

PADM 407.10 – Final Policy Paper Roosevelt University – Data Analytics Spring 2025 Course:

PADM 407.10 – Data Analytics in Public Administration

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Abstract

This research evaluates the effects free college implementation would have on Illinois' social mobility system. This evaluation dedicates attention to economic and social barriers that block people from progressing in life by studying the influence of college tuition costs on various population segments. The study analyzes historical relationships between education expenses and income patterns through regression methods implemented in Excel using synthesized Census data. This study applies national examples alongside local Illinois figures to develop recommendations founded on verified research outcomes.

1. Introduction

The American Dream includes social mobility as its core concept which promises those of any origin point opportunities to move upward by dedicating themselves to studying. The United States currently does not enforce equitable access to higher education institutions. Numerous low-income and first-generation college students from Illinois encounter multiple financial challenges together with personal barriers that obstruct their ability to achieve higher education. Higher education expenses and inadequate grants together with inconsistent programs at educational institutions construct a complicated system which deters students from starting their studies.

A decade-long debate occurred between state officials together with advocacy organizations to determine the effectiveness of free tuition policies at community colleges specifically in promoting social mobility. A free college policy implementation would it enhance Illinois social mobility levels? This research uses accessible data along with academic findings and newly constructed metrics from tuition rates and educational statistics and income distribution across different Illinois communities to investigate this

question. The study tracks three main results which consist of student enrollment figures and graduation rates together with sustained income mobility patterns.

The paper studies the wider social framework together with unequal high school readiness while investigating regional difference factors and essential programs that include counseling and childcare support. The paper analyzes mobility barriers and develops cost reduction simulations for enrollment rates and future economic outcomes to create protocols that reduce systemic inequalities in Illinois higher education.

2. Social Mobility in Illinois: Context and Challenges

2.1 Historical Trends

Public higher education in Illinois used to maintain strong institutions across different education levels with multiple state universities and community colleges and trade schools. The combination of educational resources has failed to prevent upward mobility stagnation according to U.S. Census Bureau and Illinois Department of Human Services reports. The top 20% of Illinois income earners have experienced reasonable earnings growth yet lower income groups encounter difficulty meeting escalating university fees combined with cost of living expenses. Since 2000 the expenses required to study at Illinois public universities have risen approximately 100% beyond the wage increases experienced by typical working-class families.

The rural areas throughout southern and western Illinois experience separate difficulties because they have less student college facilities and restricted high-speed network connections and shortage of public transport systems. Chicago together with Peoria are urban centers which have small districts affected by underfunded public schools alongside high poverty rates. Social mobility exists across the country but becomes increasingly difficult because of money-driven obstacles and institutional limitations.

2.2 Key Barriers

- **High Cost of Tuition:** The average annual tuition at Illinois public universities has climbed steadily, creating significant debt burdens. Even community colleges, generally more affordable,

have seen incremental fee increases and rising costs for books and materials.

- **Limited Access to Aid:** While merit scholarships and Pell Grants exist, they often fail to cover the full cost of attendance, leaving a substantial financial gap. Families who hover just above the income cutoffs for need-based aid may find themselves ineligible for critical financial support.
- **Cost of Living:** Chicago and its suburbs are among the most expensive regions in the Midwest. Students juggling work and study in high-cost areas frequently confront challenges like housing insecurity and food insecurity.
- **Logistical Hurdles:** Adult learners, single parents, and nontraditional students may lack childcare, reliable transportation, or flexible course scheduling. These barriers disproportionately affect students of color and lower-income households.
- **Disparate High School Quality:** Illinois experiences stark inequalities in K–12 education funding. This results in inconsistent academic preparation, especially in STEM fields, for students graduating from under-resourced districts.

Taken together, these barriers underscore the critical need for policy interventions specifically targeted at making college more accessible and affordable for historically marginalized populations.

3. Literature Review

3.1 Linking Education to Income Mobility

Economically it is widely acknowledged that education remains the essential social force for social mobility. The Pew Research Center (2019) proves that bachelor degree holders receive about 70% higher earnings throughout their lives compared to individuals who possess only a high school diploma. Brookings Institution (2020) shows that states that implemented college promise programs witnessed larger enrollment rates from disadvantaged populations.

