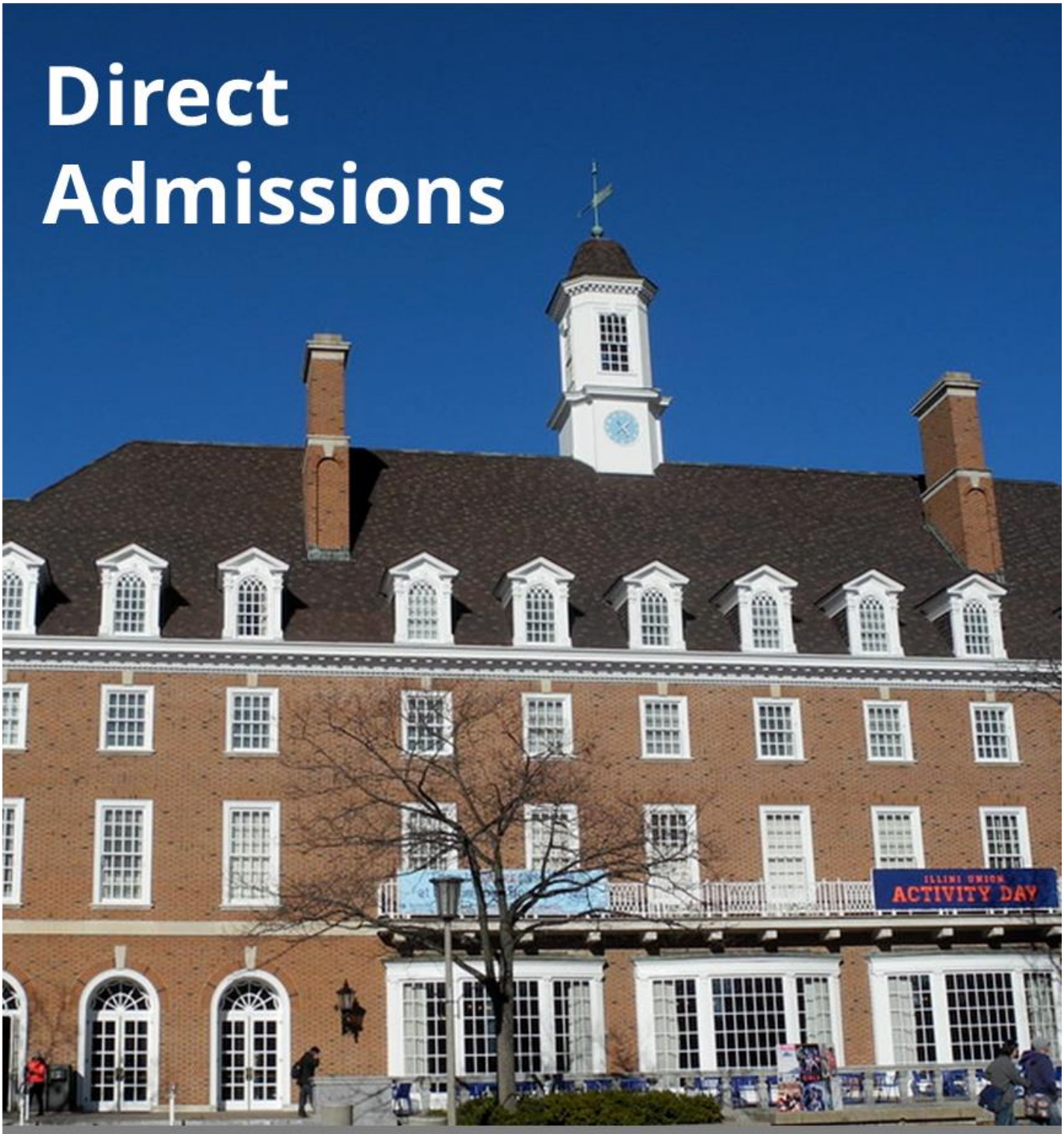
Direct Admissions



Investigating a Promising, Low-Cost Policy Innovation to Increase College Access & Equity

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Cover Image

Executive Summary

There is a need for innovative, low-cost public policies to increase college access for students, particularly by racial, socioeconomic, and geographic contexts. This report explores **direct admissions** as a promising policy option. A direct admissions system side-steps the typical college admissions process with students *proactively admitted* based on a data match between K-12 schools and postsecondary institutions. Students, parents, and high schools receive letters indicating a student has been admitted to a set of institutions and outlines steps for how students can "claim their place" using a common and free application. Typically, all students in a state are admitted to open-access institutions, and students who surpass a pre-identified threshold (based on high school academic performance such as GPA, ACT/SAT, class rank, or a combination of measures) are automatically admitted to selective institutions.

As a universal policy, direct admissions holds great potential to reduce equity gaps, provide important college-going signals to high school students, alleviate potential access gaps for rural and urban populations, and eliminate the need for extensive financial and cultural capital to navigate the college application process. This policy draws upon rich underpinnings in behavioral economics and may change the life course of individuals by offering more and higher quality postsecondary opportunities. Direct admissions is also a **low-cost** policy compared to other interventions seeking to increase college access and equity (such as traditional grant-aid programs, mentoring, or wrap-around services).

In 2015, Idaho developed the nation's first state-level direct admissions program, admitting all high school graduates to the state's public postsecondary institutions. By leveraging data and proactively signaling college opportunities to students and families, Idaho reversed declining postsecondary enrollments and out-of-state migration. In addition to Idaho, South Dakota began proactive admissions for the high school class of 2018 (Gewertz, 2017; South Dakota Department of Education, 2019). In 2019, the Illinois General Assembly passed Public Act 101-0448 to develop a pilot program for the 2020-2021 academic year to automatically admit high-performing Illinois high school graduates to targeted public institutions of higher education.

Outcomes

Following the fall 2015 introduction of direct admissions, Idaho reported *significant* changes to students' college-going behaviors. Among these included a:

- 3.1% increase in overall college enrollment across two- and four-year institutions, and
- 6.7% increase in the number of high school graduates immediately enrolling in college (Kovacs, 2016).

The 6.7% increase in enrollment encompassed a 7.7% increase at four-year institution and a 4.8% increase at two-year institutions (Kelly, 2018).

Growth across similar metrics continued in fall 2017 as Idaho brought a common application (*Apply Idaho*) online, including an:

- 88% increase in applications completed (up by 12,937),

- 6.7% cumulative enrollment increase (compared to a national increase of 2.2 %), and
- 3-percentage-point *decrease* in students leaving Idaho for college (Howell et al., 2019).

Evaluating Direct Admissions

In our analysis of the program, Idaho's implementation of direct admissions was associated with a statistically significant increase in undergraduate enrollment of 11.02% at the institutional level, as well as institutional increases in in-state enrollment between 11.09-16.3%. Similarly, direct admissions was associated with a statistically-significant, statewide increase in full-time equivalent (FTE) enrollment of 11.32%.

Translating Direct Admissions to Midwestern States

Extrapolating the effect in Idaho to Great Lakes states, our results show that, on average, these states could have increased FTE enrollment by 9,400 students using a direct admissions system. This average, per-state increase equates to a 3.03% increase in FTE enrollment. Similarly, under direct admissions, Illinois could have increased FTE enrollment by nearly 28,400 students, or 7.72%. For statewide aggregated applications to college, Illinois might have increased applications by almost 6,050 (4.62%), and Minnesota by over 13.06% (nearly 10,800 applications).

Direct admissions is an exceptionally low-cost policy option, only requiring a state longitudinal data system and, if chosen, paper and postage for acceptance letters. Given the possibility to positively increase statewide FTE enrollment and college applications, as well as in-state and undergraduate student enrollment, the policy holds strong potential for states and their students. In all, our findings suggest direct admissions is a low-cost and effective mechanism to increase institutional and statewide enrollment in postsecondary education.

Policy Recommendations

States should consider direct admissions policies as effective and low-cost mechanisms to increase the enrollment of students in public higher education.

Evidence from our evaluation of Idaho's direct admissions policy and extrapolated models to Midwestern states suggests direct admissions as a broad education policy holds the potential to increase statewide FTE enrollment and college applications, as well as the enrollment of in-state and undergraduate students. Further, information from Idaho's adoption of direct admissions suggests the policy is an exceptionally affordable policy alternative, requiring only a statewide longitudinal data system and either posted or e-mailed acceptance letters.

