

COLLEGE GRADUATES + EMPLOYMENT DATA = METHODOLOGICAL CONUNDRUM

Presented by: Meredith Fergus and Amy Gehring

CONTEXT

- Increased focus on student success / outcomes
- Engagement of business – workforce prep/supply/demand
- Political pressures
 - Minnesota mandates
 - Federal gainful employment
- Big data
 - P-20 data systems / State Longitudinal Data Systems
- Demand for Return on Investment Information
 - Earnings gain to postsecondary education
 - Student loan repayment burdens / default rates

DATA SOURCES

- Current sources of post-graduation workforce data
 - Graduate surveys
 - Limited by response rate, self-reported and difficulty tracking over time
 - Unemployment Insurance (UI) Wage Detail Records
 - Limitations:
 - Only employers within state boundaries subject to UI. Thus no federal employers, military personnel, no self-employed or contract workers, no student workers, employees of non-profit religious organizations.

Today's presentation:

- What is a Wage Record?
- Data Usability
- Current Metrics
- Current Initiatives
- Your Graduates as a Window to the Labor Market

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WHAT IS A WAGE RECORD?

year	quarter	Name	SSN	uiaccount	owner	phys_zip5	industry	avg_emp	totwage	hours	wages	tenure
2007	2	Rock Steady	208-84-8830	2054996	20	55101	923130	560	7106730	480	24934	46
2007	3	Rock Steady	208-84-8830	2054996	20	55101	923130	572	8597277	560	9722	47
2007	4	Rock Steady	208-84-8830	2054996	20	55101	923130	578	7654452	480	3645	48
2008	1	Rock Steady	208-84-8830	2054996	20	55101	923130	602	9545753	560	20915	49
2008	2	Rock Steady	208-84-8830	2054996	20	55101	923130	601	7926941	480	27791	50
2008	3	Rock Steady	208-84-8830	2054996	20	55101	923130	806	12186572	560	21177	51
2008	4	Rock Steady	208-84-8830	2054996	20	55101	923130	837	10856210	480	1947	52
2009	1	Rock Steady	208-84-8830	2054996	20	55101	923130	835	12808003	560	29613	53
2009	2	Rock Steady	208-84-8830	2054996	20	55101	923130	866	10948048	480	6717	54
2009	3	Rock Steady	208-84-8830	2054996	20	55101	923130	912	13257112	560	3796	55
2009	4	Rock Steady	208-84-8830	2054996	20	55101	923130	927	13500980	560	31379	56
2010	1	Rock Steady	208-84-8830	2054996	20	55101	923130	932	11759793	480	32495	57
2010	2	Rock Steady	208-84-8830	2054996	20	55101	923130	948	11631213	480	29539	58
2010	3	Rock Steady	208-84-8830	2054996	20	55101	923130	944	13523642	560	26826	59
2010	4	Rock Steady	208-84-8830	2054996	20	55101	923130	962	13643227	560	2195	60
2011	1	Rock Steady	208-84-8830	2054996	20	55101	923130	937	11519813	480	3694	61
2011	2	Rock Steady	208-84-8830	2054996	20	55101	923130	909	11385899	480	8933	62
2011	3	Rock Steady	208-84-8830	2054996	20	55101	923130	797	12094146	448	12873	63
2011	4	Rock Steady	208-84-8830	2054996	20	55101	923130	843	12268021	560	3111	64
2012	1	Rock Steady	208-84-8830	2054996	20	55101	923130	831	10508524	480	6865	65
2012	2	Rock Steady	208-84-8830	2054996	20	55101	923130	823	12193614	560	26218	66
2012	3	Rock Steady	208-84-8830	2054996	20	55101	923130	815	10445574	480	26785	67
2012	4	Rock Steady	208-84-8830	2054996	20	55101	923130	819	12090473	559	4312	68

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DATA QUALITY

- Dependent on employer

- Errors can be systematic

year	quarter	Name	SSN	uiaccount	hours	wages
2010	3	Free Lancer	386-61-4629	3169455	254	0
2010	4	Free Lancer	386-61-4629	3169455	520	0
2011	1	Free Lancer	386-61-4629	3169455	520	0
2011	2	Free Lancer	386-61-4629	3169455	520	0
2011	3	Free Lancer	386-61-4629	3169455	347	0
2011	4	Free Lancer	386-61-4629	3169455	520	0
2012	1	Free Lancer	386-61-4629	3169455	520	0
2012	2	Free Lancer	386-61-4629	3169455	520	0

