

Student Retention, Student Pathways, and Post-Schooling Labour Market Outcomes: New Data Linkage Approaches

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EPRI Education Policy
Research Initiative
Initiative de recherche sur les politiques de l'éducation

I. What are these new data sources and why are they so important?

Focus Here on PSE Administrative Data

- Defn: Collected for administrative purposes
- Think of all the data gathered on students...
 - Individual institutions
 - Other organisations: application centres, loan systems, etc.
- Plus non-student/more general data – e.g., tax data, EI, SA

Huge Benefits of These New Data Sources

- Low cost – the data already exist
- Often very up-to-date – sometimes in real time
- Full samples/populations
- Often longitudinal
- Can link to other data

How Can We Use These Data?

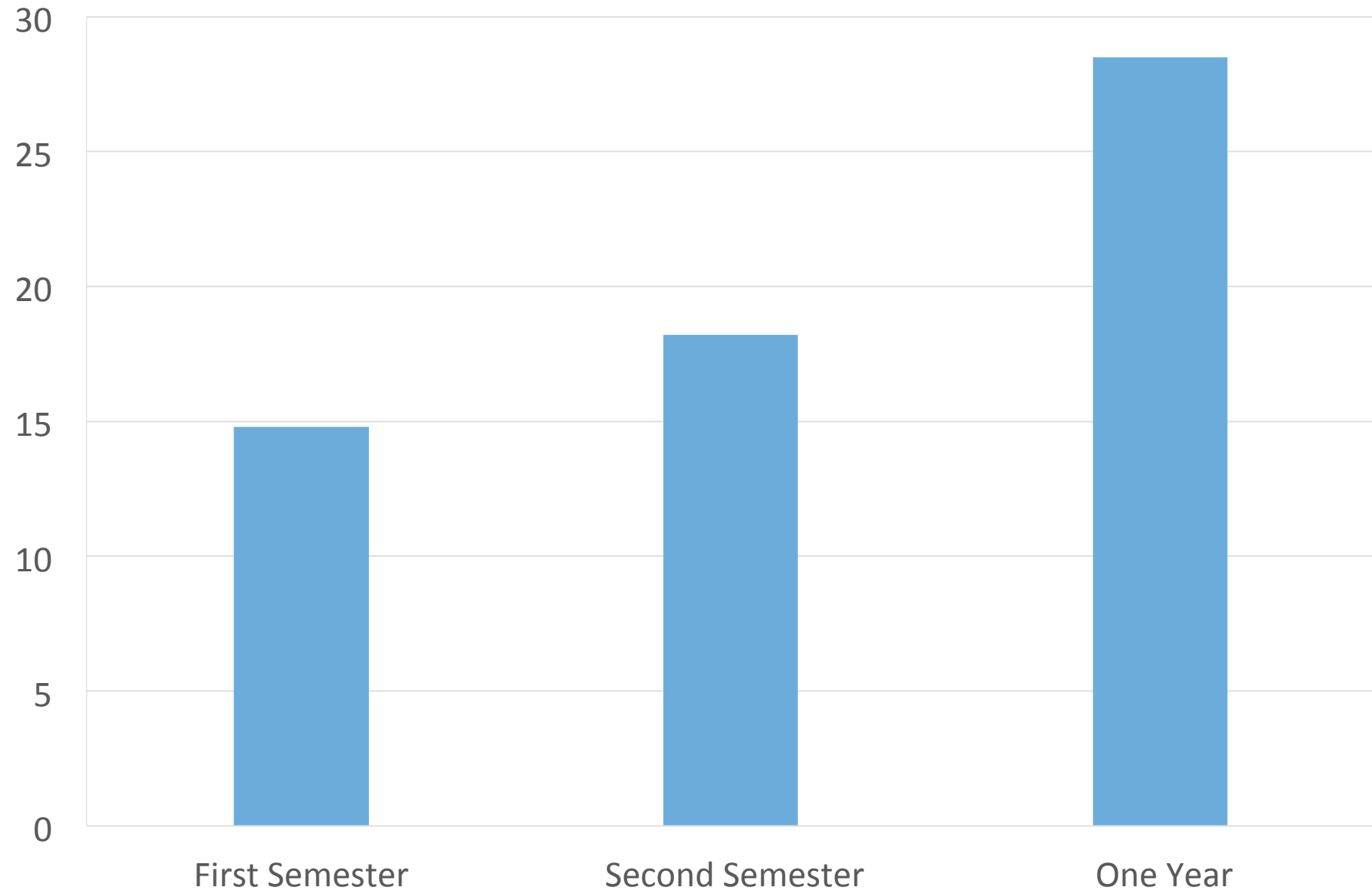
- To better understand and ultimately improve student experiences and outcomes
- Multiple Stakeholders
 - Students
 - Institutions
 - Policy makers at all levels
 - General population
 - Industry/employer organisations and associations

II: Student Retention - Work with Mohawk College

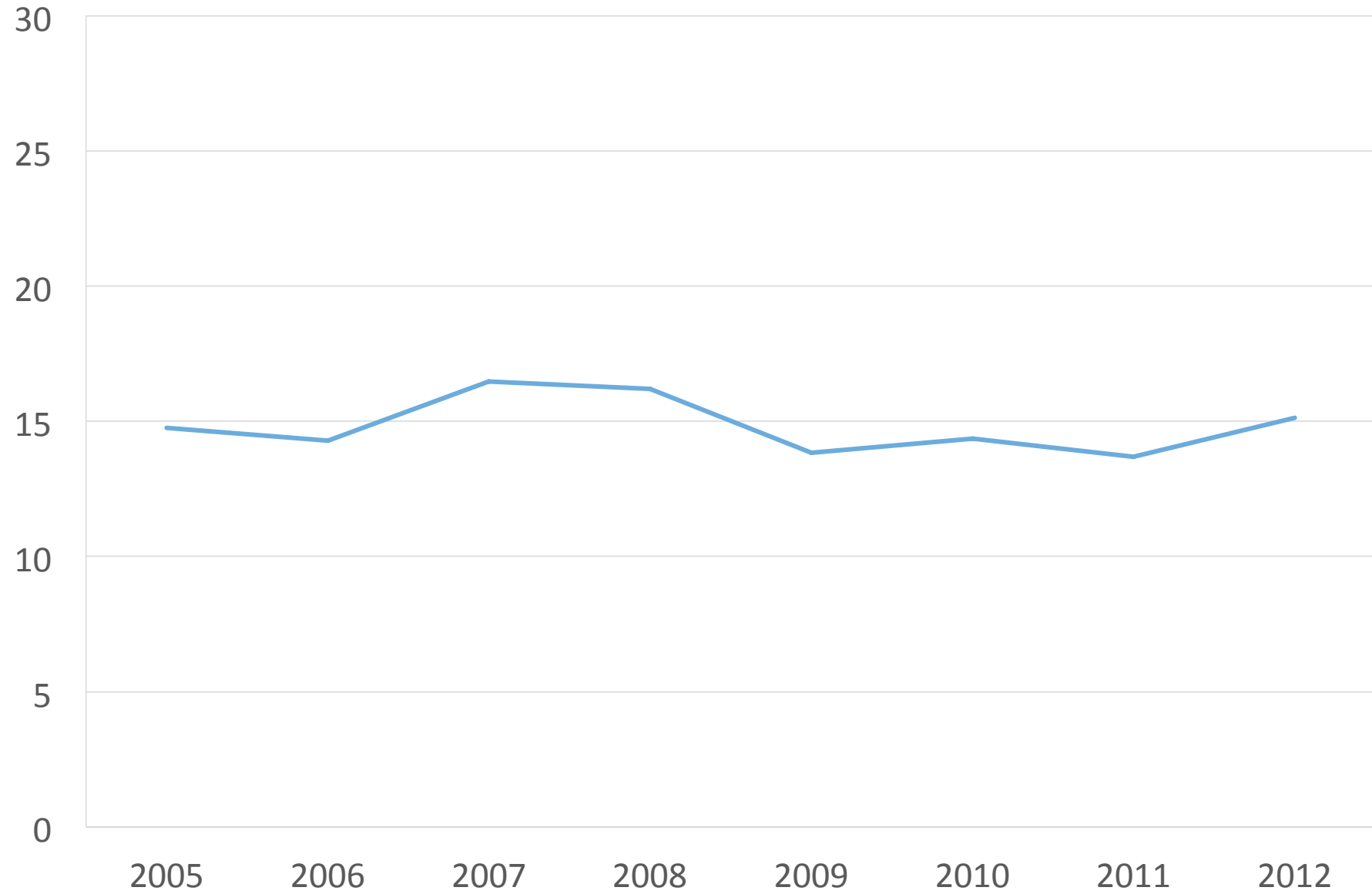
Mohawk-EPRI Partnership: Objectives

1. Better understand student retention
 - Descriptive analysis (not shown here)
 - Statistical models (provide a taste)
2. Use models to predict students at greatest risk of leaving
3. Target and test student success initiatives
4. Adopt effective practices

Leaving Rate (%) By Retention Measure



First Semester Leaving Rate By Cohort



Variables Included in the Analysis (sort of)

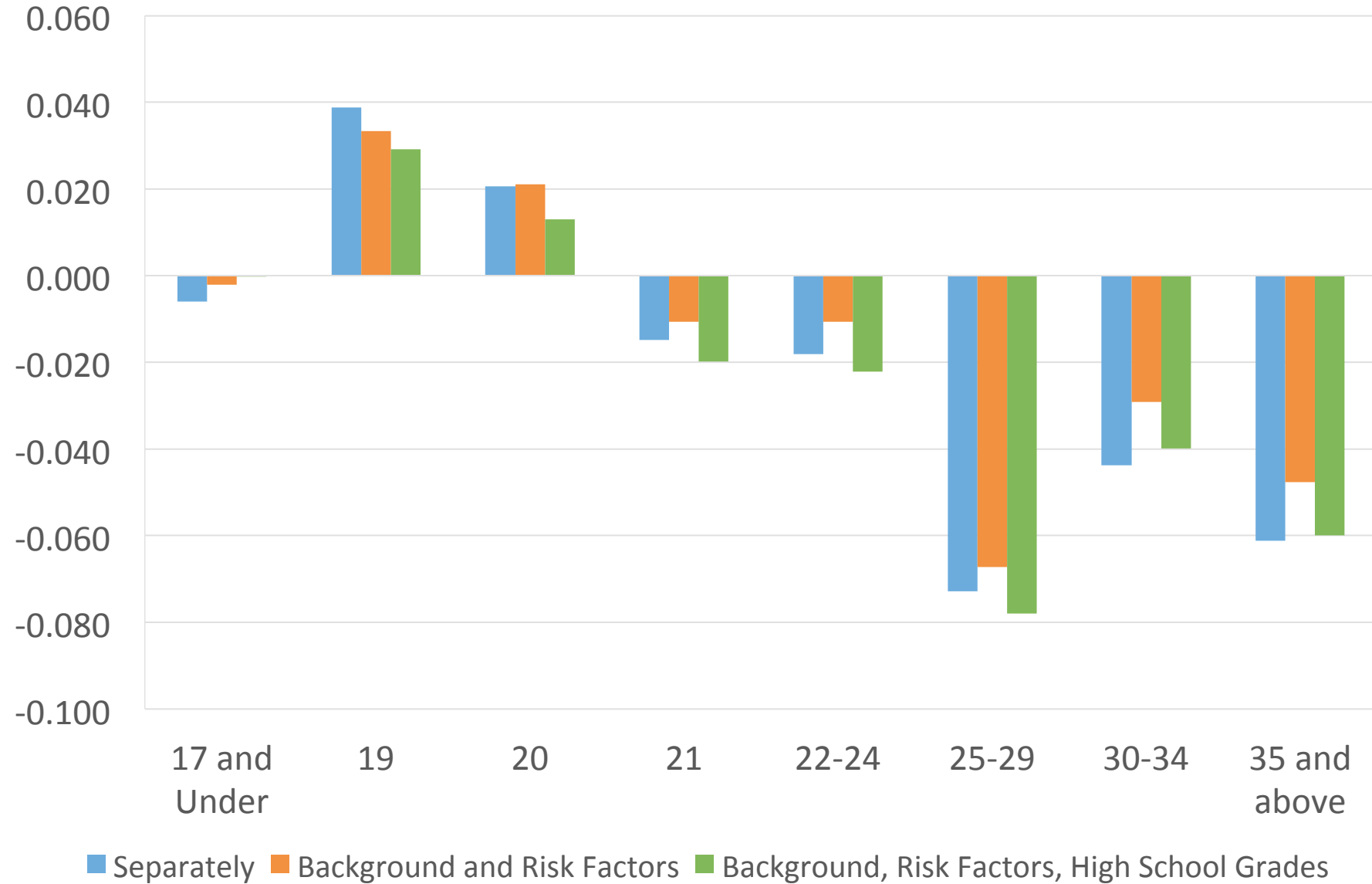
- Individual characteristics (“Background Variables”)
 - Cohort
 - Age at entry
 - Gender and Urban/Rural
 - International student identifier
- High School Grades
- Program identifiers: i) faculty, ii) school

Results

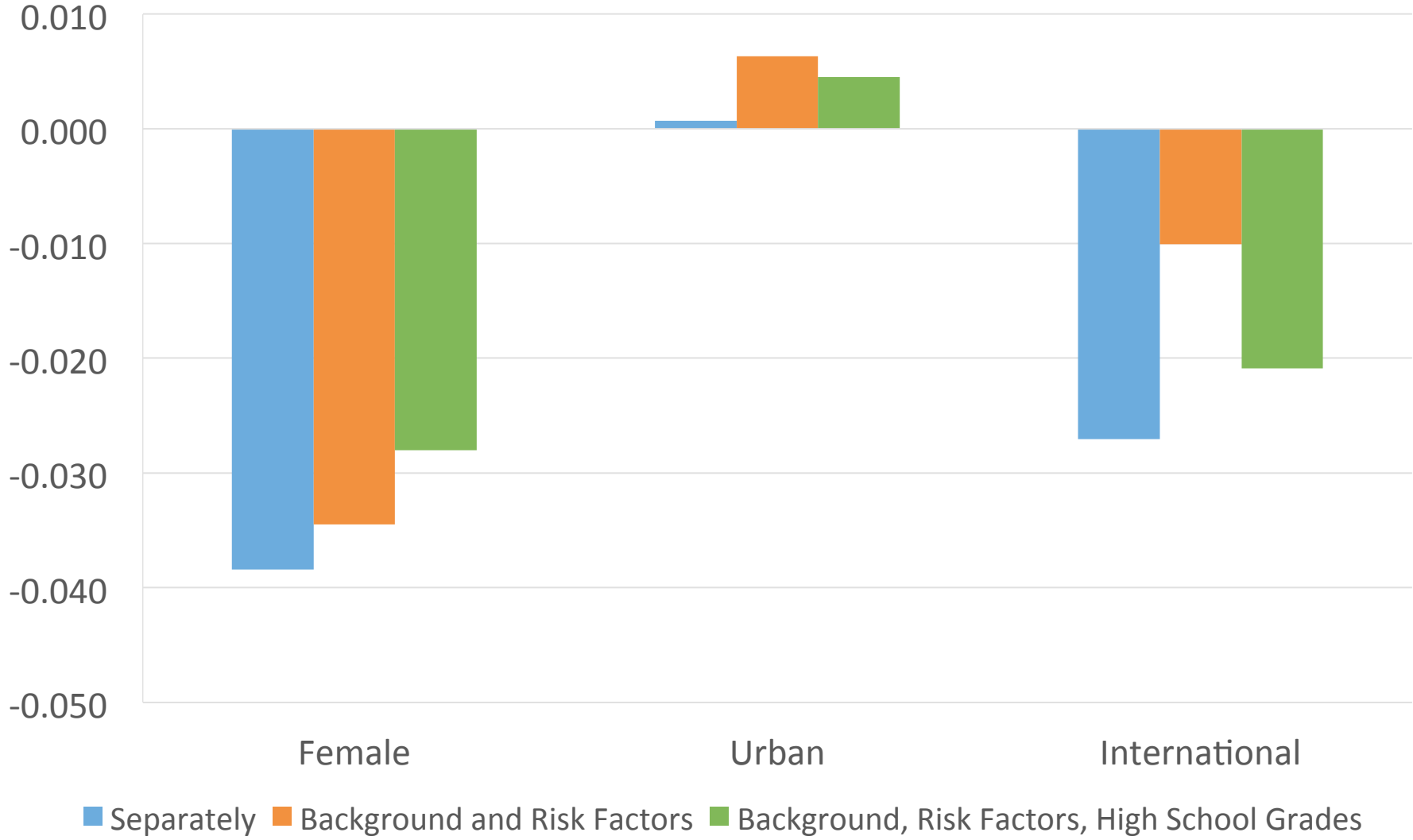
Marginal Effects (Regression Analysis)

Student Characteristics

Age at Entry (18 year old)

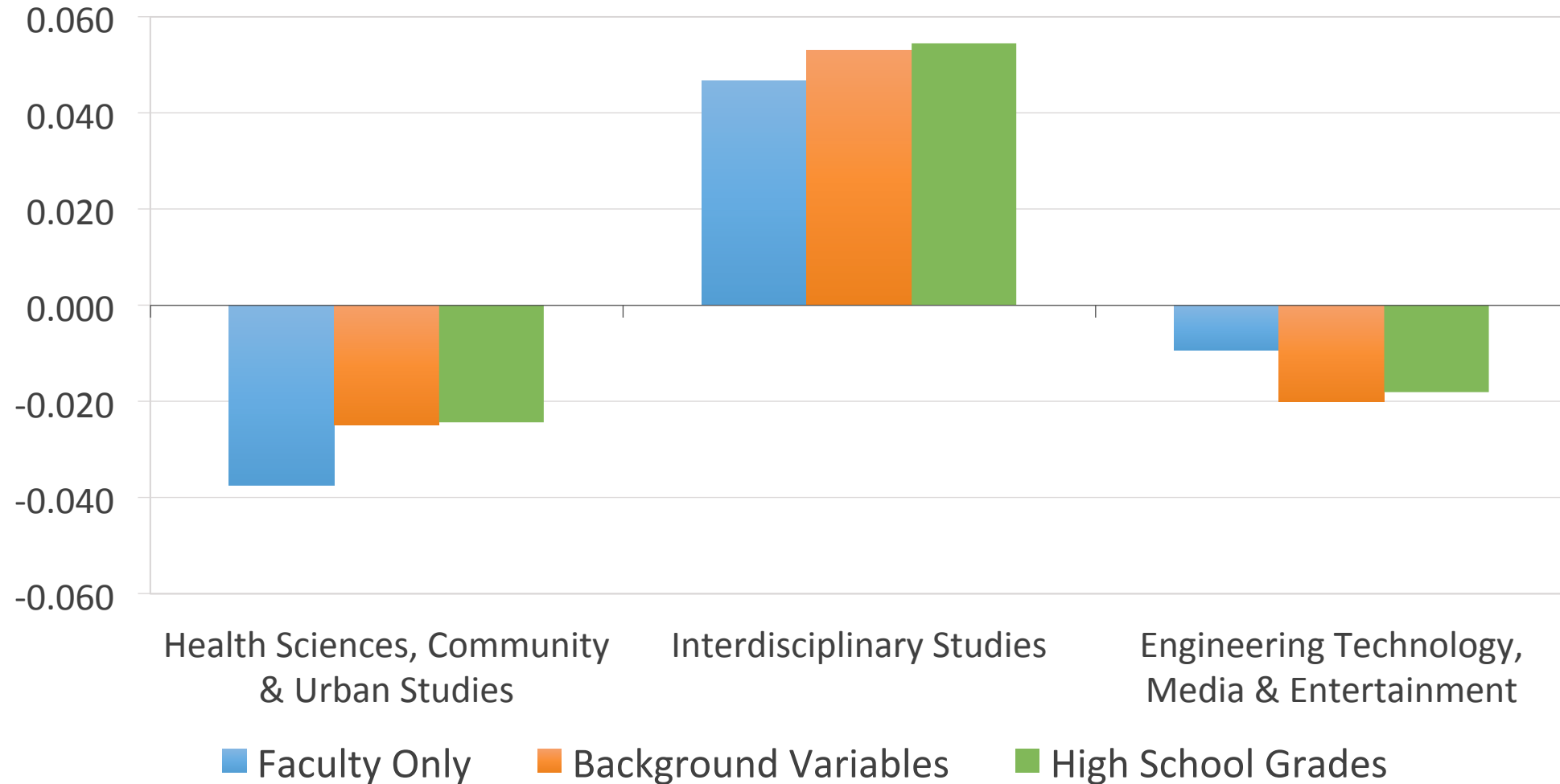


Gender (Male) & Urban/Rural/Int. (Rural)



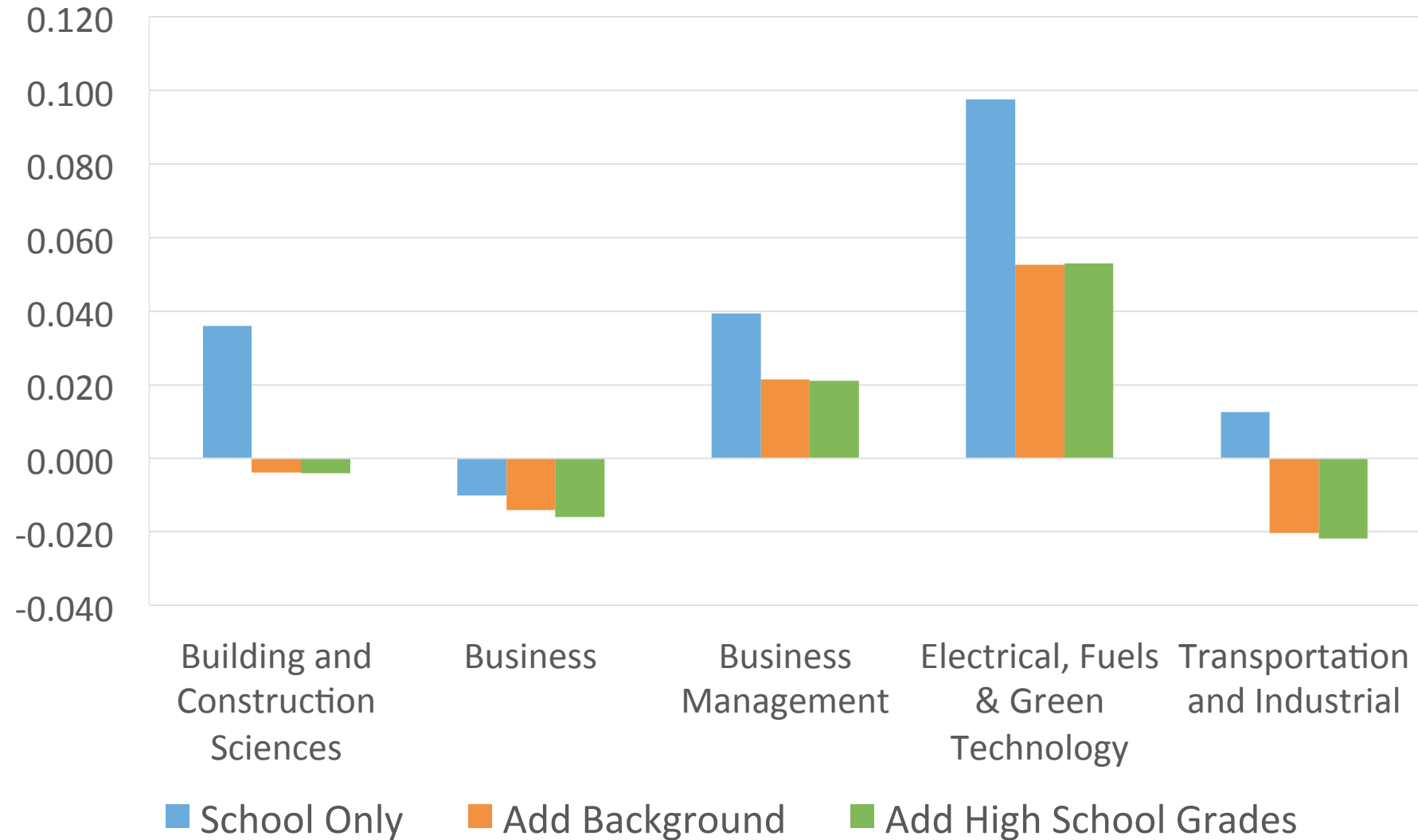
Faculty Differences

Differences Across Faculties (Comparison to Business, Skilled Trades and Apprenticeship)