States should explore policies related to direct admissions systems (*e.g.*, common applications), regardless of their decision to adopt direct admissions.

A common application allows students to use a single application to apply to multiple institutions at once, thereby simplifying the college-application process and making it easier, faster, and more

straightforward for students and families. Common applications may also encourage students to explore more postsecondary options—particularly at public institutions in their own state, reducing the odds a student goes out of state for college—and increase college choice options given the simplicity of the application process. An important component of common applications to increase access and equity is a fee-free application for students, further eliminating informational and financial constraints in the college-search process (Hoxby & Avery, 2013).

States should maintain their focus on the identification and adoption of policies seeking to increase the enrollment of low-income and racial minority students.

Not only is increased educational attainment required to fuel the modern workforce, but persistent gaps in college access and completion across racial, socioeconomic, and geographic contexts present real challenges for states and their communities. States should consider direct admissions and related policies as an innovative low-cost, viable options to support postsecondary enrollment and attainment.

States should partner with researchers and policy organizations in the design and evaluation of direct admissions, common application, and related policies.

Whether it concerns the design and implementation of a direct admissions system or a state- or system-wide common application, or discussions and evaluations of existing policies and programs, partnerships with researchers and policy organizations are important. Researchers can provide a high degree of technical support from an unbiased, third-party point of view—while also considering the national, state, and regional implications of public policies concerning higher education and workforce development. Researchers can also provide empirical evidence on successful (and unsuccessful) policy designs and diffusions across other states, relating each to the context within another given state, and provide evidentiary support for programmatic features to address statewide goals (e.g., How can this policy better serve low-income students?).

Conclusion

States need **new and innovative, yet low-cost** mechanisms to increase access to and enrollment in postsecondary education. Not only is increased educational attainment required to fuel the modern workforce, but persistent gaps in college access and completion across racial, socioeconomic, and geographic contexts present important challenges for states and their communities. Direct admissions is an exceptionally low-cost policy option, only requiring a state longitudinal data system and, if chosen, paper and postage for acceptance letters. Given the possibility to positively increase statewide FTE enrollment and college applications, as well as in-state and undergraduate student enrollment, the policy holds strong potential for states, systems, and students. In all, our findings suggest direct admissions is a promising low-cost and effective mechanism to increase institutional and statewide enrollment in postsecondary education.

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In an unprecedented move, the state of Idaho decided to automatically admit all high school graduates to its public universities. Enrollment rose.
Inside Higher Ed, "An admissions experiment succeeds"

Introduction

A diverse body of evidence consistently suggests that college pays: the individual and societal returns to earning a postsecondary credential outweigh its costs across the lifetime (Oreopoulous & Petronijevic, 2013). Not only is a degree associated with higher nominal labor-market earnings (Webber, 2014), but attending college is increasingly central to individuals' upward social mobility in the modern economy (Chetty, Friedman, Saez, Turner, & Yagan, 2017). Further, college graduates are central to states' financial stability: The average four-year graduate is 24% more likely to be employed, earning approximately $32,000 more annually (over $1 million across a lifetime)—contributing a disproportionately-higher share toward states' tax revenues (Abel & Deitz, 2014). Higher education also offers considerable nonmonetary benefits for both individuals and society (McMahon, 2009). For instance, college graduates are more civically engaged, less likely to be incarcerated, and more charitable (Trostel, 2015).

Despite this evidence, not all students who would benefit from college enroll in postsecondary education, and states' levels of postsecondary attainment ranged from only 36.4% of the working-age population in West Virginia to 56.8% in Massachusetts for 2017 (Lumina Foundation, 2019). At the individual level, a myriad of factors contribute to this phenomenon, including information constraints (Dynarski & Scott-Clayton, 2006) and declining affordability (Doyle, 2016)—both of which disproportionately affect students at the lower end of the income distribution (Avery & Hoxby, 2004). For those who do enroll, gaps by income (Deming & Dynarski, 2009), race (Baker, Klasik, & Reardon, 2018), and geography (Hillman, 2016) have persisted for much of the twenty-first century. States face significant challenges supporting higher education, as well, including competing state budget priorities such as K-12 education, healthcare, prisons, and state pension systems (Gunter, Orszag, & Kane, 2002; Barr & Turner, 2013; Delaney & Doyle, 2018; Doyle & Zumeta, 2014). Though states do support public and private higher education, appropriations per student (inflation adjusted) have declined since 2001 (SHEEO, 2019). Average educational appropriations per full-time equivalent (FTE) enrollment in fiscal year 2018 were just 80.4% of what they were in at the beginning of the century.[1] Though overall improvements to higher education appropriations in state budgets have occurred across the past six fiscal years (17.4% per

[1] Authors' calculations with data from the State Higher Education Executive Officers association.

FTE), higher education appropriations remain volatile in many states (Doyle, Dziesinski, & Delaney, 2018)—and some have yet to recover from the Great Recession.

Given the need for a more educated workforce (Carnevale, Smith, & Strohl, 2013), across the nation, states have sought public policy options to increase access to institutions of higher education through, among others, targeted information mechanisms (Bettinger, Long, Oreopoulous, & Sanbonmatsu, 2012; Castleman & Page, 2015) and broader access to financial aid (Bettinger, Gurantz, Kawano, & Sacerdote, 2018; Castleman & Long, 2016).

A notable development spanning each of these realms has been the proliferation of place-based (or "promise") scholarship programs (Perna & Leigh, 2018). To date, however, few states have managed to politically and fiscally develop large-scale promise programs, suggesting an emerging need for a viable, low-cost state policy alternative to support college enrollment. However, other policy innovations are still needed if the nation is to meet its workforce needs. In particular, low-cost policy innovations that address college access by advancing equity are needed. Direct admissions is one possible policy innovation, which is explored in detail in this report.

A direct admissions system side-steps the typical college admissions process with students *proactively admitted* based on a data match between K-12 schools and postsecondary institutions. Students, parents, and high schools receive letters indicating a student has been admitted to a set of institutions and outlines steps for how students can "claim their place" using a common and free application. Typically, all students in a state are admitted to open-access institutions, and students who surpass a pre-identified threshold (based on high school academic performance such as GPA, ACT/SAT, class rank, or a combination of measures) are automatically admitted to selective institutions.

In fall 2015, Idaho adopted a *direct admissions* policy, whereby all high school graduates are admitted to a set of the state's public community colleges and universities based upon a combination of students' SAT/ACT scores, unweighted grade-point average (GPA), and high school course credits.[2] Direct admissions was designed to increase the number of Idahoans who go on to pursue and attain a postsecondary credential. The program supports five primary objectives to:

1. promote a college-going culture;
2. connect students, families, and K-12 schools with colleges early in the college-choice process;
3. ease the transition from high school to college;
4. signal postsecondary opportunities to high school students; and

[2] Direct admissions was adopted by the Idaho State Board of education in August 2015 (Howell, 2018). The first cohort of direct admissions students entered the higher education sector in fall 2016.

5. reverse consistent enrollment declines at the state's public institutions (Howell, Mehl, Pennington, Pontius, & Kock, 2019; Kelly, 2018).

Early indicators of Idaho's success with direct admissions are promising, including reported increases of 3.1% in overall enrollment and 88% in college applications, as well as a 3-percentage-point decrease in the number of students leaving Idaho for college (Kovacs, 2016). Further, direct admissions is expected to be exceptionally low-cost, only requiring the existing state longitudinal data system and paper and postage for acceptance letters.[3]

In addition to Idaho, South Dakota began proactive admissions for the high school class of 2018 (Gewertz, 2017; South Dakota Department of Education, 2019). In 2019, the Illinois General Assembly passed a law to develop a pilot program to automatically admit high-performing Illinois high school graduates to targeted public institutions of higher education.[4]

In all, a direct admissions system may be a viable, low-cost state policy alternative to support college enrollment across racial, socioeconomic, and geographic contexts. Direct admissions may not only sidestep the traditional admissions process by proactively admitting students to college, but may also eliminate many reasons why students do not apply to begin with—including onerous application forms, inconsistent admissions processes across institutions, application fees, and a lack of transparent information for students and families (Page & Scott-Clayton, 2016). A proactive admissions system may also signal to students, parents, and K-12 schools that a postsecondary credential is attainable (Venezia & Jaeger, 2013), particularly for low-income and racial minority students who do not apply to or enroll in higher education at the same rates as their higher-income and majority peers (Hamrick & Stage, 2004; Institute of Education Sciences, 2018[5]). This policy may also hold the potential for states to increase undergraduate enrollment—keeping students in-state—and invigorate workforce development by educating a larger and more diverse populous (Carnevale, Smith, & Strohl, 2013; Frey, 2015).