Full-Time Employee
With No Wages

year	quarter	Name	SSN	uiaccount	hours	wages
2011	1	Joe Noshow	581-05-4015	248750	0	20348
2011	2	Joe Noshow	581-05-4015	248750	0	3112
2011	2	Joe Noshow	581-05-4015	248750	0	2374
2011	3	Joe Noshow	581-05-4015	248750	0	30482
2011	4	Joe Noshow	581-05-4015	248750	0	24335
2012	1	Joe Noshow	581-05-4015	248750	0	20060
2012	2	Joe Noshow	581-05-4015	248750	0	29282
2012	3	Joe Noshow	581-05-4015	248750	0	2834
2012	4	Joe Noshow	581-05-4015	248750	0	25180

Cannot Calculate
Hourly Wage

- Many variations between these two extremes

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MATCHING UI WITH GRADUATES

- College Graduate information is linked to UI data

- Matching Algorithm / Rules

- Dependent on presence of personal identifiers (Name, SSN);
 - Likelihood of match / probability threshold
 - Example business rules for determining probabilities:
 - Full Name (fuzzy) and SSN (exact)
 - SSN (exact), Last Name (exact), First Name (name group), Middle initial (null or exact)
 - Last Name (exact), First Name (fuzzy), Date of Birth (exact), SSN (90%+)

- Know your populations

- Geographic location of graduates
 - Online students & non-residents

- Length of Time between Graduation and Employment

- Immediate? 6 months? 1 year? 5 years? 10 years?
 - Post-graduation plans (graduate school, national/international placements)

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DATA USABILITY THRESHOLDS

- What is the minimal amount of data needed to use the matched record?
 - Standards set by reporting agency, are not set nationally, but should be agreed upon at time of study.
- Current Thresholds
 - Evaluation of wages or hours reported (Minnesota, California)
 - \$1 in wages for the quarter (Texas)
 - 1 hour worked for the quarter
 - What if quarterly wages exceed \$1,000,000?

year	quarter	Name	SSN	ulaccount	owner	phys_zip5	Industry	hours	wages	tenure
2011	1	Rock Steady	208-84-8830	2054996	20	55101	923130	480	24934	46
2011	2	Rock Steady	208-84-8830	2054996	20	55101	923130	560	9722	47
2011	3	Rock Steady	208-84-8830	2054996	20	55101	923130	480	3645	48
2011	4	Rock Steady	208-84-8830	2054996	20	55101	923130	560	20915	49
year	quarter	Name	SSN	ulaccount	owner	phys_zip5	Industry	hours	wages	tenure
2011	1	Ed Amame	123-45-6789	3169455	20	55101	923130	254	1816	128
2011	2	Ed Amame	123-45-6789	3169455	20	55101	923130	456	3260	129
2011	3	Ed Amame	123-45-6789	3169455	20	55101	923130	189	1351	130
2011	4	Ed Amame	123-45-6789	3169455	20	55101	923130	335	2395	131

Both workers meet the \$1 wage, 1 hour threshold

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DATA USABILITY THRESHOLDS

- Current Thresholds
 - Full-time minimum wage standard (Arkansas, Virginia)
 - Sum of 4 quarters of wages must exceed the state minimum wage * 35 hours per week * 52 weeks (\$7.25 * 1820 = \$13,195 annually or \$3,299 per quarter)
 - Minimum Wage Threshold (varies by state; Federal = \$7.25, MN Large Employer = \$6.15, MN Small Employer = \$5.25, Training Wage = \$4.90)
 - If using a minimum wage threshold, part-time wages may be omitted
 - 4 quarter full-time minimum wage standard (Colorado)
 - Earnings must be reported in each of 4 consecutive quarters starting 7-9 months after graduation and meet the full-time minimum wage standard by quarter

