

Do STEM Careers Bear Fruit?



Comparing Outcomes and the Gender Wage
Gap:
Business versus Computer Science Majors

Professional Novice-Expert Research Data Scientists (Professional N.E.R.D.S.)

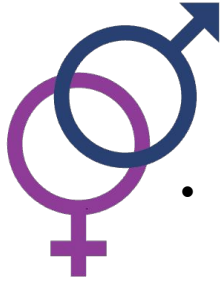


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The Syntucky Governor asks: *Do STEM careers offer a positive career pathway for women in Syntucky? Does this education/training provide a good return on investment?*

Approach and Constraints:

- Business is a widely-chosen degree, and we have the most data about it.
- We lack data for all STEM fields, but we can study Computer Science graduates.
- Compare Computer Science and Business degree earners to understand gender-related earning differences.
- Our mission, should we choose to accept it:
 1. **Analyze earnings** for Computer Science and Business degrees.
 2. **Examine the gender wage gap** across in all Bachelor degree earners 7, 8, and 9 years after graduation.
 3. **Explore whether STEM degrees lead to equal earnings** for women.



Findings

- A gender wage gap exists for both Business and Computer Science Bachelor's degree holders.
- **It is larger for Computer Science degrees (STEM) than for Business degrees.**
- The gender wage gap does not uniformly decrease over time for Computer Science (STEM) degrees.



STEM careers appear to offer both strong demand/job growth and high earnings potential for those who obtain a degree in STEM fields.

Source: Syntucky Data

Literature Review

Most studies have found that **STEM graduates have higher earnings** than graduates of the biological sciences, humanities, fine arts and social sciences fields.

Wall, K., Zhao, J., Ferguson, S.-J., & Rodriguez, C. (2018). Results from the 2016 Census: Is Field of Study a Factor in the Payoff of a Graduate Degree? Insights on Canadian Society. In Statistics Canada. Statistics Canada.

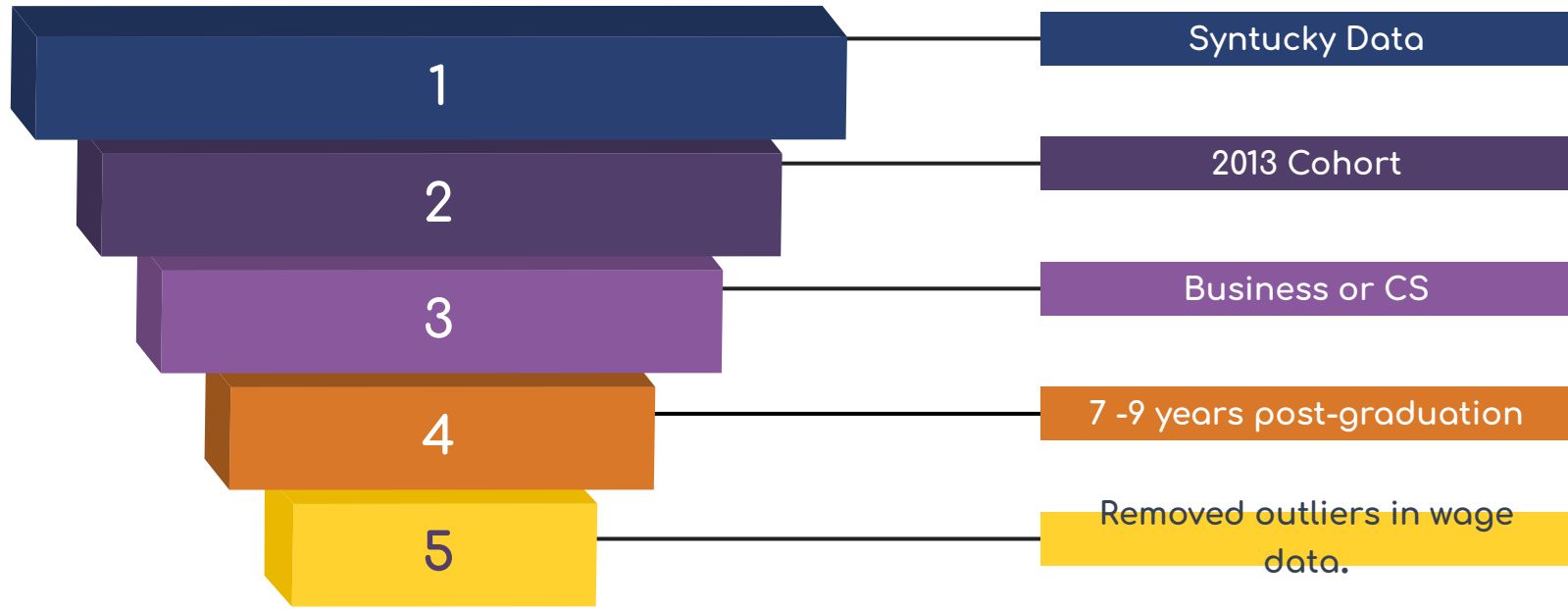
While **STEM occupations lead to higher median earnings** than other occupations, there is still significant overlap in earnings among occupations, in addition to overlap among workers across education levels within the same occupations.