This report first reviews direct admissions as a conceptual idea, considering related scholarly literature, the costs of direct admissions, the impact of direct admissions for individuals, institutions, and states, and important elements of direct admissions systems. Next, an evaluation of an existing direct admissions program—the one in Idaho—is presented. After providing background information on Idaho and their direct admissions program, descriptive evidence from the program is presented along with a quantitative policy evaluation using two complementary

[3] Idaho has now begun a transition to electronic (e-mail) letters, which further reduces the costs of direct admissions. To date, Idaho has decreased the number of letters from 4 (2 for student, 2 for parents—one in early fall, one in late fall) to a single postcard and one letter to the student (early fall) and a single letter to the parents (late fall).
[4] See Public Act 101-0448 (HB0026) of the 101st Illinois General Assembly for further detail. The uniform admission pilot program begins academic year 2020-2021.
[5] Table 302.20. Percentage of recent high school completers enrolled in college, by race/ethnicity: 1960 through 2017.

quasi-experimental methods—difference-in-differences and generalized synthetic control methods. Each method is used to estimate models at both the state- and institution-levels. Following the evaluation of Idaho's direct admissions system, this report next considers the possible impact of direct admissions systems in other states and presents models for the Midwest region and select Great Lakes states. Detailed public policy recommendations are then presented. The conclusion outlines the promise of direct admissions systems. Additional information about the larger direct admissions project from which this report was derived, the research team, and advisory board end the report along with a listing of acknowledgements, funding sources, and a list of references. Finally, an appendix includes a sample direct admissions letter from Idaho, examples of common application usage in U.S. states, and a methodological appendix that presents more detail on each of the statistical models used in this report.

Direct Admissions as a Policy Idea

This section reviews academic literature that presents related evidence that direct admissions can increase postsecondary outcomes and reduce equity gaps; discusses the financial costs of a direct admissions system; conceptually considers the impact of direct admissions for individuals, institutions, and states; and explores important elements of direct admissions, including a common application, the use of fee-free applications, and early student financial aid commitments.

As a universal policy, direct admissions holds great potential to reduce equity gaps, provide important college-going signals to high school students, alleviate potential access gaps for rural and urban populations, and eliminate the need for extensive financial and cultural capital to navigate the college application process. While there may still be the need to investigate financial and cultural capital issues beyond admissions, this policy draws upon rich underpinnings in behavioral economics and may change the life course of individuals by offering postsecondary opportunities. Direct admissions is also a low-cost policy compared to other interventions seeking to increase college access and equity (such as traditional grant-aid programs, mentoring, or wrap-around services).

Findings from Academic Literature: Related Evidence that Direct Admissions Can Increase Postsecondary Outcomes and Reduce Equity Gaps

Simplifying the college admissions process has been shown to be helpful to students, especially high achieving, low-income students. More than half (53%) of high achieving, low-income students do not apply to a selective institution (Hoxby & Avery, 2013). In fact, only 8% of high achieving, low-income students apply in a manner similar to that of their higher-income peers. Current widely-used college admissions policies—like admissions staff recruiting, campus visits, and access programs—are typically ineffective with many high achieving, low-income students (Hoxby & Avery, 2013). A universal policy eliminating barriers for college admission (like direct admissions) is likely to be transformational for at-risk student populations, including those who are low-income, first generation, from rural areas, and students of color.

An experiment using low-cost interventions for college admission (including college application fee waivers) for high achieving, low-income students demonstrated increases in the number of applications submitted overall and to selective institutions, a 31% increase in admissions to a selective institution, and increased enrollment at selective institutions (Hoxby & Turner, 2013). A recent study of Texas' automatic admissions policy showed that this policy reduces income-based inequities by helping low-income, high-achieving students better match to higher-quality institutions (Cortes & Lincove, 2019).

Widening disparities exist in college attendance between students from high- and low-income families. Researchers at the University of Michigan experimented with a low-cost intervention for

in-state high achieving, low-income students called the HAIL (High Achieving Involved Leader) Scholarship. Students received a personalized mailing encouraging them to apply and were guaranteed four years of tuition and fees if admitted (without having to complete the FAFSA or other aid forms). Parents and students' principals also received this information. Sixty-seven percent of high school students in the treatment group applied to UM compared to 26% of the control group, and 27% enrolled compared to only 12% of the control group. These students would have otherwise not attended college, attended a community college, or attended a less selective four-year college (Dynarski, Libassi, Michelmore, & Owen, 2018).

Direct Admissions Costs

Direct admissions is fundamentally a technical solution for college admissions. When compared to other types of programs that seek to increase college access— mentoring programs, student financial aid, admissions office recruiting activities, tuition discounting, etc.—direct admissions is a very low-cost policy intervention. With the spread of state longitudinal data systems, many states already have the data infrastructure to implement a direct admissions system.[6] At least 70% of states and territories reported having automated infrastructure to link K–12 student data to K–12 teacher data, postsecondary data, Perkins CTE data, and early childhood data. Half reported having automated links to workforce data (National Center for Education Statistics, 2019). Likewise, a number of states already have common application systems in place either statewide or for large systems of higher education (see the Appendix for a list with detailed information on existing common application systems). Using these existing systems to build a direct admissions system is possible in many states at low-cost. In terms of informing students about their college admissions, the use of email notifications also reduces the costs of a direct admissions system.

Direct Admissions Impacts for Students, States, and Institutions

While the literature to-date has focused on high-achieving students attending selective institutions, as a universal policy it is expected that direct admissions will have an impact on students throughout the ability spectrum and across institutional types. The policy is also expected to impact states by increasing overall enrollment and the educational levels of the workforce. Institutions are

[6] For more information, see for instance:

- https://www.ecs.org/state-longitudinal-data-systems/
- https://www.wiche.edu/info/publications/FrameworkForAMultistateHumanCapitalDevelopmentDataSystem.pdf
- https://postsecondarydata.sheeo.org/wp-content/uploads/2018/05/SHEEO_StrongFoundations2016_FINAL.pdf
- https://www.wiche.edu/longitudinalDataExchange/prior
- http://www.ihep.org/sites/default/files/uploads/postsecdata/docs/resources/state_postsecondary_data_systems.pdf
- https://dataqualitycampaign.org/wp-content/uploads/2016/03/384_NextStep.pdf
- https://www.rand.org/content/dam/rand/pubs/monographs/2008/RAND_MG695.pdf

expected to be impacted, but impacts are expected to be different across different institutional sectors.

With direct admissions systems, prospective students would still be able to apply to institutions using traditional admissions systems. Students would use traditional admissions systems to apply to non-profit private, for-profit private, and out-of-state institutions. Students would also not be precluded from applying to additional in-state public institutions, especially if they have a special skill or qualification (like the ability to compete on an athletic team) where a holistic admissions review would be warranted. Direct admissions is set up to provide information and a guarantee of admissions proactively to public high school graduates in a state. States would be able to modify and expand the scope of direct admissions by including private K-12 schools, home schooled students, private postsecondary institutions, or out-of-state institutions with tuition reciprocity agreements in a direct admissions system.

