Examining the Teacher Pipeline in Syntucky

Team4Teachers
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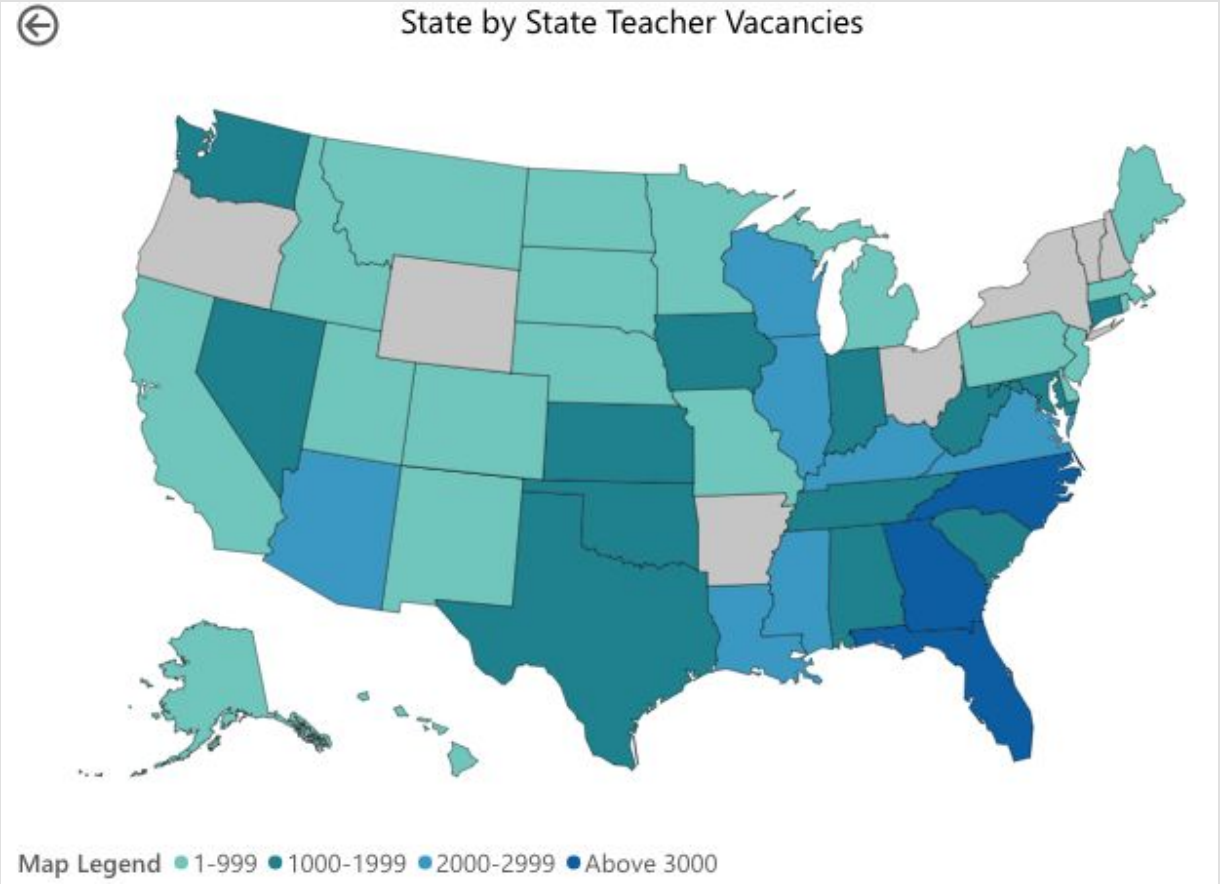
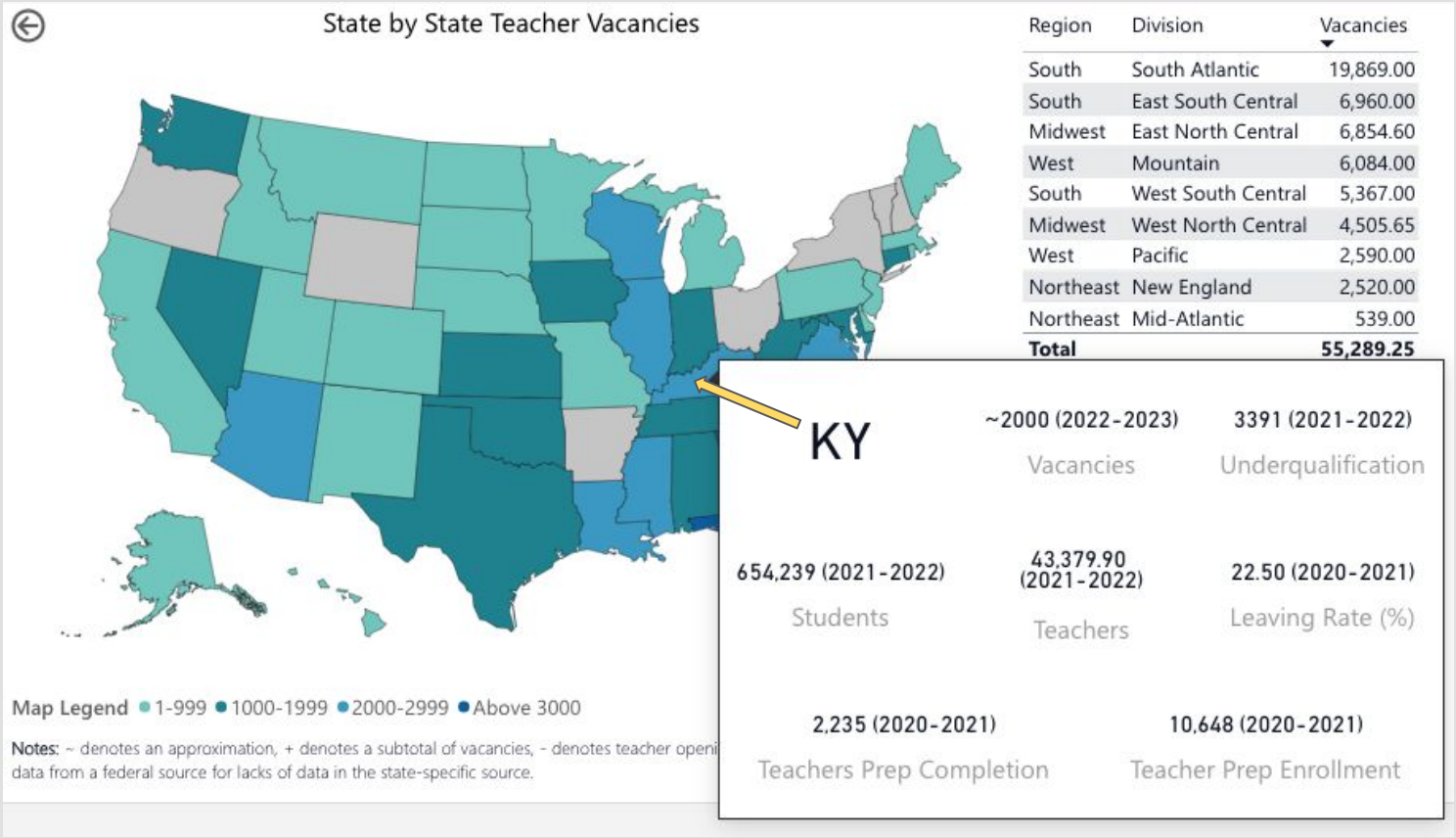
Teacher Shortages: A National Picture



Nguyen, Tuan D., Chanh B. Lam, and Paul Bruno. (2022). Is there a national teacher shortage? A systematic examination of reports of teacher shortages in the United States. (EdWorkingPaper: 22-631). Retrieved from Annenberg Institute at Brown University: https://doi.org/10.26300/76eq-hj32. *Figure from teachershortages.com.