2011	1	Rock Steady	208-84-8830	2054996	20	55101	923130	480	24934	46	Total wages \$59,216 Meets both standards
2011	2	Rock Steady	208-84-8830	2054996	20	55101	923130	560	9722	47	
2011	3	Rock Steady	208-84-8830	2054996	20	55101	923130	480	3645	48	
2011	4	Rock Steady	208-84-8830	2054996	20	55101	923130	560	20915	49	
year	quarter	Name	SSN	ulaccount	owner	phys_zip5	Industry	hours	wages	tenure	Total wages
2011	1	Ed Amame	123-45-6789	3169455	20	55101	923130	349	2530	3	Total wages \$13,228 Meets FTMW standard but not 4 Quarter FTMW
2011	2	Ed Amame	123-45-6789	3169455	20	55101	923130	456	3306	4	
2011	3	Ed Amame	123-45-6789	3169455	20	55101	923130	489	3912	5	
2011	4	Ed Amame	123-45-6789	3169455	20	55101	923130	435	3480	6	


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DATA USABILITY FOR REPORTING

- Aggregated cohorts (5 year rolling aggregates) (California, ESM)
 - Minimal use of single year reporting due to small cells by program

- Disclosure thresholds – applies to each program (ESM)
 - 2 methodologies
 - 1. # of graduates exceeds minimum (e.g. 5, 10, 15 graduates per program)
 - 2. # graduates with wage data exceed minimum
 - 200+ graduates requires 20%+ with wage data
 - 10-199 (15-199; 4-199) graduates requires 30%+ with wage data
 - 1-10 (1-15; 1-3) graduates means no reporting

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Economic Success Measures - Virginia

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GO

Area of Study

Spanish Language and Literature

Area of Study (CIP) Code: [16.0905]

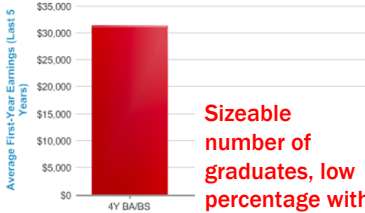
Area of Study Description

A program that focuses on the Spanish language and related dialects. Includes instruction in philology; Modern Castilian; Latin American and regional Spanish dialects; and applications in business, science/technology, and other settings.

Detailed Breakdown (5 Year Data)

Degree Level	Institutions with Disclosable Programs	Average First-Year Earnings (Last 5 Years)	% of Above-Average Earners	5-Year Trend	# of Completers	% of Completers with Wage Data
Four-Year Bachelor's Degree	1 institutions	\$31,447	11 %	↑	797	23 %
	University of Virginia-Main Campus	\$33,516	13 %	↑	389	21 %

Average First-Year Earnings (Last 5 Years) by Degree Level



Sizeable number of graduates, low percentage with wage data

What makes a program disclosable? | Methodology

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DATA USABILITY FOR REPORTING

- Institutional exclusions
 - Are data collected from all institutions?
 - Community Colleges only (California Salary Surfer)
 - Public only (Virginia, Arkansas)
 - Public and a few privates (Colorado)
 - Public and private (Minnesota)
 - Predominantly online institutions may skew results
 - Students are physically located in other states and thus no wage match
 - *Large Online U in MN has 5.4% of recent graduates employed in MN –include in state estimates?*
- Individual exclusions
 - Cohort may exclude students re-enrolling after degree completion (Colorado)
 - certificate program → associates;
 - associates → bachelors
 - bachelors → grad school
 - Or by age (Texas)
 - 21+

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WAGES, SALARY & INCOME

- Wages
 - Sum of wages reported for a given time period, includes:
 - Total quarterly wages; Median/average quarterly wages
 - Annual wages; Median/average first-year earnings, Above average earners
- Wage Rate
 - Total wages ÷ total hours for a given time period; Requires both hours and wages be reported

year	quarter	Name	SSN	ulaccount	owner	phys_zip5	industry	hours	wages	tenure	Wage Rate
2010	3	Art Majors	987-65-4321	2058344	20	55101	923130	392	5643	128	\$ 14.40
2010	4	Art Majors	987-65-4321	2058344	20	55101	923130	456	6566	129	\$ 14.40
2011	1	Art Majors	987-65-4321	2058344	20	55101	923130	395	5688	130	\$ 14.40
2011	2	Art Majors	987-65-4321	2058344	20	55101	923130	520	7488	131	\$ 14.40
									Total Quarterly Wages \$	25,385	
									Average Quarterly Wages \$	6,346	
									Median Quarterly Wages \$	6,127	

