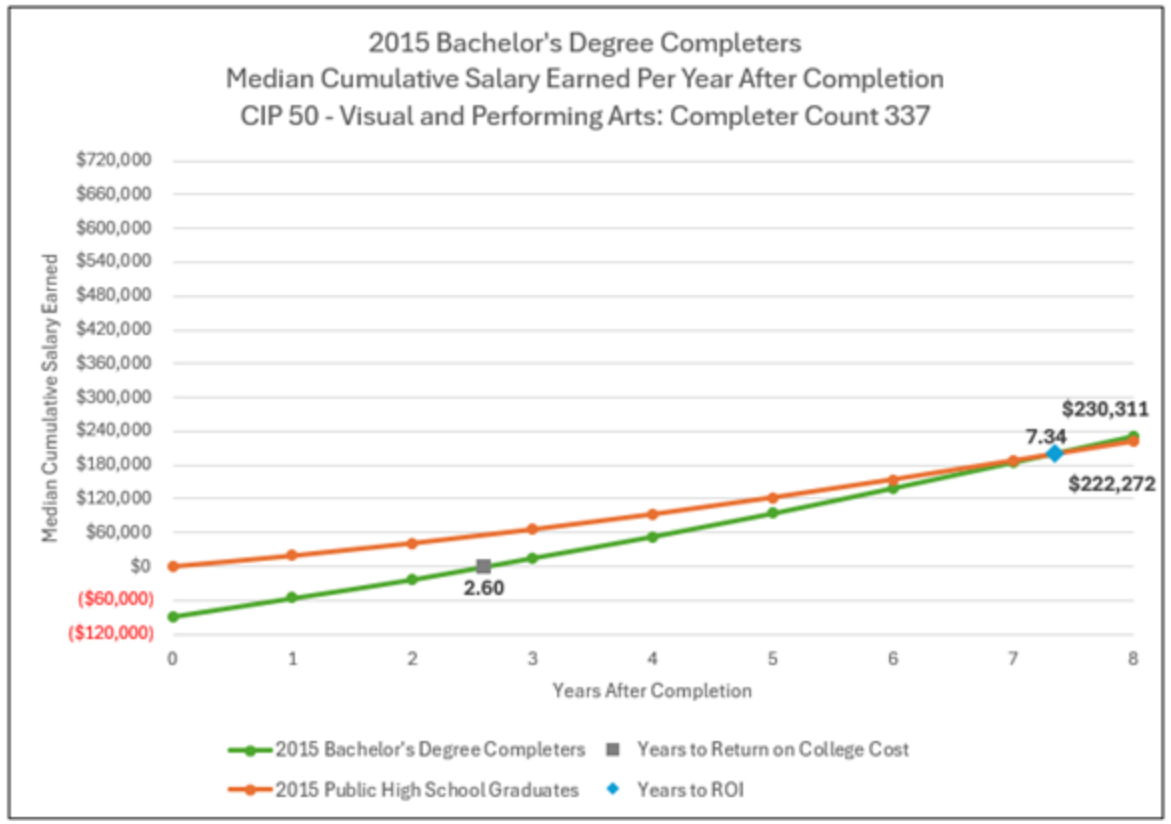


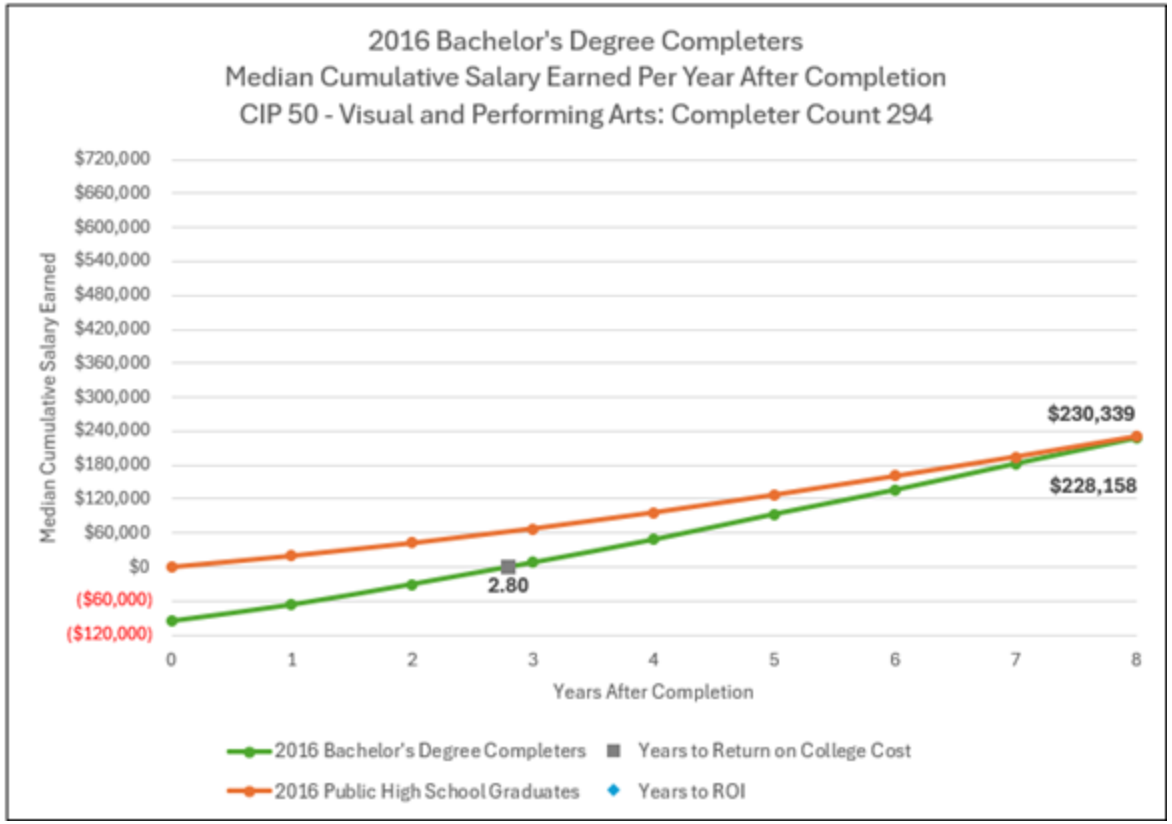
ROI Results – CIP Code 15





ROI Results – CIP Code 50





ROI Results – Comparing 2015 and 2016 Cohorts

Associate Completers

Years to ROI	Count of 2-Digit CIP Programs	
	2015	2016
0 to < 1	5	3
1 to < 2	8	7
2 to < 4	3	5
4 to 8	1	4
No ROI in 8 Years	2	2

Bachelor's Completers

Years to ROI	Count of 2-Digit CIP Programs	
	2015	2016
0 to < 3	7	6
3 to < 5	8	9
5 to < 7	11	10
7 to 8	2	0
No ROI in 8 Years	0	3

ROI Formula Creation

- Huge help from HCM Strategists
- Research other states and organizations
  - Texas, Third Way, FREOPP, Gates Postsecondary Value Commission, Georgetown Center on Education and Workforce
- Discussed formula inputs and what sources of data were available
  - Earnings, Cost of Attendance, Financial Aid, Student Information
  - SLDS, AHEIS, IPEDS, ADHE Finance, SAMS, etc.
- What detail should be looked at
  - 2-, 4-, or 6-digit CIP, statewide vs. institutional, individual programs
- What limitations were there
  - Reliability of data, how much data we have, timeframe

Our ROI Definition

ROI is defined as the amount of time it takes a college graduate to recover the cost of their post-secondary education and begin to earn more than a high school graduate.