Teacher Shortages: A Portrait of Kentucky



Region	Division	Vacancies
South	South Atlantic	19,869.00
South	East South Central	6,960.00
Midwest	East North Central	6,854.60
West	Mountain	6,084.00
South	West South Central	5,367.00
Midwest	West North Central	4,505.65
West	Pacific	2,590.00
Northeast	New England	2,520.00
Northeast	Mid-Atlantic	539.00
Total		**55,289.25**

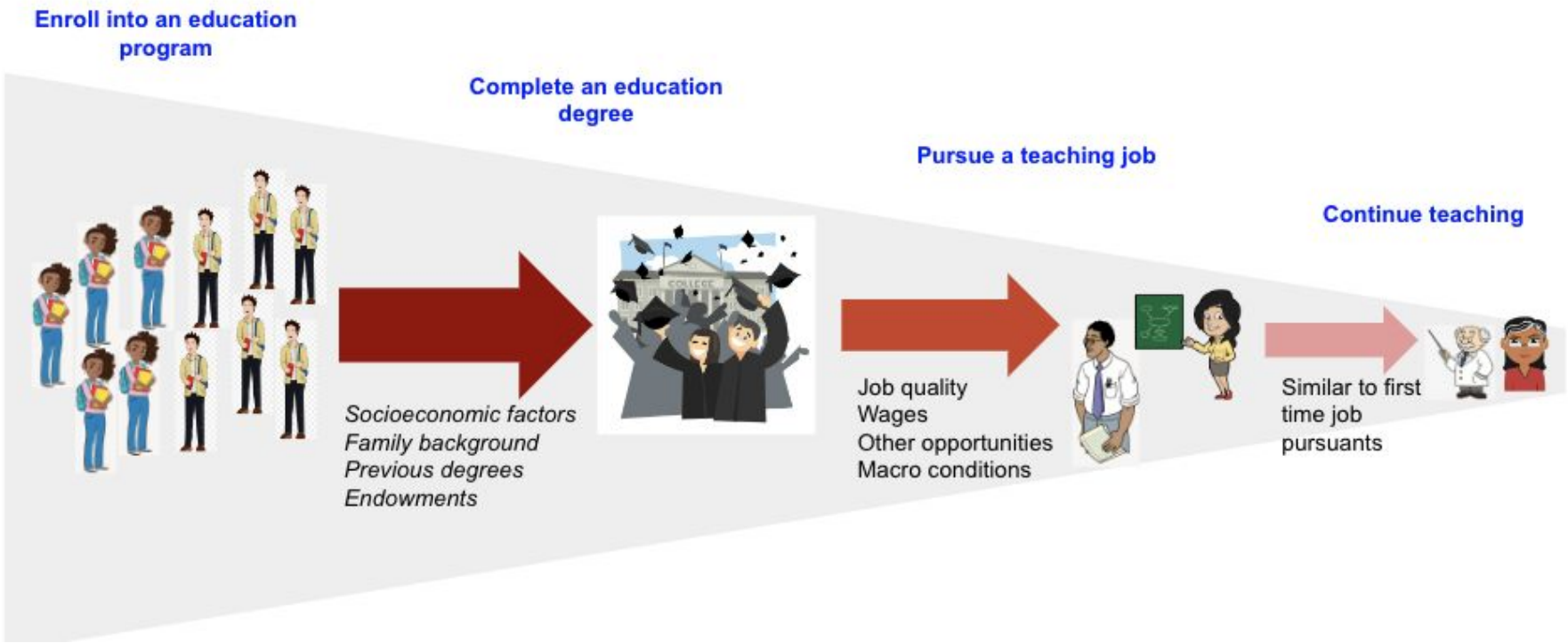
Nguyen et al. (2022). *Figure from teachershortages.com.

Declining Supply: Teacher Preparation in Kentucky

Education degrees conferred in *Kentucky* show downward trend

- The Kentucky Department of Education (KDE) reports reductions in teacher preparation enrollments and completions.
- In particular, completions declined by 37%, 2008-2018 (see KDE op-ed here).

