

Financial Aid Programs in Missouri

The state of Missouri has three primary financial aid programs:

- Access Missouri (AM): A need-based aid program.
- Bright Flight (BF): A merit-based aid program.
- A+ Scholarship (A+): A hybrid program with a community college focus.

While each program has very different initial eligibility requirements, the year-to-year renewal requirement is the same for each program: to maintain a 2.5 cumulative grade point average (GPA) and maintain satisfactory academic progress (SAP) as defined by a student's school.

Access Missouri Renewal: A Policy Puzzle

- **Need-based initial eligibility:** As a need-based grant, the Access Missouri is initially assigned to applicants from low-income families, without considering their academic preparation. Applicants whose Expected Family Contribution (EFC) was below \$12,000 were awarded grant aid.
- **Merit-based renewal eligibility:** The subsequent renewal of the Access Missouri grant is dependent upon continuing to meet the initial eligibility (EFC < \$12,000) and meeting an academic performance requirement (GPA > 2.5).
- **Theoretical and policy design puzzle:** On one hand, the performance requirement can motivate recipients to maintain good academic standing in their programs and increase aid efficiency. On the other hand, students from low-income families may be less-prepared, making them difficult to subsequently meet the renewal requirement. Losing their Missouri Access award may force them to leave higher education and jeopardize aid effectiveness.

Research Question & Method

In this study we explore the consequences of losing state-based financial aid due to not meeting the 2.5 GPA requirement for aid renewal on retention between a student's 1st and 2nd academic year.

We apply a sharp regression discontinuity (RD) design to estimate the effect of being renewal eligible on subsequent outcomes. Cumulative GPA serves as the running variable in our RD design with a GPA of 2.5 serving as the policy cutoff.

$$Y_i = \alpha_{Above_i} + \delta_1(f(GPA_dist_i) * Below_i) + \delta_2(g(GPA_dist_i) * Above_i) + \theta' X_i + \epsilon_i \quad (1)$$

In the equation above,

- Y_i represents a set of subsequent academic outcomes, specifically in the second fall semester.
- $Above_i$ or $Below_i$ indicates that the subject's GPA is above or below the threshold (2.5)
- GPA_dist_i is the distance between the subject's GPA and the cut-off score.
- Functions $f(\cdot)$ and $g(\cdot)$ specify separate function forms (linear or quadratic) on either side of the cut-off.
- X_i is a vector of student-level control variables, such as demographic information, etc.
- α is our most interested intent-to-treat parameter, which measures the causal effect of the renewal eligibility on student subsequent enrollment.

Data

Our primary data is derived from two administrative datasets maintained by the Missouri Department of Higher Education (MDHE).

- The first dataset contains all first-time, full-time, and degree-seeking students from 13 Missouri 4-year public universities during the 2007-2012 academic years and includes each student's demographic indicators, high school performance and college information.
- The second dataset provides information about every state financial aid recipient with the specific state grants he or she received.

Figure 1 roughly indicates the significant jump of renewal rate around the GPA cut-off. Students who just achieve a 2.5 cumulative GPA or above have a higher probability to renew the aid successfully than their peers just below the GPA threshold. Due to the data limitation, we do not have all the second-year enrollment information for every initial recipient but we can match majority of them (over 90%).

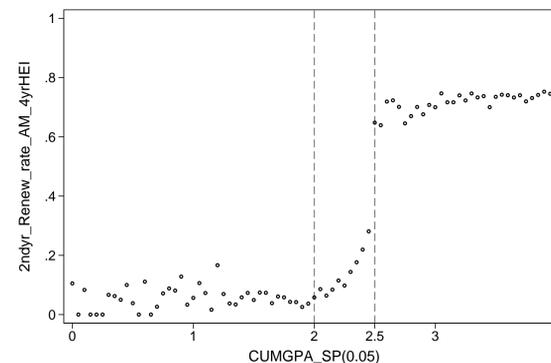


Fig. 1: The second-year renewal rate of the Access Missouri by the first-year cumulative GPA

Fuzziness still exists on both sides. The fuzziness on the right side can be attributed to the different eligibility determined by EFC. Some students may become ineligible because of EFC requirement. The fuzziness on the left may imply some potential issues such as GPA manipulation and various institutional grading policies.