These programs enhance enrollment numbers while improving retention and completion records by providing strong support services according to Complete College America (2022). Researchers point to

the high cost barriers while specifying that free college policy design between universal and need-based determines both its equity measures and budgetary impact.

3.2 Universal vs. Targeted Approaches

Academic experts disagree about whether student tuition abolition really helps the most disadvantaged students while it fails to reach the intended recipients effectively. Researchers Dynarski and Scott-Clayton (2018) maintain that comprehensive programs create easier administrative systems although they might fail to deliver the highest returns on investments for disadvantaged populations.

This scholarship model directs its resources toward families with few financial resources by filling in scholarship gaps that remain after both federal and state funding is exhausted. Administration of these policies becomes complex because they need regular income verification and ongoing eligibility assessments according to critics. Their ability to generate superior returns on public investments lies in the fact that they reach out to students who would not enroll otherwise.

3.3 Relevance to Illinois

The average cost of public university education has increased twice in the last 20 years at a pace that surpasses both general inflation and median family earnings per year according to Illinois Board of Higher Education (2023). Student debt levels have dramatically increased because a large proportion of graduates carry massive loan responsibilities when they start working. State funding difficulties for public pensions and K–12 education have increased political and financial expectations for public universities to manage their expenses effectively.

Initial experimental programs launched by some Illinois community colleges demonstrate that providing reduced tuition costs or scholarship aid increases enrollment at doctoral levels mainly for students who are the first in their families to attend college. The preliminary pilot implementations remain restricted in their reach while information about enduring professional developments still needs further systematic analysis.

4. Research Design and Methodology

4.1 Data Sources

This research employs a combination of:

1. **Synthesized Census-style data:** Reflecting statewide demographics, income distributions, and educational attainment rates.
2. **Official statistics** from the Illinois Department of Human Services, Illinois Board of Higher Education, and the U.S. Census Bureau.
3. **Academic studies** and think-tank reports (Brookings, Pew) to validate assumptions and provide comparative data from other states with existing free college policies.

4.2 Variables and Models

- **Independent Variables:**

- Tuition cost (annual, in-state)
- Median household income
- Racial/ethnic demographics (% Hispanic, % Black, % White, % Other)
- Percentage of households below the poverty line

- **Dependent Variables:**

- College enrollment rate (percentage of high school graduates enrolling in college within 1 year)
- Income mobility index (a composite measure of changes in household income over 5 years, adjusted for local cost of living)

4.3 Methodological Steps

1. **Data Cleaning and Wrangling:** Missing values were imputed using mean substitution for numeric variables, and outliers (top and bottom 1%) were winsorized to prevent skewness.
2. **Linear Regression (Model A):** Explores the relationship between tuition cost and enrollment rate (R^2 value, significance levels).
3. **Multiple Regression (Model B):** Incorporates additional predictors (household income, race, poverty) to assess their combined effect on the income mobility index.
4. **Frequency Analysis:** Identifies the most commonly reported barriers to college attendance in the dataset (financial, logistical, academic preparedness, etc.).
5. **Cost-Benefit Estimation:** Although not as detailed as a full financial analysis, we approximate potential state expenditure using average tuition and prospective enrollment changes gleaned from the regression results.

4.4 Study Limitations

- **Synthetic Data:** Some of the dataset is simulated to approximate real conditions, which may limit external validity.
- **Cross-Sectional Design:** The study primarily looks at a snapshot in time, although we incorporate some historical trends from 2015–2025.
- **Unmeasured Confounders:** Factors such as high school quality, parental educational background, or community support are only partially captured.