Defining the ROI Cohort

- Include
  - Highest credential earned for completers within an academic year
  - If more than one credential awarded at the same credential level, then priority is to high demand then STEM programs

- Exclude
  - Students who re-enroll in postsecondary education within one year after graduating.
  - Out-of-state students
    - Students that had a tuition status of out-of-state at least once prior to their graduation **and**
    - Made less than minimum wage within one calendar year after graduation.
  - Students who have been submitted with alternate IDs that are not able to match to wage data.
  - A SQL query is used to create the cohort and then store in completers table

Comparison Group

- High School Graduates
  - Students reported by Arkansas Department of Education (ADE) as having graduated high school and have not taken any college courses in Arkansas.
  - ARData team matches cohort to wages and sends back an aggregate report.
  - Also used in Potential Wages Input
  - Data reviewed and then uploaded into high school wage match table

Formula Inputs

- Post-Completion Earnings
  - A student's median cumulative wages up to 8 years after completion of a credential.
    - Completer's Social Security Numbers (SSN) are matched to Arkansas Unemployment Insurance (UI) wage data obtained from State Longitudinal Data System (SLDS).
    - Must have wages in all four quarters of a year to be included
  - Data is not available for completers that are employed out-of-state, self-employed, military, etc.
  - Data was reviewed and then uploaded into completer wage match table

Formula Inputs

- Potential Wages
  - Wages an undergraduate completer might have earned if they did not attend college.
  - This is a calculation done in our SQL queries and stored in our report summary details table for each student completer.

Formula Inputs

- Cost of Attendance
  - Tuition and Fees
    - Data from the ADHE Institutional Finance unit because Integrated Postsecondary Education Data System (IPEDS) data was inconsistent.
    - Estimated annual tuition and fees were converted to a per credit hour rate (annual rate/30 hours per year).
  - Books and Supplies
    - Data obtained from IPEDS
    - Only available back to 2000, so a linear regression formula was used for prior years.
    - After linear regression, data is uploaded to books and supplies table
  - Excludes room/board and other miscellaneous categories

Formula Inputs

- Financial Aid
  - Includes grants and scholarships as reported to us but excluded student/parent loans
  - Capped so total aid would not be higher than cost of attendance.
  - The total state aid and non-state aid were calculated per student per AY and put into roi financial aid table.

Formula Inputs

- Other Data
  - Inflation data was obtained from SHEF report using the Consumer Price Index (CPI) and uploaded to inflation adjustment table
  - Minimum wage information for Arkansas from our Department of Workforce and uploaded to minimum wage table
  - Student tuition status and attempted hours were obtained from AHEIS
    - A SQL query is run to calculate tuition status, credits attempted, and total cost of attendance per academic year and inserted into roi student status table.

ROI Database Tables

ROI Database
Tables
Completers
Cost of Attendance
Books and Supplies
High School Grad Wage Match
Completer Wage Match
SAMS FA State Aid
ROI Financial Aid
ROI Student Status
Minimum Wage
Inflation Adjustment
Report Summary Details
Report Summary Medians
Report Summary Median Cumulative

Where did we Start with Analysis

- Phase One
  - Report pulled individual student information into Excel spreadsheet
  - Created a separate spreadsheet per credential level
  - Created a separate tab per 2-digit CIP
  - Used formulas in Excel
    - Created median values per 2-digit CIP for each input and annual earnings after graduation
    - Created years to ROI value
    - Created years to return on college cost
  - Created a graph on each tab using data from formulas

