The Great Equalizer: A Longitudinal Look at How Internships Close the Post-Collegiate Earnings Gap

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Questions Questions…some answers.

Past and current question:
Is a college credential (baccalaureate) from the UMN a good investment (i.e., earnings)? If so, is it an equalizer for students who come from disadvantaged economic backgrounds?

Found:
Yes, overall a UMN credential is good investment but inequities exists in initial earnings outcomes and growth.

Current question:
Does having an internship/work-based learning experience reduce or eliminate some of these inequities for students who come from disadvantaged backgrounds?

Work integrated learning experiences

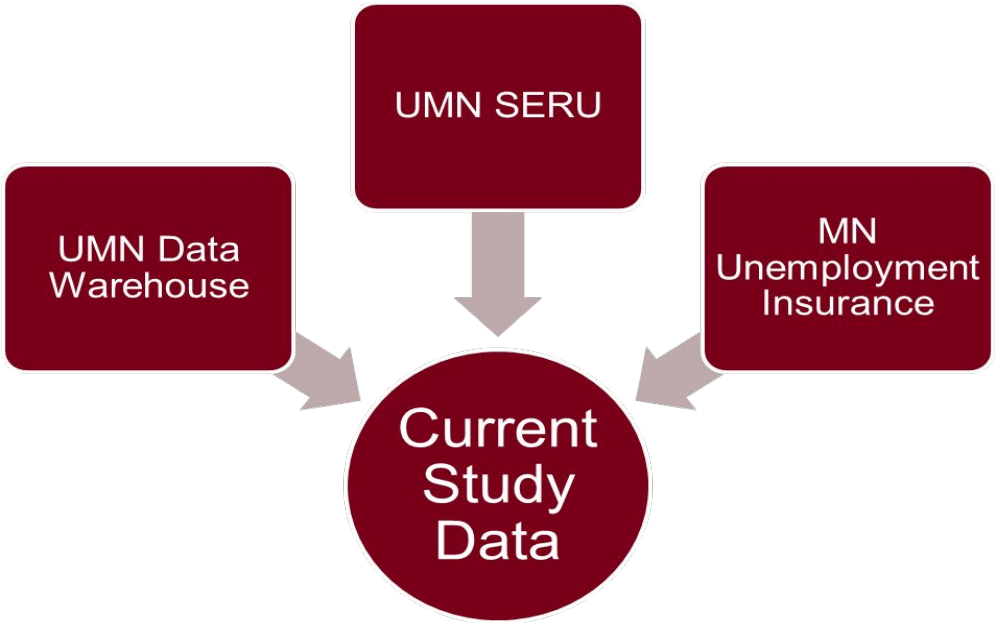
Co-ops, paid internships are critical:

- **strong** connection between internships and college-level employment after graduation.
- Controlling for factors such as gender, race/ethnicity, and institutional characteristics, the odds of underemployment for graduates who had at least one internship are **48.5** percent lower than those who had no internships,
- The benefits associated with completing an internship are relatively strong across degree fields.

The Burning Glass Institute and Strada Institute for the Future of Work, in their recent report from Feb. of 2024, Talent Disrupted: Underemployment, College Graduates, and the Way Forward, 2024

Our focus today….what background & experiences while enrolled matter later?

- Pell grant recipient
- Internships
- Earnings over time



2010-2015 SERU Data File: Focus on Internship Items

Selected SERU survey items + student id

- Academic Experience module: **2** Internship items collapsed into **1** variable
- Have done or currently doing:
  - Internship under the direction of a faculty member
  - Other internship (e.g., co-op, clinical assignment)
- **7,015** responded to the internship items

Modeling Earnings Outcomes of UMN Baccalaureate Alumni Over Time

Data in the Model

- Bachelor's degree recipients only: graduates who earned further education credentials are removed

- Data errors and non-normality:
  - Left-side cut-off point - prevailing MN minimum wage of $17,927 (working full-time at least 1,820 hours per year)
  - Natural log transformation of the salary data

- Time (2011-2022) was coded as a dummy variable (**10** years)

- Final sample: *n* of alumni =**2,931**; *n* of salary records = **17,179**

- Earnings are based on a calendar year and are inflation-adjusted to reflect *2024* dollars.

Final sample n=2,931

Group		% of Total N=2,931
1	**No** Internship & **No** Pell	40.3%
2	**No** Internship & Pell	25.5%
3	Internship & **No** Pell	23.2%
4	Internship & Pell	11.0%

Final sample n=2,931

- 36.5% had received a Pell grant at some point in their enrollment

- Overall internship rate: **34.2**%
  - **Pell Grant Students' Internship Rate:** 322 out of 1,070 had an internship, or **30.1%**.
  - **Non-Pell Grant Students' Internship Rate:** 680 out of 1,861 had an internship, or **36.5%**.