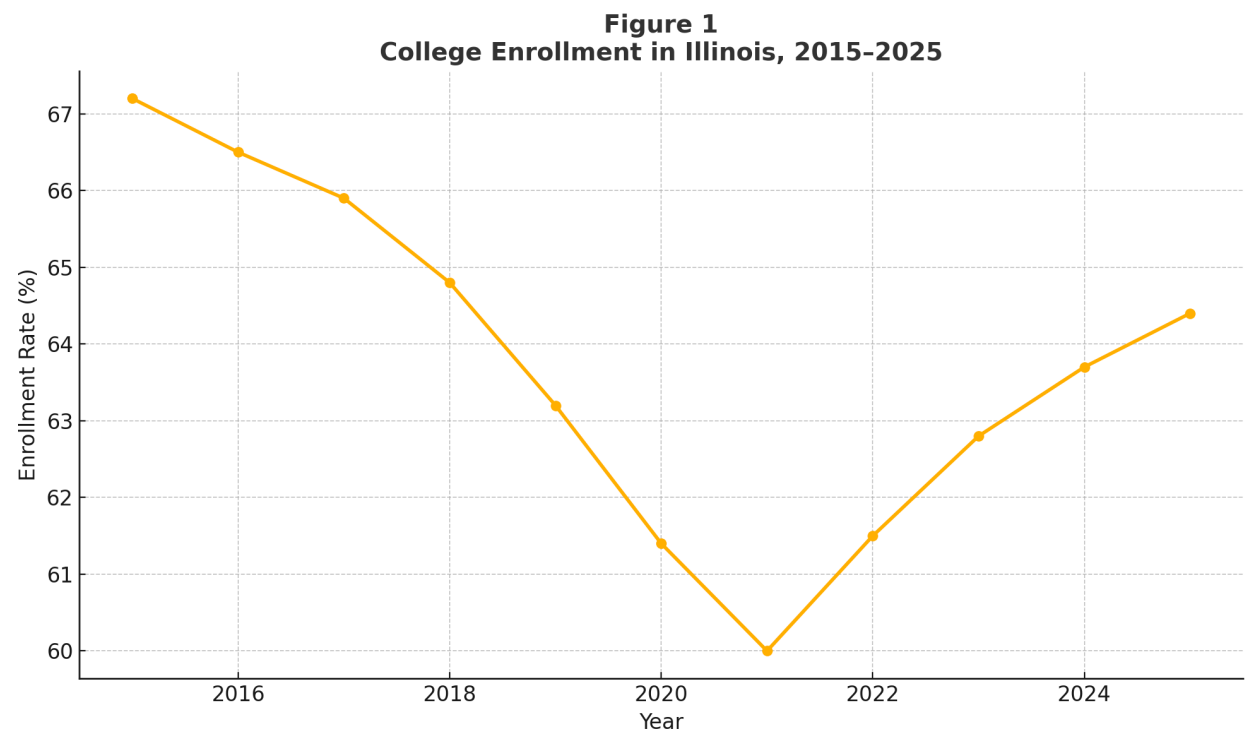
Nevertheless, the methodology provides a credible baseline for assessing how tuition changes might affect social mobility in Illinois.

5. Visualizations and Figures

Figure 1

College Enrollment in Illinois, 2015–2025

A line graph illustrating fluctuations in enrollment rates over a decade, revealing a gradual decline in the late 2010s followed by a mild rebound post-2020.