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WAGES, SALARY & INCOME

- Salary
 - 4 continuous quarters of reported wages
 - First-Year Earnings = 4 continuous quarters of reported wages starting 7-9 months after graduation (ESM)

year	quarter	Name	SSN	ulaccount	owner	phvs	zip5	Industry	hours	wages	tenure	Wage Rate
2010	3	Art Majors	987-65-4321	2058344	20	55101	923130		392	5643	128	\$ 14.40
2010	4	Art Majors	987-65-4321	2058344	20	55101	923130		456	6566	129	\$ 14.40
2011	1	Art Majors	987-65-4321	2058344	20	55101	923130		395	5688	130	\$ 14.40
2011	2	Art Majors	987-65-4321	2058344	20	55101	923130		520	7488	131	\$ 14.40
Total Quarterly Wages/Salary										\$ 25,385		

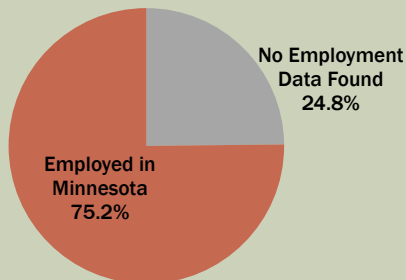
- Wages & Salary DO NOT EQUAL Income
 - No information on non-wage income of graduates (e.g child support, social security/disability payments, rental income, spouse's income)
- Inflation in CPI/Cost of Living Index
 - Must inflate/adjust earnings to be comparable across time

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EMPLOYMENT ACTIVITY

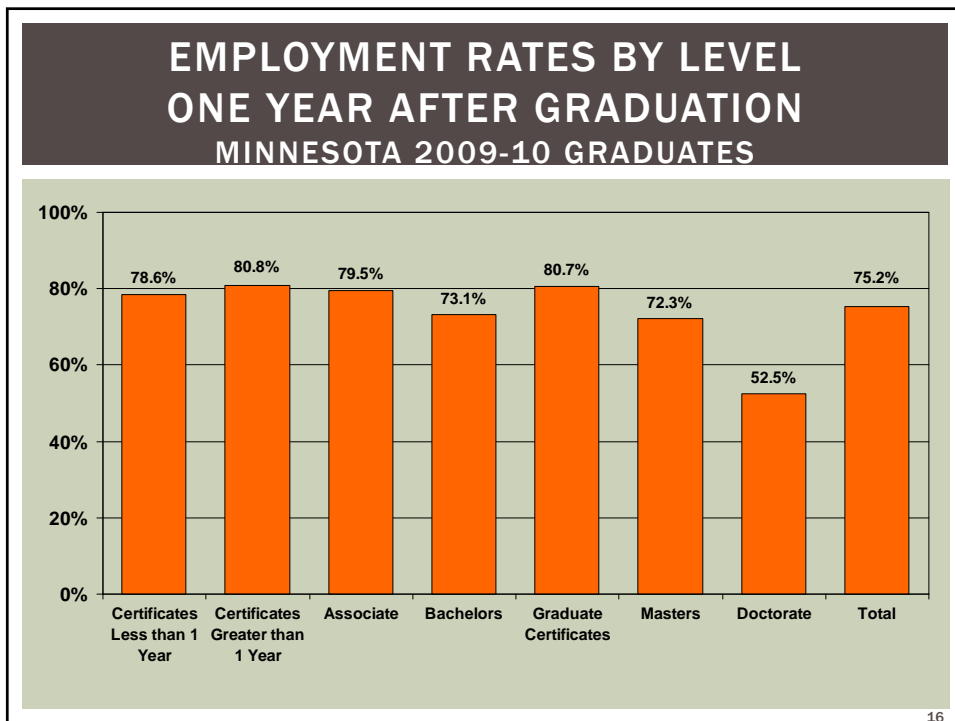
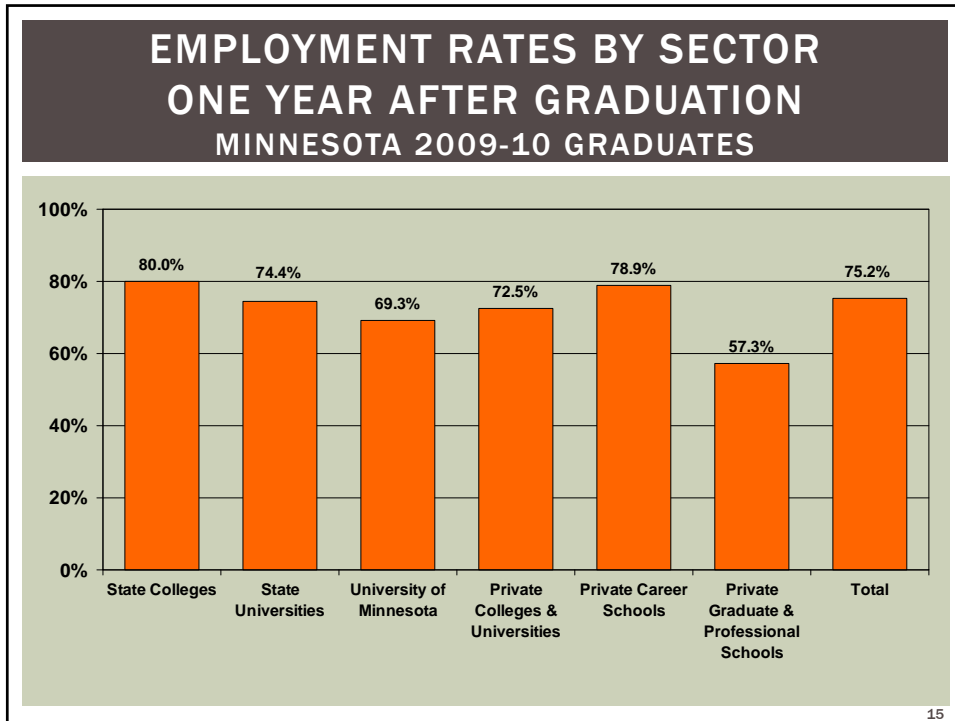
- Match Rate
 - Number of graduates with a matched UI record ÷ total graduates
 - Sometimes referred to as Employment Rate, but that label assumes 100% of employment records available