Regression Model for Salary Outcomes Over Time: Internship & Socioeconomic Status as Major Predictors

Model type: Different Intercepts and Different Slopes

(The model adds a group by time interaction to the additive model)

$$ln(Salary)_{ij} = \beta_0 + \beta_1 Time_{ij} + \beta_2 Group + \beta_3 Group{:}Time_{ij} + \beta_4 Experience_1 + \ldots + \varepsilon_{ij}$$

Intercept: β_0 is the average expected starting log-salary of Group 1 (**no internship no pell**) subjects at time $t_{ij} = 0$ or one year after graduation

Intercept differences: β_{22}, β_{23}, β_{24} are the differences in Group 2, 3, and 4 means compared to Group 1 at $t_{ij} = 0$ or one year after graduation

Slope: β_1 is the slope (annual salary growth) for Group 1 subjects

Slope differences: β_{32}, β_{33}, β_{34} are differences in Group 2, 3, and 4 annual salary growth compared to Group 1

Random Intercept and Slope and Autoregressive (AR1) Model

Coefficients:	Value (β^)	Std.Error	t-value	p-value
(Intercept)*	**10.5227**	0.0603	174.3890	0.0000
Time*	**0.0731**	0.0025	29.3424	0.0000
No Internship & Pell Grant	**-0.0822**	0.0238	-3.4471	0.0006
Internship & No Pell Grant	**0.0701**	0.0243	2.8849	0.0039
Internship & Pell Grant	0.0437	0.0314	1.3930	0.1637
Value of Education	**0.0276**	0.0060	4.5713	0.0000
GPA	0.0248	0.0175	1.4204	0.1556
Time:No Internship & Pell Grant	-0.0042	0.0039	-1.0629	0.2878
Time:Internship & No Pell Grant	-0.0037	0.0039	-0.9575	0.3384
Time:Internship & Pell Grant	-0.0042	0.0049	-0.8562	0.3919

Baseline group for comparison:* ***No Internship & No Pell Grant*
Note: The estimates provided in the "Value" column are ***in log units.***

Regression Model Results

Estimate: Monetary Value $e^{10.5227} \approx \$37{,}148$ and Percentage Change $(e^{\hat{\beta}} - 1) \times 100\%$

	Estimate	Lower Bound of 95% CI	Upper Bound of 95% CI
(Intercept)*	**$37,148**	$33,005	$41,810
Time*	**7.58%**	7.06%	8.11%
No Internship & Pell Grant	**-7.89%**	-12.09%	-3.48%
Internship & No Pell Grant	**7.27%**	2.27%	12.50%
Internship & Pell Grant	4.47%	-1.77%	11.11%
Value of Education	**2.80%**	1.59%	4.03%
GPA	2.51%	-0.94%	6.09%
Time:No Internship & Pell Grant	-0.41%	-1.17%	0.35%
Time:Internship & No Pell Grant	-0.37%	-1.13%	0.39%
Time:Internship & Pell Grant	-0.42%	-1.38%	0.54%

Baseline group for comparison:* ***No Internship & No Pell Grant*

Regression Model Results: Expected Salaries One Year after Graduation

Intercept Estimates

	Estimate
Int & No Pell	$39,847
Int & Pell	$38,810
No Int & No Pell	$37,148
No Int & Pell	$34,218

Pairwise Comparisons of Intercepts: Simultaneous Tests for General Linear Hypotheses

	Estimate	p-value
No Int & No Pell - No Int & Pell	0.08217	0.00294
Int & No Pell - No Int & No Pell	**0.07014**	**0.01962**
Int & Pell - No Int & No Pell	**0.04375**	**0.49774**
Int & No Pell - No Int & Pell	0.15231	< 0.001
Int & Pell - Int & No Pell	**-0.02639**	**0.86038**
Int & Pell - No Int & Pell	**0.12592**	**< 0.001**

*Note: The intercept estimates (geometric means of the starting salary) are provided **in U.S. dollars.***
*The pairwise comparisons of starting salaries between groups are provided **in log units.***

Regression Model Results: Expected Annual Salary Growth

Slope Estimates

	Estimate
No Int & No Pell	7.58%
Int & No Pell	7.18%
No Int & Pell	7.14%
Int & Pell	7.13%

Pairwise Comparisons of slopes: Simultaneous Tests for General Linear Hypotheses

	Estimate	p-value
No Int & No Pell - No Int & Pell	0.004154	0.709
No Int & No Pell - Int & No Pell	0.003728	0.771
No Int & No Pell - Int & Pell	0.004210	0.825
No Int & Pell - Int & No Pell	-0.0004259	1.000
Int & No Pell - Int & Pell	0.0004826	1.000
No Int & Pell - Int & Pell	0.00005666	1.000

*Note: The slope estimates (annual salary growth) are provided **in percentage change units.***
*The pairwise comparisons of annual salary growth between groups are provided **in log units.***

Regression Model Results

Internships as a Powerful Equalizer

Evidence: Internships Level the Playing Field

- Internships have an immediate impact on wages for all students but especially Pell students
- This boost is so significant it brings their pay to the same level as their more advantaged peers and well above their peers who did not have the same opportunity.

Results cont.

- Pell students who did not have an internship experience have the lowest starting salaries.
  - Although their salary growth over time is not statistically significantly different from that of other groups, they never catch up in terms of salary due to the initial disparities at the beginning of their careers

Conclusions, Implications for Research and Practice

- Promote work-based experiential learning experiences-there is evidence of value

- Career Services targeting experiences (e.g., internships, experiential learning) for specific sub-populations to help level the playing field—create those opportunities for networks and create more partnerships with industry

Thank you!

Questions?

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