Schools

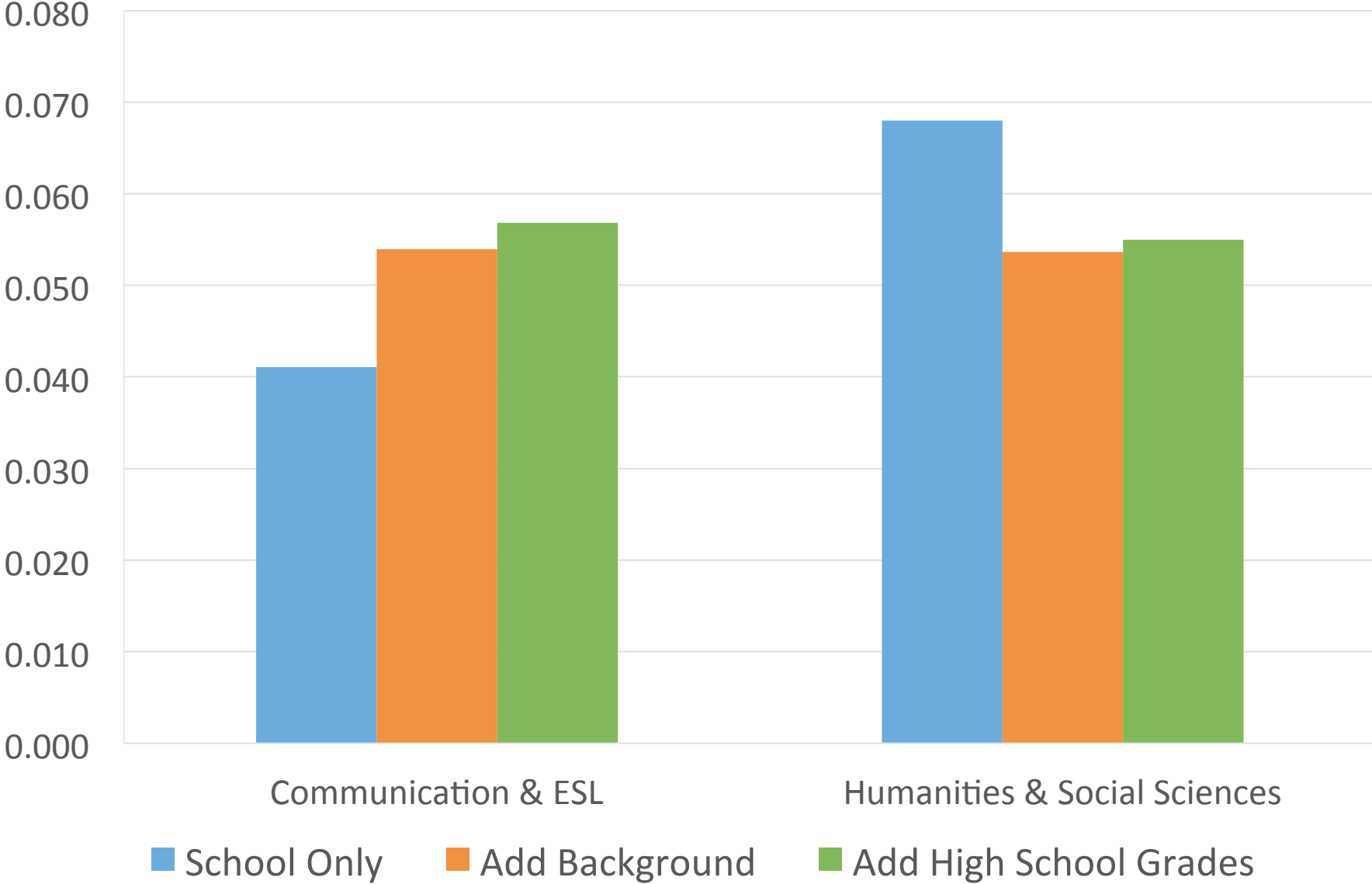
Business, Skilled Trades & Apprenticeship (Human Services)



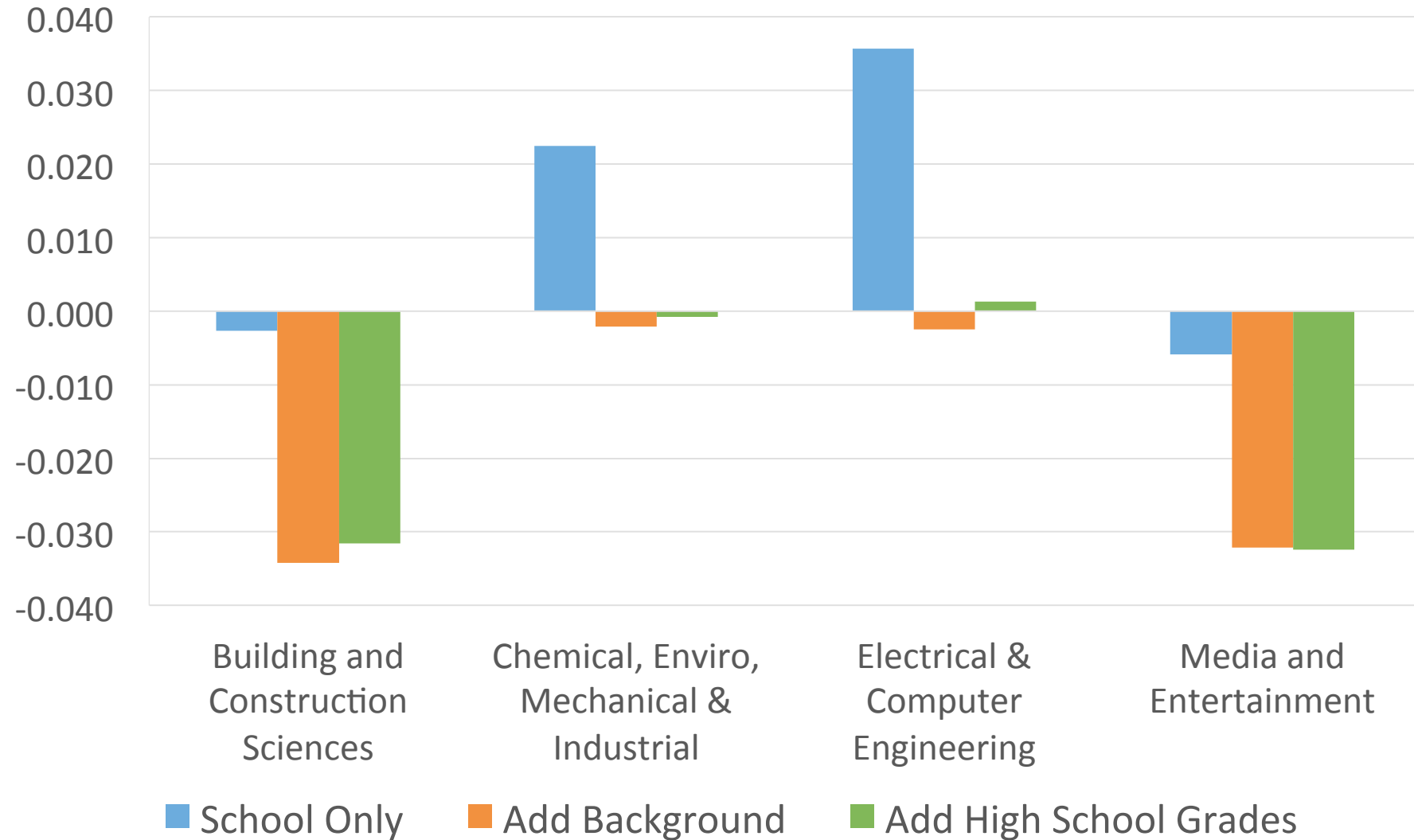
Health Sciences, Community & Urban Studies (Human Services)



Interdisciplinary Studies (Human Services)



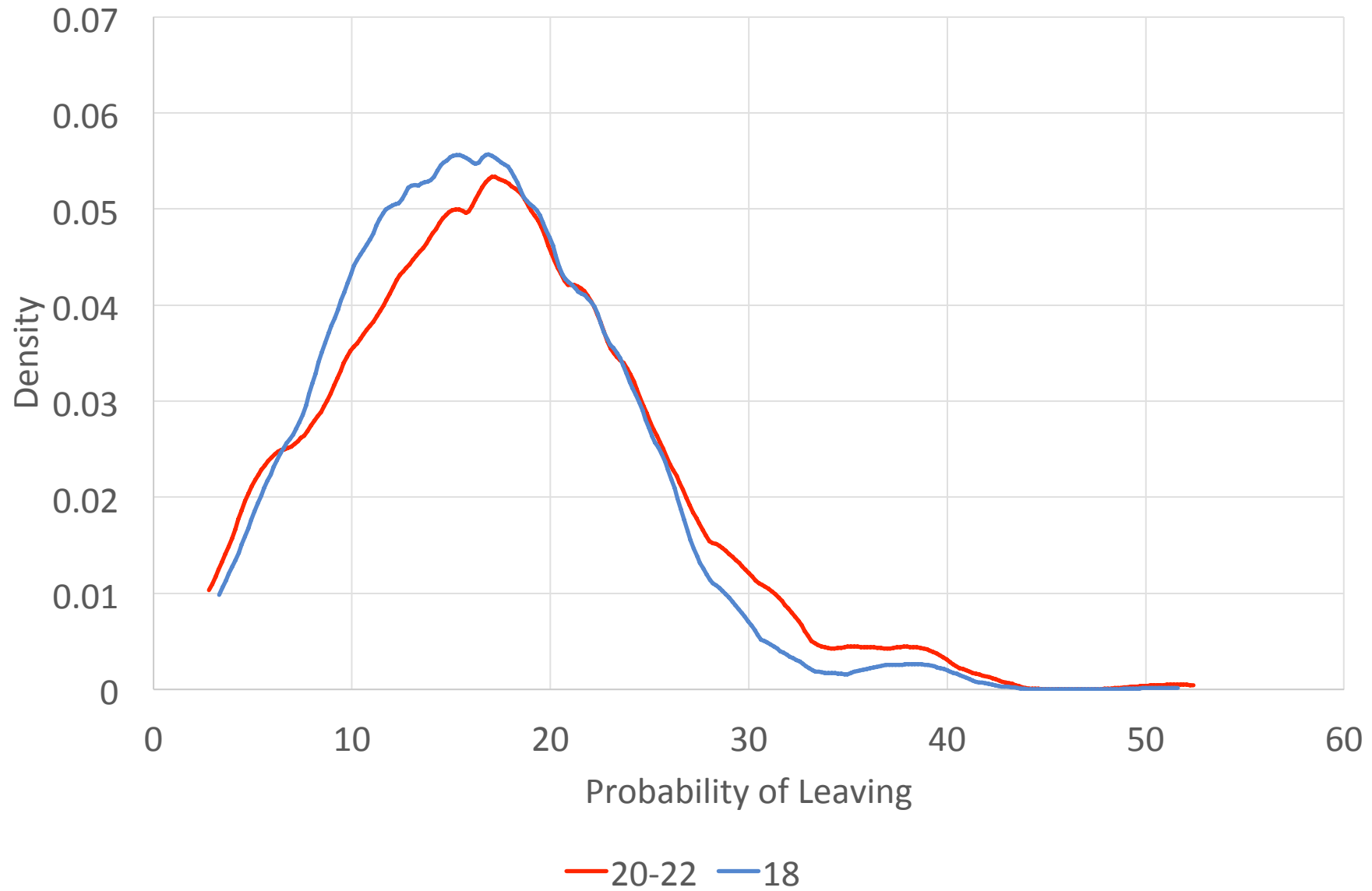
Engineering Technology, Media & Entertainment (Human Services)



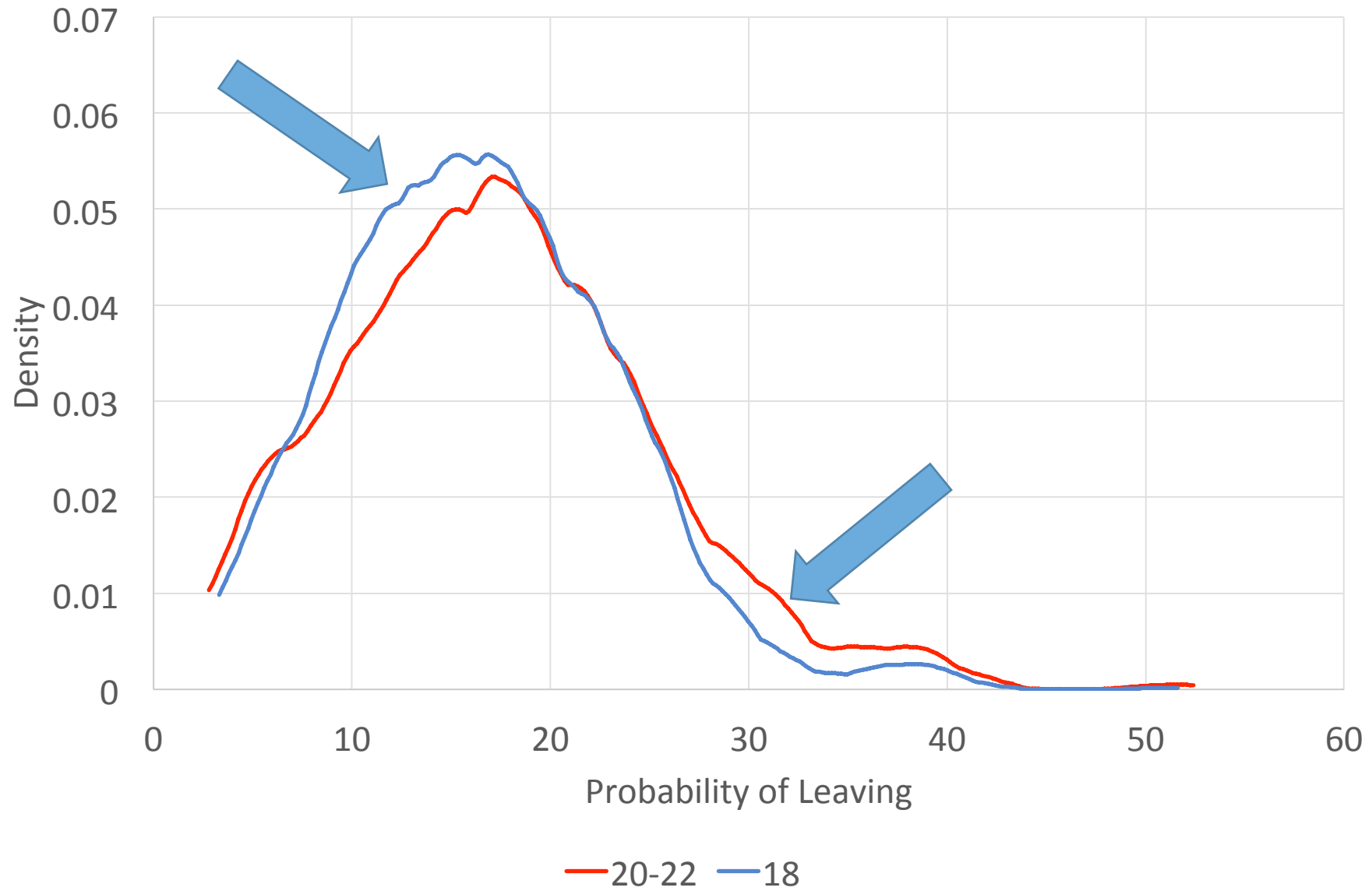
Now Use the Models to Predict
Leaving Rates at the Individual Level