75 PERCENT OF 2009-2010 GRADUATES EMPLOYED IN MINNESOTA ONE YEAR AFTER GRADUATION



Source: Minnesota Office of Higher Education and Minnesota Department of Employment and Economic Development

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EMPLOYMENT ACTIVITY

■ Employment Status

- Full-time vs Part-time (Full-time = 35+ hours per week (455 hours per quarter); Proxy for employment with benefits; NCES use)
- Dominant Employer
 - Employer for whom highest total wages reported (highest total hours)
- Multiple Employers
- Seasonal Employment

year	quarter	Name	SSN	ulaccount	owner	phys zip5	Industry	hours	wages	tenure
2010	3	Oliver D. Map	208-84-8830	2054996	20	55101	238290	312	2808	18
2010	3	Oliver D. Map	208-84-8830	3169455	20	55404	923130	156	1638	11
2010	4	Oliver D. Map	208-84-8830	2054996	20	55101	238290	312	2808	19
2010	4	Oliver D. Map	208-84-8830	3169455	20	55404	923130	168	1764	12
2010	4	Oliver D. Map	208-84-8830	1124863	20	55410	454111	240	3120	1
2011	1	Oliver D. Map	208-84-8830	3169455	20	55404	923130	156	1638	13
2011	2	Oliver D. Map	208-84-8830	2054996	20	55101	238290	312	2808	21
2011	2	Oliver D. Map	208-84-8830	3169455	20	55404	923130	144	1512	14
2011	3	Oliver D. Map	208-84-8830	2087962	20	55101	442110	208	3016	1
2011	3	Oliver D. Map	208-84-8830	2054996	20	55412	238290	88	792	22
2011	4	Oliver D. Map	208-84-8830	2054996	20	55101	238290	189	1701	23
2011	4	Oliver D. Map	208-84-8830	2087962	20	55101	442110	212	3074	2
2011	4	Oliver D. Map	208-84-8830	1124863	20	55410	454111	480	6240	1

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EMPLOYMENT ACTIVITY

■ Employment Tenure

- Length of time with specific employer
- Length of employment in industrial field
- Gaps in employment (don't assume unemployed)