Direct Admissions Individual Impact

When considering the impact of direct admissions on individual students, it is important to consider how the policy may change a student's postsecondary destination across the ability spectrum. It is possible that for some students, direct admissions will yield no change in their behavior. However, for other students, knowing that they have been admitted to college could change their life course. This has been shown to be true for some high-achieving low-income students (Dynarski, Libassi, Michelmore, & Owen, 2018), but should equally apply to all students. Because access to information about college admissions is dependent on social and cultural capital under traditional admissions models (Hoxby & Avery, 2013; Klasick, 2012; Knight & Schiff, 2019), at-risk students such as low-income, minority, and rural students tend to be underserved. In addition, students receive different access to different types of degrees at different institutional types. Because not all institutions offer all majors or degree types, changing the type of institution attended can alter an individual's life course. In addition, graduation rates and support services offered to students on campuses vary greatly. In general, more selective institutions spend larger amounts per-student on instruction and have higher graduation rates (Alon & Tienda, 2005; Delta Project, 2010). In 2008, on average, the subsidy value (spending beyond net tuition on each FTE student) was eight percent higher at public research institutions than at community colleges ($8,055 vs. $7,404) (Delta Project, 2010). Moving from a community college to a four-year institution opens up the possibility that a student could earn a Bachelor's degree from their first institution. Moving from a less selective to a more selective institution generally improves a student's odds of graduating and earning a degree. It also likely means that students will have access to greater resources and support services on campus.

Table 1 conceptually presents possible changes due to direct admissions that yield both improved outcomes for students and states. We consider the following to be positive outcomes: gaining access to more degree types (for example, moving from no college to any postsecondary institution, or a community college to a four-year institution year when students can earn a BA degree) and access to a more selective institution (for example, moving from an open access institution to a selective institution). The conceptual model presented in Table 1 assumes that the direct admissions system only applies to in-state public institutions. For students who would have not otherwise received any postsecondary training, direct admissions has the potential to move them into college such that any outcome is seen as a positive policy result. For students who had initially planned on attending a for-profit college, attending a public institution instead will yield a positive result based on both average graduate rates, tuition levels, average student debt levels, and average default rates. If direct admissions encourages a student to enroll in a four-year institution when they had been previously planning to attend a community college, the student is likely better off in attending a more highly-resourced institution and having access to Bachelor's degrees without the need to successfully transfer institutions. For students planning to attend a non-selective four-year institution, direct admissions has the ability to push them into a selective institution where students will benefit from higher per-FTE spending and graduation rates, on average. In all these instances, it is assumed that there will also be improved outcomes for states through the potential of producing a more highly educated workforce.

Table 1. *Possible positive changes where the student and the state are better off (improved match).*

Possible Positive Changes
- Where the student and the state are better off

Plan	With the Introduction of Direct Admissions, Possible Positive Outcomes
Not planning on attending college	Attend 2-year Attend 4-year non-selective Attend 4-year selective
Planning to attend a For-Profit college	Attend 2-year Attend 4-year non-selective Attend 4-year selective
Planning to attend a 2-year college	Attend 4-year non-selective Attend 4-year selective
Planning to attend a 4-year non-selective college	Attend 4-year selective
Planning to attend a 4-year selective college	None
Planning to attend an in-state Private Non-Profit college	None
Planning to attend an out-of-state college	None

It is possible that direct admissions could produce sub-optimal outcomes and Table 2 lists possible responses that would redirect otherwise qualified students away from more highly resourced institutions with higher graduation rates.

Table 2. *Possible negative changes – where the student and the state are worse off (undermatch).*

Possible Negative Changes
- Where the student and the state are worse off (under-match)

Plan	With the Introduction of Direct Admissions, Possible Negative Outcomes
Not planning on attending college	None
Planning to attend a For-Profit college	None
Planning to attend a 2-year college	None
Planning to attend a 4-year non-selective college	Attend 2-year
Planning to attend a 4-year selective college	Attend 2-year Attend 4-year non-selective
Planning to attend an in-state Private Non-Profit college	Attend 2-year
Planning to attend an out-of-state college	Attend 2-year

Student/Institutional Match

In addition to having the potential to change the type of institution that a student attends, direct admissions has the potential to improve student-to-institution matches. Better matching has the potential to increase academic outcomes and to direct students to more resource-rich environments. While some of this may happen naturally as students realize the full range of institutions where they have been offered admission, direct admissions systems can also be used to more specifically encourage better matches both academically and with regard to other factors. By proactively providing information about institutional costs, financial aid, graduation rates, and average starting salaries of graduates, students can be more informed consumers regarding their institutional choice. Data analytics can also be used to recommend good institution matches for students based on past academic achievement and geography. While there have been attempts in the past to provide this information to students (the federal College Scorecard[7] is one example), no existing information-based approaches proactively provide information to students. Instead these systems rely on individual initiative to both know where and how to conduct searches, systems that often mirror the problems of traditional admissions systems.

[7] https://collegescorecard.ed.gov/

There is also the potential for direct admissions systems to be used to encourage better student matches to majors within institutions. By providing detailed information about different majors within institutions, students will be better able to select institutions that have the field of study they wish to pursue and to select majors within an institution that will yield the individual labor market outcomes they hope to achieve.

Direct Admissions Impact on Institutions

When considering the impact of direct admissions for institutions, it is expected that the policy change will both increase enrollments overall and change institutional destinations for students.

Figure 1 presents a conceptual diagram of how a direct admissions system could change students' postsecondary destinations. The figure considers the impact on for-profit institutions, two-year colleges, four-year non-selective institutions, four-year selective institutions, in-state private non-profit colleges, and out-of-state colleges. Overall, we predict that the introduction of a direct admissions system will result in a net enrollment loss at for-profit institutions. By offering admission to public institution options to students, individuals should be more likely to choose low-cost public options than considerably more expensive for-profit offerings. We expect that community colleges will see net enrollment gains. Importantly, some of these enrollment gains will come from students who were not planning on attending college. As a consequence, direct admissions systems may reveal the need for additional support services at institutions. Increasing college access for this student group is important for pushing forward equity in higher education. Four-year non-selective institutions are expected to see net enrollment gains as are four-year selective institutions. The ability of students to start and complete degrees at four-year institutions opens up more possibilities for individuals to obtain four-year credentials and Bachelor's degrees, which are vital to the increasing workforce demands of states. Assuming that in-state private non-profit institutions do not participate in the direct admissions systems, it is expected that these institutions will experience net enrollment losses. One possibility is for states to encourage non-profit in-state institutions that offer high-quality degrees to participate in direct admissions systems thereby increasing institutional choice for students. Out-of-state institutions are expected to see a net enrollment loss when a direct admissions system is introduced. This is particularly important in states where net migration loss is an issue of political concern. All of these shifts in enrollment should improve higher education outcomes and degree attainment levels for the state.