Start with Differences
by Selected Characteristics

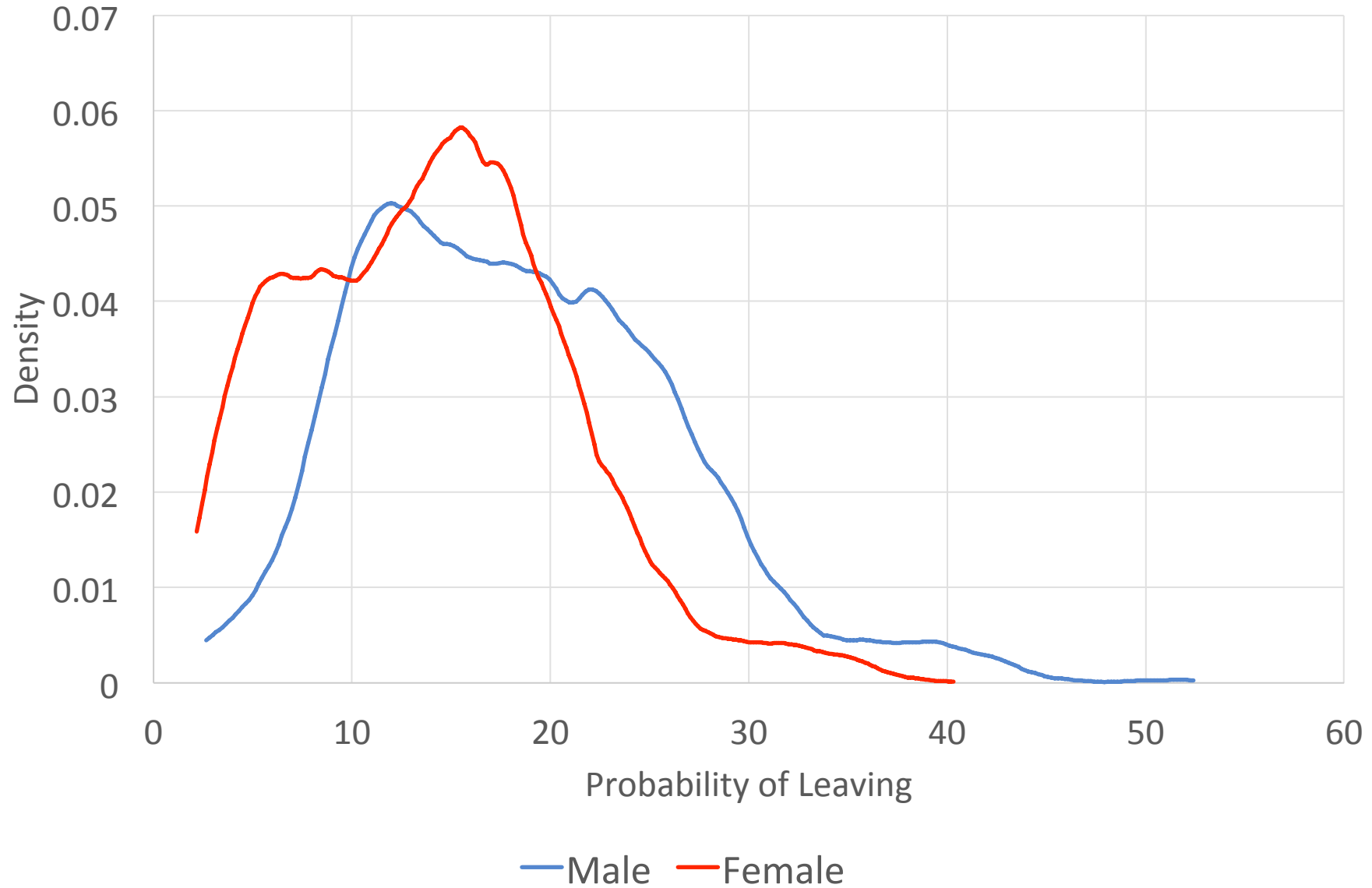
Predicted Leaving Rates by Age



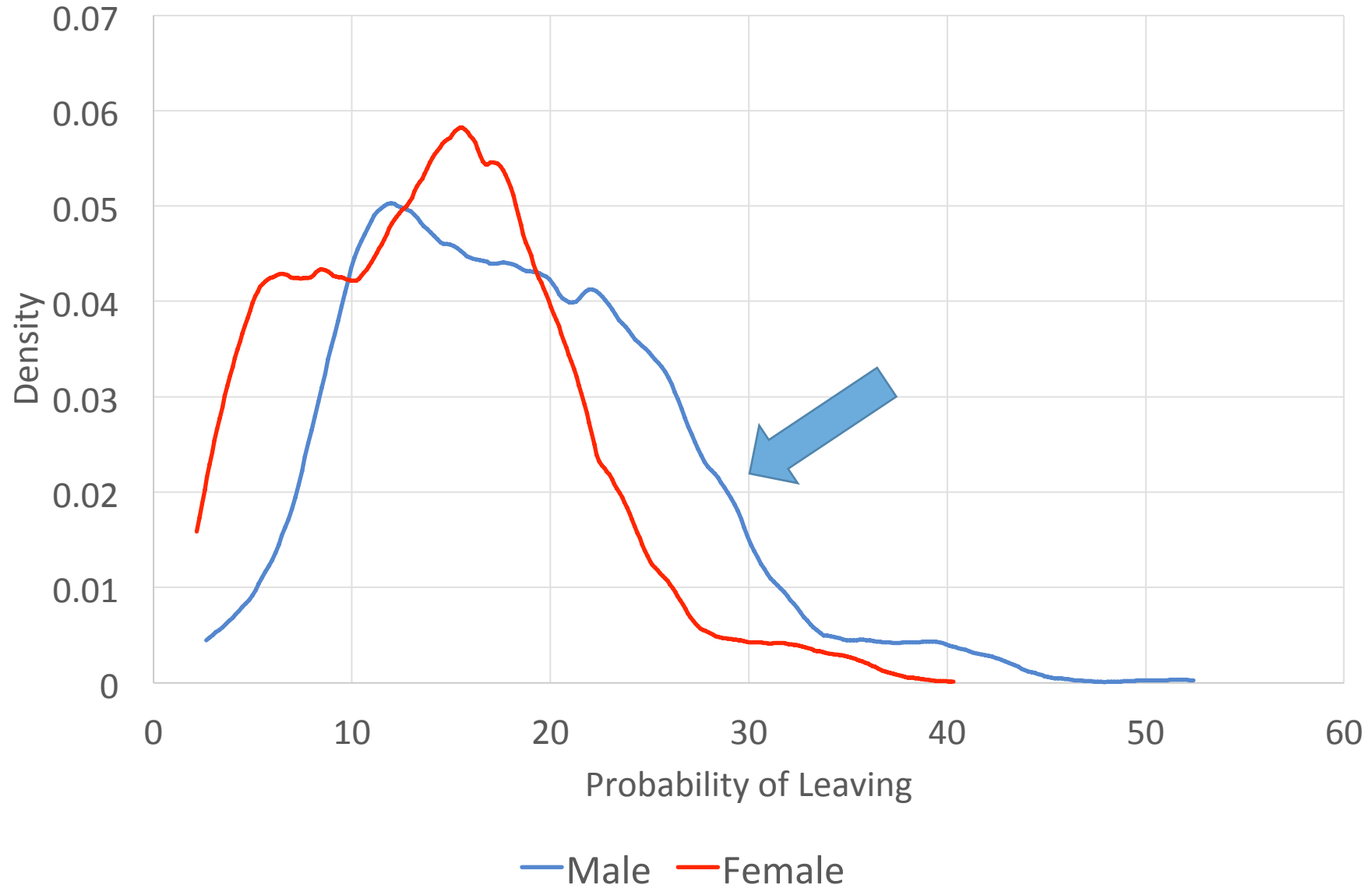
Predicted Leaving Rates by Age



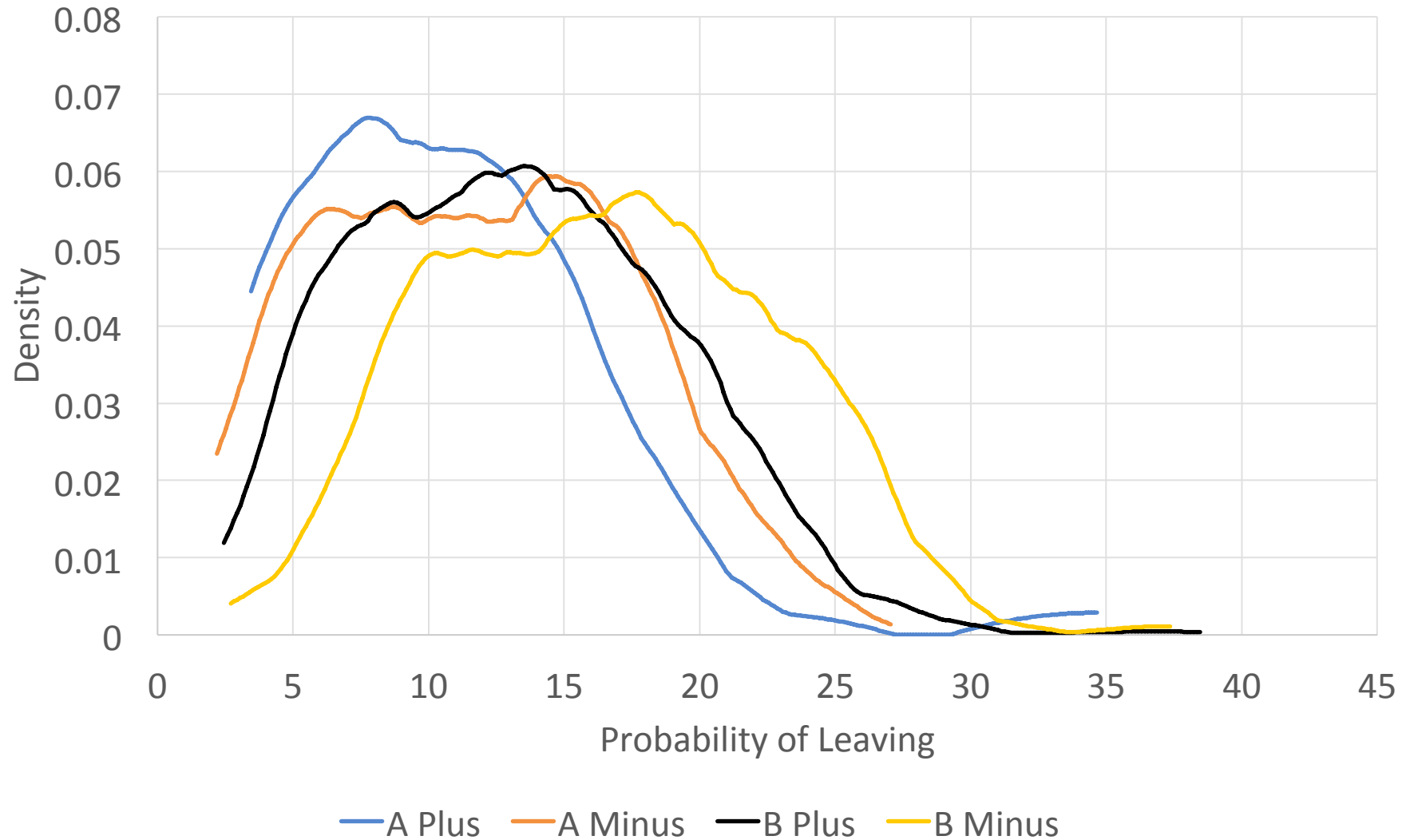
Predicted Leaving Rates by Gender



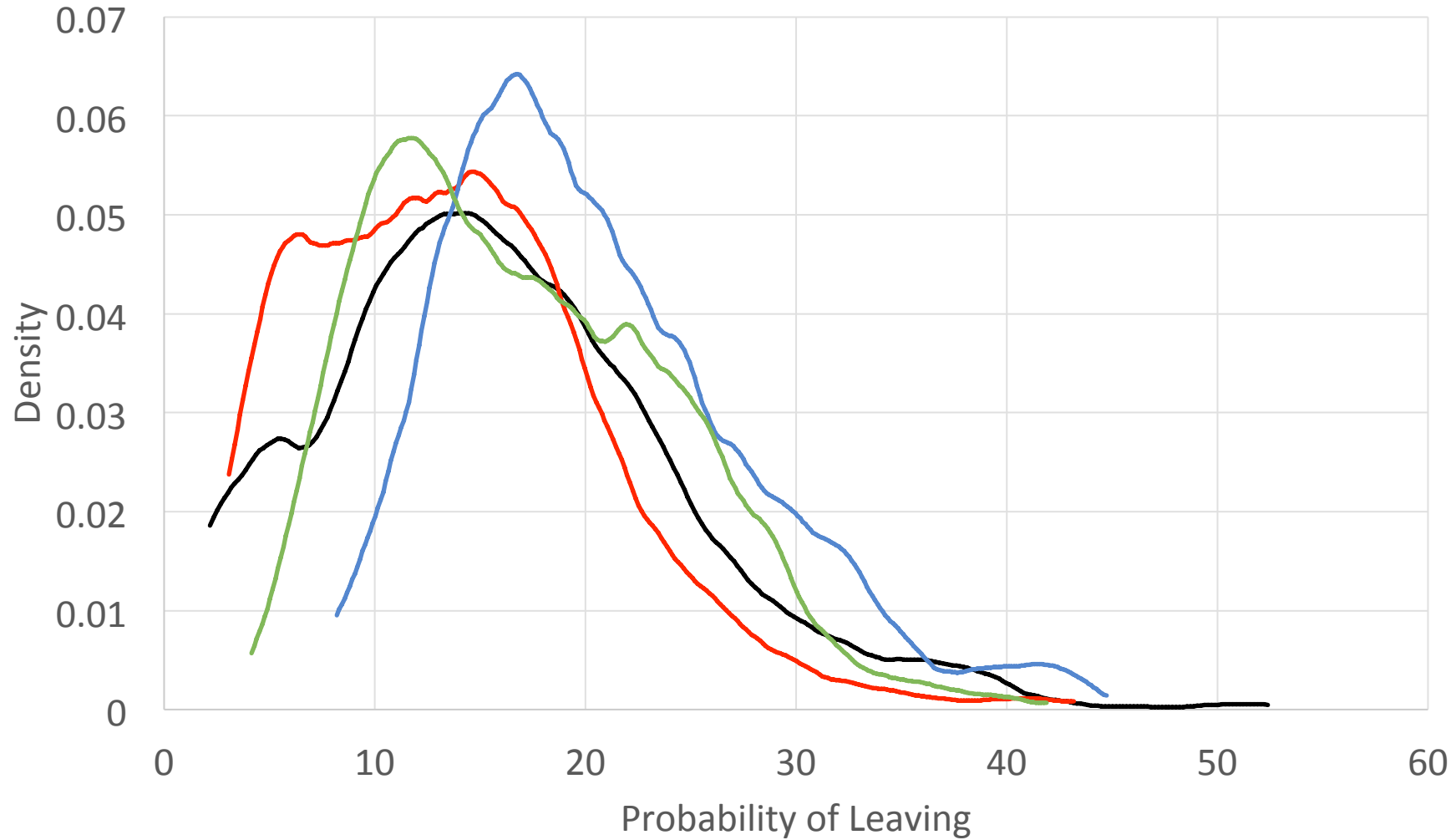
Predicted Leaving Rates by Gender



Predicted Leaving Rates By High School Grades



Predicted Leaving Rates by Faculty



— Business, Skilled Trades and Apprenticeship

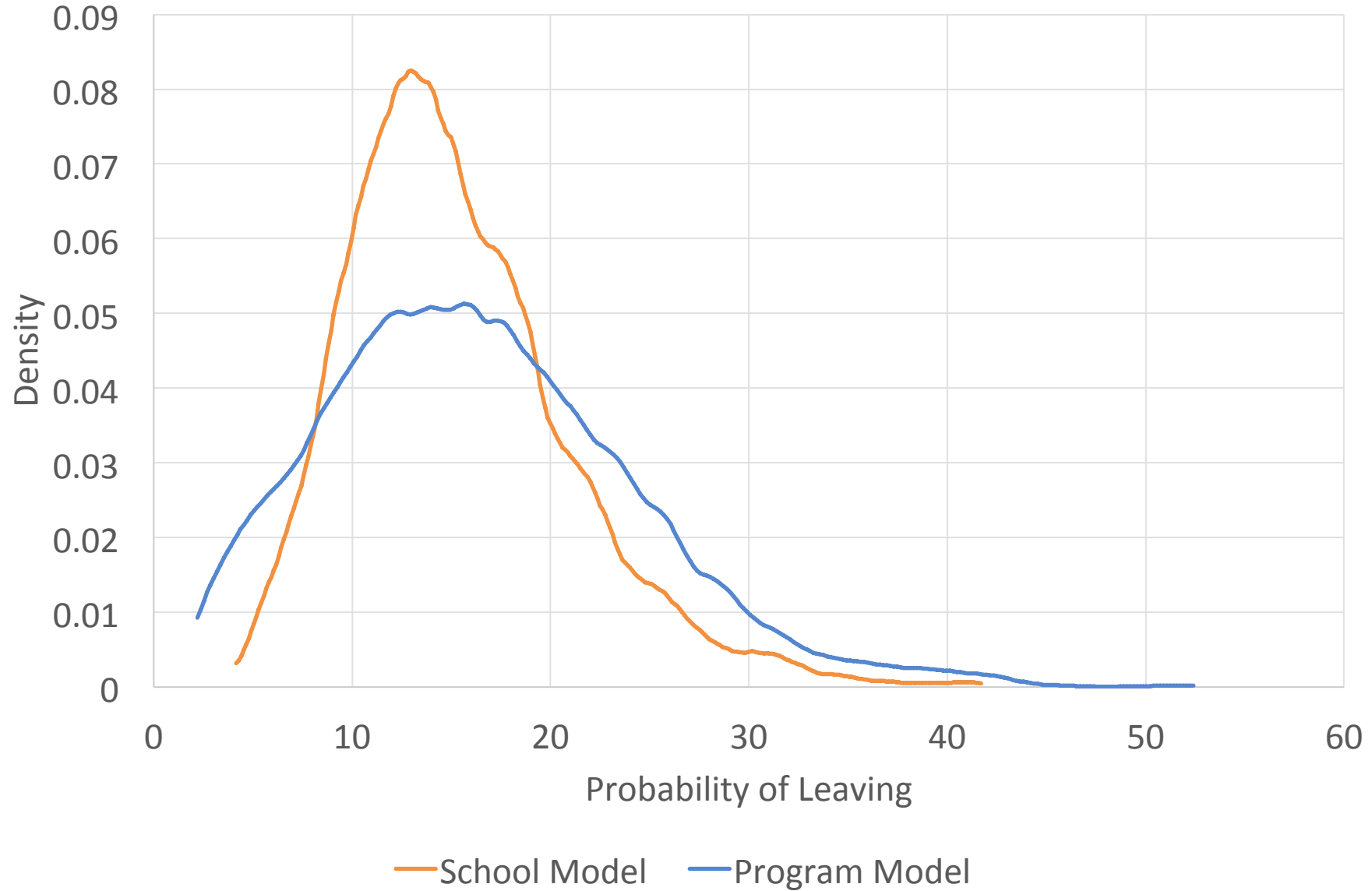
— Health Sci., Comm. And Urban Studies

— Interdisciplinary Studies

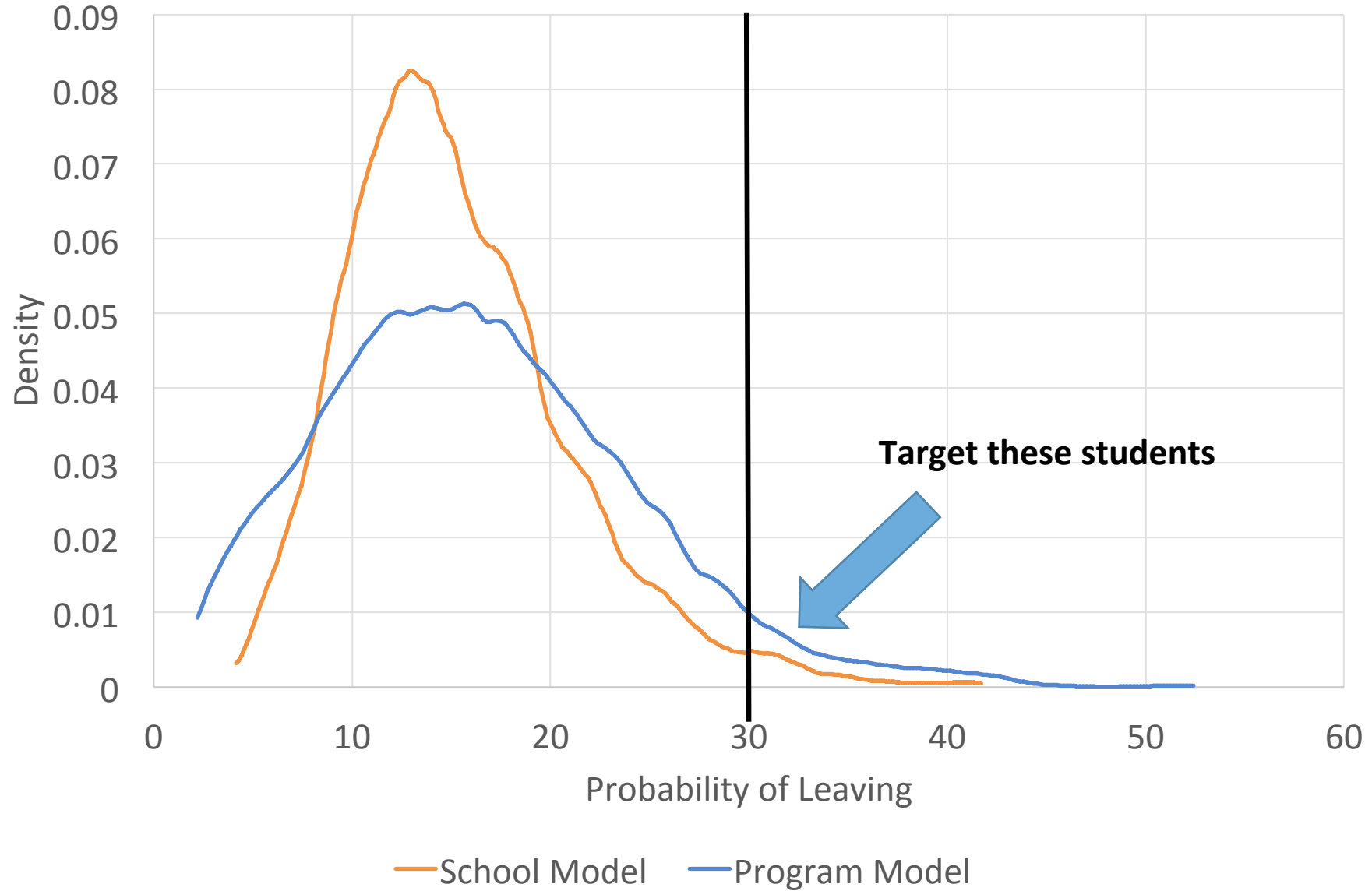
— Eng. Tech., Media and Entertainment

Overall Leaving Rates –
True “Predictive Models”

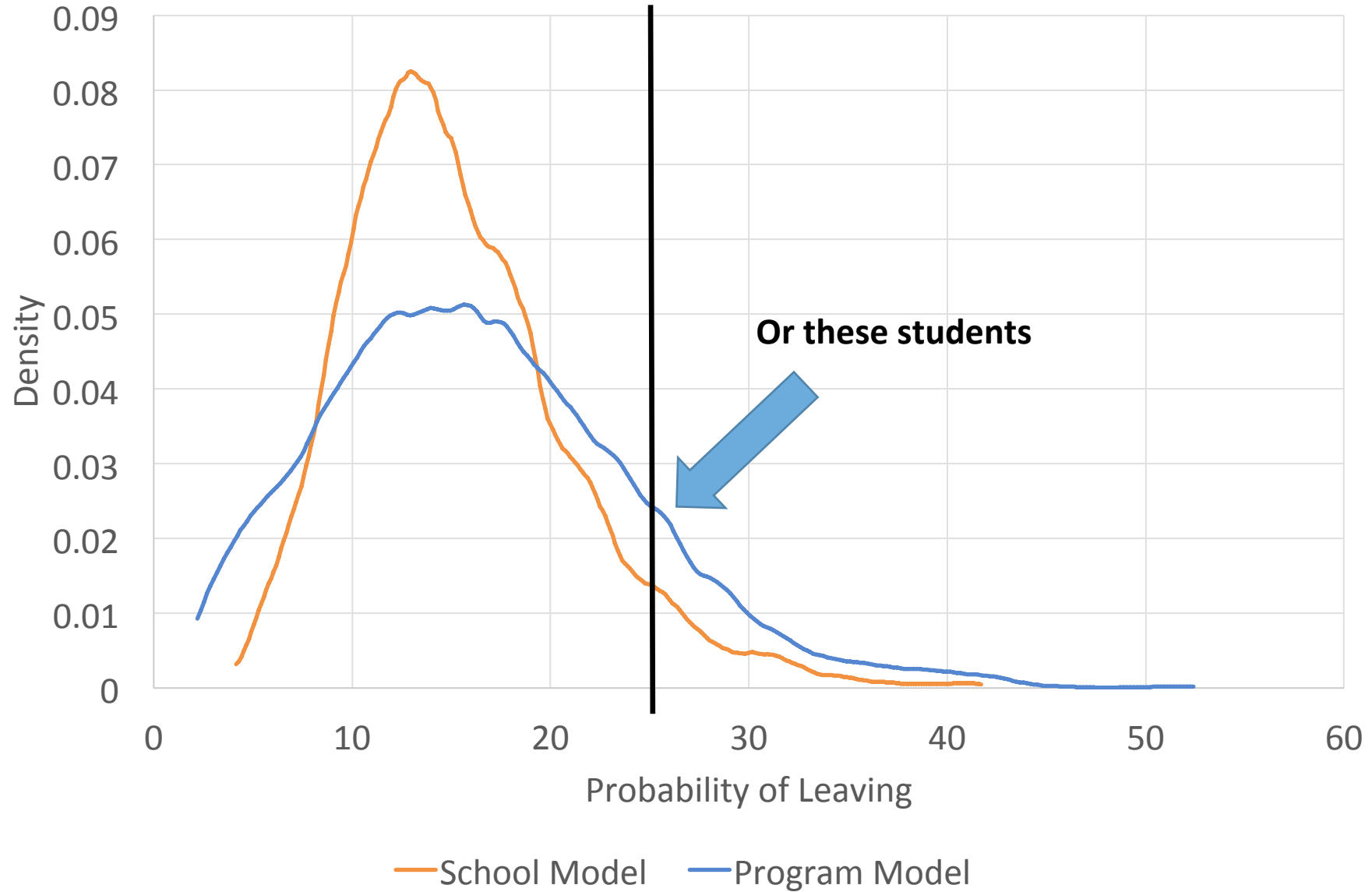
Overall Predicted Leaving Rates



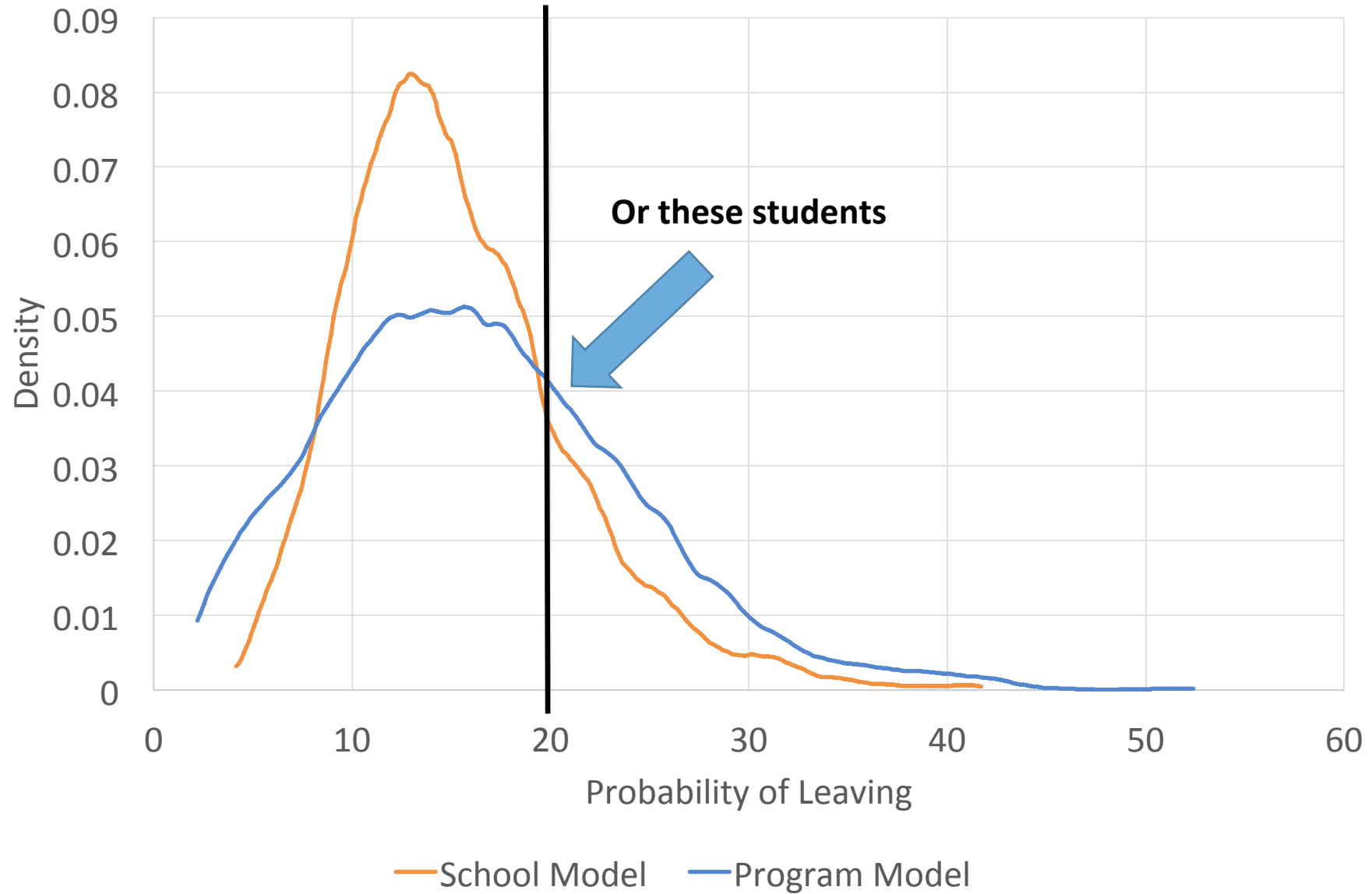
Overall Predicted Leaving Rates



Overall Predicted Leaving Rates



Overall Predicted Leaving Rates



Evaluate Student Initiatives

1. Use models to control for observable factors
2. Use “discontinuity analysis” based on our targeting
3. Use traditional experimental design

So Far We have Learned...