The Teacher Pipeline in Syntucky: From Preparation to Placement



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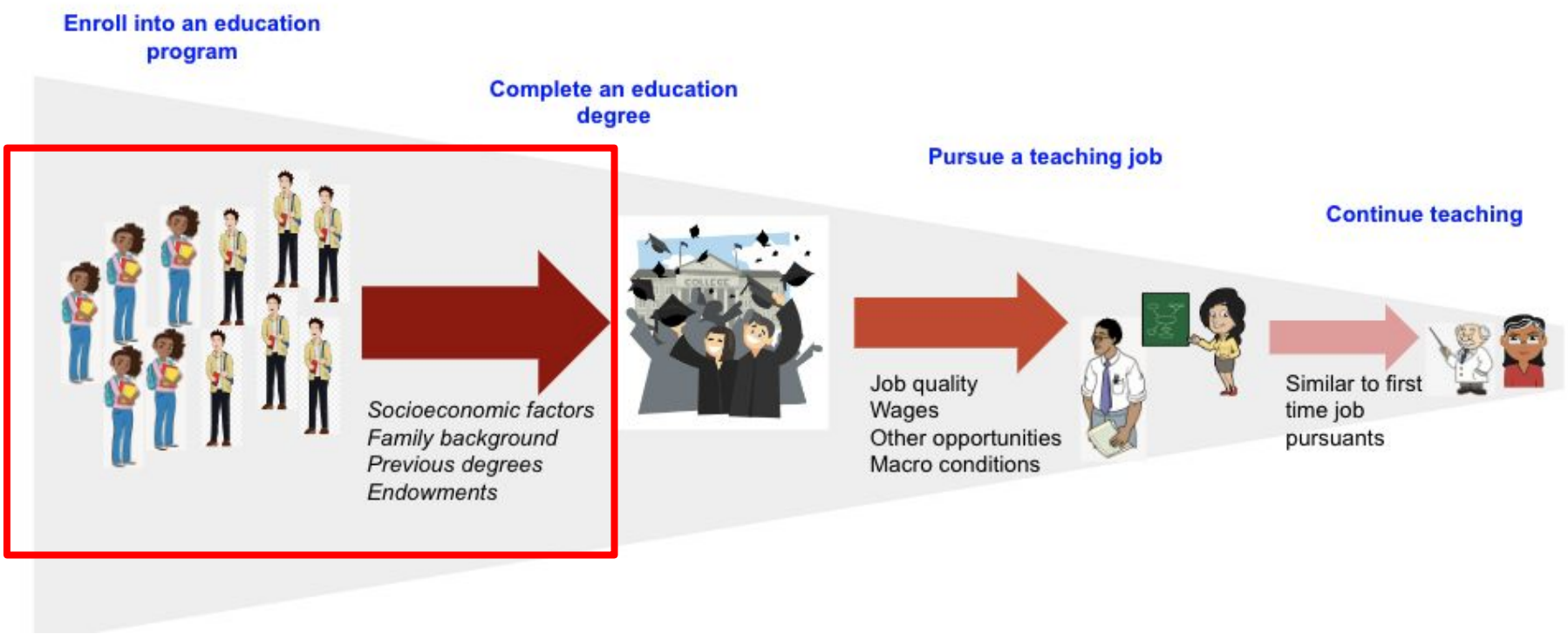
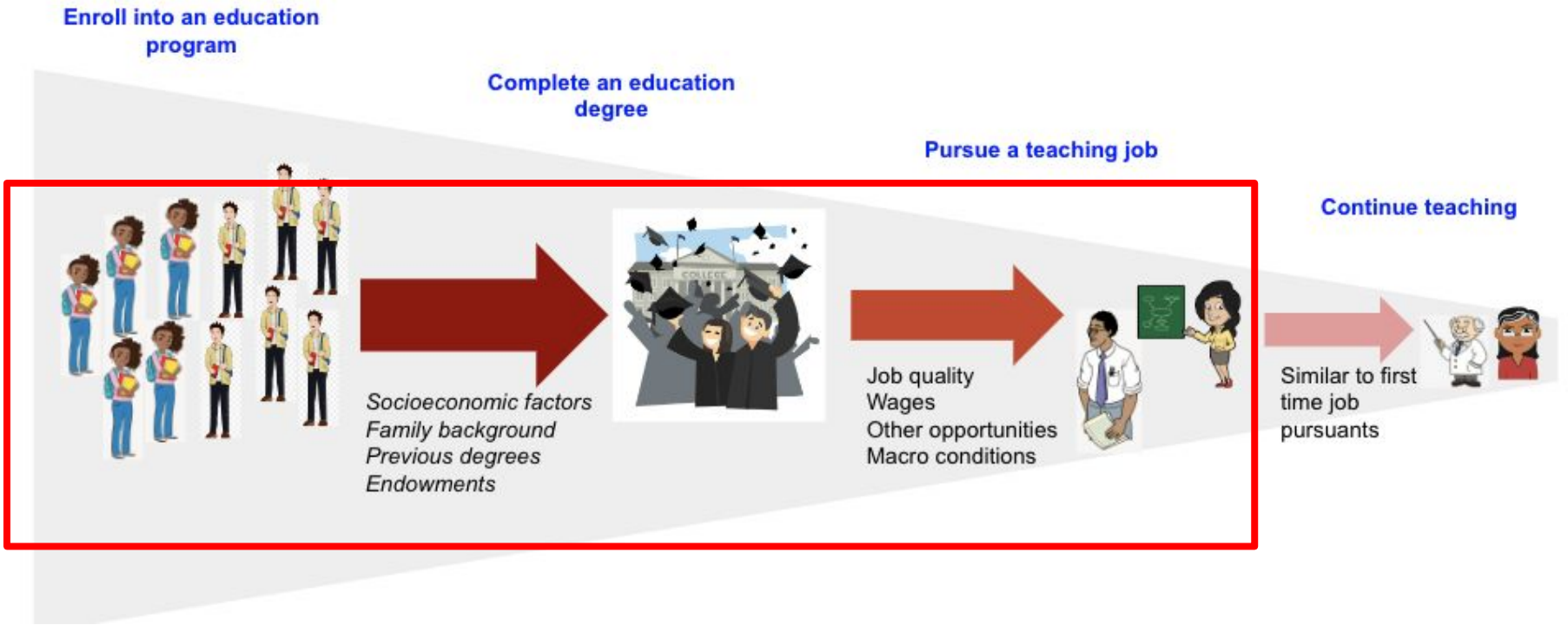


The Teacher Pipeline in Syntucky: From Preparation to Placement



Research Question

What is the relationship between time-to-degree for Education majors and their employment outcomes?

Time to Degree

Why this measure matters

- On average, students who take longer to complete degree earn **lower wages**—with caveats (Yue and Fu, 2014)
- Longer time-to-degree often perceived as waste of time and money for student and tax-payers (Complete College America, 2014)
- Up to half of Bachelor degree seekers take more than 4 years, and 24% take more than 7 years (Shapiro et al. 2016), and the proportion delayed is increasing! (Bound et al. 2012; Knight 2002, 2004)

Measuring Labor Market Outcomes: Extensive and Intensive Margins

Measurement matters

- **Extensive margin**: Are you employed? Are you in the job market?
- **Intensive margin:** Do you have a good job quality?
  - Wages (Chetty et al., 2014)
  - Hours worked (Blundel et al., 2013)
  - Job security (Bockerman et al., 2011)

Target Population

First-Time, Bachelor's Degree Graduates in Education (2013 cohort)

- First Time = No Prior Degree

```
cohort_2013_ft = cohort_2013[(cohort_2013['high_degree_preenrollment'] == 'No Known Degree')]
```

- Bachelor's Degree Graduates in Education

```
condition = (((cohort_2013_ft_ed['high_completion_label'] == 'Bachelor') &
              (cohort_2013_ft_ed['high_completion'] == 'education')))
```

Data and Measurement

Example pipeline metrics

Time-to-Degree: Time from starting academic year to completion academic year.