■ Labor Force Mobility

- Change in employers, industries over time

year	quarter	Name	SSN	ulaccount	owner	phys zip5	Industry	hours	wages	tenure
2010	3	Oscar LaVista	234-12-5896	3169455	20	55101	923130	520	9752	24
2010	4	Oscar LaVista	234-12-5896	3169455	20	55101	923130	360	6423	25
2010	4	Oscar LaVista	234-12-5896	2054996	20	55101	238290	80	1152	1
2011	1	Oscar LaVista	234-12-5896	2054996	20	55101	238290	520	11579	2
2011	2	Oscar LaVista	234-12-5896	2054996	20	55101	238290	520	12543	3

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OUTCOMES AFTER COLLEGE

- Pre- and Post- Wage comparisons
 - Pre- and Post-Enrollment OR Pre- and Post-Graduation

- Tailor time frame to the program
 - Sub-baccalaureate certificate /Associate's degree:
 - 2 years pre-graduation, 1 year post-graduation (MN)
 - 2 years pre-graduation, 2 years post-graduation, 5 years post-graduation (CA)
 - Bachelor's degree: what is the appropriate pre-enrollment time frame?

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EMPLOYMENT PRE- AND POST-SUB-BACC COMPLETION IN HEALTH PROFESSION (CIP 51) PROGRAMS 2009/10 COMPLETERS

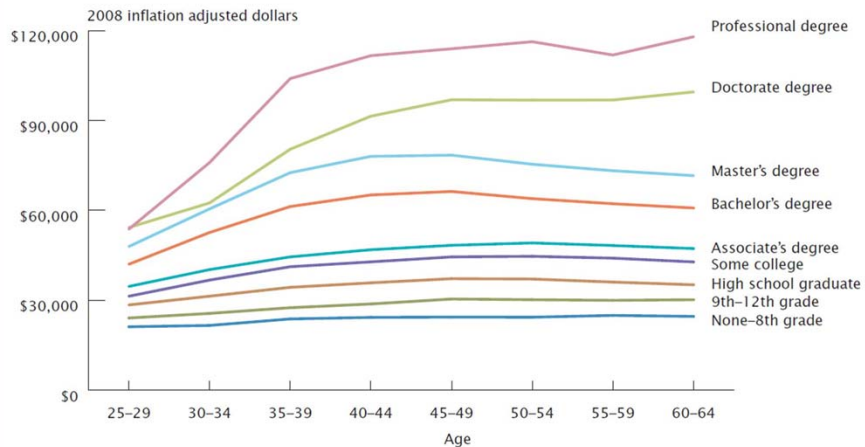
Two Years Before Graduation				One Year After Graduation			
Industry of Employment	Count	% Employed in Industry	Median Wage	Industry of Employment	Count	% Employed in Industry	Median Wage
Health Care and Social Assistance (NAICS 62)	1,127	34%	\$11.42	Health Care and Social Assistance	998	89%	\$15.18
				Other than Health Care	129	11%	\$12.28
Other than Health Care Industry	2,228	66%	\$9.88	Health Care and Social Assistance	1,154	52%	\$12.61
				Other than Health Care	1,074	48%	\$11.74

EMPLOYMENT PRE- AND POST-SUB-BACC COMPLETION IN CONSTRUCTION TRADES (CIP 46) PROGRAMS 2009/10 COMPLETERS

Two Years Before Graduation				One Year After Graduation			
Industry of Employment	Count	% Employed in Industry	Median Wage	Industry of Employment	Count	% Employed in Industry	Median Wage
Construction (NAICS 23)	90	18%	\$14.00	Construction	65	72%	\$18.04
				Other	25	28%	\$13.55
Other than Construction Industry	405	82%	\$9.77	Construction	113	28%	\$14.41
				Other	292	72%	\$12.52

INCOME TRAJECTORIES

Median Annual Earnings by Age and Educational Attainment
(Full-time, year-round workers)



Source: U.S. Census Bureau, American Community Survey, 2006-2008.

OUTCOMES AFTER COLLEGE

- Return on investment (ROI)
 - What return did graduates see from investing time and money in postsecondary education? What return do non-completers see?
 - What return did the state/region/locality see?