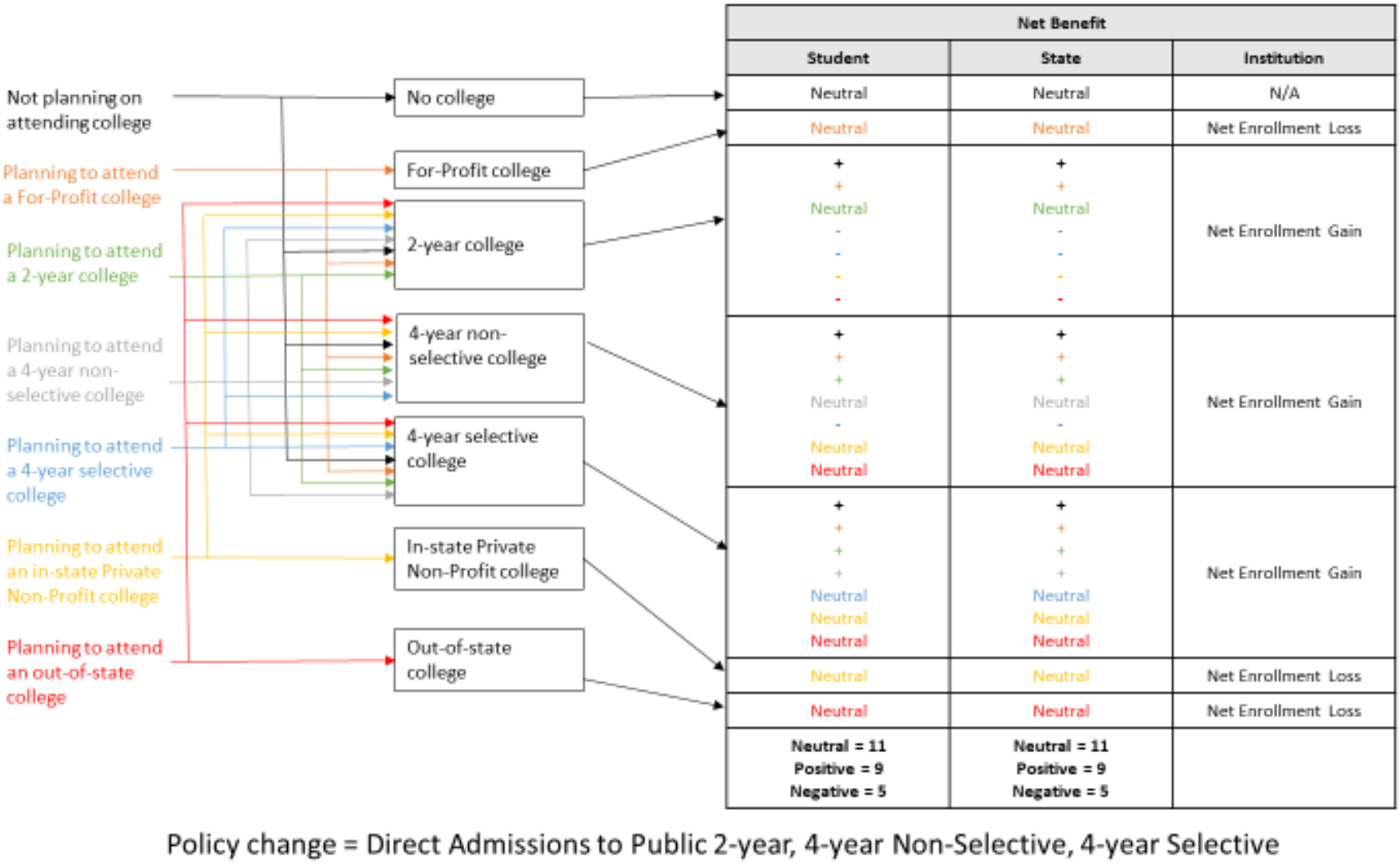

FIGURE 1. *Direct admissions institutional impact.*

Important Elements of Direct Admissions Systems

There are three important design elements of direct admissions systems that influence their effectiveness: the use of a common application, admissions application fee waivers, and integration with existing student financial aid programs.

A Common Application Form

Although there is no research on direct admissions to-date, strong evidence supports the effectiveness of an element of direct admissions systems—the use of a common application. A common application[8] allows students to use a single application to apply to multiple institutions, simplifying the college application process. Common applications increase enrollments by making it easier to apply to college and to match with institutions based on academic credentials. Common applications encourage students to apply to multiple institutions, reducing students self-selecting out of institutions that would be a good fit, offer important educational opportunities, grant better financial aid packages, and have lower net prices. A common application encourages students to explore more postsecondary options in-state, thereby increasing the odds that students remain in-state for college. It also helps campuses attract more desirable students for each incoming class.

A study of the "Common Application"[9] (run by an independent, non-profit organization) at private four-year institutions shows that institutions benefited from using a common application. Institutions increased applications by 5.7 to 7.0%, but decreased yield rates by 2.8 to 3.9%. For some with large local networks, acceptance rates declined (increasing institutional prestige). The "Common Application" was associated with a decline in average SAT scores at institutions, but an increase in the percentage of students of color (Liu, Ehrenberg, & Mrdjenovic, 2007). A dissertation using the Texas Common Application showed that elements of the common application were helpful in predicting student performance, degree progress, and persistence in college (Murphy, 2010). Several other states use common applications, but definitions of common applications vary and apply to different ranges of institutions. The Appendix contains information on common application use in five states.

A common application, with emphasis on simplifying the process from the students' point of view, is an important element of direct admissions. Ideally, a common application will enable students to "claim their place" by reducing the intimidation of the application process, making an application to college easier, faster, and straightforward. A common application system that has a single application that can be used at multiple institutions offers the most public value. A

[8] Sometimes called a universal application.
[9] http://www.commonapp.org/

clearinghouse website for multiple institution applications[10] could also be helpful, but will be less effective than the creation of a single application. Including in-state private institutions in direct admissions increases options for students and the potential to retain residents in-state for college.

Eliminate Admissions Application Fees.

With direct admissions, students are admitted to multiple campuses. However, application fees for students to "claim their place" at the institution of their choice dampen potential policy impacts, especially for low-income or financially-constrained students. While application fee waivers are currently available for low-income students at most institutions, the process of obtaining a waiver can be a cumbersome deterrent (Hoxby & Turner, 2013). Idaho successfully transitioned to a fee-free system in 2017 (Idaho State Board of Education, 2019a).

Early Information and Commitment on Student Financial Aid.

Ideally, a direct admissions system will combine information on admissions *and* student financial aid for students. Including financial aid as part of a direct admissions system is particularly important for students who are more likely to select institutions that do not match their qualifications, including high achieving, low-income students and first-generation students (Heller, 2006; Kim, DesJardins, & McCall, 2009; Liu et al., 2011; Luna De La Rosa, 2006; Perna, 2005).

[10] See the Wisconsin common application as an example of a clearinghouse-type common application. Apply Wisconsin: https://apply.wisconsin.edu/

Direct Admissions at Work: The Idaho Experience

Background Context: Higher Education in Idaho

This section provides context on the state of Idaho's education landscape, including its organization, size, and public-policy goals during the adoption of direct admissions.

Idaho's public education sector has a centralized governance structure, with the Office of the State Board of Education (OSBE) overseeing K-12 (Idaho Department of Education) and postsecondary operations. The state supports four public community colleges (College of Eastern Idaho, College of Southern Idaho, College of Western Idaho, and North Idaho College) and four universities (Boise State University, Idaho State University, Lewis-Clark State College, and the University of Idaho).

OSBE reported that 48% of the high school senior class of 2017 immediately enrolled in a postsecondary institution following graduation and that enrollment across Idaho's public institutions reached 106,493 in 2017-18, up 3.84% over the previous year (OSBE, 2018b). The statewide college graduation rate (measured at 150% of time) was 36.4% in 2017 (OSBE, 2018b). The state has also aggressively promoted dual credit to high school students, including increasing the number of students taking dual credit by 112% since 2015, and providing $4,125 per student for dual-credit course fees through the *Fast Forward* program (OSBE, 2018b). Despite these successes, Idaho struggles with equitable high school completion and postsecondary access for students in its urban and rural regions (OSBE, 2018b).

Spending on K-12 and higher education in Idaho comprises nearly 63% of the state's annual budget (OSBE, 2018b). For higher education, educational appropriations per full time equivalent (FTE) student reached $8,513 in fiscal year 2018—up 0.65% since the previous year and 28.0% over that in 2013, but 18.8% less than pre-Recession (2008) levels (SHEEO, 2019). Idaho's appropriations per FTE are still higher than the national average ($7,853). Idaho had the seventh-lowest net tuition as a percent of total educational revenue in fiscal year 2018 among the 50 states (SHEEO, 2019). In fiscal year 2019, tuition comprised 45.9% of the sector's total revenue (OSBE, 2018b). The average in-state tuition and fee rate is $7,399 for four-year institutions and $3,297 for two-year institutions in 2018-19 (OSBE, 2018b). Idaho also operates a mixed merit- and need-based aid program, the *Idaho Opportunity Scholarship*, with an average award of $3,450 (OSBE, 2018b).[11]

After being identified as the state with the lowest college-going rate in 2010 (NCHEMS, n.d.), Idaho set an ambitious postsecondary attainment goal: By 2025, 60% of Idahoans between the

[11] The *Opportunity Scholarship* is based on 70% need (as determined by a student's Expected Family Contribution on the FAFSA) and 30% merit.

ages of 25 and 34 will attain a postsecondary degree or credential (OSBE, 2017). Since then, Idaho has aggressively pursued the 60 % goal, including spending over $133 million in special-purpose dollars for secondary and postsecondary education initiatives.[12] Additionally, Idaho has adopted two statewide college-access initiatives using existing state resources: direct admissions for high school students and a common college application (Richert, 2017, 2018). Since the 2015 introduction of direct admissions in the state and the 2017 start of *Apply Idaho*, the common application, Idaho has reported large increases in college-going among its high school population. As of 2017, however, Idaho still lagged behind the nation in college attainment. Nationally, 47.6% of the population held a high-quality certificate, associate degree, or bachelor's or higher in 2017. In Idaho, only 40.7% of the population met those criteria (Lumina, 2019). Furthermore, significant gaps in degree attainment by race and geography persist in the state: 39.9% of White adults age 25 to 64 hold at least an associate degree compared to only 15.1% of Hispanic residents, and residents of large metropolitan areas (e.g., Boise City) have attainment rates 3.5 percentage points higher than their rural peers (Lumina, 2019). A snapshot of higher education in Idaho is detailed in Figure 2.