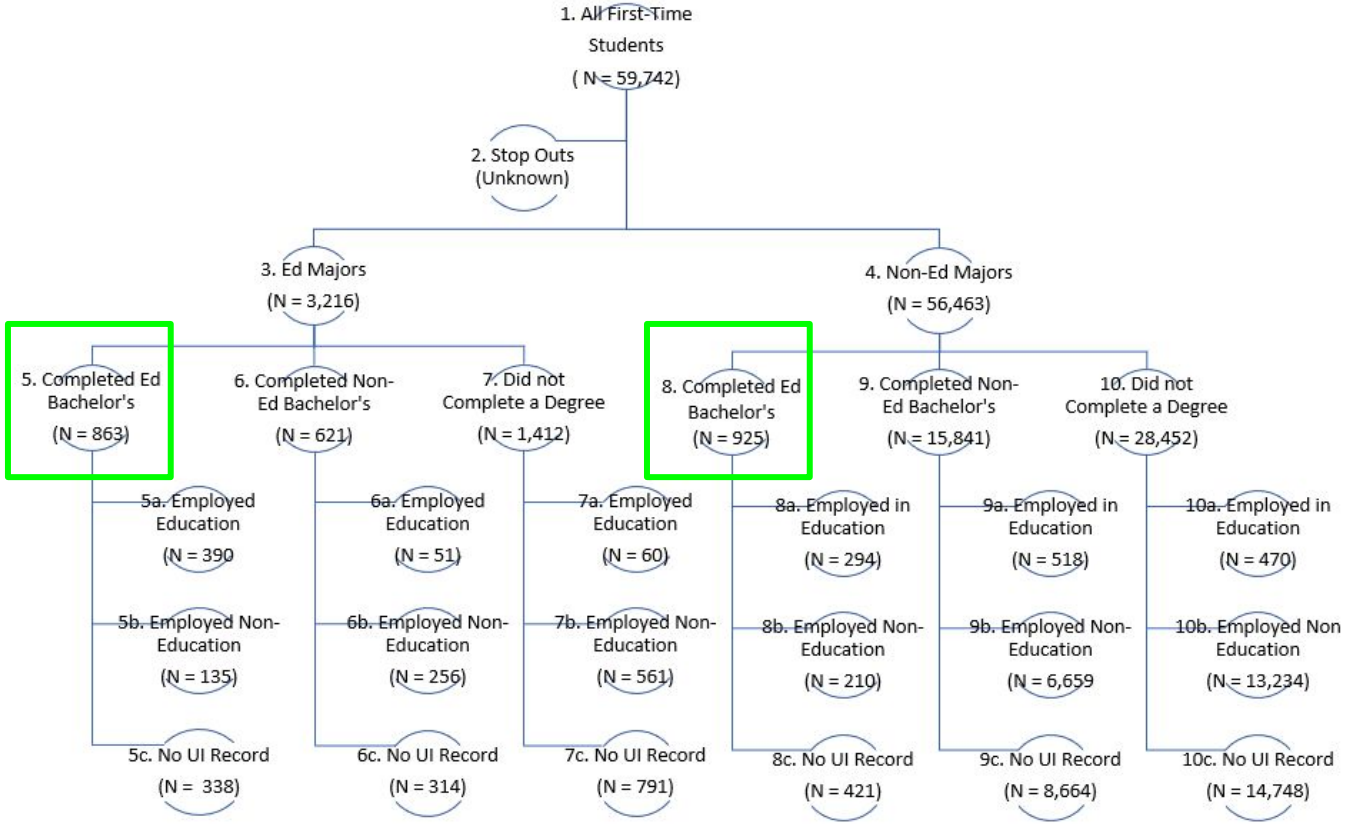
```
cohort_2013['ttd'] = cohort_2013['first_completion_acadyr'] - cohort_2013['first_enroll_calendaryear']
```

Industry Employed: Tracking who was employed in Education and Non-Education Industries in the year after graduation.

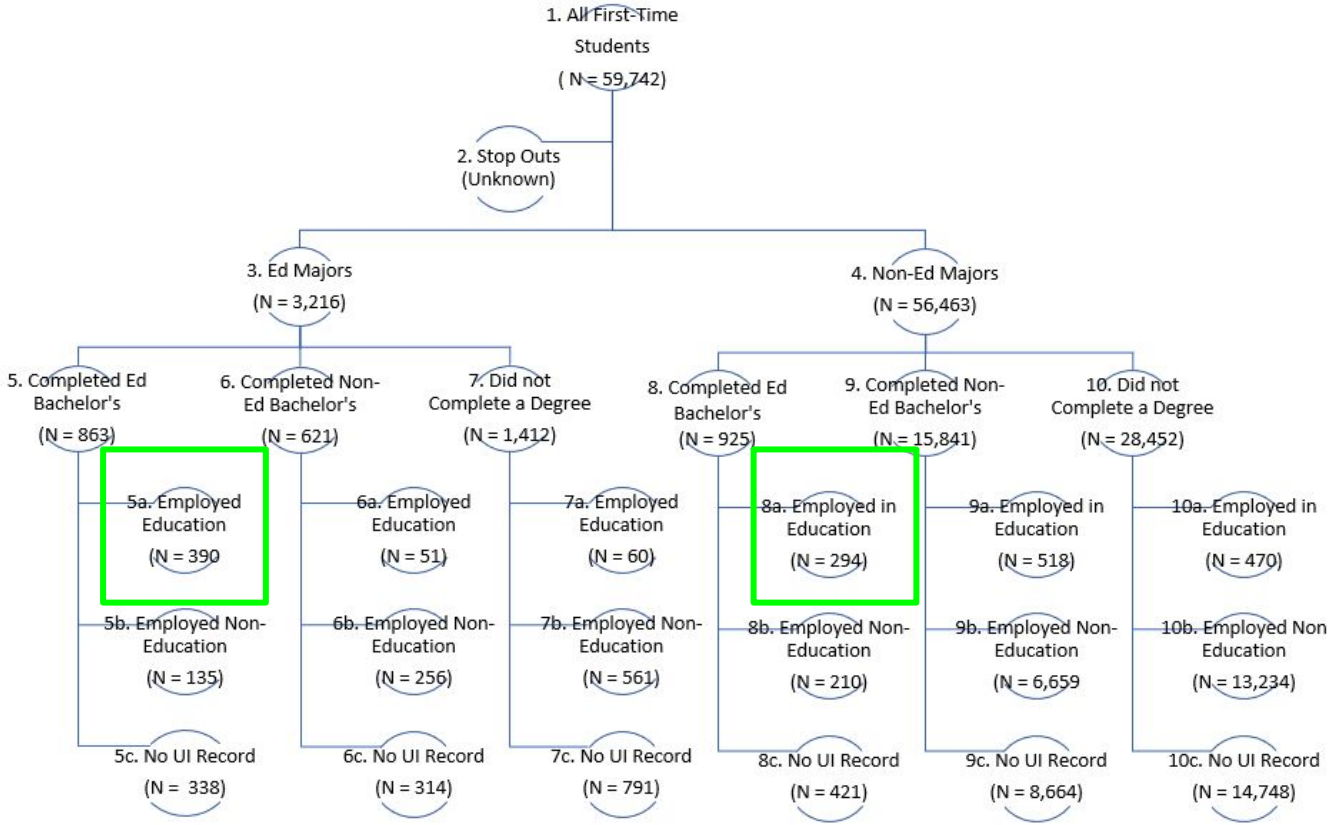
Education Major "Attrition": Tracking who initially majored in Education, but either earned their max degree from a non-Education program or never completed a degree.

No UI Record: Tracking "missingness" to determine how it may influence our results.