- Student retention is complex: no silver bullets
- Statistical modeling is valuable
 - to understand student retention
 - to identify students at risk
 - to evaluate initiatives
- The more data available, the better
 - Basic admin. data
 - Pre-entry assessments and surveys
 - Updates on student situation as they move through their studies

Next steps

- Two HEQCO Projects (\$)
 1. Student Advising - using students targeted with our models
 2. Future Authoring - random assignment experiment

Pathways

- An elaboration on retention analysis
- But need to be able to track students across institutions
- Where do we get such data?
 - Individual institutions collaborate
 - Provincial and related data aggregates
 - PSIS
- But inherently tricky/challenging work

III: Tracking Student's Post-Graduation
Labour Market Outcomes:
uOttawa Pilot Study

What We Do: Track Students' Post-Schooling Labour Market Outcomes

- Year-by-year after graduation
- Cohort-by-cohort
- By faculty
- By gender
- Across the distribution of earnings (by quintile)

Data

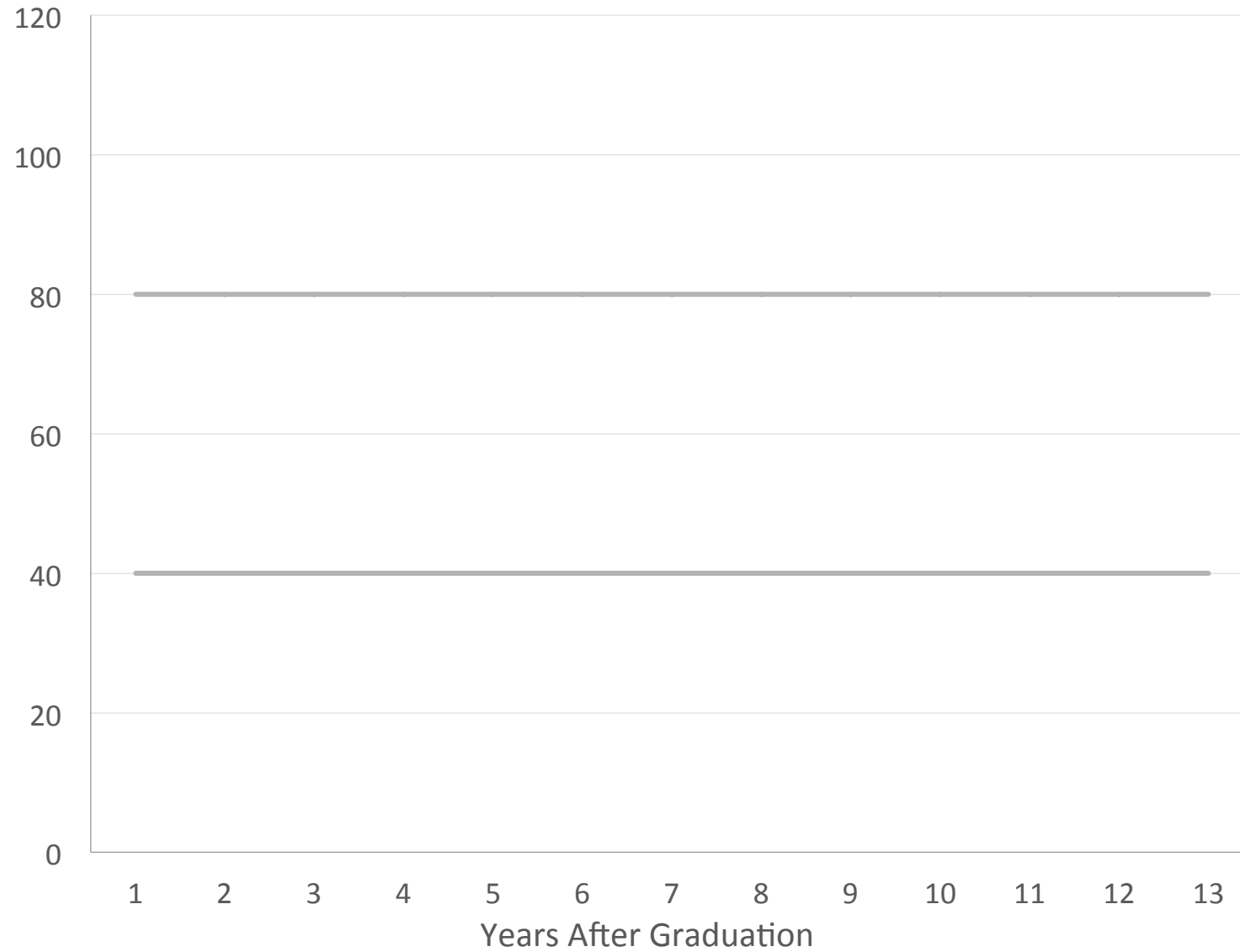
Graduates 1998-2010



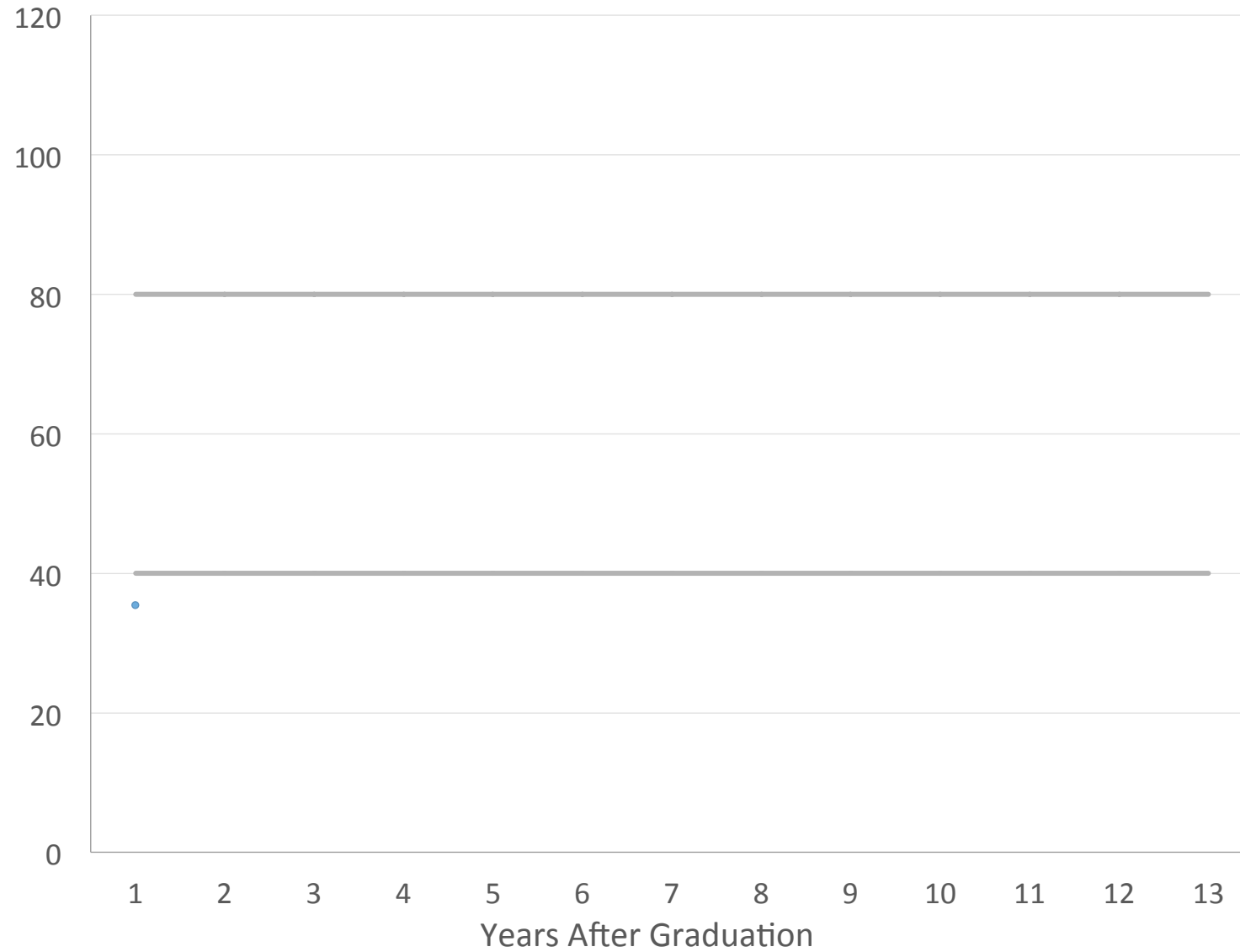
Linked to tax data

Social Science Graduates
(Starting with 1998 Graduates)

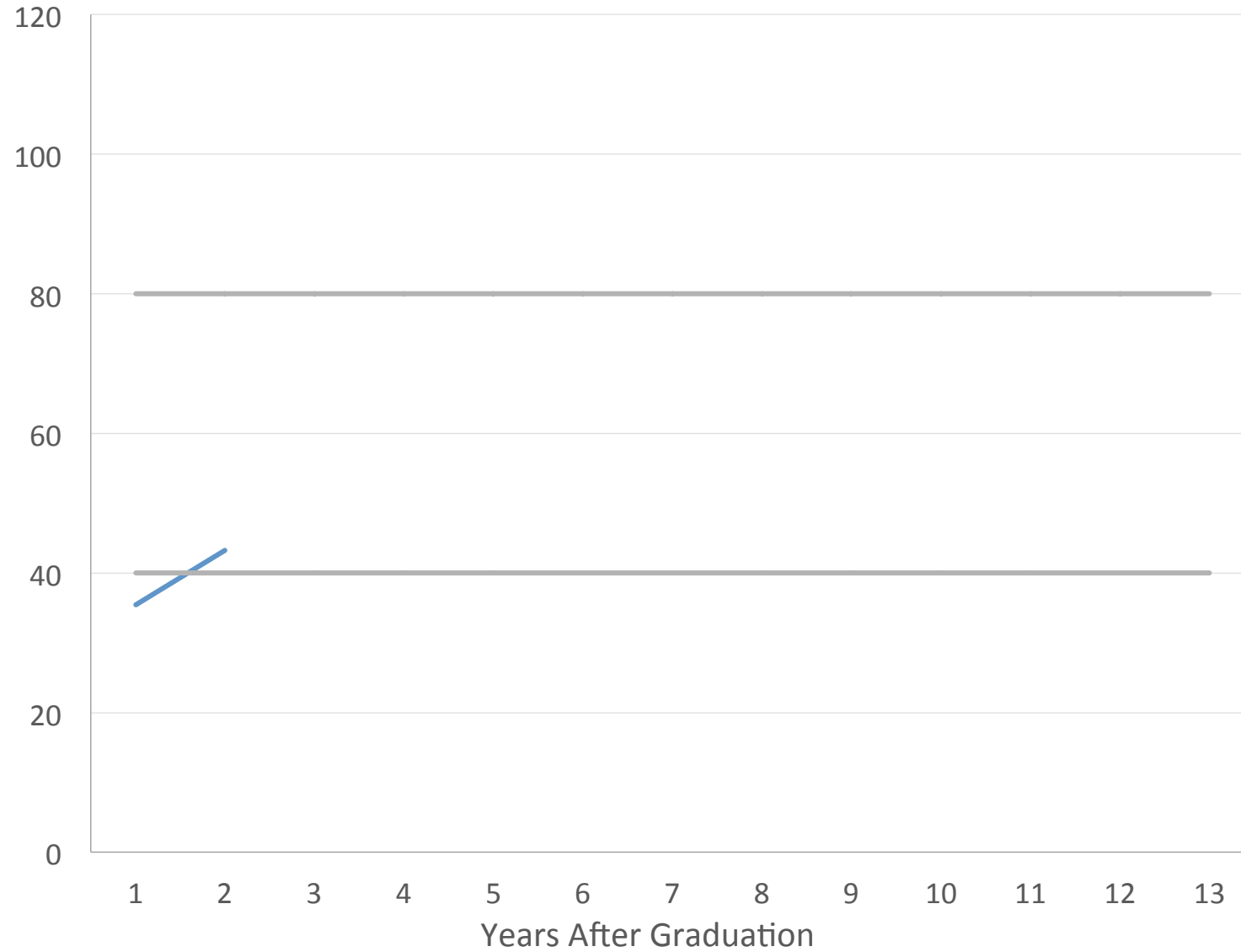
Mean Earnings of Social Science Graduates (\$2011)



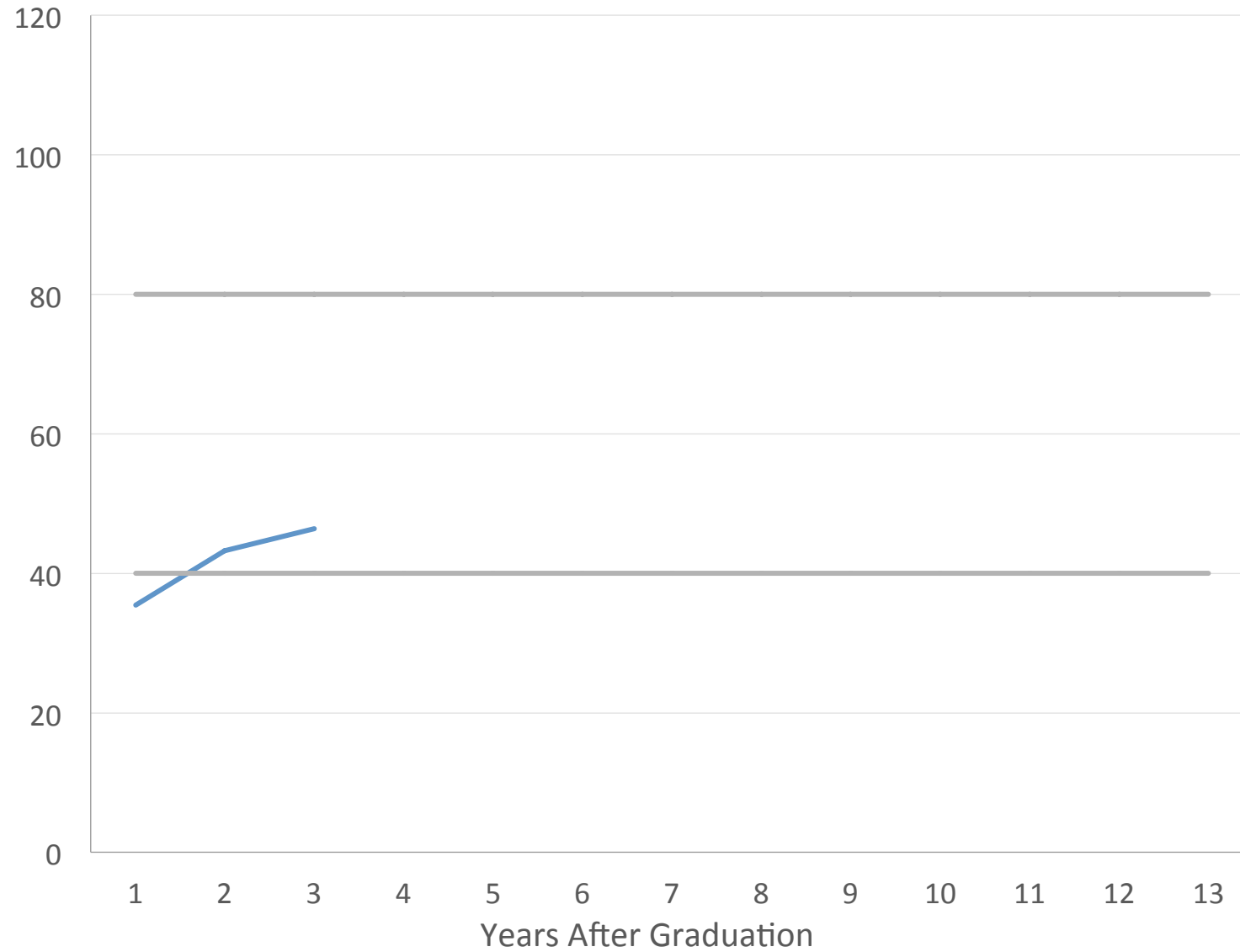
Mean Earnings of Social Science Graduates (\$2011)



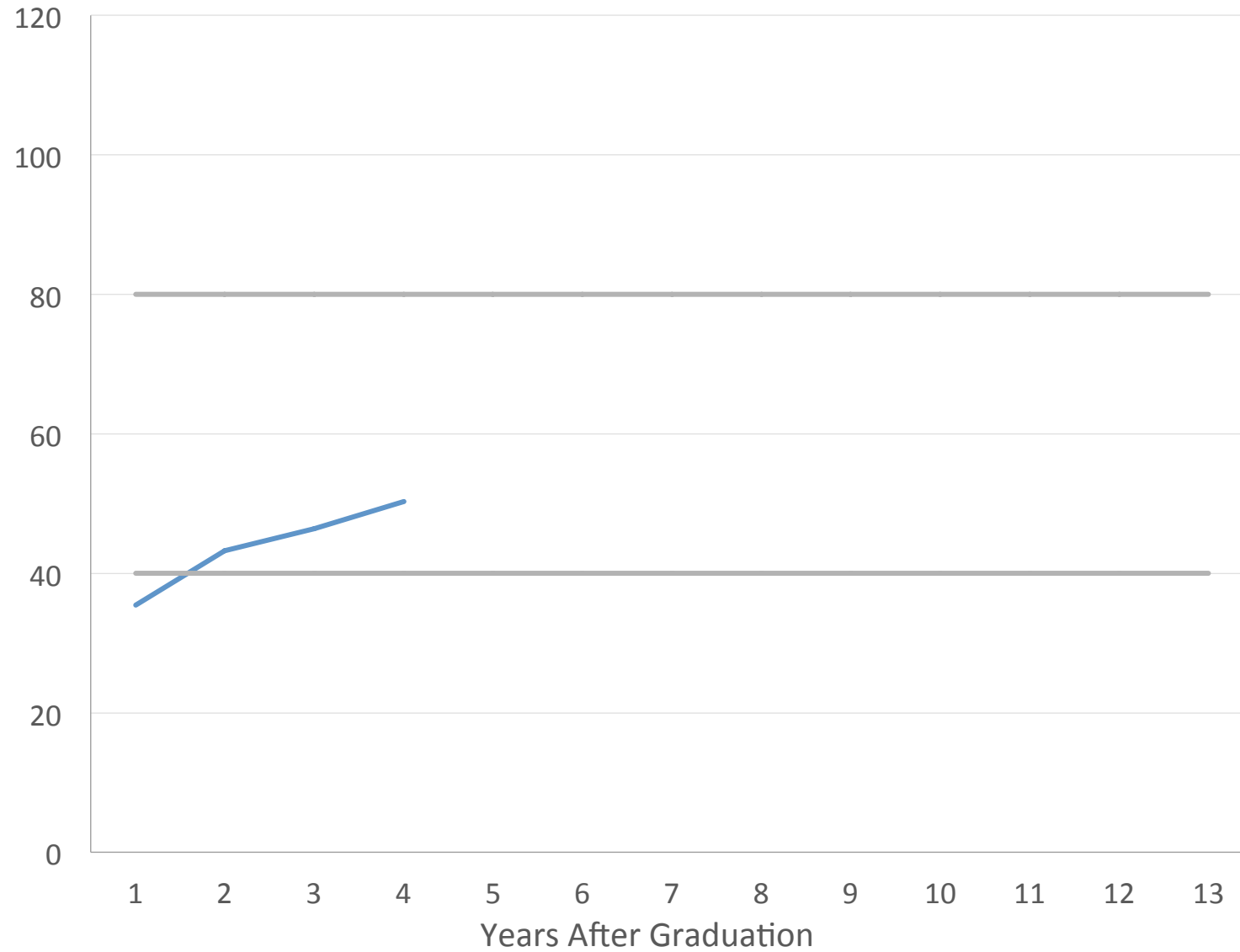
Mean Earnings of Social Science Graduates (\$2011)