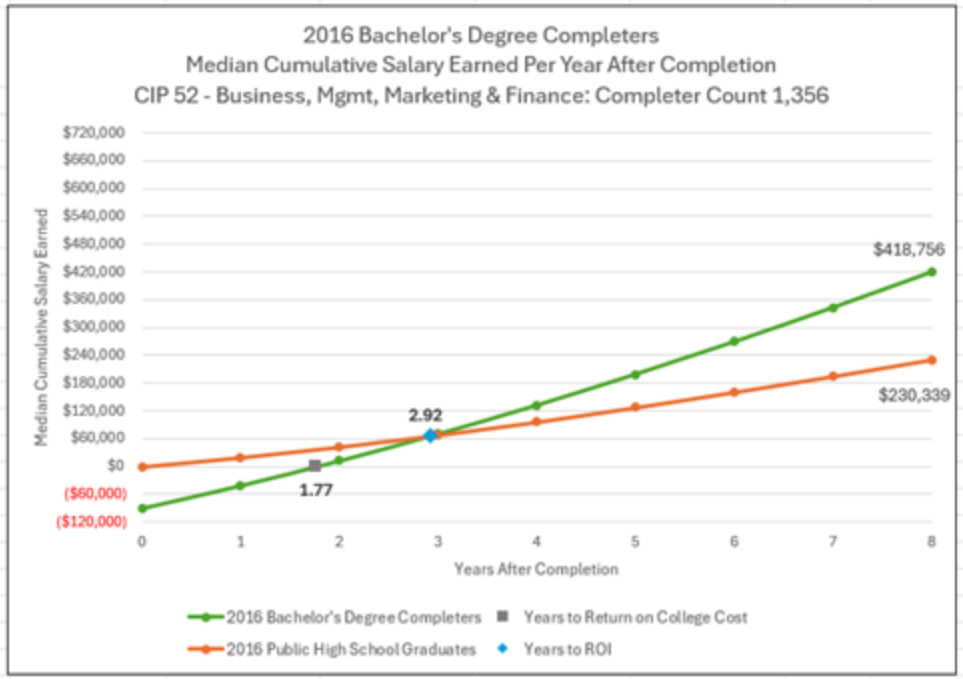
Automation is where it's at!

- Phase Two
  - Made some tweaks to our methodology
    - Making sure cohorts were matching apples to apples
    - Fixing minimum wage information to correct year
    - Adjusting how high school wage information was adding up
  - All graph information is run from queries in SQL and put into report summary tables
  - Report pulled for data and graph details only (no individual student information)
  - Template is used for credential level and 2-digit CIP
  - Paste data into spreadsheet and all graphs and information adjust automatically

2016 Bachelor's Degree Completers	Median Cumulative Salary Earned Per Year After Completion					CIP 52 - Business, Mgmt, Marketing & Finance: Completer Count 1,356									
graduation_cohort_year	degree_level	cip_code	headcount	median_cost_of_attendance	median_total_aid	median_potential_wages	median_one_year_after_yearly_wages	median_two_year_after_yearly_wages	median_three_year_after_yearly_wages	median_four_year_after_yearly_wages	median_five_year_after_yearly_wages	median_six_year_after_yearly_wages	median_seven_year_after_yearly_wages	median_eight_year_after_yearly_wages	
2016	05	52	1356	51411.76714	24420.08665	62695.50723	48834.21331	53398.37112	57837.70236	62101.2196	66587.7618	69931.92272	73551.97444	76200	

graduation_cohort_year	degree_level	cip_code	years_after_grad	2016 Bachelor's Degree Completers	2016 Public High School Graduates	intersect_line_start	intercept_line	intercept_zero
2016	05	52	0	-89687.18772	0	-89687.19	0	0
2016	05	52	1	-40852.97441	19733	-60585.97	0	1
2016	05	52	2	12545.39671	42366	-29820.6	1	0
2016	05	52	3	70383.09907	67764	2619.1	0	0
2016	05	52	4	132484.3187	96194	36290.32	0	0
2016	05	52	5	199072.0805	127296	71776.08	0	0
2016	05	52	6	269004.0032	160395	108609	0	0
2016	05	52	7	342555.9776	194512	148043.98	0	0
2016	05	52	8	418755.9776	230339	188416.98	0	0

Years to ROI				Years to Return on College Cost			
Intersect row	3			**Intersect row**	2		
	x	**Line 1**	**Line 2**		**x**	**Line 1**	**Line 2**
A	2	12545.397	42366	**A**	1	0	-40852.97441
B	3	70383.099	67764	**B**	2	0	12545.39671
Gradient		57837.702	25398	**Gradient**		0	53398.37112
Intercept		-103130	-8430	**Intercept**		0	-94251.34552
		Intercept				**Intercept**	
	y	65713.43			**y**	0.00	
	x	2.92			**x**	1.77	



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