Carnevale, A. P., Cheah, B., & Wenzinger, E. (2021). The College Payoff: More Education Doesn't Always Mean More Earnings. In Georgetown University Center on Education and the Workforce. Georgetown University Center on Education and the Workforce.

Women are **less likely** than men to graduate with STEM degrees. This underrepresentation has implications both for the gender composition of the science professions and for the **average gap in economic status between men and women** (Card, 2021).

Card, D., & Payne, A. A. (2021). High School Choices and the Gender Gap in Stem. *Economic Inquiry*, 59(1), 9–28. <https://doi-org.proxy.library.nyu.edu/10.1111/ecin.12934>

Drilling Down to the Final Data Set



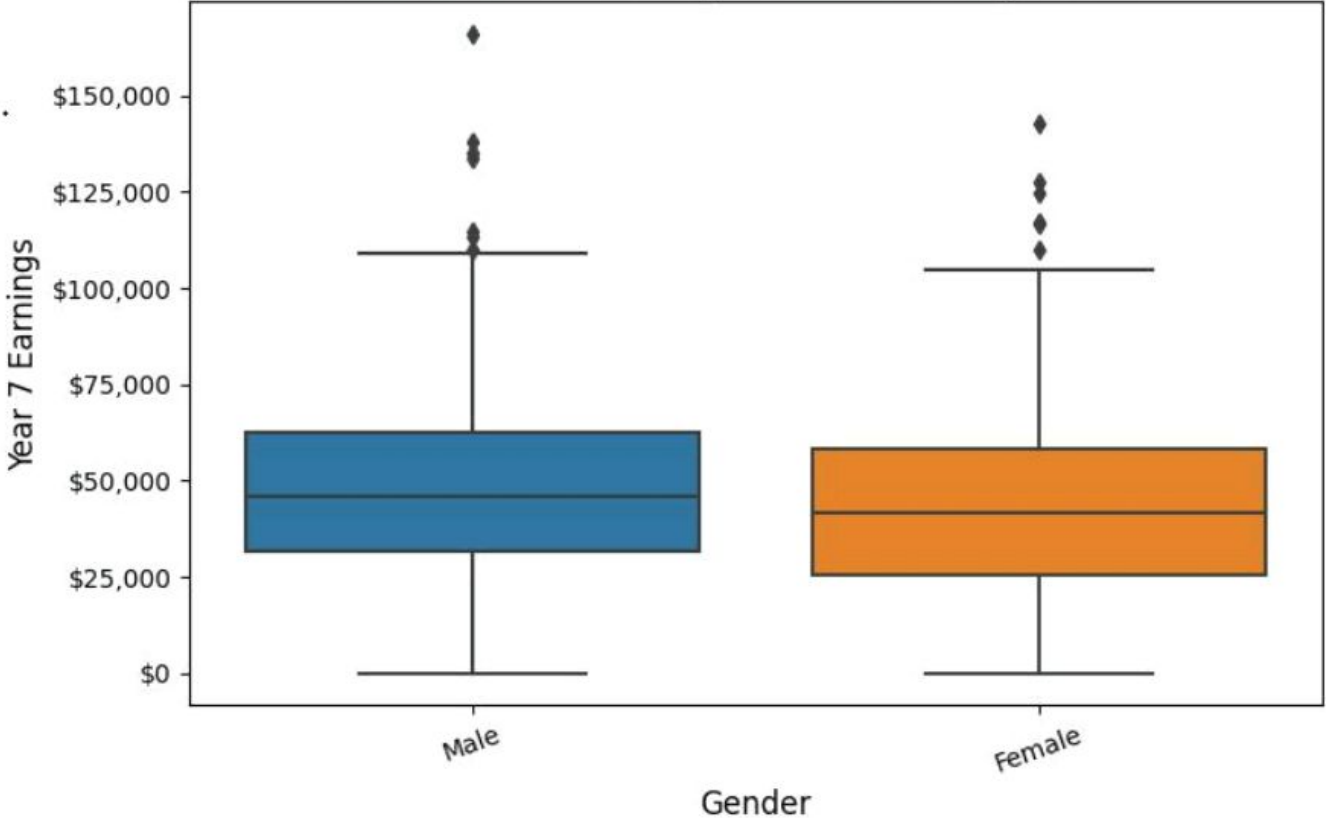
* This is not to scale.