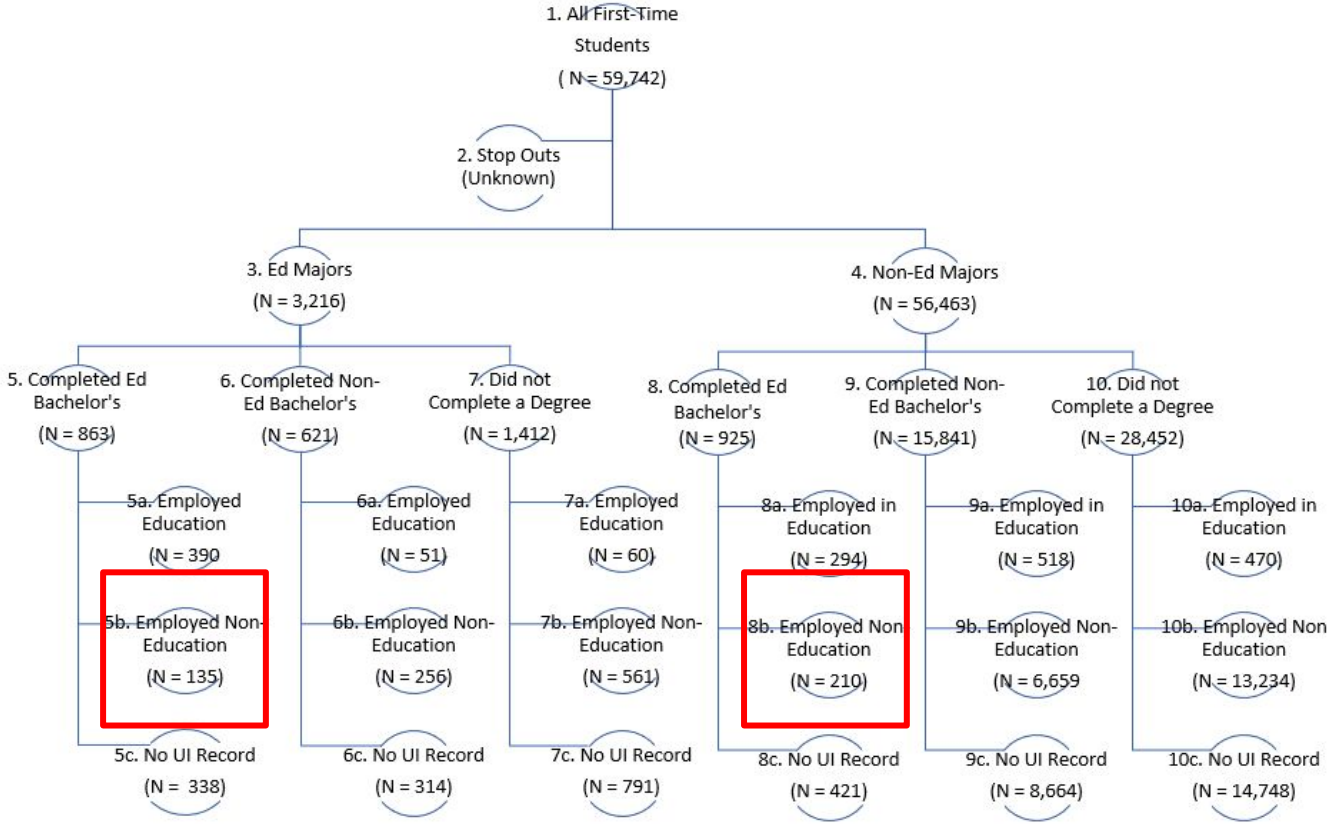
In the 2013 Syntucky cohort, there are **1,788 First-Time, Bachelor's Degree Graduates in Education**.



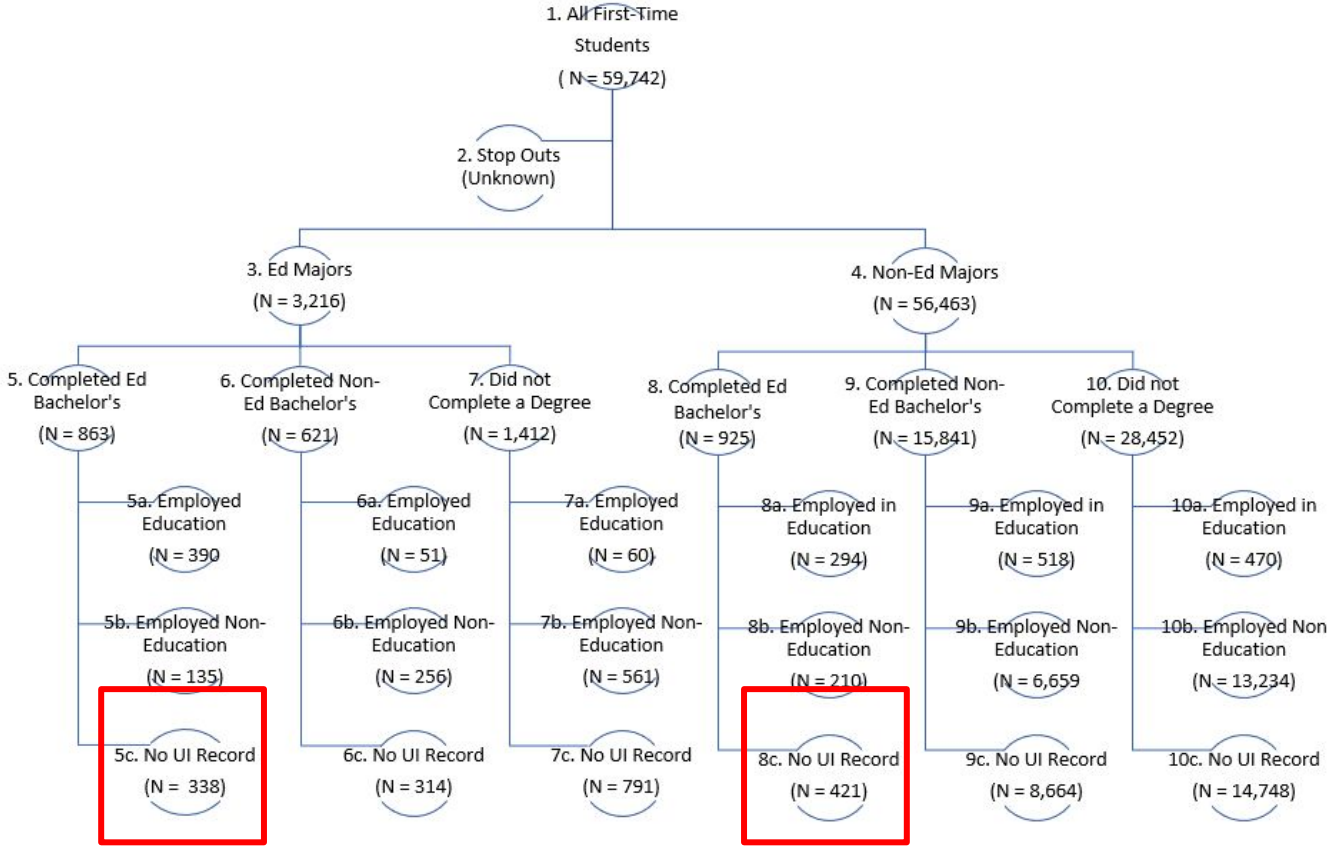
In the 2013 Syntucky cohort, **684 out of 1,788 (38.2%) First-Time, Bachelor's Degree Graduates in Education were employed in Education 7 years after starting their training.**