RD Plot Results

Figure 2 shows the effect of aid eligibility on two types of subsequent enrollment: (1) Retained in the same institution (retention1); (2) Retained in the Missouri public higher education system (retention2). It indicates that the aid eligibility has negative effects on both types of retention but a more significant one on retained in the same institution.

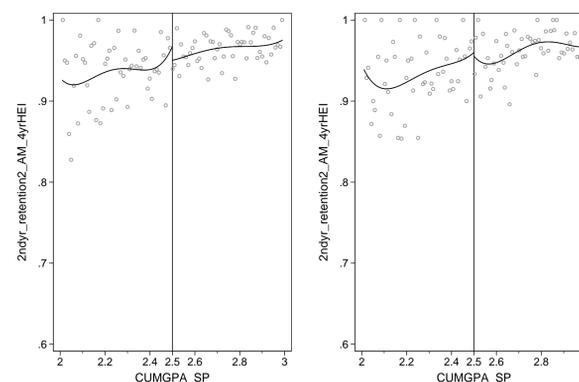


Fig. 2: The second-year retention rate by the first-year cumulative GPA (Non-parametric method and optimal bandwidth)

RD Estimates

To further examine the impact of the financial aid renewal, Table 1 reports the sharp RD estimates about the effect of the AM eligibility on subsequent retention. Race and gender variables are included as control variables. We find that:

1. No negative effect of losing state financial aid on retention;
2. Renewal of financial aid increases within system transfer rates.

Tab 1 The effects of being AM renewal eligible on subsequent enrollment

	Retained w/in same institution			Retained w/in MO HE		
	Linear	Quadratic	Nonparametric	Linear	Quadratic	Nonparametric
	BW 2.0-3.0		BW Optimal	BW 2.0-3.0		BW Optimal
Eligibility	-0.010 (0.015)	-0.036 (0.023)	-0.108*** (0.038)	0.004 (0.009)	0.001 (0.014)	-0.024 (0.021)
N	8,970	8,970	8,970	8,970	8,970	8,970
	BW 2.25-2.75			BW 2.25-2.75		
Eligibility	-0.024 (0.022)	-0.092*** (0.033)		0.005 (0.013)	-0.013 (0.020)	
N	4,526	4,526		4,526	4,526	

Standard errors in parentheses; * p<0.1 ** p<0.05 *** p<0.01

We also notice the potential issue of GPA manipulation. Since the manipulation may come from various institutional grading policies, we conduct McCrary (2008) test on each institution separately and exclude the institutions which cannot pass the test. The reduced sample only contain 9 of 13 Missouri public universities. In addition to the robustness check, we use no-aid recipients to test the falsification. The results are displayed in Table 2 (only non-parametric results are included). Even the manipulation is controlled, the AM eligibility still increases within system transfer rates. Besides, the falsification test implies that there does not exist other policy incentives around the GPA 2.5 cut-off.

Tab 2 Robustness check

	Manipulation		Falsification	
	BW Optimal	Retention1	Retention2	Retention1
Eligibility	-0.115** (0.045)	-0.020 (0.024)	-0.060 (0.038)	0.002 (0.019)
N	5,766	5,766	11,108	11,108

Standard errors in parentheses; * p<0.1 ** p<0.05 *** p<0.01

Remarks

There are not many previous studies about the consequence of losing financial aid. Generally, losing aid reduces academic success:

- Pell grant & SAP - reduces retention and success in 4-year institutions (Schudde & Scott-Clayton, 2016); in 2-year institutions (Scott-Clayton & Schudde, 2019).
- Merit-based aid & GPA - decreases engagement in college (Carruthers & Özek, 2016).

Differently, our study utilizes a higher GPA cut-off for need-based aid (2.5) instead of SAP (2.0). It is easier to measure the pure effect of losing aid eligibility in our setting since we can avoid other policy incentives near the SAP cut-off (2.0), such as probation. As a conclusion, our results imply that the loss of financial aid between 1st and 2nd year is not associated with decreased retention in higher education but increases internal transfer within Missouri public higher education system.