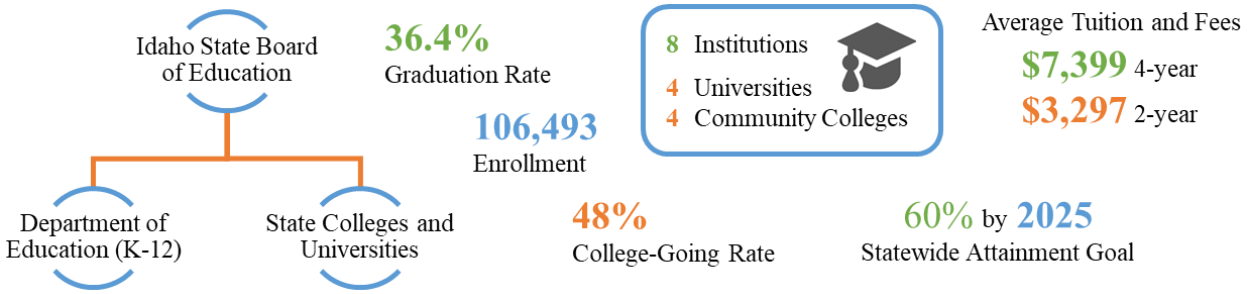

Figure 2. *Snapshot of higher education in Idaho*.

Two important features of Idaho's education system facilitated their adoption of direct admissions: universal SAT testing in high school and a state longitudinal data system (SLDS). A college entrance exam is required for high school graduation in Idaho, and the state has funded universal SAT testing for high school students. Additionally, the state operates a robust P-20W+ SLDS system, commonly referred to as the Education Analytics System of Idaho (EASI). EASI combines data from the Department of Education (K-12), the State Board of Education (K-12 and postsecondary), and the Idaho Department of Labor (Howell et al., 2019). Because of Idaho's centralized education governance structure, data sharing agreements between K-12 schools and postsecondary institutions were not required—both fall under the State Board of Education—allowing for a seamless introduction of the direct admissions policy. One state agency held access

[12] Of this funding, only $8.6M for *Complete College Idaho* was appropriated to the colleges and universities for student success strategies.

to students' high school transcripts, ACT/SAT scores, and grade-point averages (GPA), and had the authority to share that information with its own postsecondary arm to grant students admission to college. It is also important to note the state's direct admissions policy was championed by the President of the University of Idaho, the state's flagship and most selective institution (Logue, 2015).

Idaho Direct Admissions

This section describes Idaho's direct admissions program, including details on how students are admitted, informed, and subsequently enroll in a community college or university.

Direct admissions *proactively* admits all high school graduates to in-state public community colleges or universities using information already included in Idaho's data system, EASI. In the design of its system, Idaho uses a common application, fee-free applications, and direct admissions. Academic affairs staff at each institution collaborated to develop thresholds to determine admission based upon students' SAT/ACT score, unweighted GPA, and high school course credits at the end of their junior year (Howell et al., 2019). Institutions were able to agree on common thresholds creating two groups of institutions where students can be admitted. The state compares students' information to these pre-defined thresholds to determine admission. Students are either admitted to all eight state institutions (including the selective Boise State University, Idaho State University, and University of Idaho) or to the remaining five institutions (College of Eastern Idaho, College of Southern Idaho, College of Western Idaho, Lewis-Clark State College, and North Idaho College) plus Idaho State University's College of Technology.[13] These institutions are from both the two- and four-year sectors. Figure 3 exhibits this process and details admission by institutional group.

Students and parents receive a mailed letter in September/October of their senior year informing them of their admission, including information on how to apply and enroll in the college of their choice (Howell & Youde, 2015). An example letter is included in the Appendix. High schools also receive a list of all students who have been pre-admitted. Students must still complete a college application, pay an application fee (where applicable, though fee waivers are available and fees paid are re-applied as a credit toward students' first semester's bill), and submit an official final high school transcript (Howell & Youde, 2015). Students applying in fall 2017 and later can use Idaho's fee-free universal common application to apply to all in-state public institutions via one application.[14] Students using *Apply Idaho* submitted an average of 2.5 applications, and each application took approximately five minutes (Howell et al., 2019). Students are also encouraged

[13] Admission to an institution is contingent upon high school graduation (proof of graduation) and does not guarantee admission into a specific program or to competitive majors.
[14] As of fall 2018, students could also apply to two private, non-profit institutions in Idaho.

to apply for the Idaho Opportunity Scholarship and complete the Free Application for Federal Student Aid (FAFSA). Students must accept a pre-admittance offer by February of their senior year in order to use the offer of guaranteed admission (Kelly, 2018).

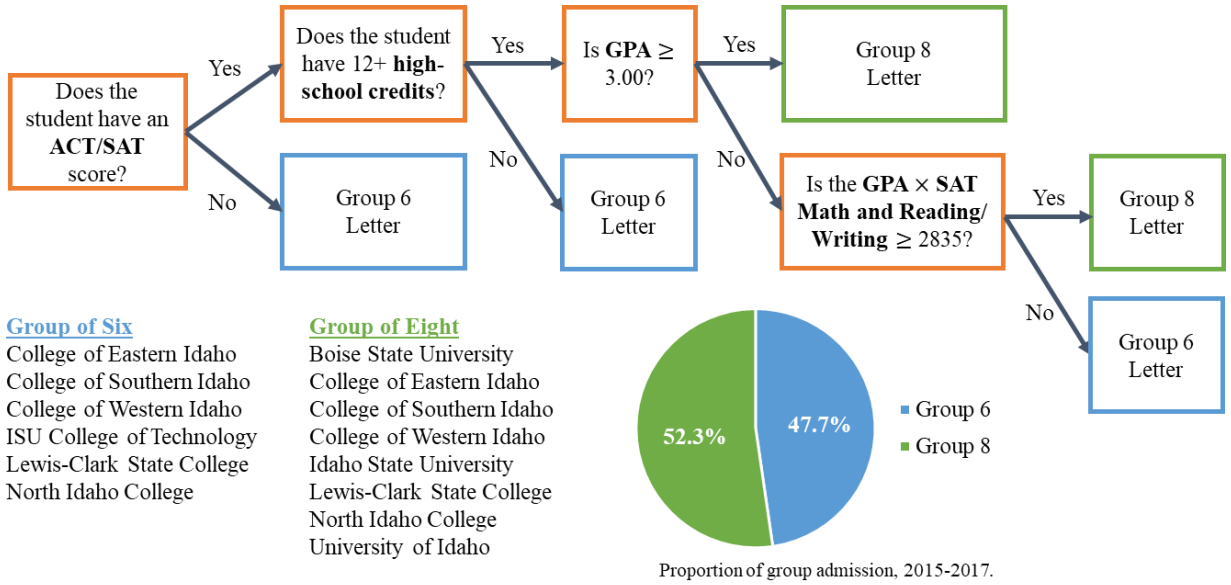

Figure 3. *The direct admissions process in Idaho*.

Since fall 2015, over 116,720 students in Idaho have been guaranteed admission to six or more of the state's public colleges and universities (OSBE, 2019b).