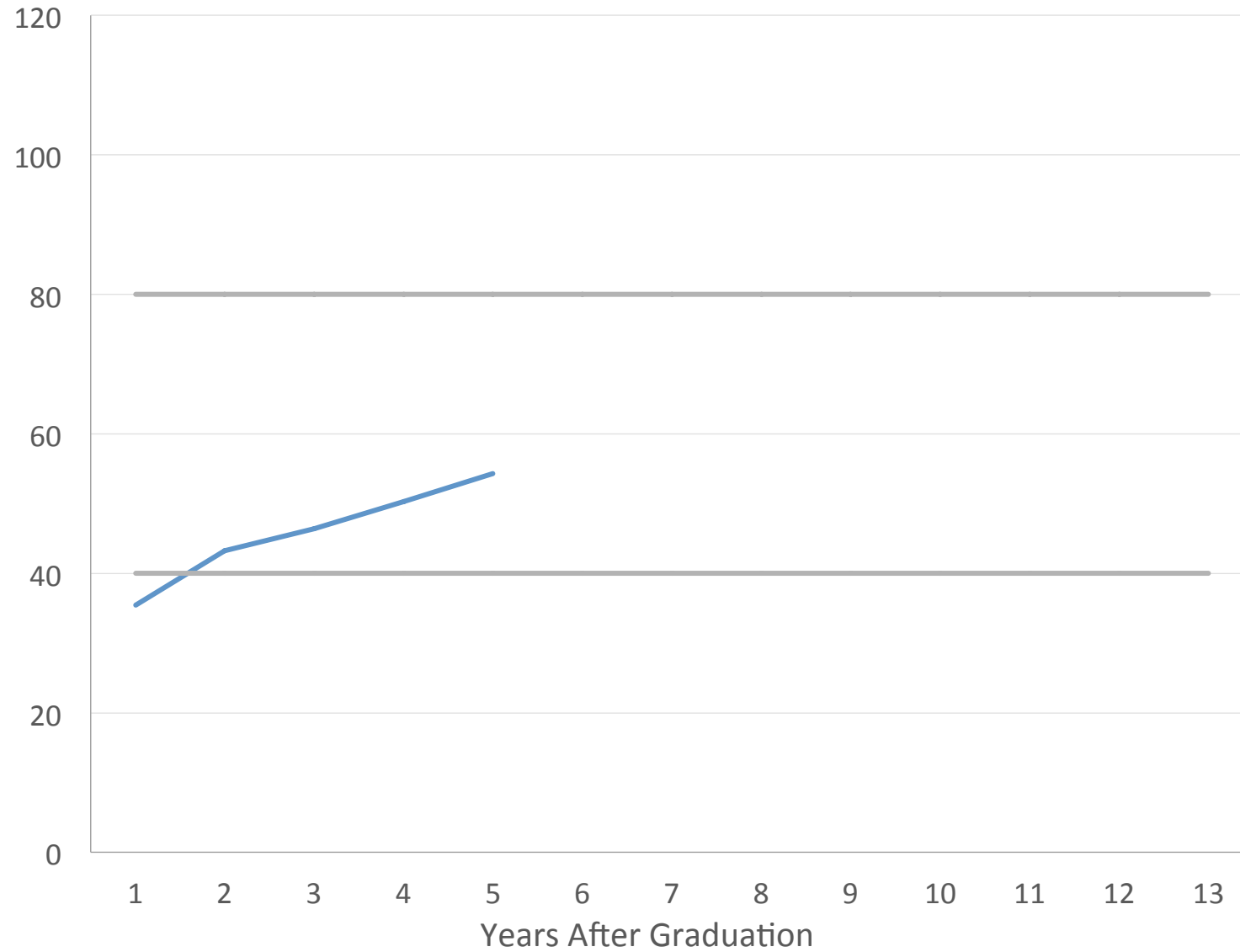
Mean Earnings of Social Science Graduates (\$2011)



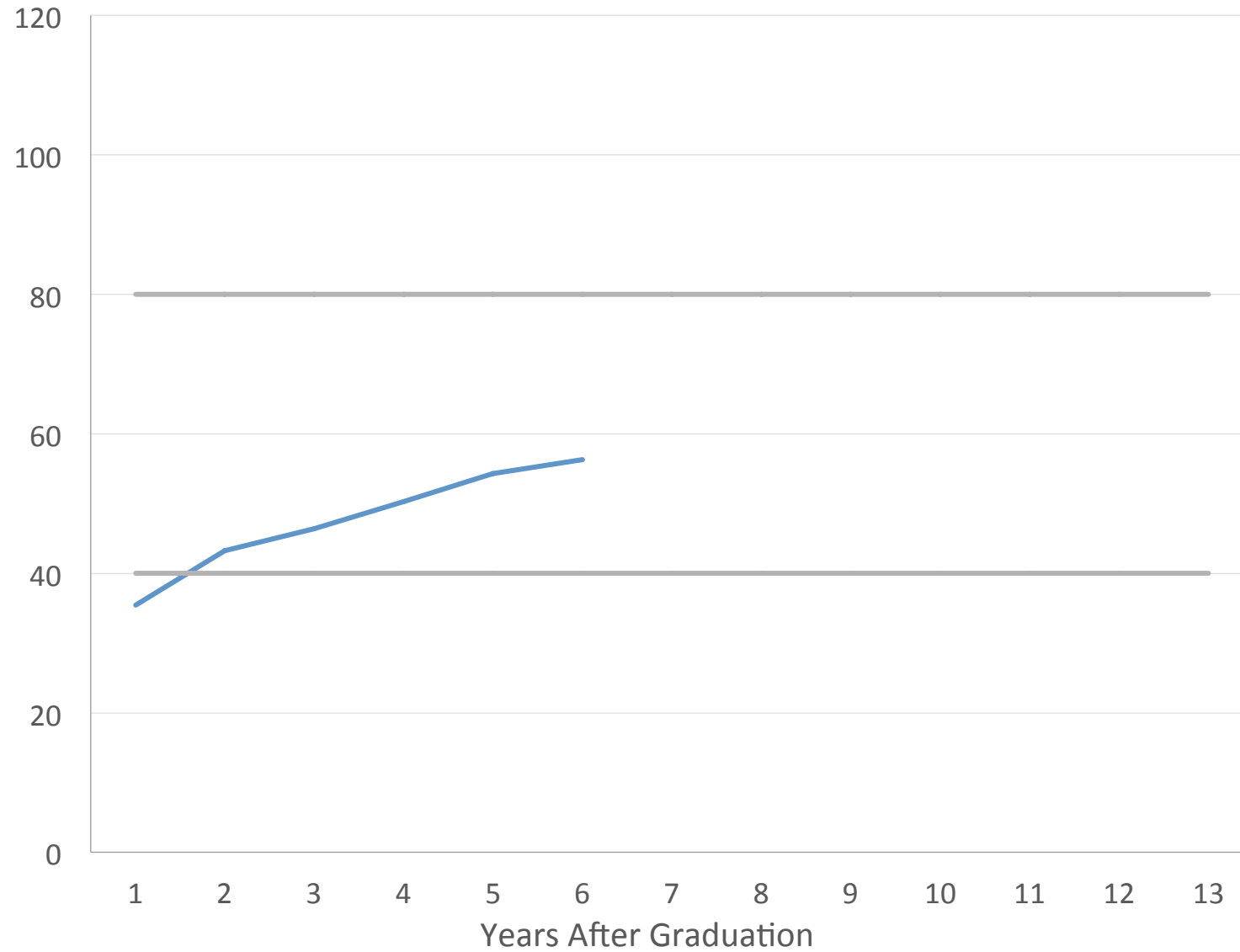
Mean Earnings of Social Science Graduates (\$2011)



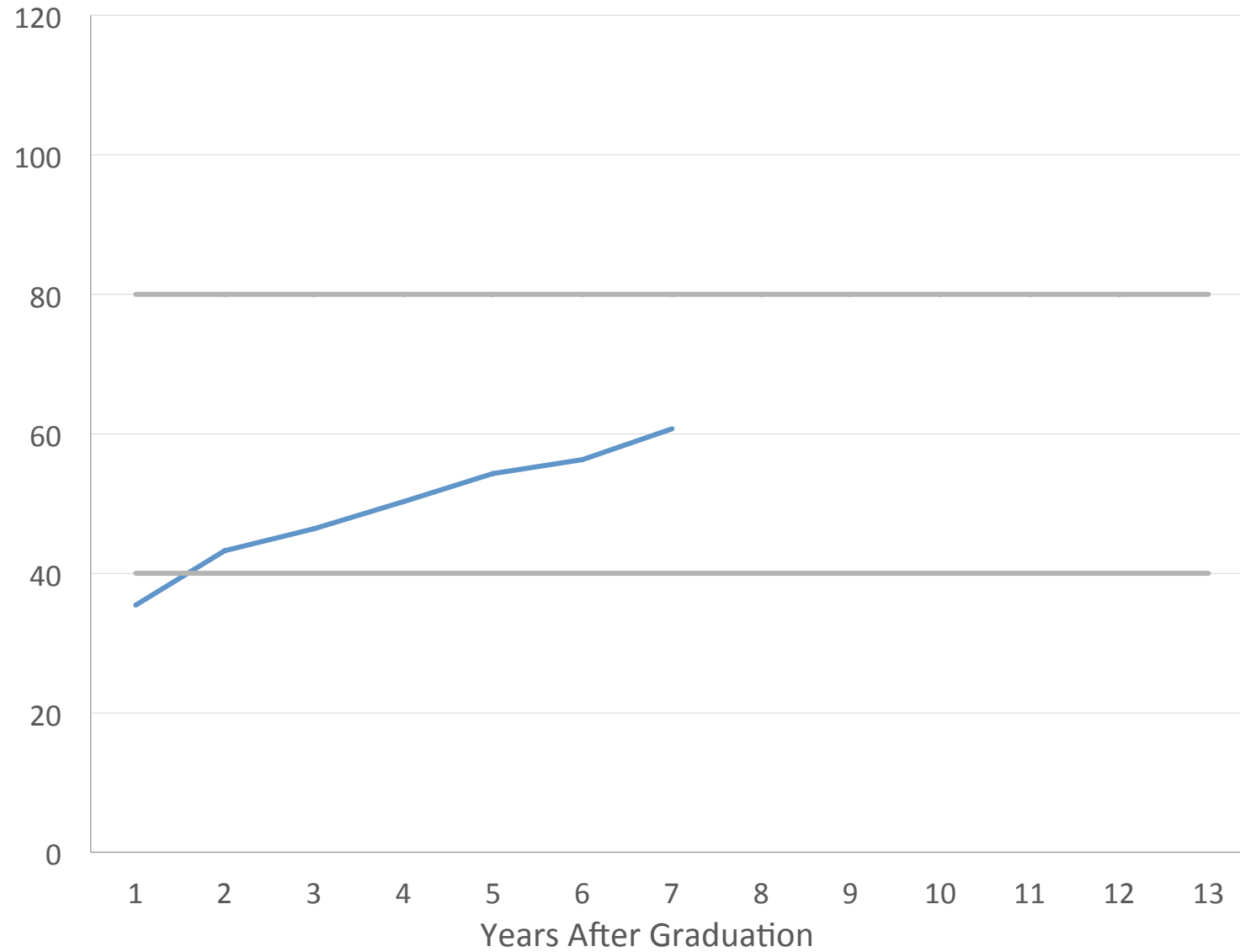
Mean Earnings of Social Science Graduates (\$2011)



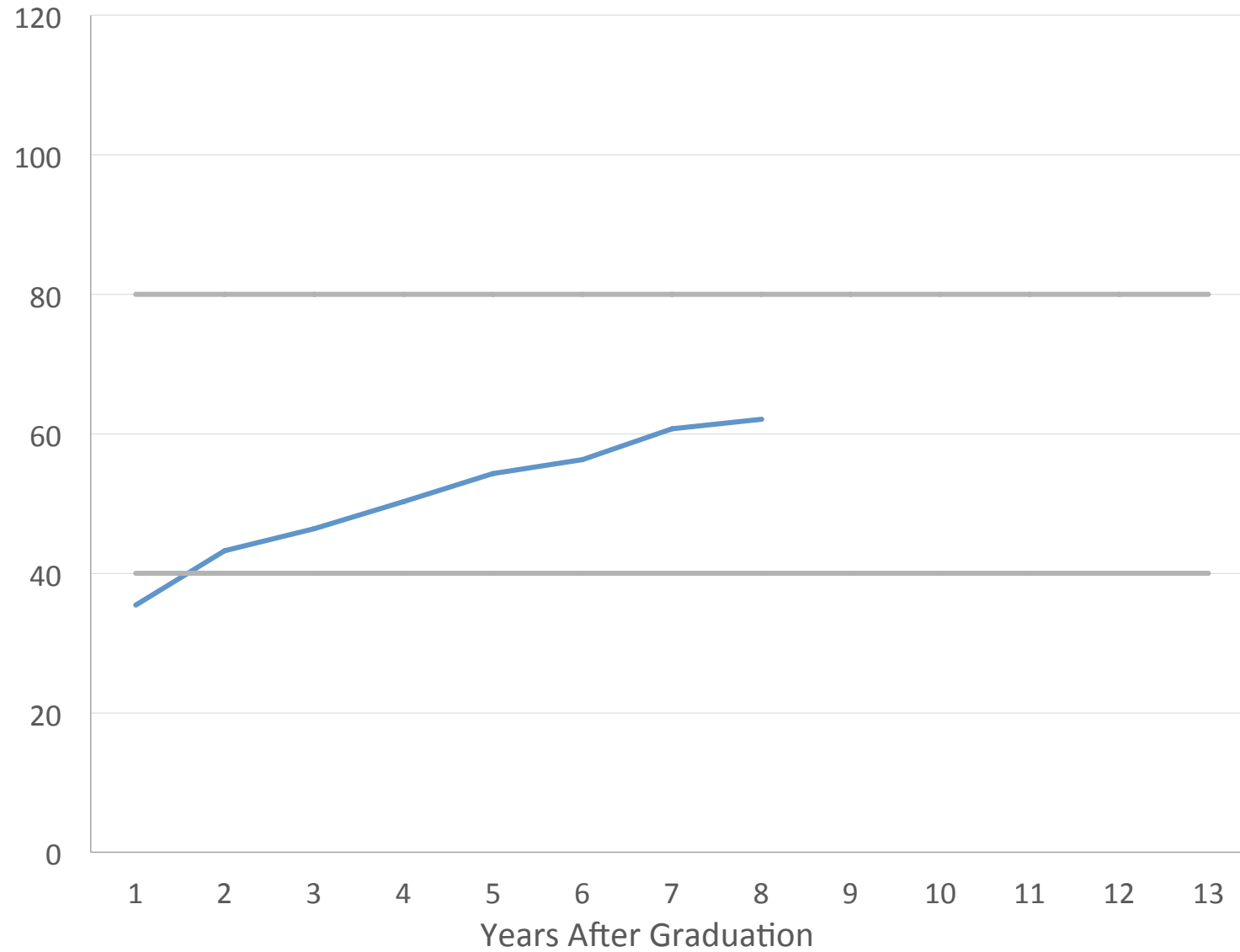
Mean Earnings of Social Science Graduates (\$2011)



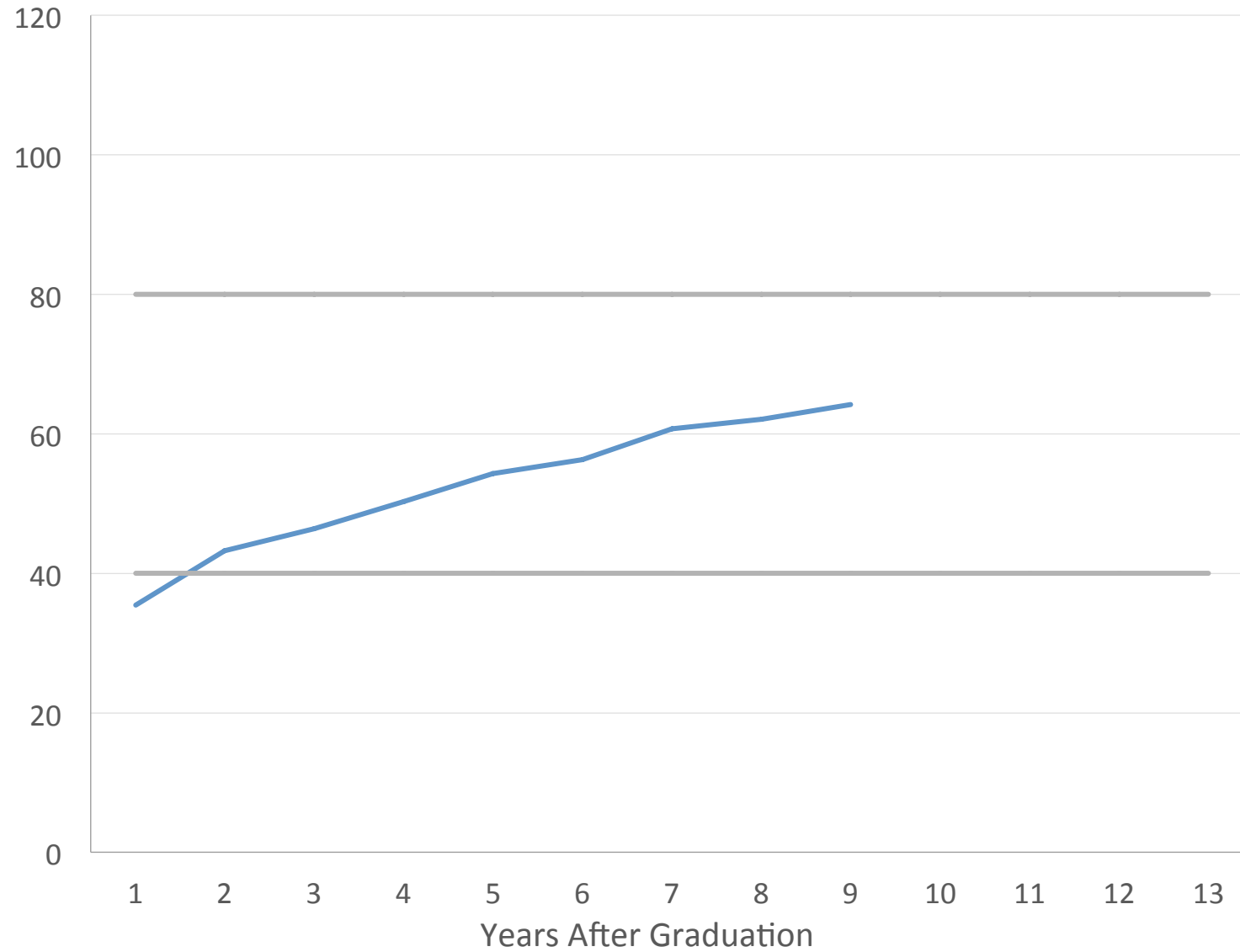
Mean Earnings of Social Science Graduates (\$2011)



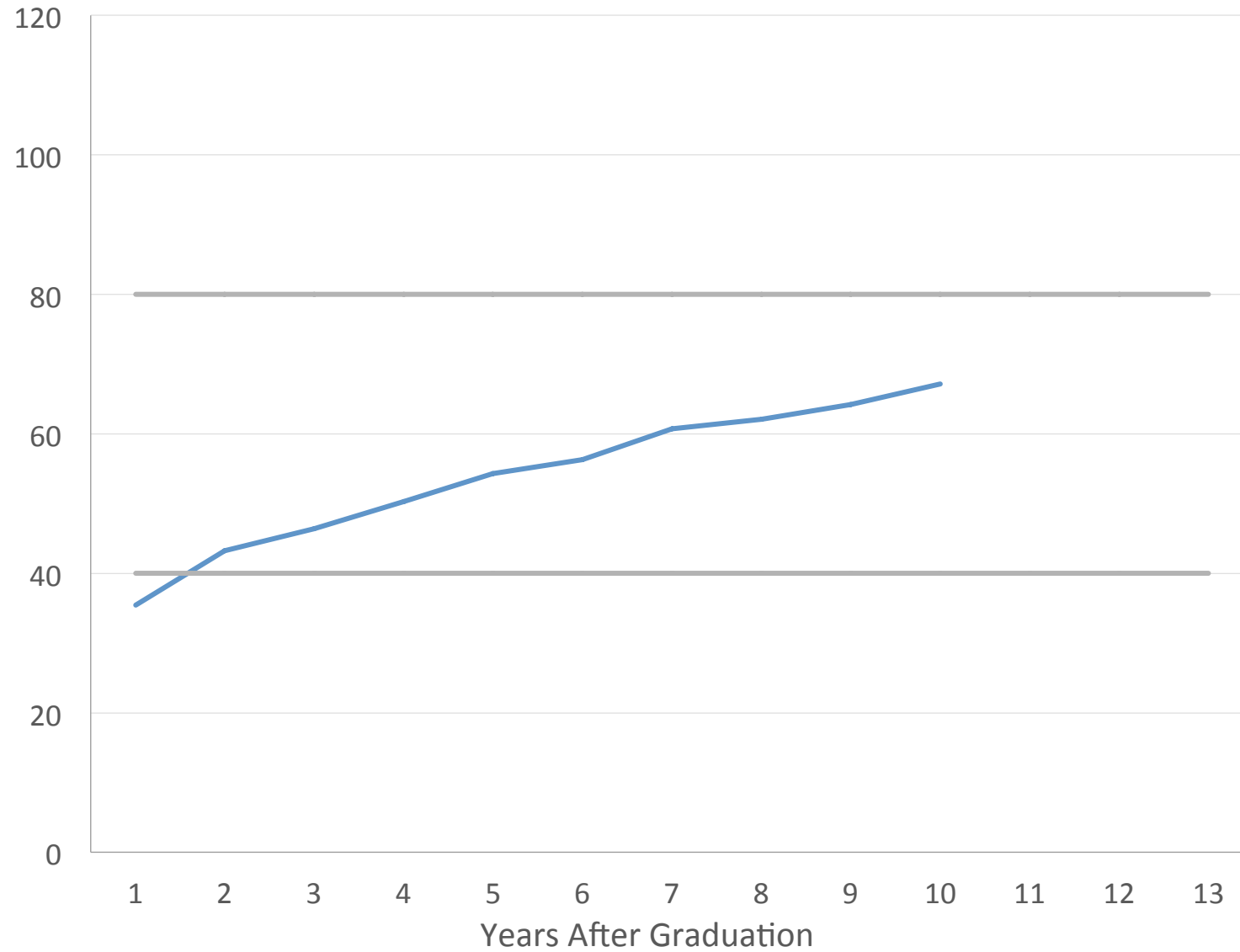
Mean Earnings of Social Science Graduates (\$2011)