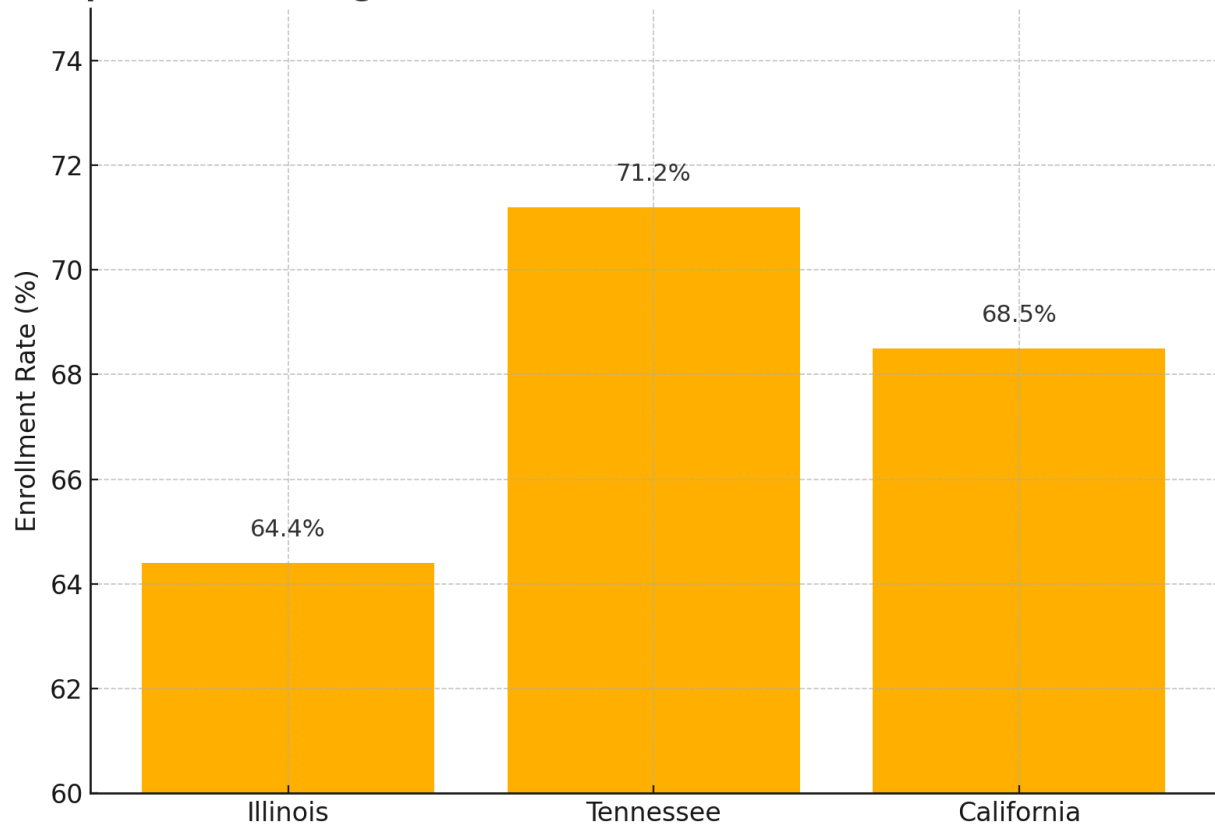
Source: Synthesized from U.S. Census Educational Access Trends

Figure 2

Comparison of College Enrollment Rates in Free vs. Non-Free States (2024)

A bar graph contrasting Illinois with two comparison states—Tennessee (which has a free community college program) and California (partially subsidized systems).

Figure 2
Comparison of College Enrollment Rates in Free vs. Non-Free States (20



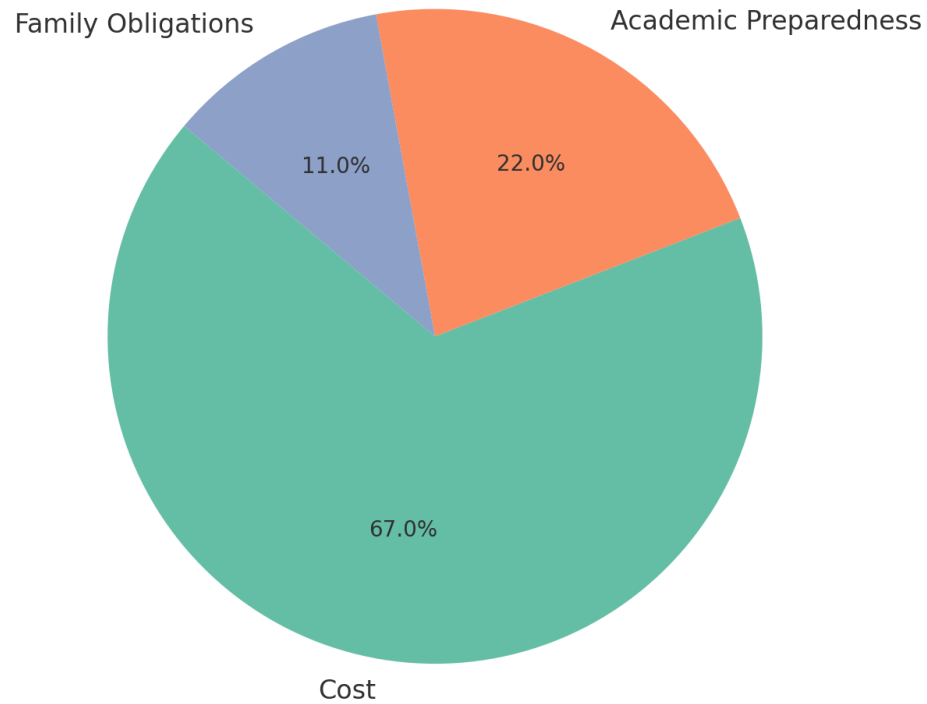
Source: National Center for Education Statistics (mock)