In spring 2016, after students had committed to their college of choice, the Idaho State Board of Education conducted a survey with the first cohort of direct admissions students (Howell, 2018). Responses from 1,410 students were analyzed, and 58% reported direct admissions had an impact on their decision to attend college, with 55% reporting an impact on their choice of *which* college to attend (Howell, 2018). Researchers found direct admissions had no effect on students who already planned to attend college, identifying no disadvantages for this group as compared to traditional admissions systems. However, the policy *did* encourage students who would not have otherwise attended college to apply and enroll (Howell, 2018). Additionally, students whose parents had no postsecondary education (i.e., first-generation students) self-reported direct admissions had a larger effect than their peers whose parents had college degrees (Howell, 2018). Finally, while only 27.4% of students indicated speaking with a college counselor, 79.4% of students reported discussing their college plans with parents (Howell, 2018). The survey also found that the direct admissions system influenced students who were planning to attend an out-of-state institution to remain in-state.

Though direct admissions presents with many positive benefits to students and the state, it has been met with criticism by college admissions officers, whose chief claim was that the ACT/SAT-

GPA-Credit formula surrounded the admissions process was too simple for selective, four-year institutions (Seltzer, 2018). Additional concerns included uneven benefits across the state: While overall enrollment grew in the state, headcount continued to decline at Idaho State University, North Idaho College, and the Colleges of Eastern and Southern Idaho (Kovacs, 2016). Criticism on behalf of college admissions officers was rebutted by the Idaho State Board of Education's Executive Director (Freeman, 2018).

What Happened in Idaho? Descriptive Changes in College-Going Outcomes

This section describes changes observed in Idaho following direct admissions, including college application and enrollment behavior.

Following the fall 2015 introduction of direct admissions, Idaho reported *substantial* changes to students' college-going behaviors. Among these included a 3.1% increase in overall enrollment (up 2,272 from fall 2015 to fall 2016) and a 6.7% increase in the number of highs school graduates who immediately enroll in college (Kovacs, 2016). The 6.7% increase in enrollment encompassed a 7.7% increase at four-year institution and a 4.8 % increase at two-year institutions (Kelly, 2018). Growth across similar metrics continued into fall 2017 as Idaho brought a common application (*Apply Idaho*) online, including an 88% increase in applications completed (up by 12,937), a cumulative enrollment increase of 6.7% (compared to a national increase of 2.2%), and a 3-percentage-point *decrease* (from 13 to 10%) in the number of students leaving Idaho for college (Howell et al., 2019). Data obtained from Idaho provide further detail regarding these changes in college-going behavior. The proportion of high school graduates who enrolled in higher education immediately after graduating increased from 48% in 2015 to 49% in 2016 (OSBE, 2019b). Additionally, the proportion of those college-going students who enrolled in out-of-state institutions fell from 29% in 2014 to 28% in 2015 and to 26% in 2016 (OSBE, 2019b). Figure 4 summarizes these descriptive changes.

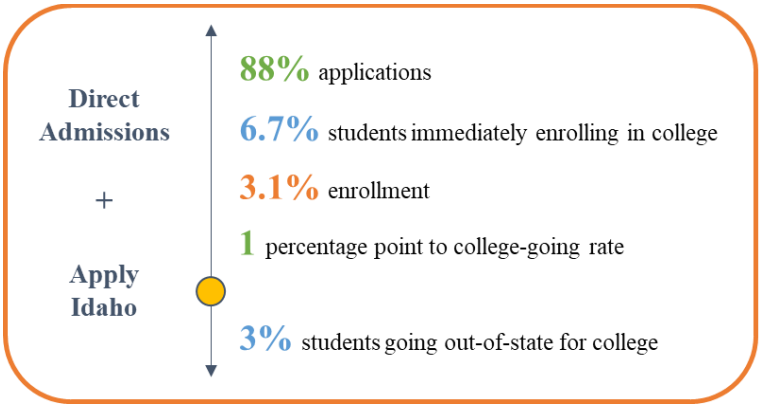

Figure 4. *Descriptive changes after direct admissions and Apply Idaho*.

Estimating the Effect of Direct Admissions: Idaho's Experience

This section presents the methods and results of the Research Team's quantitative policy evaluation, which sought to estimate the effect of direct admissions on student and state outcomes in Idaho using separate but complementary quasi-experimental methods.

While changes in student application and enrollment behavior were observed and reported in Idaho following the implementation of direct admissions and the state's common application (*Apply Idaho*), further research is needed to isolate the *causal* effect of the policy change on student behavior.[15]

We use two basic approaches in this work. First, a *difference-in-differences* estimation strategy is used to compare outcome changes in Idaho to other states (including those in the Midwestern region) over time, controlling for a host of state and institutional external factors. Second, in a complementary fashion, the *synthetic control method* uses sample weighting to assemble a nearly-identical state to Idaho, mirroring that of a true random experiment with a treated Idaho and untreated ("synthetic") Idaho. Each of these estimation strategies will provide causal-inference estimates of the effect of direct admissions by reducing bias, controlling for external factors, and providing a unique contribution to the exploration of a) what happened after direct admissions and b) what could happen if other states were to adopt the policy. We have provided a more detailed description of the methods used in the appendix.

We ask two primary research questions to evaluate the effectiveness of direct admissions:

1. What was the effect of direct admissions on enrollment and application behaviors?
2. What effect did direct admissions have across racial, economic, and geographic contexts?

We consider both state- and institution-level models to answer each research question. Further, the models are varied, and we use both all other states in the nation and the Great Lakes states as

[15] In order to estimate the effect of direct admissions on student enrollment, applications, and other outcomes of interest in Idaho, these differences, as well as pre-policy trends (e.g., Idaho's declining college enrollments) and external factors (e.g., Idaho's strong economy), must be controlled for in the analysis. Because the direct admissions policy was not "randomly assigned" to Idaho, there may be state-specific factors that influenced policy adoption that also relate to students' college-going behaviors. In a true experiment, states could have been assigned to "treatment" and "control" groups, with treatment states adopting the policy. Random assignment removes the bias introduced by those pre-policy trends and external factors (i.e., a state whose college enrollment is increasing is just as likely to be treated as a state whose college enrollment is declining). Because this was not the case for Idaho, this evaluation of direct admissions will be treated as a *natural experiment*, where Idaho (treatment) was exposed to the policy while other states were not (control). The methods employed here attempt to mirror that of a true experiment by reducing bias from other factors and controlling for pre-policy changes in students' college-going behaviors. In the evaluation of natural experiments, quasi-experimental design techniques provide this superior control over prior trends and confounding factors.

comparison groups. Our institutional models consider two sectors: community colleges and universities.

Difference-in-Difference: State-Level Models

The first set of models ("state-level") presented compare outcome changes in Idaho to changes in states across the nation. Outcomes and control variables are aggregated at the state-by-year level. Data for these models come from the U.S. Census Bureau's American Community Survey (ACS), the U.S. Department of Labor's Bureau of Labor Statistics (BLS), the U.S. Department of Education's Common Core of Data (CCD) and Integrated Postsecondary Education Data System (IPEDS), as well as from the State Higher Education Executive Officers Association (SHEEO). Data encompass all 50 states.

The first primary outcome of interest (FTE enrollment) is drawn from SHEEO's *State Higher Education Finance (SHEF) Survey*, and the second outcome (applications) is drawn from IPEDS. SHEEO collects the aggregate number of enrolled credit hours by state and scales these figures by 12-credit hours to arrive at a comparable number of full-time, academic year students (excluding medical school enrollments). All public institutions in the United States and others (including private) who participate in federal financial aid programs must report annually to the U.S. Department of Education through IPEDS. IPEDS collects and reports the number of applications submitted for a given academic year by institution. Application numbers have been aggregated at the state level for public two- and four-year institutions. Table 3 presents outcome trends in these variables over time from academic year 2010-11 through 2017-18. Please note that these are different measures than are reported by OSBE in Idaho. The benefit of using standardized national measures from SHEEO and IPEDS is that they allow comparability across states. The Idaho measures are more nuanced and provide more details about enrollment and applications, which is why they are used above in the descriptive analysis.

Table 3. *Outcome trends for Idaho and the United States by year*.

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
FTE Enrollment								
Idaho	53,201	58,980	57,837	56,177	54,102	52,744	53,116	53,570
United States	235,945	234,001	229,485	227,039	224,541	222,946	222,356	221,955
Applications								
Idaho	12,211	14,921	14,439	16,148	17,498	15,442	15,407	17,723
United States	92,589	95,733	99,294	102,970	108,555	113,370	119,677	122,402

Source(s): Integrated Postsecondary Education Data System and State Higher Education Executive Officers Association.
Note(s): Table reports means by year for Idaho and the United States (excluding Idaho); Figures rounded to hundredths; The first year of direct admissions was 2016-17.