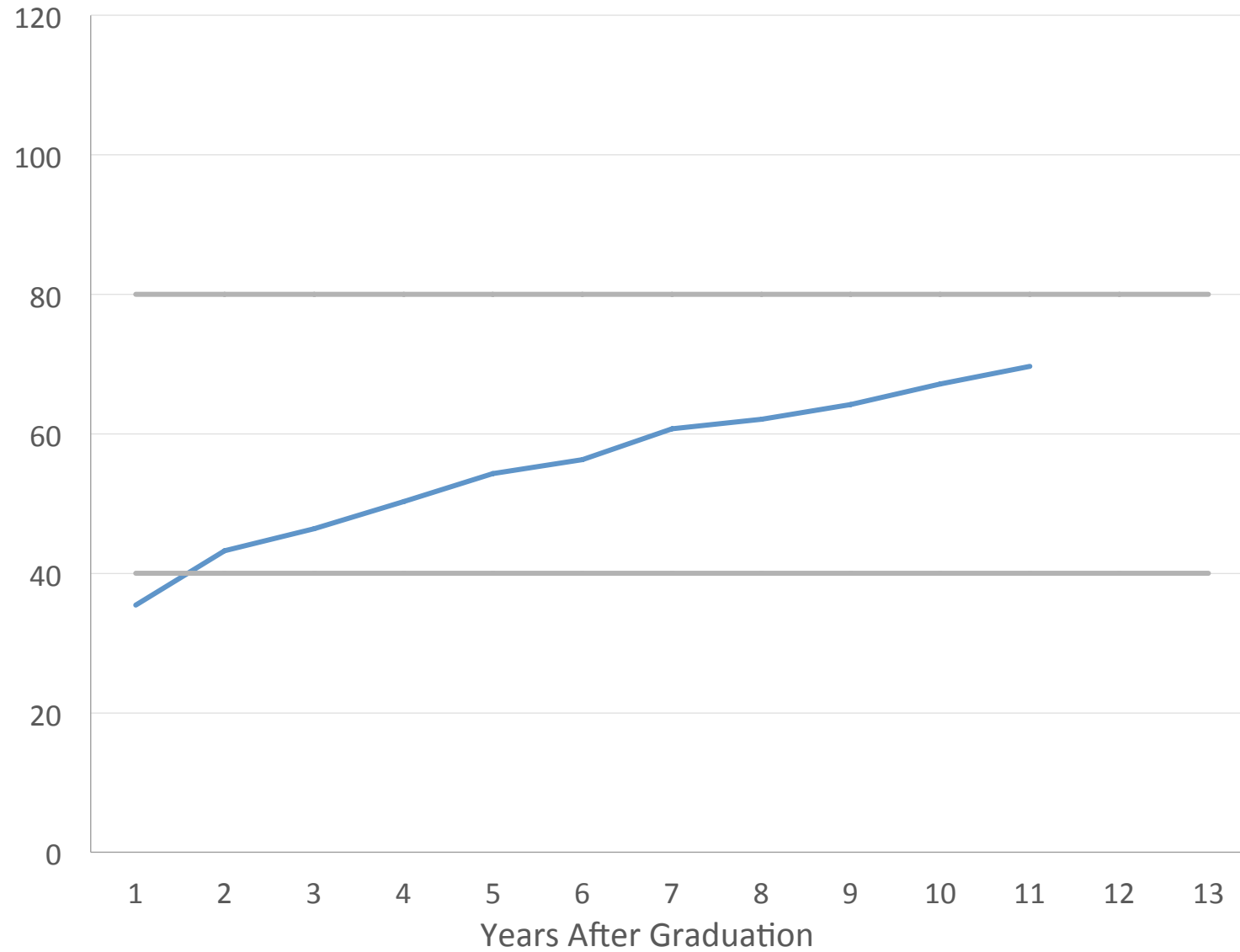
Mean Earnings of Social Science Graduates (\$2011)



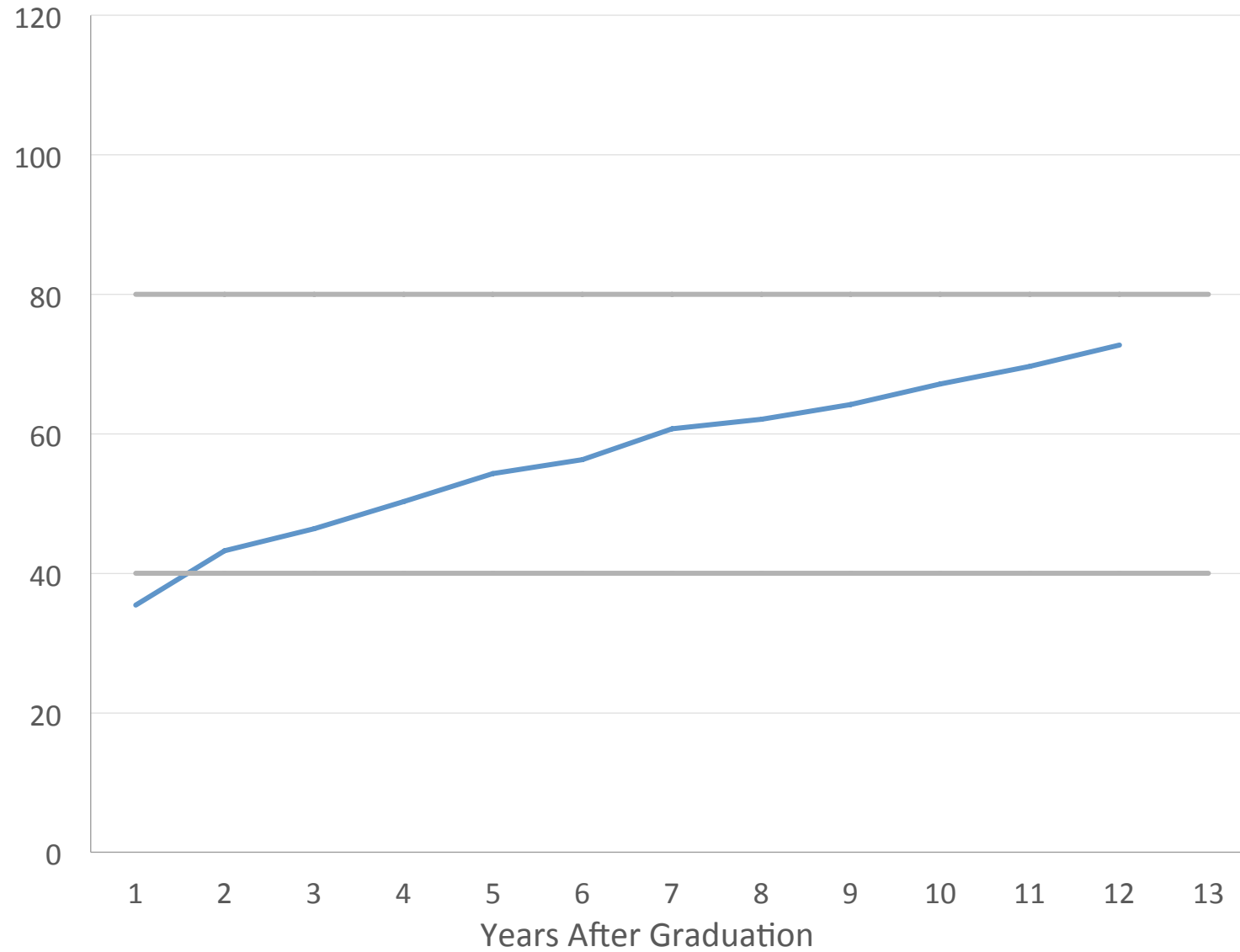
Mean Earnings of Social Science Graduates (\$2011)



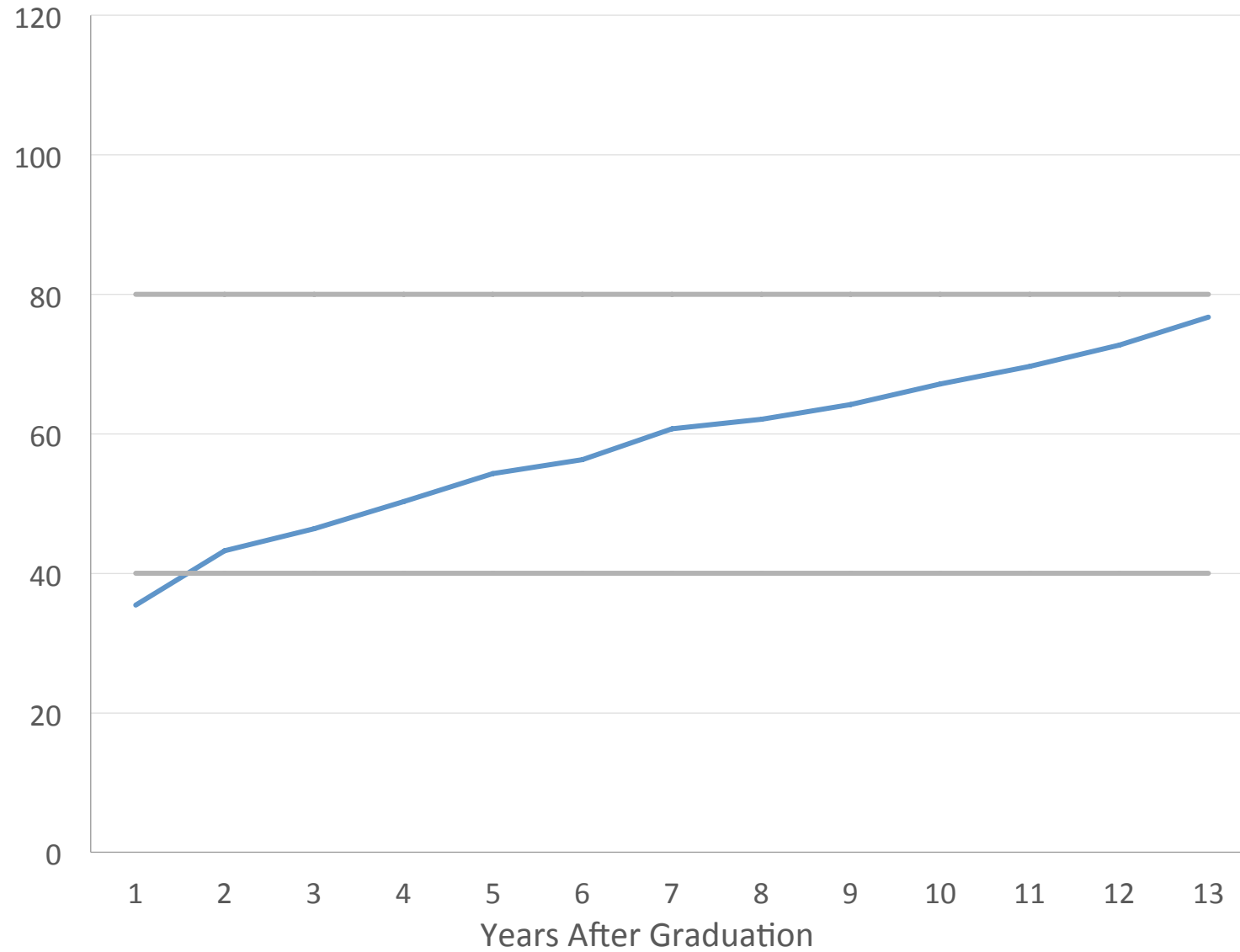
Mean Earnings of Social Science Graduates (\$2011)



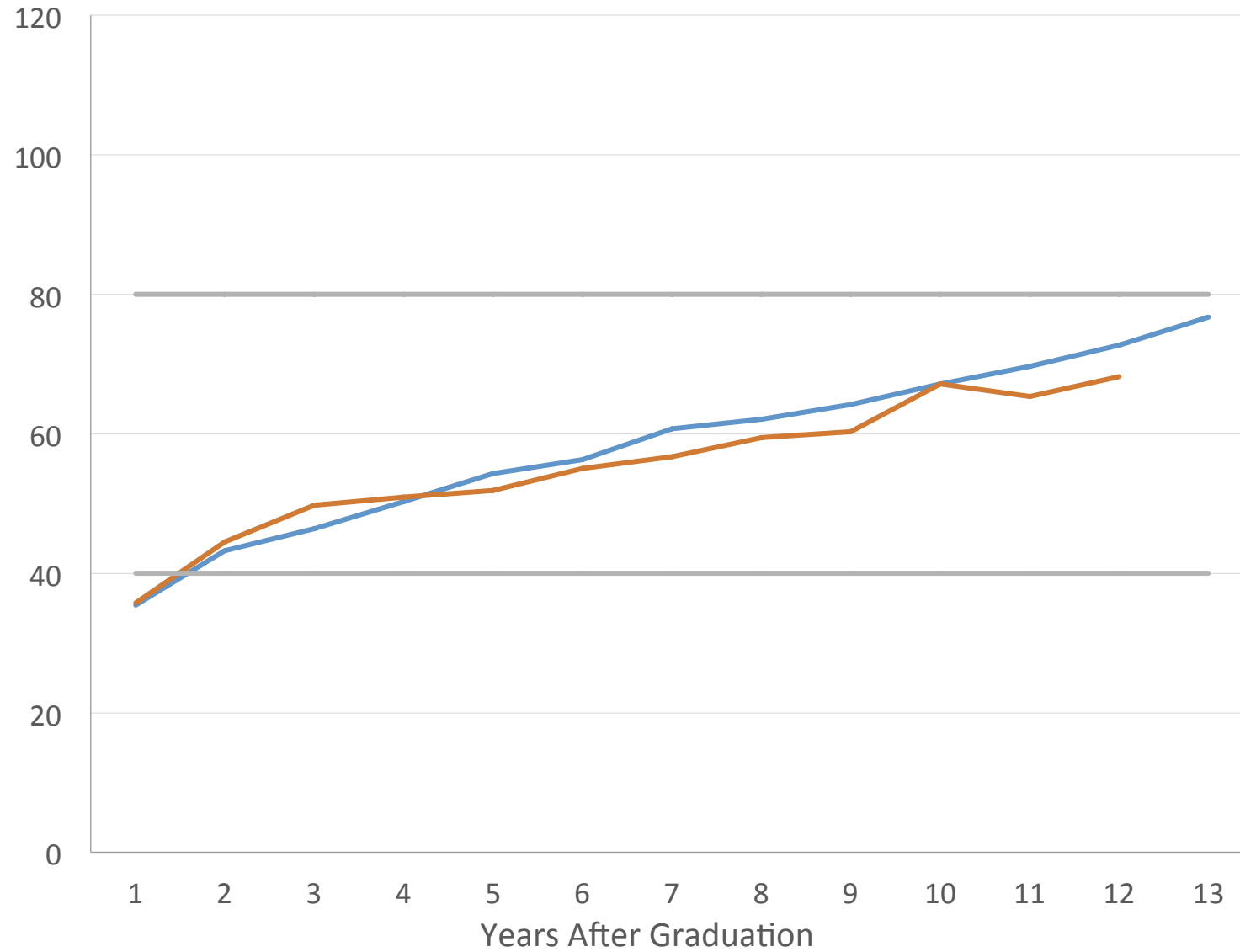
Mean Earnings of Social Science Graduates (\$2011)



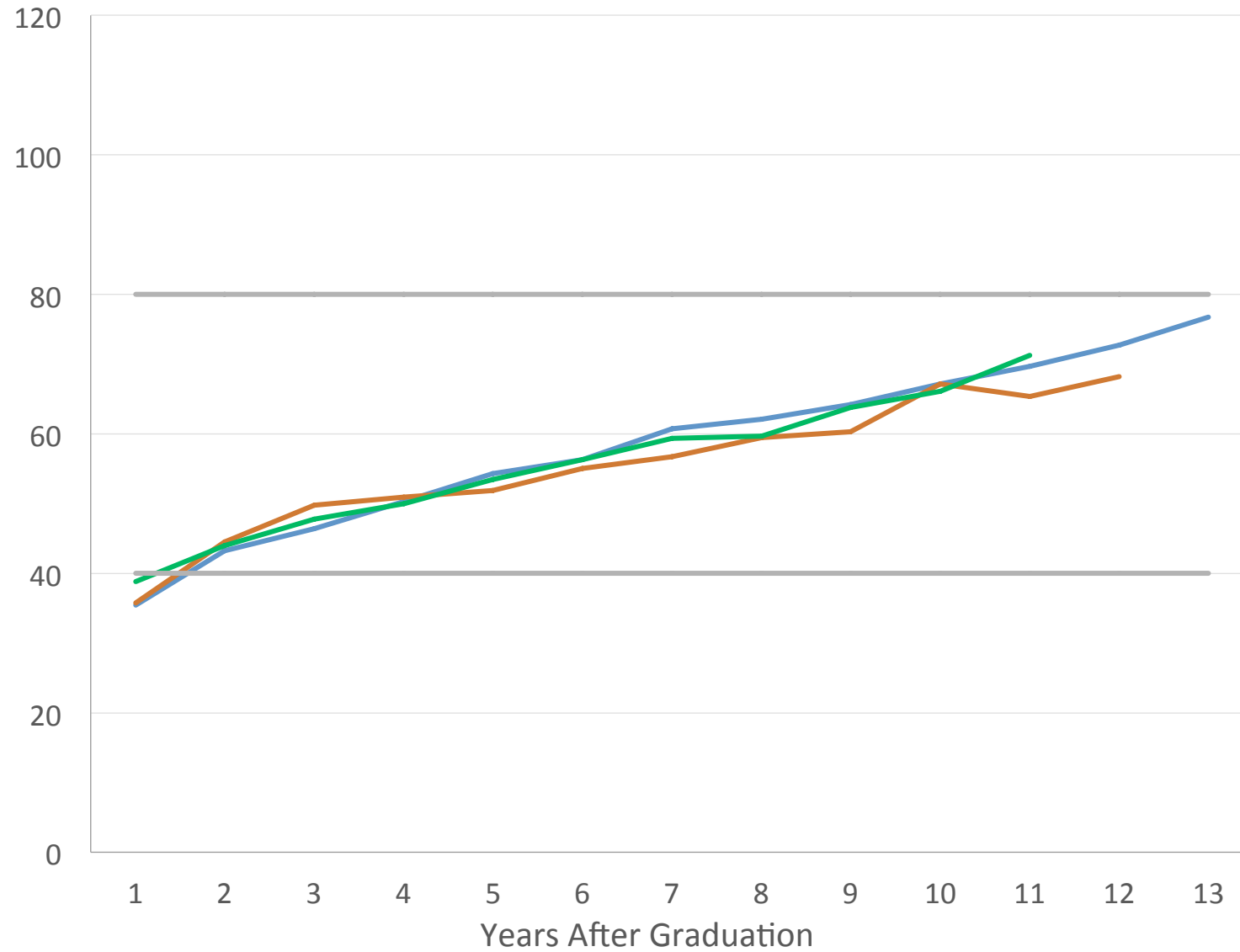
Mean Earnings of Social Science Graduates (\$2011)



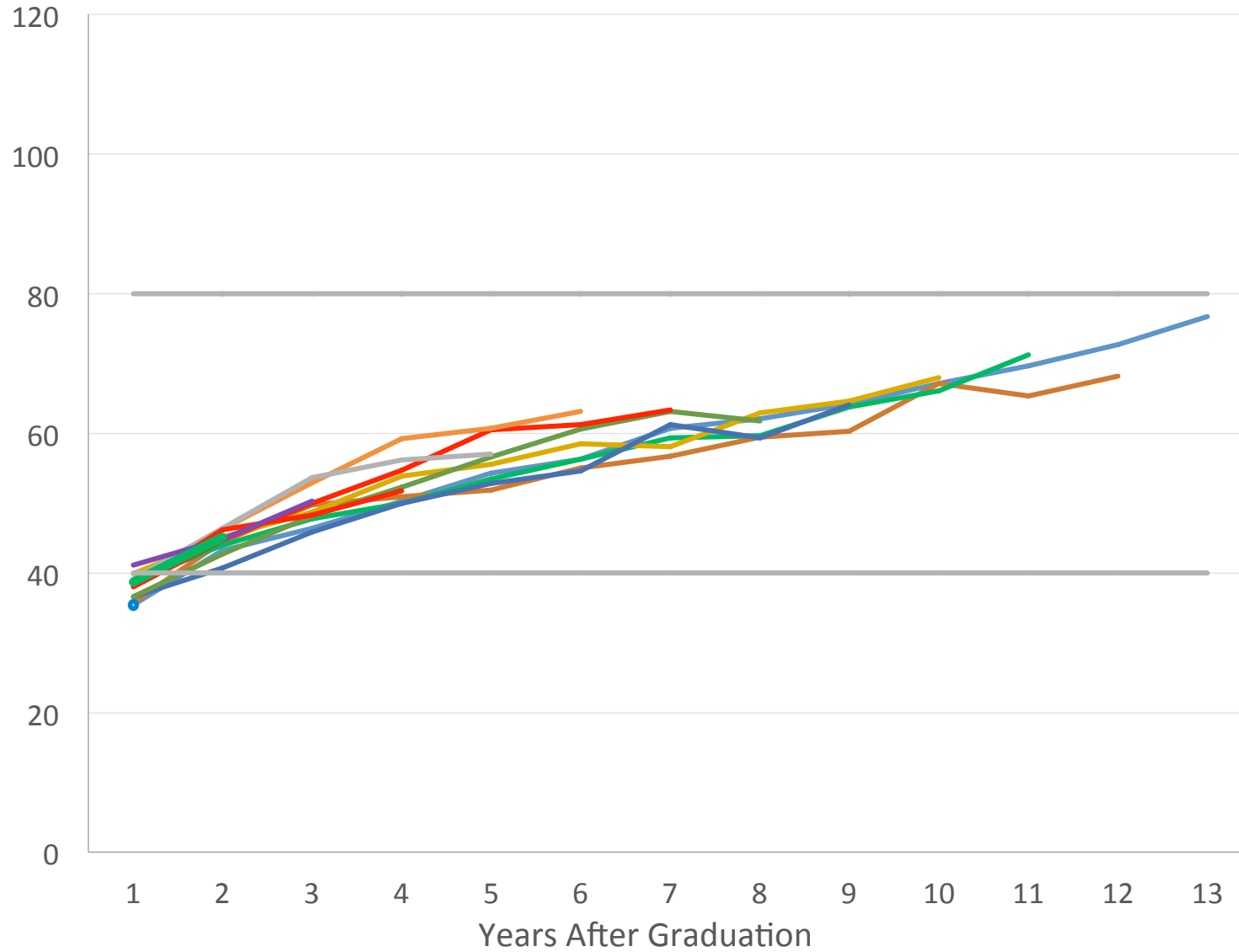
Mean Earnings of Social Science Graduates (\$2011)