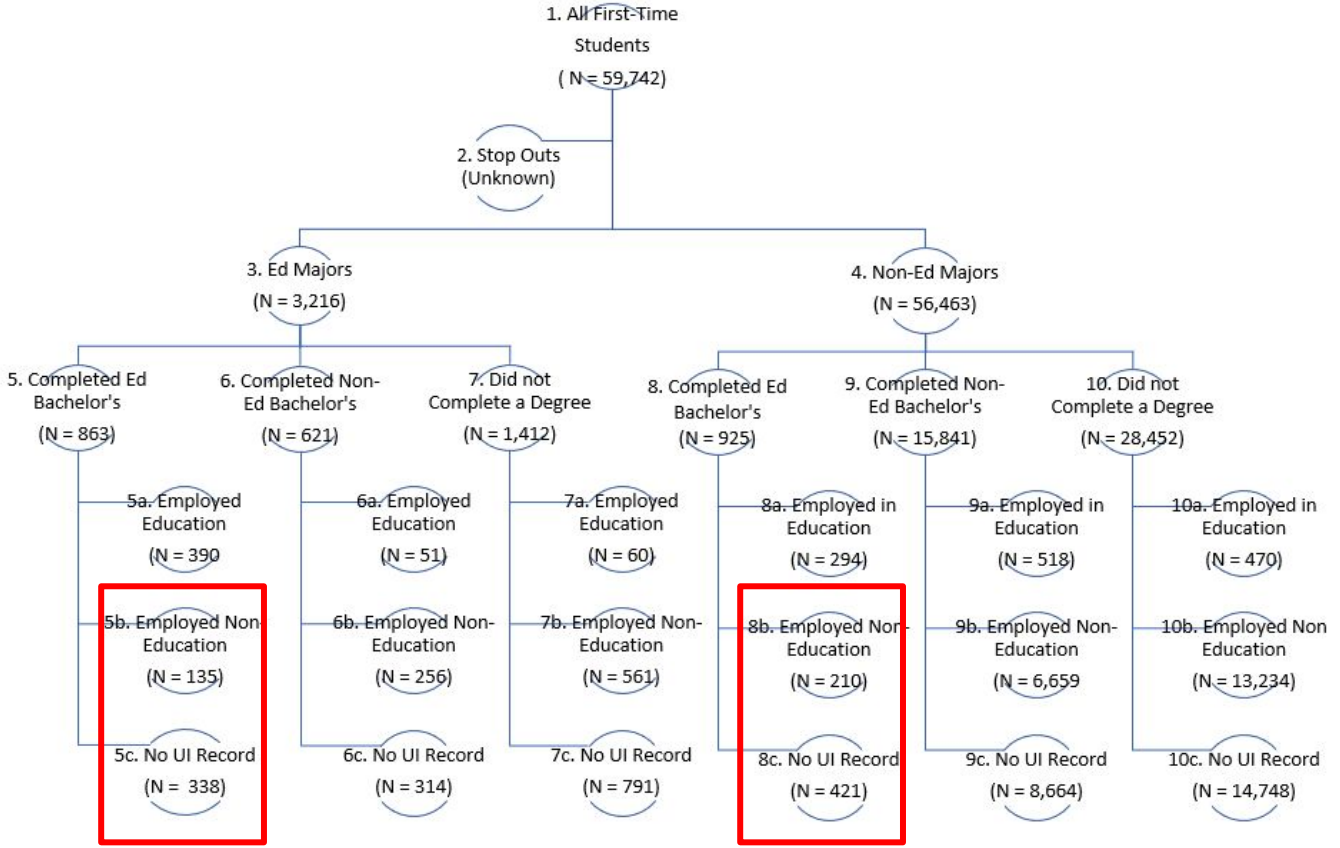
In the 2013 Syntucky cohort, **345 out of 1,788 (19.3%) First-Time, Bachelor's Degree Graduates in Education were employed outside of Education 7 years after starting their training.**



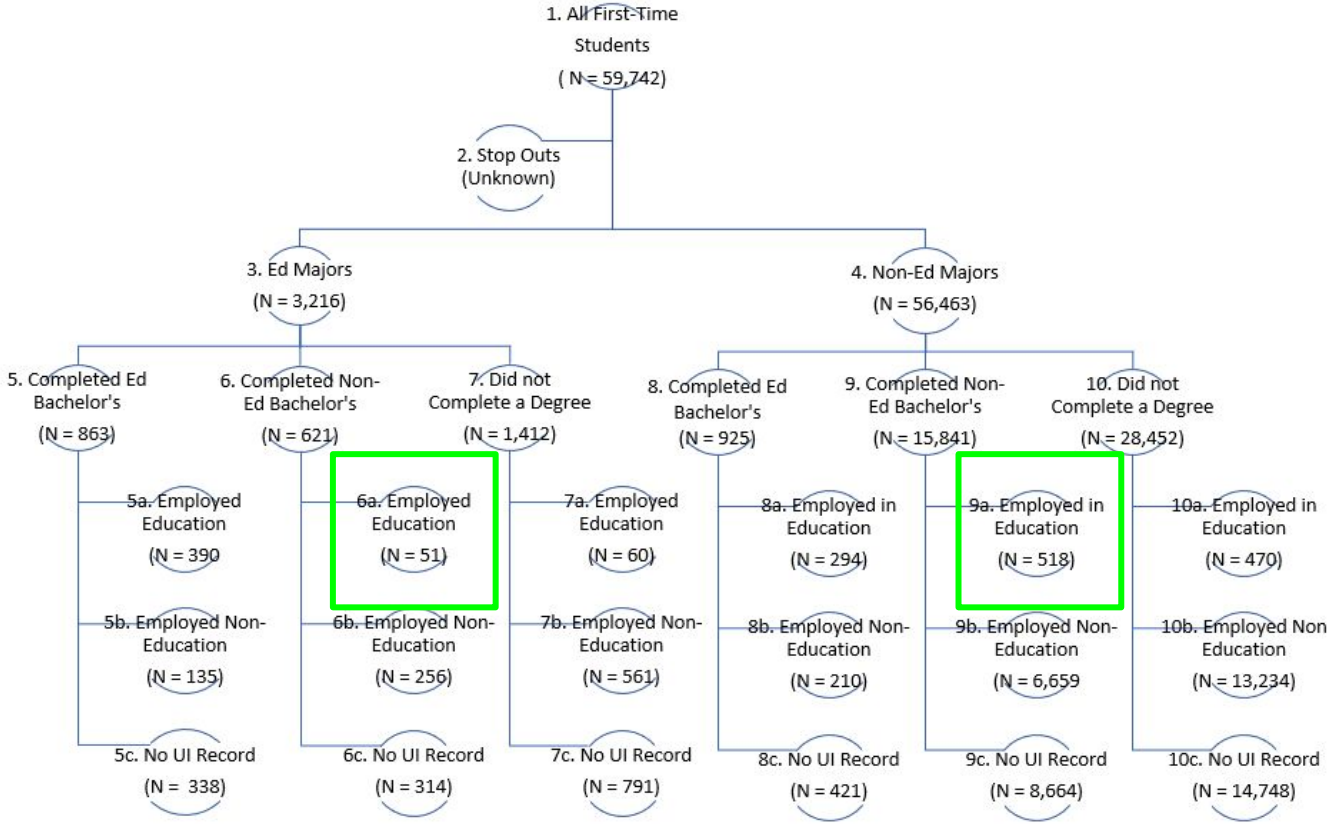
In the 2013 Syntucky cohort, **759 out of 1,788 (42.4%) First-Time, Bachelor's Degree Graduates in Education had no UI record in Syntucky.**