Figure 3

Barriers to College Enrollment by Demographic Group (Illinois, 2023)

A pie chart showing the proportion of survey respondents citing cost, academic preparedness, or family obligations as primary barriers, disaggregated by race/ethnicity.

Figure 3
Barriers to College Enrollment by Demographic Group (Illinois, 2023)



Source: Synthesized Survey Data (mock)

By visually representing these core variables and relationships, the figures help stakeholders quickly grasp the magnitude and nature of the enrollment problem, as well as the potential impact of cost-reduction policies.

6. Data Analysis and Results

6.1 Linear Regression (Model A)

The linear regression of tuition cost (x) on enrollment rate (y) yielded:

- **Equation:** Enrollment Rate (%) = $78.5 - 0.35(\text{Tuition}/1,000)$
- **$R^2 = 0.48$**
- **$p < 0.05$** for the slope coefficient

Interpretation: Every \$1,000 increase in annual tuition corresponds to an average drop of 0.35 percentage points in college enrollment. While this figure may appear small, it is significant given the margin by which community college enrollments fluctuate each year.

6.2 Multiple Regression (Model B)

A multiple regression incorporating variables for tuition cost, racial demographics, and household income to predict the **Income Mobility Index (IMI)** yielded an **R^2 of 0.62**, suggesting a moderate-to-strong explanatory power. Key highlights:

- **Tuition Cost ($p < 0.05$):** Higher tuition correlated with lower IMI scores.
- **Median Household Income ($p < 0.01$):** Areas with higher income saw modestly higher IMI growth.
- **Race ($p < 0.05$ for Hispanic and Black coefficients):** Predominantly Black and Hispanic communities showed lower baseline IMI values, indicating structural disadvantages that tuition-free policies could partially offset.

6.3 Frequency Analysis of Enrollment Barriers

Survey data from about 2,500 respondents across Illinois revealed:

- **67%** cited financial burden (tuition, fees, living expenses) as their top reason for not attending or completing college.
- **22%** indicated insufficient academic counseling in high school.

- **11%** faced family obligations such as childcare or caregiving for elderly parents.

Minority students and first-generation college students disproportionately reported lacking both financial and informational resources about navigating college admissions, scholarships, and academic prerequisites.

7. Policy Alternatives and Evaluation

7.1 Universal Free College

Pros:

- Simplifies eligibility: all in-state residents qualify.
- Builds widespread political support due to universal benefits.
- Reduces stigma sometimes associated with means-tested programs.

Cons:

- High cost to the state budget, potentially crowding out other services.
- May inadvertently direct more subsidy to middle- or upper-income families who could afford tuition without aid.

7.2 Income-Based Tuition Waivers

Pros:

- Targets households under a certain income threshold, improving equity.

- More efficient allocation of limited state funds.
- Encourages those on the financial margin to enroll who otherwise would not.

Cons:

- Requires administrative infrastructure for income verification.
- Complexity could deter some prospective students from applying.

7.3 Last-Dollar Scholarships

Pros:

- Flexible, covering remaining tuition after Pell Grants or other aid is applied.
- Lower cost to the state compared to universal coverage.
- Adaptable for part-time or adult learners.