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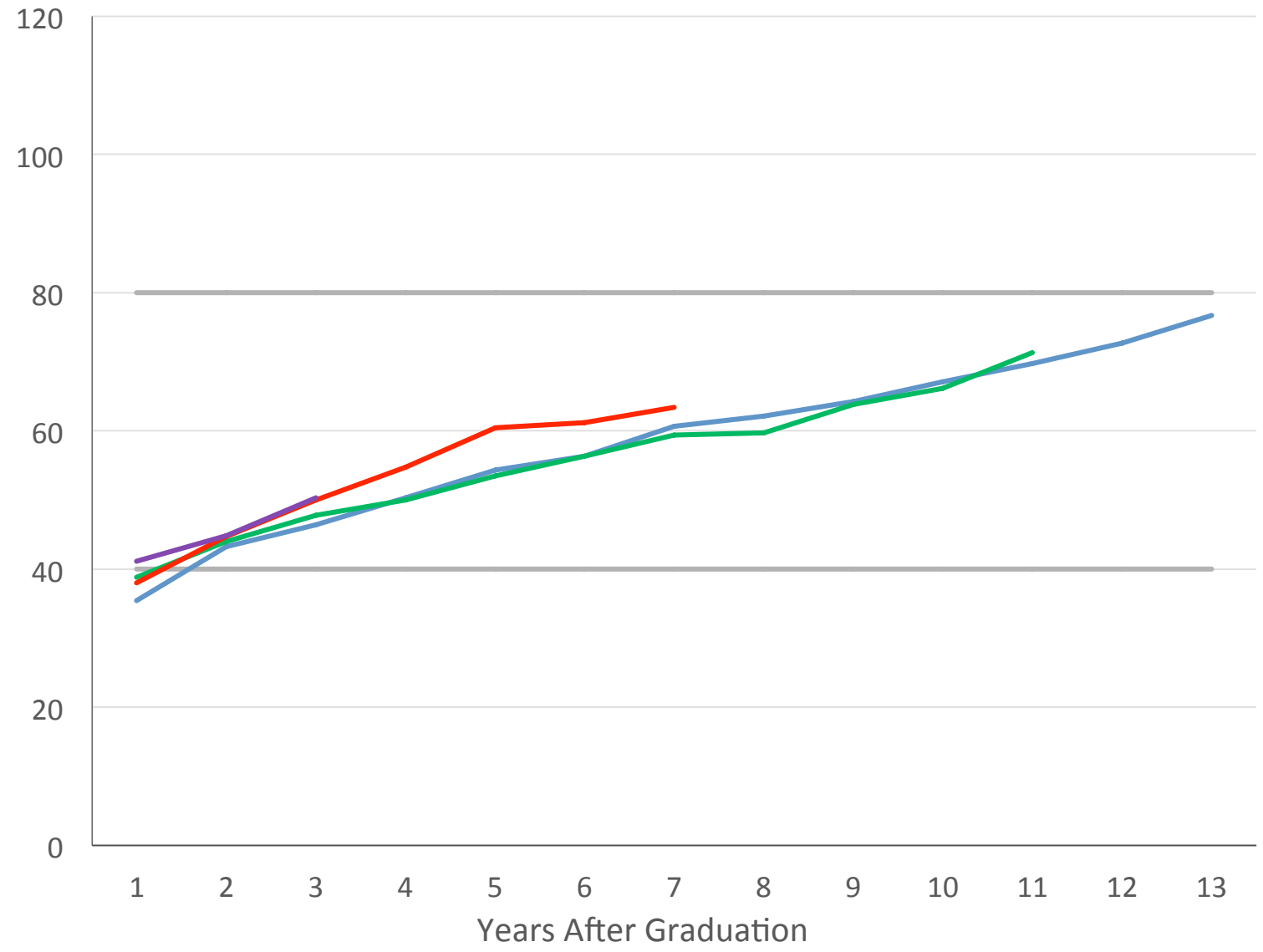


Mean Earnings of Social Science Graduates (\$2011)



Showing Selected Cohorts:
1998, 2000, 2004, 2008

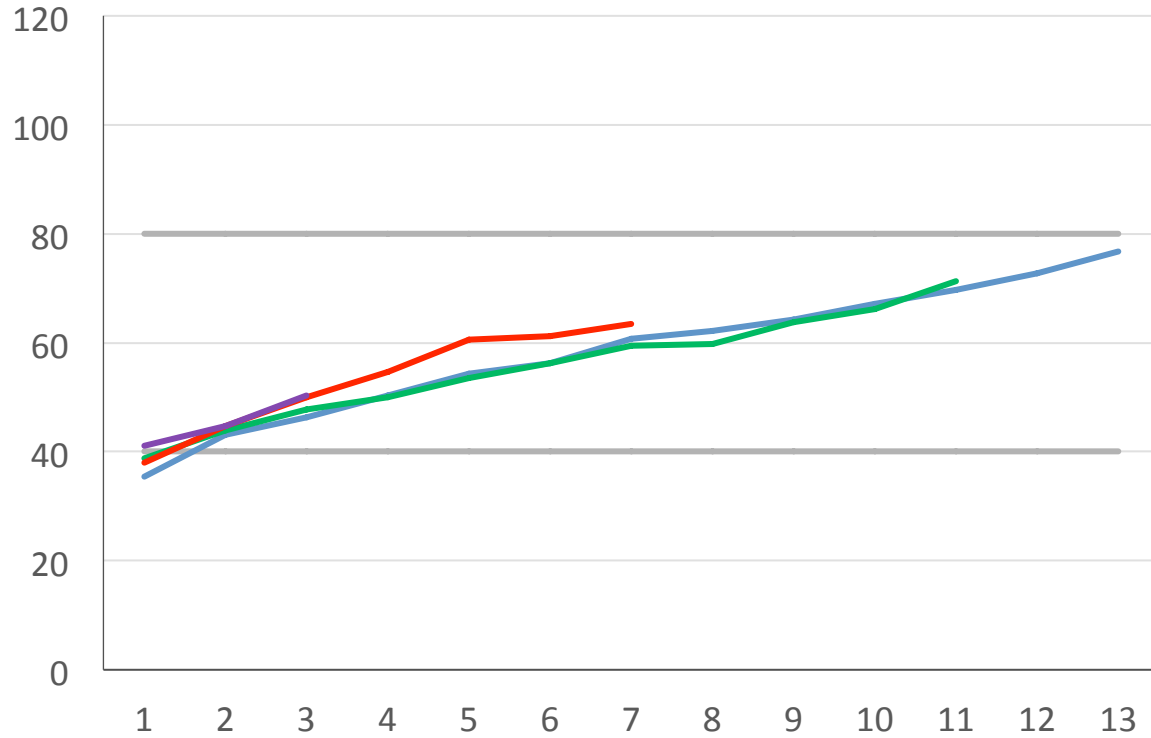
Mean Earnings of Selected Cohorts (\$2011) – Social Science Graduates



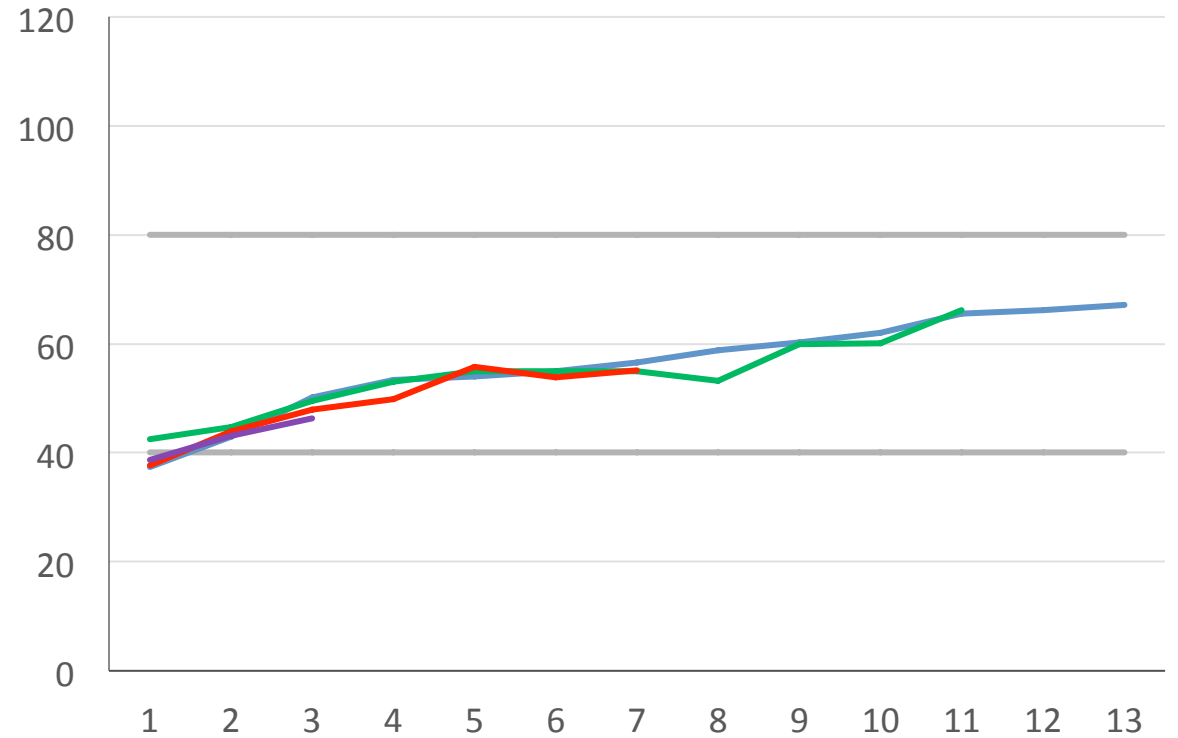
Comparing Social Science and Humanities Graduates

Mean Earnings of Selected Cohorts (\$2011)

Social Science

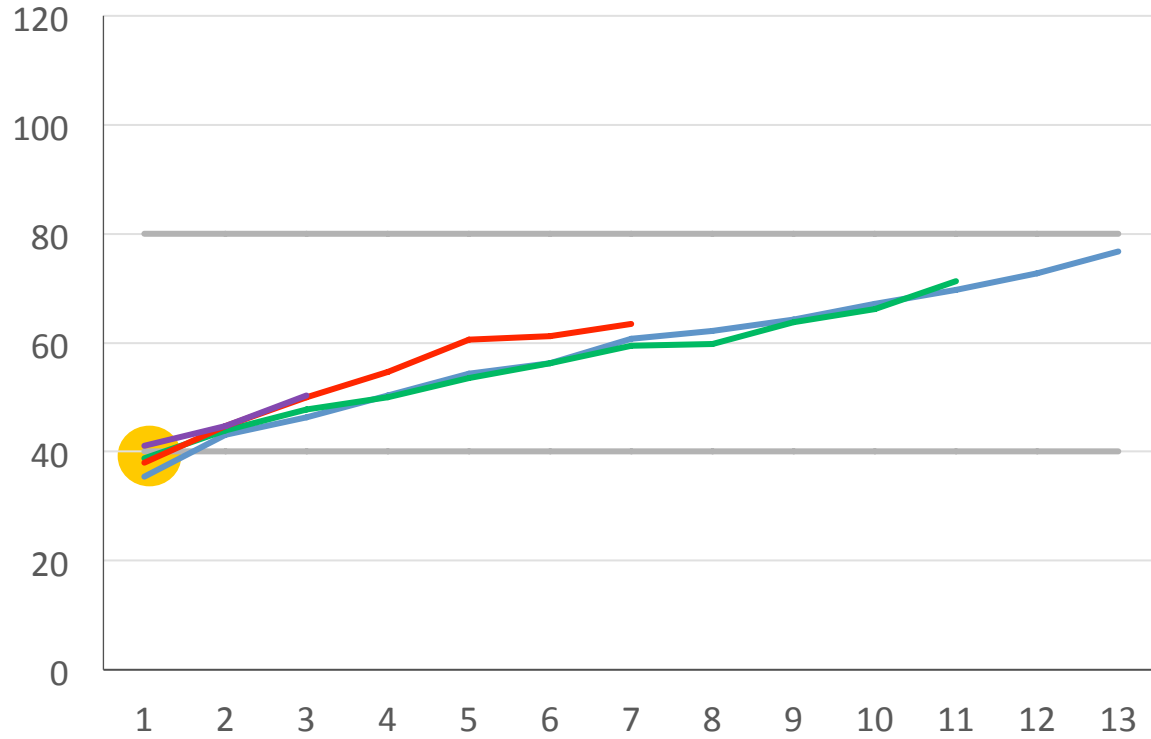


Humanities

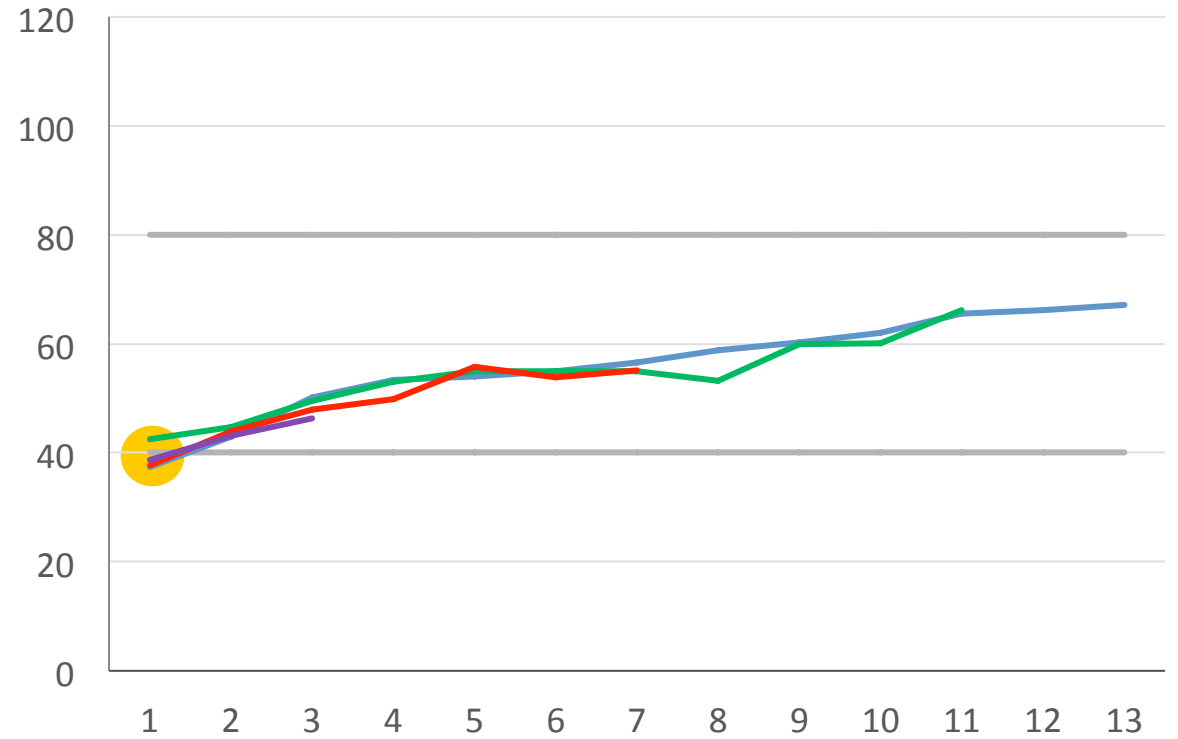


Mean Earnings of Selected Cohorts (\$2011)

Social Science



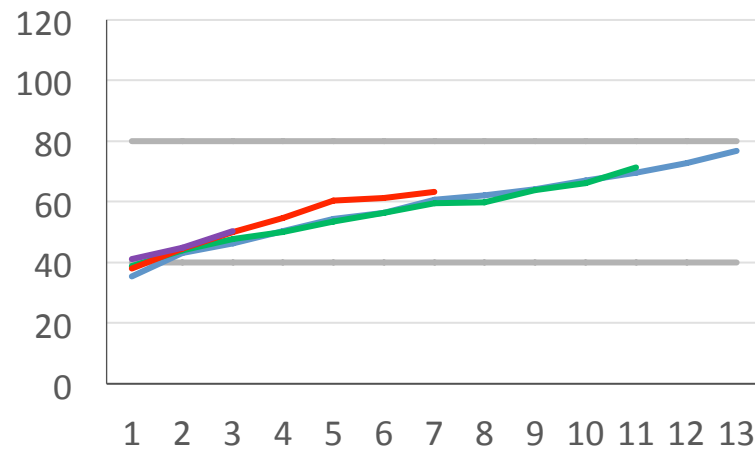
Humanities



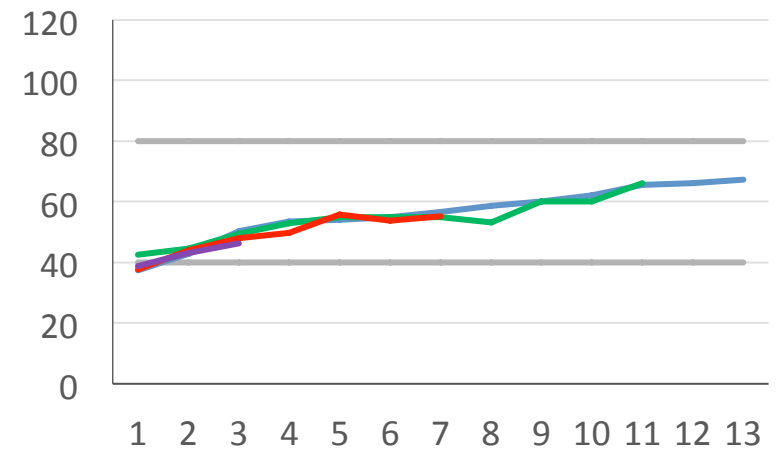
Comparing Graduates Across All Faculties

Mean Earnings of Selected Cohorts (\$2011)

Social Science

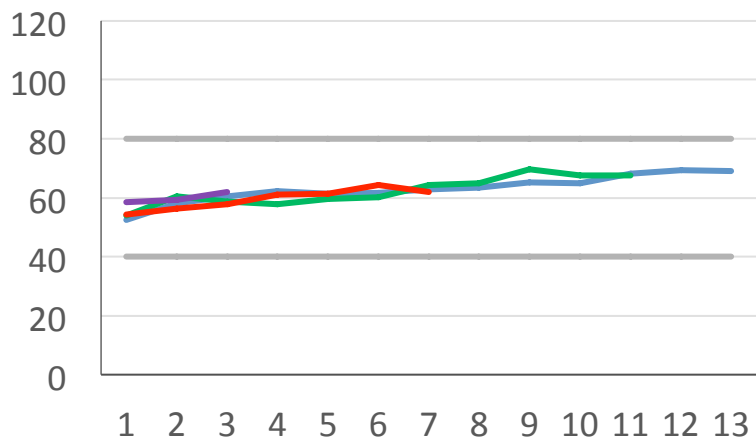


Humanities

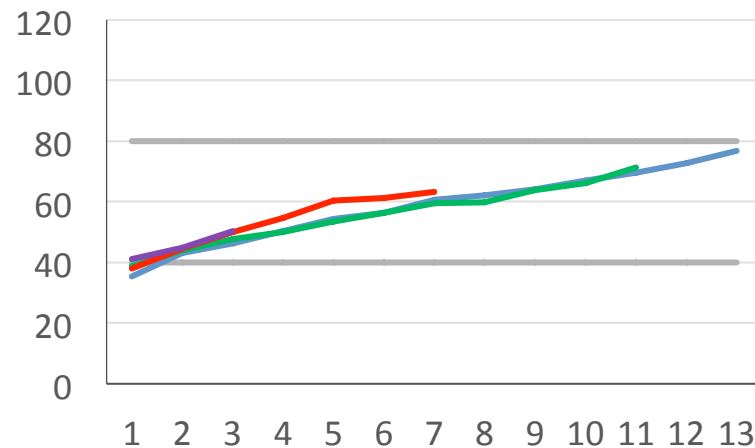


Mean Earnings of Selected Cohorts (\$2011)

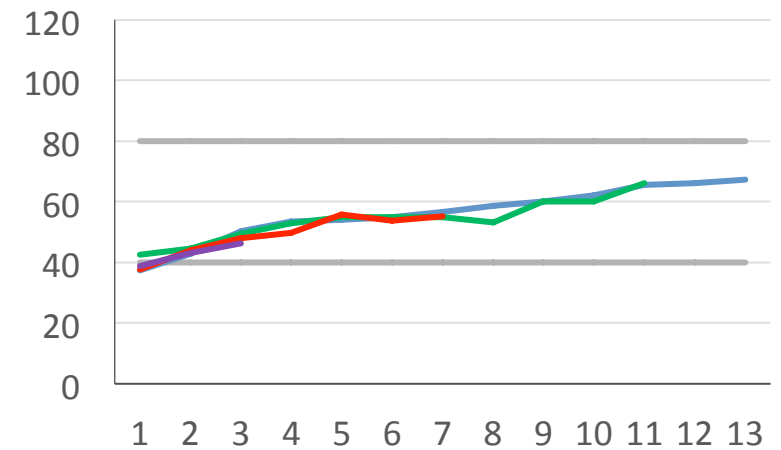
Health



Social Science

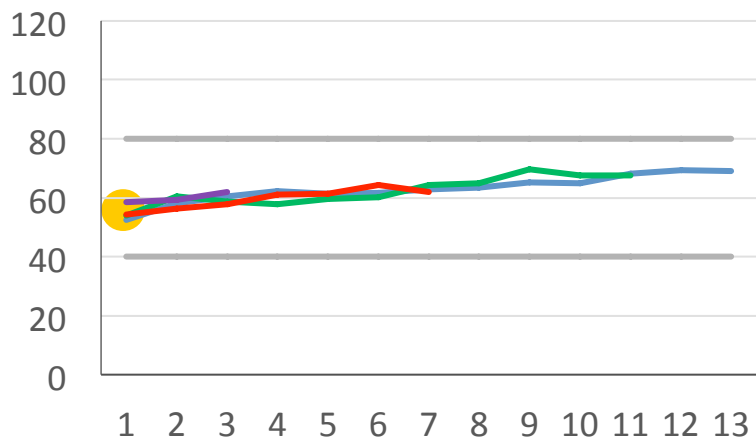


Humanities

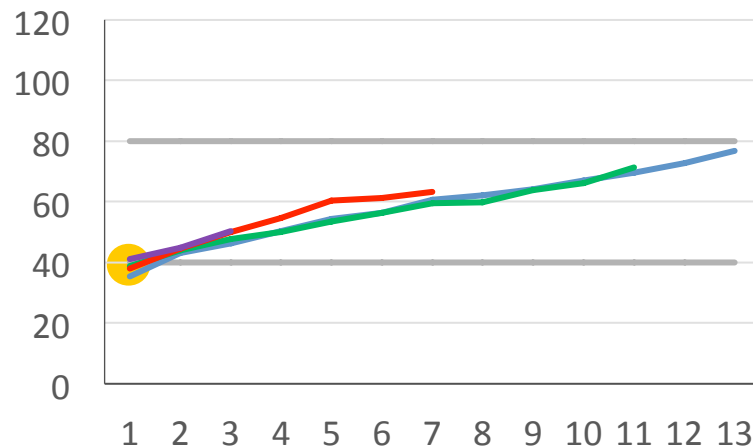


Mean Earnings of Selected Cohorts (\$2011)