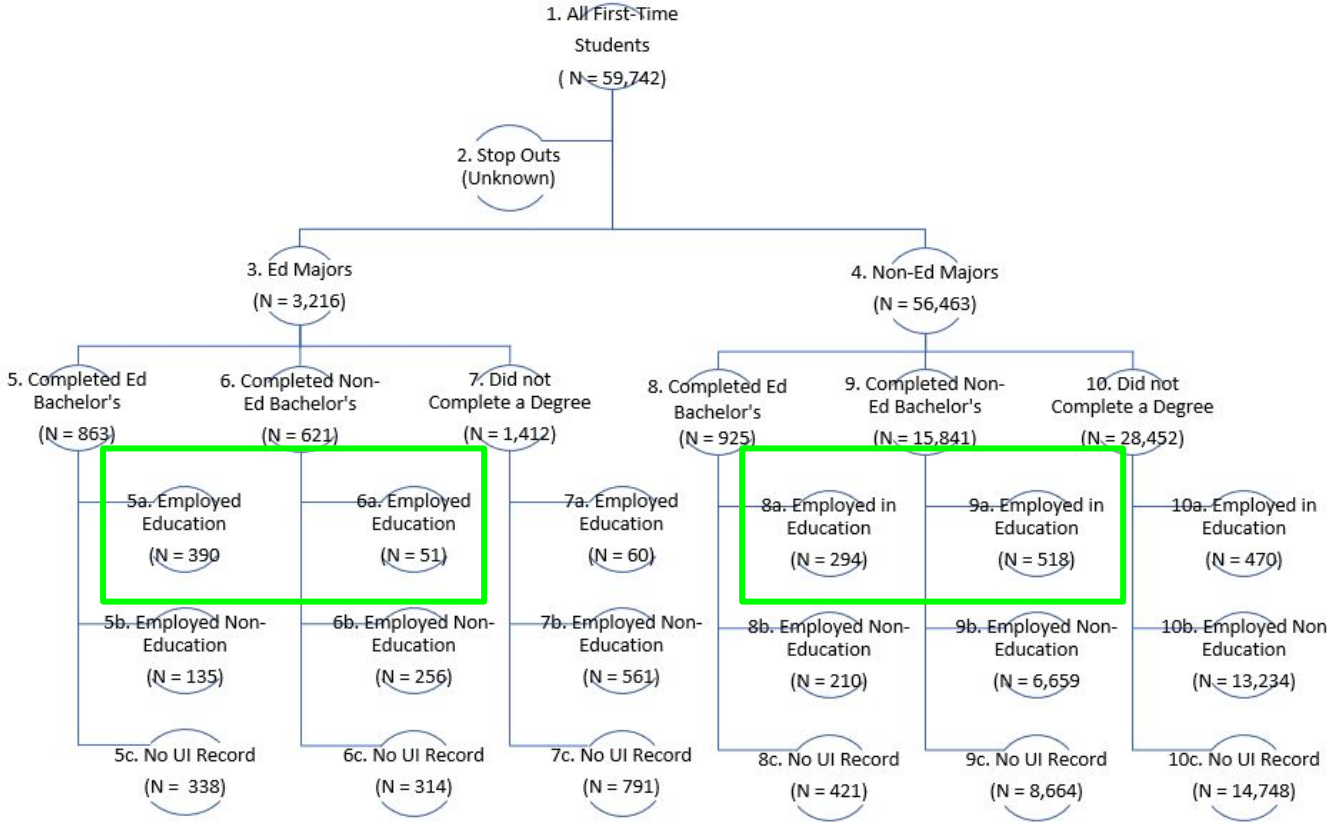
In the 2013 Syntucky cohort, **1,104 out of 1,788 (61.7%) First-Time, Bachelor's Degree Graduates in Education were not employed in the Education industry in Syntucky 7 years after starting their training.**



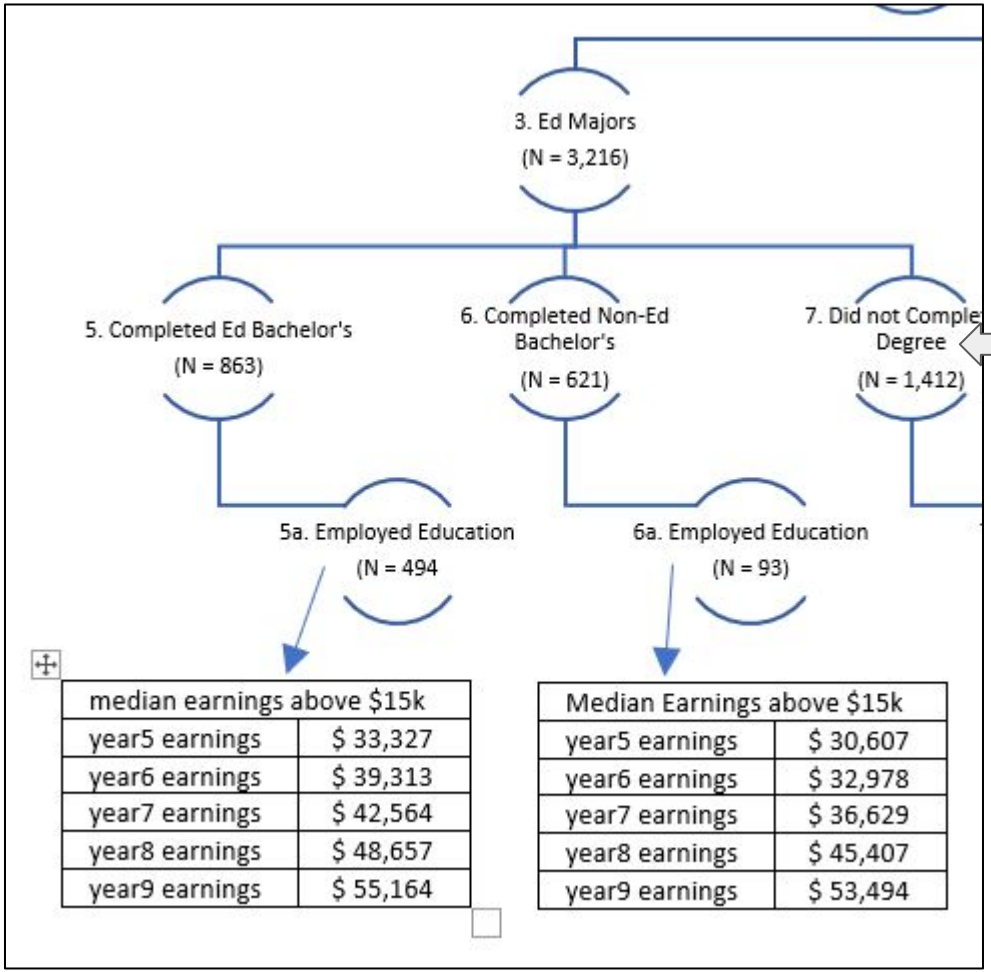
In the 2013 Syntucky cohort, **569 out of 16,462 (3.5%) First-Time, non-education Bachelor's Degree completers were employed in Education 7 years after starting their training.**