Computer Science is More Heavily Male Than Business

Business		Gender	Computer Science	
Percent	Number		Number	Percent
47.26%	1,538	Female	233	42.83%
52.74%	1,716	Male	311	57.17%
100.00%	3,254	Total	544	100.00%

Source: Syntucky Data

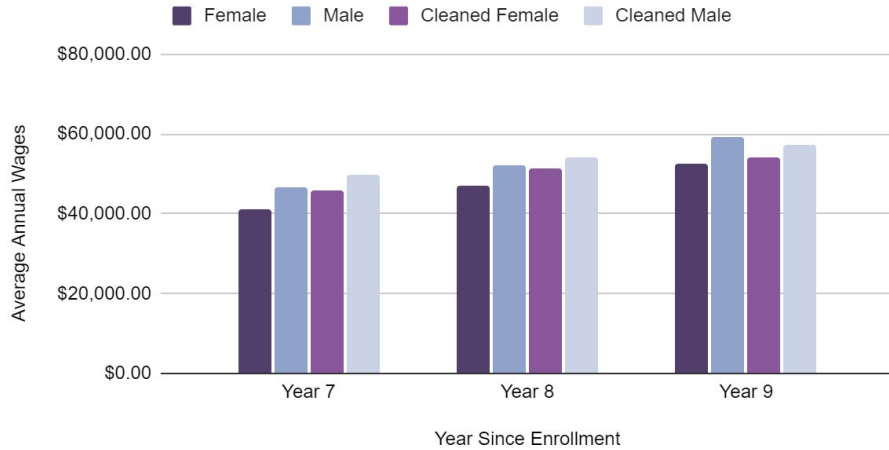
Of the 2013 Cohort Business Bachelor Degree Holders that were not enrolled, Male Students Had a Higher Median Earnings in Year 7



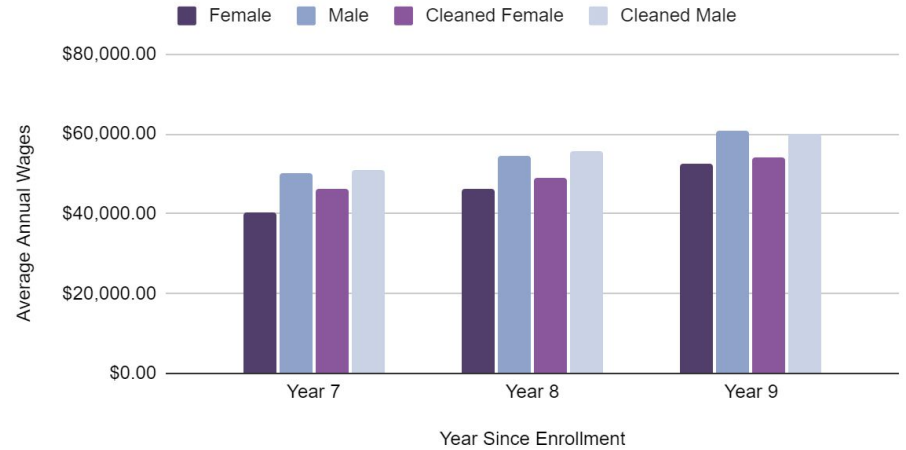
Data Source: Syntucky Data



Women with a Bachelor's Degree in Business Consistently Earn Less Than Their Male Counterparts



Women with a Bachelor's Degree in Computer Science Consistently Earn Less Than Their Male Counterparts