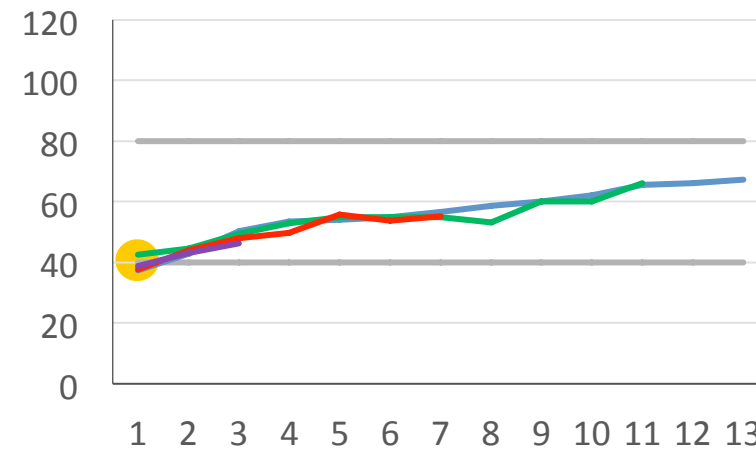
Health



Social Science

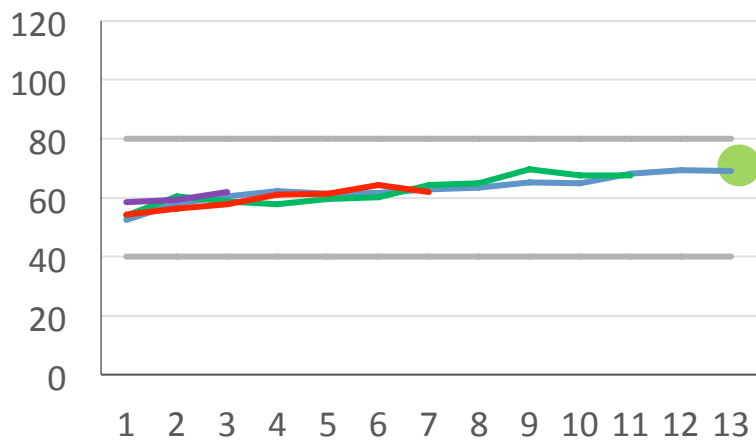


Humanities

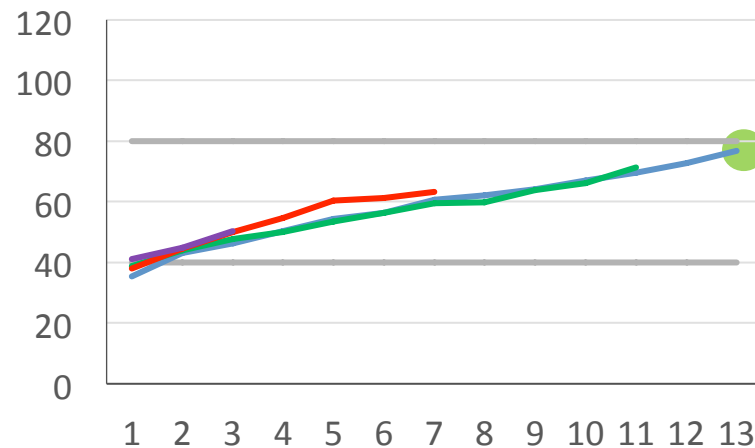


Mean Earnings of Selected Cohorts (\$2011)

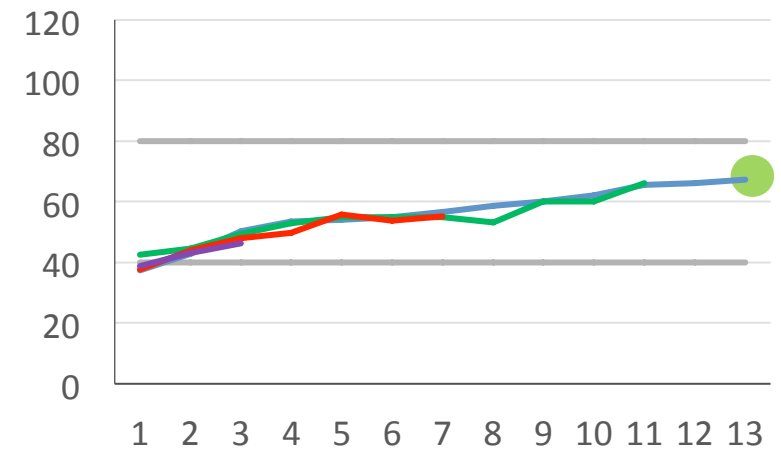
Health



Social Science

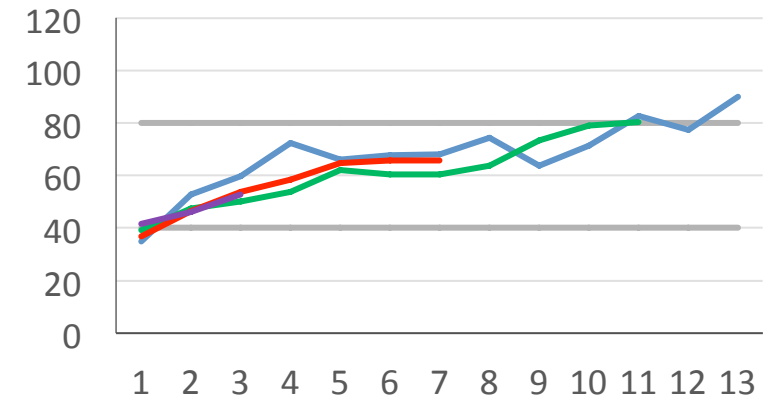


Humanities

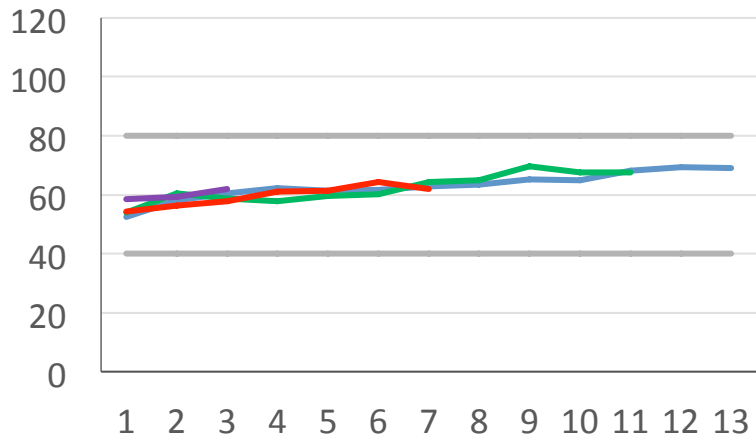


Mean Earnings of Selected Cohorts (\$2011)

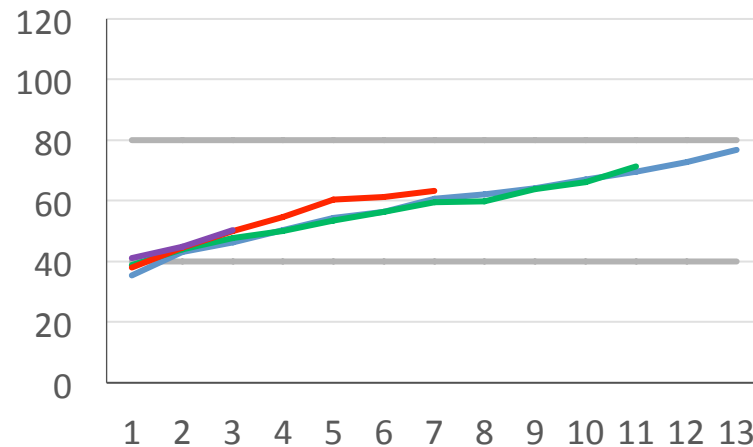
Mathematics and Natural Sciences



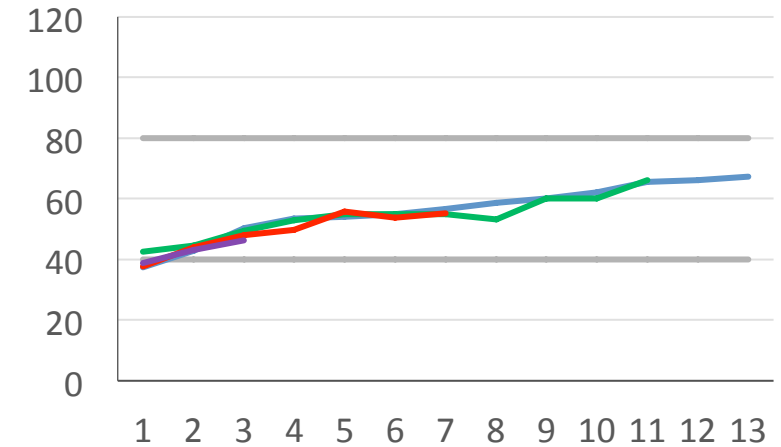
Health



Social Science

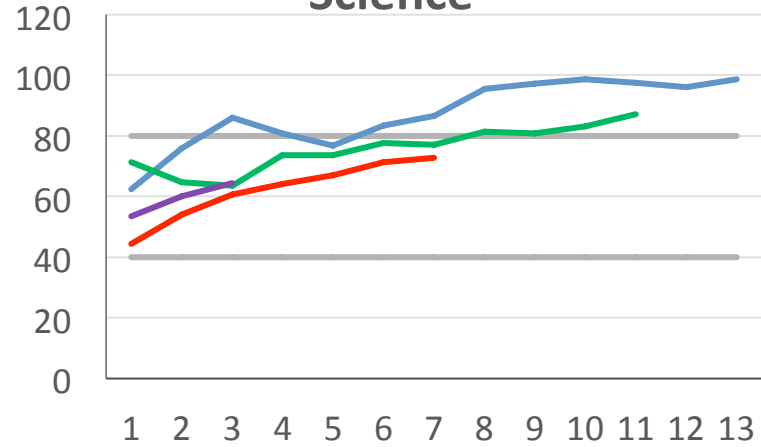


Humanities

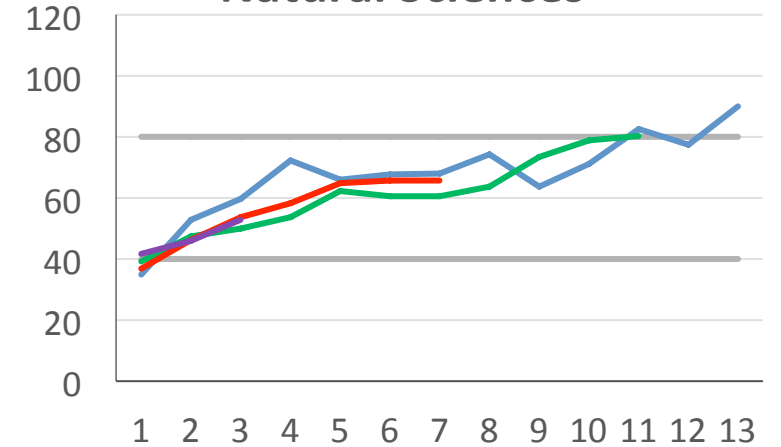


Mean Earnings of Selected Cohorts (\$2011)

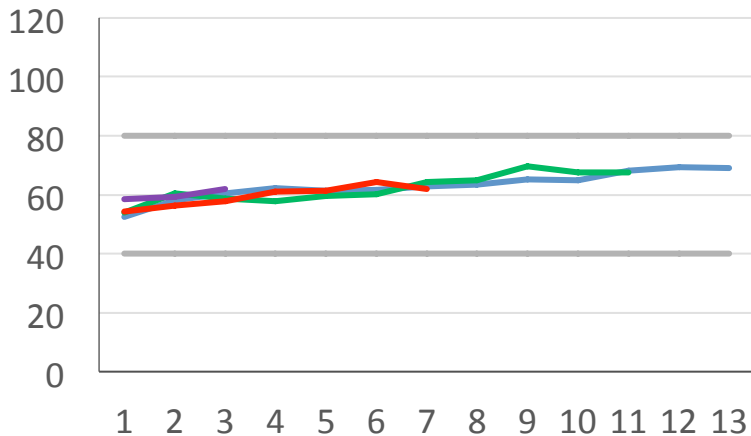
Engineering and Computer Science



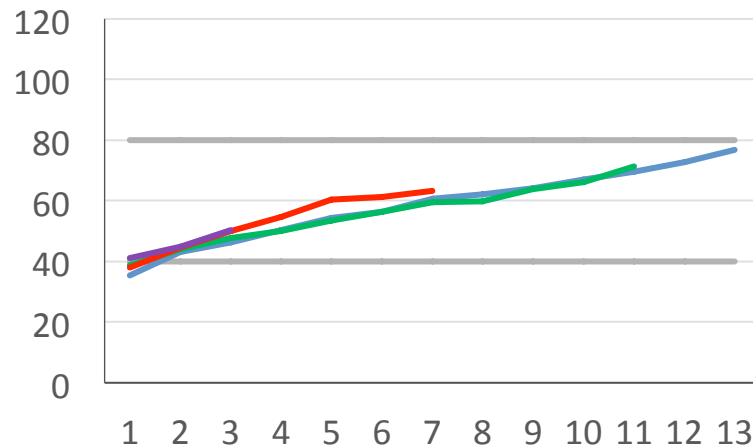
Mathematics and Natural Sciences



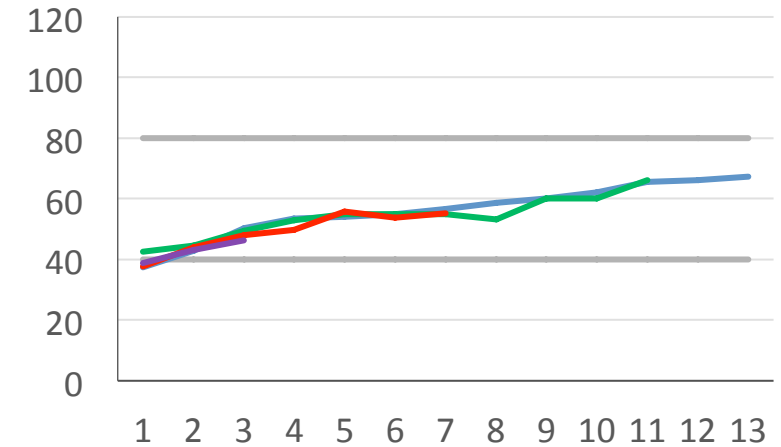
Health



Social Science

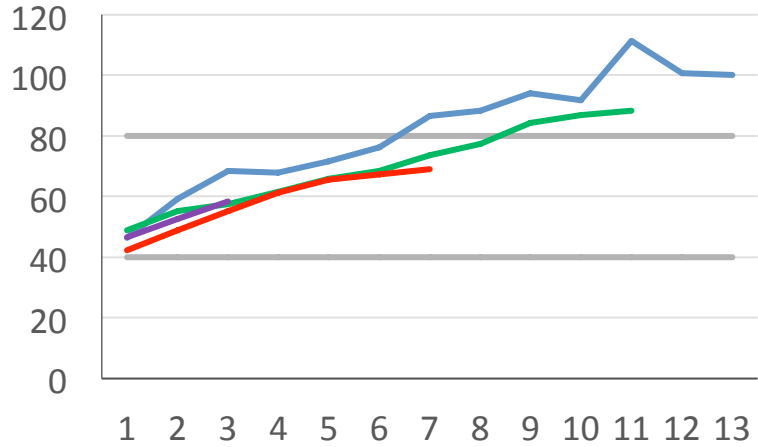


Humanities

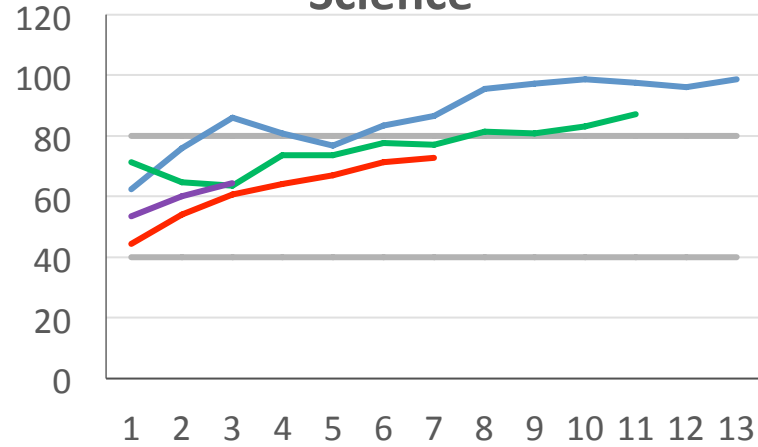


Mean Earnings of Selected Cohorts (\$2011)

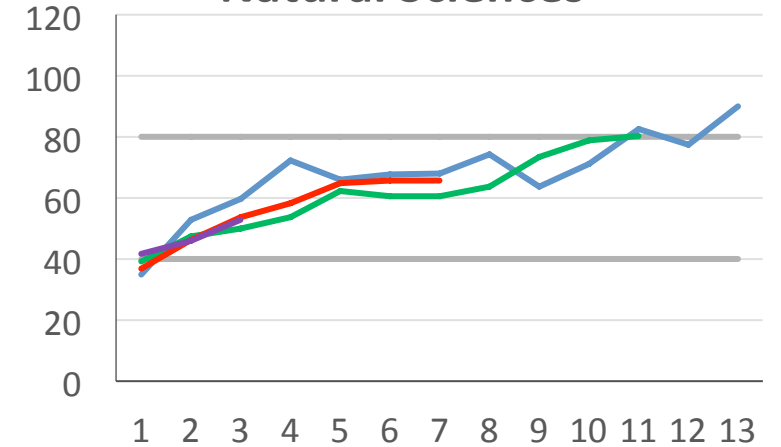
Business



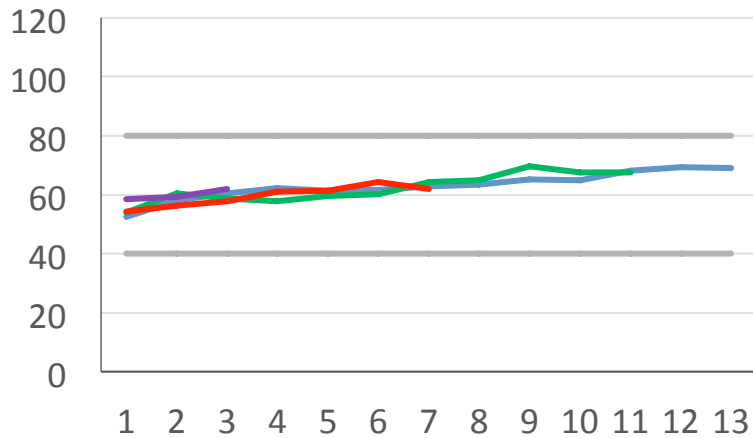
Engineering and Computer Science



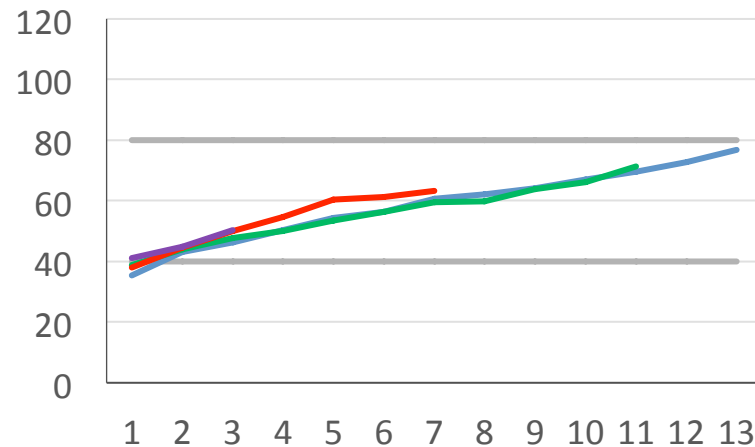
Mathematics and Natural Sciences



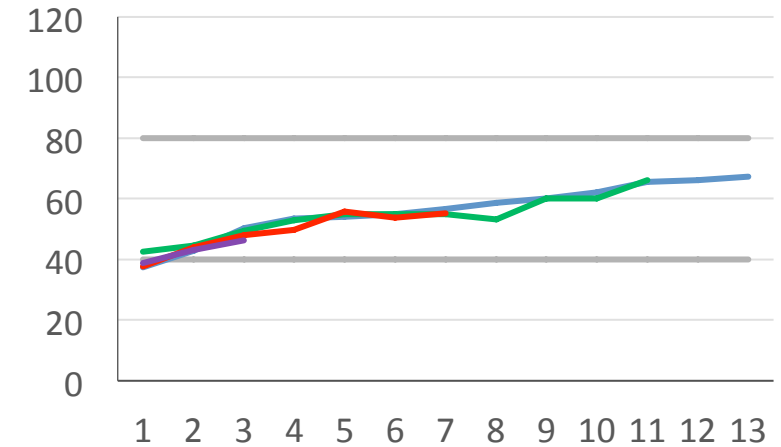
Health



Social Science



Humanities



Why are These Results So Important?

- Valuable information for all stakeholders, especially students
- Unique nature of the data
 - Year by year, cohort by cohort, by field of study, etc.
 - Full, representative samples
 - Accurate earnings information

Next Steps for Tax Linkage Work

- ESDC project involving 12 institutions (colleges and universities)
 - New results – new and powerful LLMI
 - Establish a research platform starting with these institutions
 - Show feasibility for other related projects, including PSIS-based
- Extend
 - Dig deeper into how outcomes are related to a wide range of student characteristics and schooling experiences
 - Add institutions or do whole systems
 - Link to other data

The Different Research Agendas are Related

- Retention/pathways: means identifying student characteristics and tracking their schooling experiences
- Tracking labour market outcomes starts simple...
- But then leads to relating outcomes to any number of student chars. and schooling experiences

New Data, New Projects, New Frontiers

- To better understand and improve student outcomes
- Just getting started
- CICAN project?

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