In the 2013 Syntucky cohort, **1,253 out of 18,250 (6.9%) First-Time, Bachelor's Degree completers were employed in Education 7 years after starting their training.**

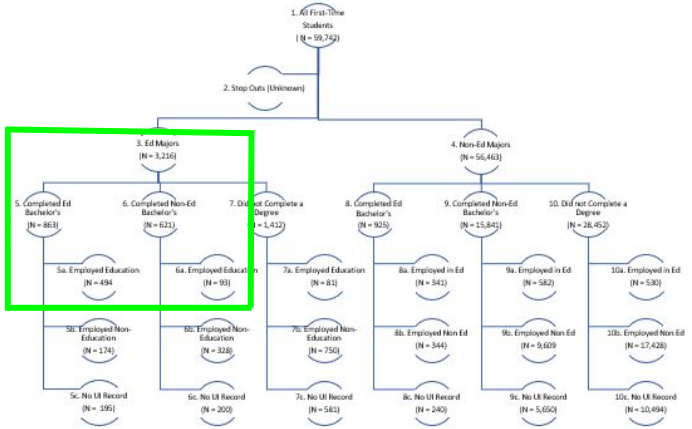


Median Earnings above $15k for Ed Majors who work in Education



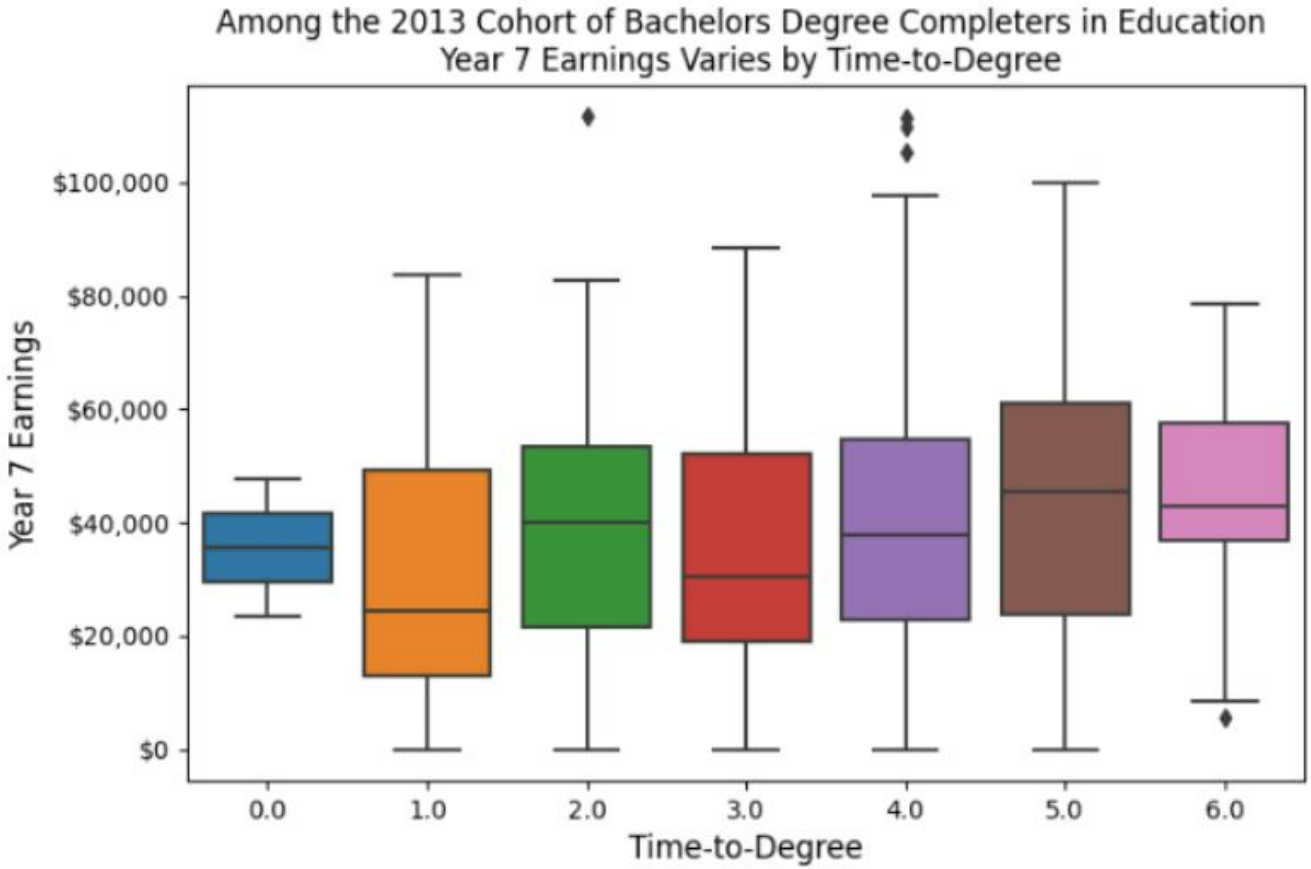
median earnings above $15k	
year5 earnings	$ 33,327
year6 earnings	$ 39,313
year7 earnings	$ 42,564
year8 earnings	$ 48,657
year9 earnings	$ 55,164

Median Earnings above $15k	
year5 earnings	$ 30,607
year6 earnings	$ 32,978
year7 earnings	$ 36,629
year8 earnings	$ 45,407
year9 earnings	$ 53,494



Ed Majors who completed BA in Education earned more than Ed Majors who completed non-Ed BA especially in year 6 and 7 post graduation

Time to Education Degree in Syntucky



Next Steps

- Other job market outcomes
  - Intensive margin: is time to degree related to employment status?
  - More measures of job quality (stability, # of employers)
- Predictive Models
  - Create machine learning model that predicts employment in the Education Industry based on student characteristics
    - Does TTD matter?
  - Create machine learning model that predicts job quality outcomes among graduates employed in Education.
    - Does TTD matter?
- Research on Attrition and Missingness
  - What explains education graduate attrition to other industries?
  - How do the results change when multi-state data are considered?
  - How can we capture more information about non-completers and bring them into teaching?