Source: Syntucky Data

The Gender Wage Gap is Greater For Computer Science

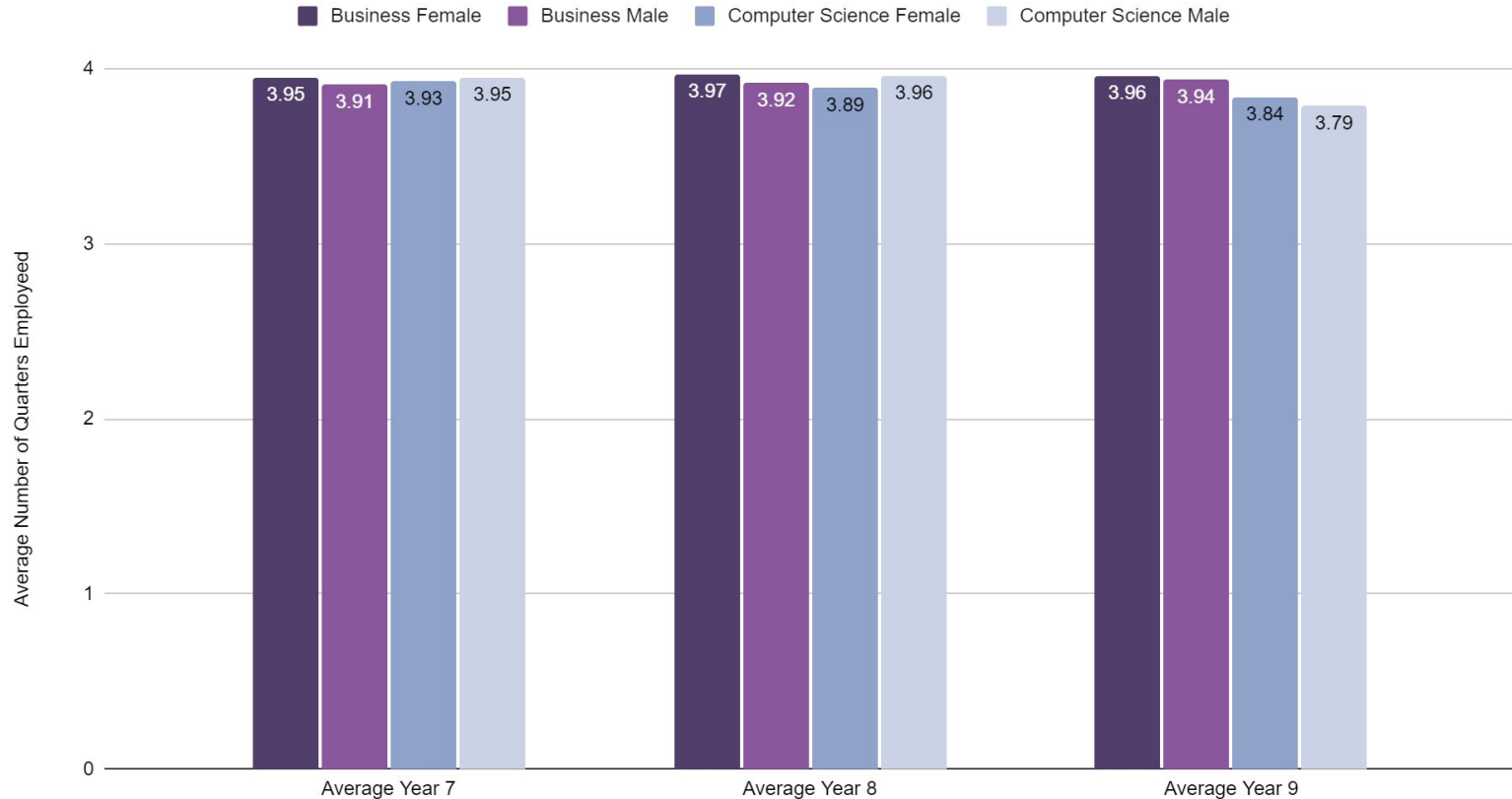
■ Wage Difference in Business ■ Wage Difference in Computer Science



Source: Syntucky Data

Women work (long and) hard for the money.

Men and Women Have Comparable Average Number of Quarters Employed in Both Business and Computer Science

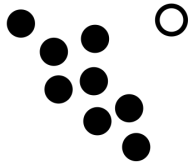


Caveats



Missingness in the Quarters Employed data

- Individuals who are unemployed
- Individuals who moved out-of-state
- Individuals who are working out-of-state but living in Syntucky



Further Cleaning and Exploration

- Use a multiple imputation model to adjust for intermittent quarters of wages reported
- Re-examine outlier thresholds variations in future years earnings
- Differences in sample size and completion rates may impact on these results
- Consider further analysis, especially related to Under-Represented Minorities

Protecting Syntucky's Investment: Recommendations and Next Steps

STEM careers could be a good investment for women, but the gender wage gap still exists in this field. STEM degrees *alone* are not enough to overcome this hurdle.

The Governor of Syntucky may want to consider:

- Implementing comprehensive government strategies for pay equity analysis.
- Creating targeted measures to combat the gender pay gap.
- Integrating gender pay gap into diversity and inclusion efforts.
- Educating the public about equal pay and gender pay gap.
- Enhancing pay transparency for employees and citizens.
- Encouraging employers to address wage discrimination.



Thank You

Any Questions?

Hex codes for theme:

Navy: 294172



Dark purple: 513E6B



Medium purple: 8A579D



Orange: D97828



Yellow: FFD22F



Medium blue: CAD3E6



Light blue: 8FA2CA



Fonts: Arial and Comfortaa
Background: White with Kentucky
shadow