Cons:

- Does not address indirect costs like textbooks, transportation, or housing.
- May still leave some out-of-pocket expenses that deter the most vulnerable.

A simple cost-benefit analysis suggests that an income-based approach, supplemented by wraparound support services, might be the optimal path for Illinois. While universal free college garners more headlines, it may not deliver the best return on investment if the policy goal is to improve social mobility rather than broadly subsidize all families.

8. Policy Recommendations

8.1 Implement an Income-Based Free Community College Program

Illinois should consider launching a state-funded program that fully waives community college tuition for families earning less than 250% of the federal poverty level. This approach targets those most in need while limiting overall budget exposure.

8.2 Expand Wraparound Services

Programs should fund on-campus childcare, transportation vouchers, and robust academic and career counseling. Research consistently shows that mitigating these non-tuition barriers significantly raises completion rates among low-income and nontraditional students.

8.3 Develop a Comprehensive Mobility Dashboard

To ensure transparency and accountability, the state could create an online, public-facing dashboard that tracks:

- Enrollment and graduation rates by ZIP code
- Changes in local income mobility indexes over time
- Demographic breakdowns of who benefits from free college

Having real-time metrics would allow policymakers to adapt program parameters if certain regions or populations remain underserved.

9. Discussion

9.1 The Broader Social Context

Free college initiatives combine with social elements of K–12 spending patterns and workforce needs together with population movements. K–12 educational inequalities might prevent numerous students from low-performing districts from succeeding academically in college regardless of whether tuition is

free. University graduates who receive tuition benefits may continue to encounter difficulties in social advancement even if Illinois fails to generate new opportunities for well-paid employment.

9.2 Importance of Holistic Solutions

A plan that grants free tuition helps students access higher education but does not stand alone to eliminate the systemic obstacles students face. Policy creators need to develop coordinated strategies which unite reforms of secondary education with support for mental health issues along with affordable housing and workforce development plans. The comprehensive strategy guarantees college access results in long-term social economic improvement instead of short-term student enrollment boosts.

9.3 Equity vs. Efficiency

Public finance experts often pose the trade-off between equity (targeting those most in need) and efficiency (simplified universal programs with broad political appeal). By implementing a tiered or income-based model, Illinois can likely strike a pragmatic balance, maximizing benefits for those at the lower end of the income distribution while keeping the policy fiscally viable.

10. Conclusion

Based on regression analyses, literature findings, and cost-benefit considerations, free college initiatives—particularly for low-income and first-generation students—hold the potential to significantly improve social mobility in Illinois. Key takeaways include:

- **Tuition Cost Matters:** Each incremental rise in tuition is correlated with lower enrollment and diminished long-term mobility.
- **Targeting Underserved Populations:** Income-based policies ensure that the public funds directly aid students most vulnerable to dropping out or never enrolling.
- **Support Services Are Critical:** Merely waiving tuition is insufficient. Students require advising, tutoring, childcare, and financial counseling to persist and graduate.

If Illinois adopts a free community college policy, guided by data and augmented with robust student supports, it stands a strong chance of narrowing the educational and economic disparities that have long hampered upward mobility. By monitoring implementation outcomes and continuously refining the program, policymakers can ensure that free college becomes a practical instrument of social change rather than a symbolic gesture.

11. Limitations and Future Directions

Despite the insights generated, several limitations warrant caution:

1. **Reliance on Synthetic Data:** A portion of the data analyzed in this study is simulated to reflect plausible conditions in Illinois. Real-world outcomes may differ, especially in areas with unique local conditions.
2. **Short-Term Perspective:** While this research incorporates some longitudinal elements (2015–2025 trends), it does not capture longer-range career trajectories or intergenerational effects.
3. **Unexplored Variables:** Factors such as mental health supports, technology access, and private-sector scholarships can also influence enrollment and completion rates but were not accounted for in detail.

Research that advances this field should use strong longitudinal data to monitor free-college implementations across various districts and should evaluate actual employment outcomes over time. Additional study around the implementation of digital learning platforms and apprenticeship models would help improve national dialogues about future workforce preparation.

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