- Comparison of Wage Gains to:
 - Cumulative Tuition & Fees paid
 - Cumulative Student Debt incurred
 - Monthly Debt Repayment Amount (varies by individual & loan)

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CURRENT INITIATIVES

- **Economic Success Metrics** (<http://collegemeasures.org/>)
 - Measures how well graduates from the same degree program at different institutions within a state perform in job market
 - Allows for comparisons vertically and horizontally
 - Vertically – See how higher levels of education will affect outcomes
 - Horizontally – How different majors compare, or how same majors across institutions compare
 - Allows for consumer-minded education decisions
 - Evaluate and maximize state's higher education ROI
 - 6 states to date (VA, ARK, TX, CO, FL, TN); Primarily public institutions
 - **California Salary Surfer** (<http://salarysurfer.cccco.edu/SalarySurfer.aspx>)
 - Provides consumer information (system level data) and program-specific feedback (college and program level data)
 - Initiated by an internal Student Success Task Force on student progress and success metrics
 - **Minnesota** – coming online 2014
 - Legislative mandates in 2013
 - Focus on consumer information (system level data) and institutional evaluation for continued participation in state financial aid

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FOR YOUR INSTITUTION

- Use your graduates as a window into larger labor market trends
 - Construction trades during the recession
 - Earnings gains over the lifetime
- Give potential students real data to encourage investment
 - Full disclosure of the metrics chosen
 - Geographic trends
 - Industrial trends
- Potential research linkages to
 - Student enrollment
 - Student persistence & completion
 - Alumni giving
- Use as Program Review
 - Carleton College Visualization

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LINKS TO REPORTS & INFO

WDQI - Workforce Data Quality Initiative; federal program sponsored by the US Department of Labor to support the development of longitudinal databases that will integrate workforce and education data.

State	Link
Alabama	AL
Alaska	AK http://labor.alaska.gov/trends/jun12.pdf
Arizona	AZ
Arkansas	AR http://esm.collegemeasures.org/esm/arkansas/ ; https://arc.arkansas.gov/arc_web/resources/publications/AEER_FullReport_FINAL_20120113.pdf
California	CA http://salarysurfer.cccco.edu/SalarySurfer.aspx
Colorado	CO http://esm.collegemeasures.org/esm/colorado/
Connecticut	CT
Delaware	DE
Florida	FL http://www.fldoe.org/fcs/pdf/FCS-EmploymentEarningsEducation.pdf
Georgia	GA
Hawaii	HI
Idaho	ID
Illinois	IL
Indiana	IN http://www.iwis.iupui.edu/analysis.aspx
Iowa	IA http://www.iowaworkforce.org/lmi/labsur/edoutcomes.html
Kansas	KS http://www.kansasregents.org/resources/PDF/2296-EconomicAlignmentWorkforce012013.pdf
Kentucky	KY
Louisiana	LA https://www.louisianaworks.net/hire/analyzer/default.asp
Maine	ME
Maryland	MD https://wcp.p20.memmsdc.org/webcenter/
Massachusetts	MA
Michigan	MI
Minnesota	MN http://mnp20.org/working_groups/documents/SLEDSGOVCOMMDec32012_fullpresentationandhandouts-1.pdf

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LINKS TO REPORTS & INFO

WDQI : Workforce Data Quality Initiative; federal program sponsored by the US Department of Labor to support the development of longitudinal databases that will integrate workforce and education data.

State	Link
Mississippi MS	
Missouri MO	WDQI grant, did not find report
Montana MT	
Nebraska NE	WDQI grant, did not find report
Nevada NV	
New Hampshire NH	
New Jersey NJ	WDQI grant, did not find report
New Mexico NM	
New York NY	
North Carolina NC	
North Dakota ND	http://www.legis.nd.gov/assembly/62-2011/docs/pdf/he041712appendixc.pdf
Ohio OH	WDQI grant, did not find report
Oklahoma OK	WDQI grant, did not find report
Oregon OR	
Pennsylvania PA	WDQI grant, did not find report
Rhode Island RI	WDQI grant, did not find report
South Carolina SC	WDQI grant, did not find report
South Dakota SD	WDQI grant, did not find report
Tennessee TN	http://esm.collegemeasures.org/esm/tennessee/
Texas TX	http://esm.collegemeasures.org/esm/texas/
Utah UT	
Vermont VT	
Virginia VA	http://esm.collegemeasures.org/esm/virginia/
Washington WA	WDQI grant, did not find report
West Virginia WV	http://www.be.wvu.edu/bber/pdfs/BBER-2011-09.pdf
Wisconsin WI	WDQI grant, did not find report

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