Enrollment in Idaho rose sharply from 2010-11 to 2011-12 (10.86%) but fell a cumulative 10.57% from 2011-12 through 2015-16. Enrollment across the United States also fell over this period, but

at a slower rate. From 2010-11 through 2015-16, FTE enrollment across the nation declined by 12,999 students (5.51%). While enrollment across the United States continued to decline in 2016-17 and 2017-18, FTE enrollment in Idaho rose when the first cohort of direct admissions students entered college in fall 2016. Enrollments grew 0.71% in 2016-17 and an additional 0.85% in 2017-18, up 826 students (1.57%) since 2015-16.

Applications to public community colleges and universities across the United States have risen consistently since 2010-11, up a cumulative 29,813 (32.2%) in 2017-18. Idaho's application counts have risen dramatically across the same time horizon, up by 5,512 (45.14%) since 2010-11. Idaho did, however, have two years where applications declined (2012-13 and the year immediately prior to direct admissions, 2015-16). Direct admissions started in 2016-17 and *Apply Idaho* started in 2017-18. Applications in Idaho remained relatively flat across the implementation of direct admissions, though they declined slightly, and the state again saw an increase in applications for the 2017-18 academic year (up 2,316or 15.0%), likely following the introduction of *Apply Idaho*.

Outcome trends for Idaho are plotted in Figure 5, which shows Idaho compared to all other states in the nation, states contiguous to Idaho (i.e., Montana, Nevada, Oregon, Utah, Washington, and Wyoming), and states in the Great Lakes (i.e., Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin) region. The shaded band highlights the year prior to direct admissions (2015-16) and the years following implementation, where outcome changes could be expected. X-axis labels correspond to the fall start of an academic year (e.g., 2010 = 2010-11) and Y-axis labels are the number of individuals for each outcome (indicated by each plot's title).

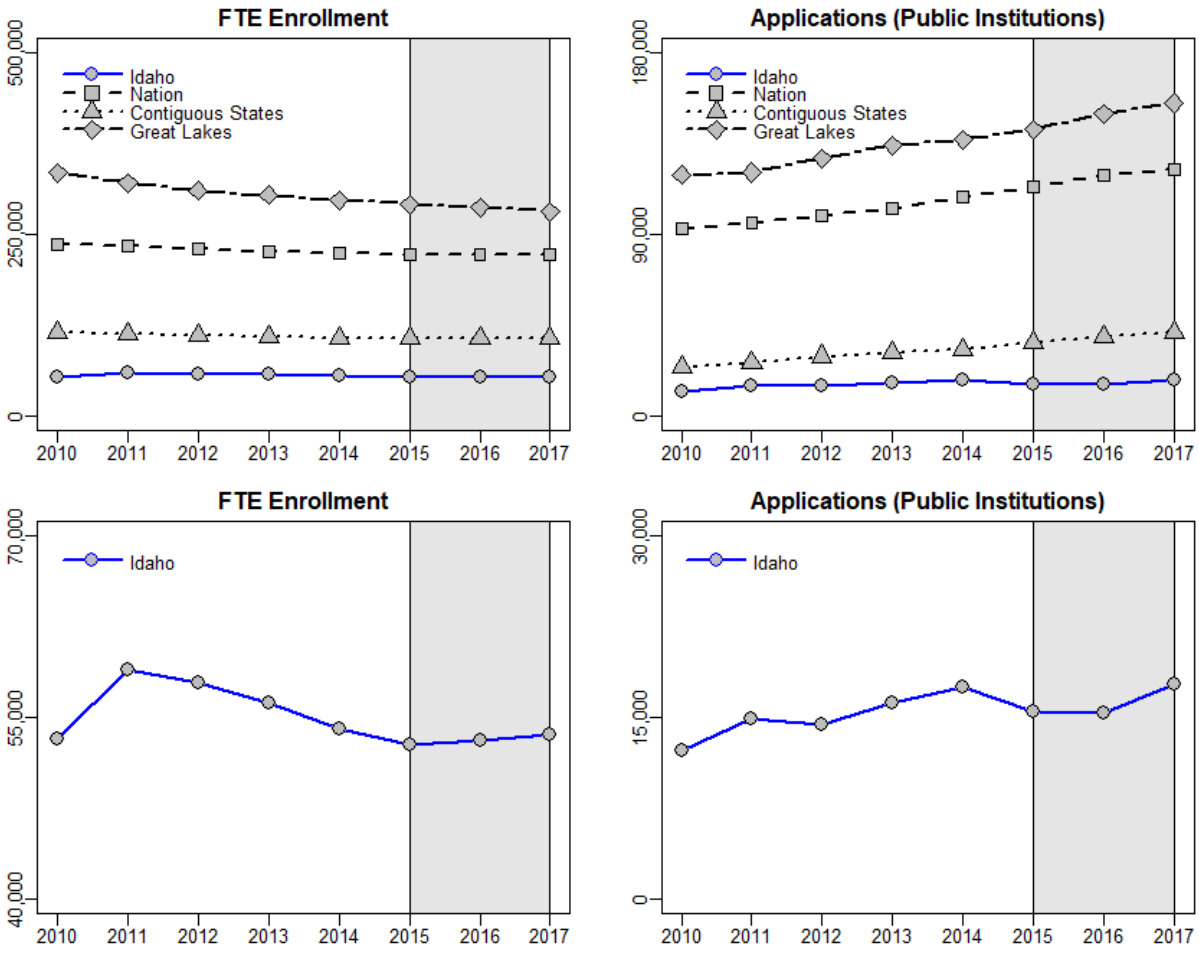

Figure 5. *State-level outcome trends for Idaho and comparison groups*.

Table 4 reports descriptive statistics for the state-level models' covariate controls. Our models use financial (net tuition revenue and state appropriations for higher education), economic (Gini coefficient—a measure of income inequality—and unemployment rate), and both demand- and supply-side (educational attainment and the K-12 high school senior population) control factors associated with college-going behaviors. Any financial variables have been adjusted to the Consumer Price Index (2018), allowing comparability over time. Compared to the nation as a whole, Idaho has substantially lower average tuition revenue and nominal state appropriations for higher education. Additionally, Idaho has a lower unemployment rate and a greater level of income equality. The proportion of Idaho's working-age population (age 25+) who have earned a high school diploma or greater is higher than the national average, but, as previously noted, the state's postsecondary attainment rates are lower. Idaho also has an unsurprisingly smaller K-12 population than the national average.

Table 4. *Descriptive statistics for state-level models.*

	Idaho	United States
Net Tuition Revenue ($1M)	216.00	1,413.17
	(23.76)	(1,215.30)
State Appropriations ($1M)	416.51	1,651.74
	(42.64)	(2,051.22)
Gini Coefficient	0.44	0.46
	(0.01)	(0.02)
Unemployment Rate	5.83	6.32
	(2.17)	(2.16)
High School Attainment (%)	89.69	88.29
	(0.87)	(3.16)
BA Attainment (%)	25.84	29.24
	(1.04)	(5.09)
High School Sr. Population	19,909.75	70,731.78
	(785.72)	(83,598.49)

Source(s): American Community Survey, Bureau of Labor Statistics, Common Core of Data, and State Higher Education Executive Officers Association.
Note(s): Academic years 2010-11 through 2017-18; Table reports means and standard deviations (in parentheses); Figures rounded to hundredths; Financial predictors scaled by $1M and inflation adjusted to CPI (2018).

Estimates from state-level models of the effect of direct admissions on FTE enrollment and applications are presented in Table 5, comparing outcome changes in Idaho to changes in states across the nation. After controlling for financial, economic, and both demand- and supply-side factors associated with college-going behavior, it is estimated that direct admissions increased FTE enrollment at public community colleges and universities in Idaho by approximately 6,285 students ($p \leq .05$). Idaho's pre-direct admissions average FTE enrollment (from 2010-11 through 2015-16) was nearly 55,507. A growth of this magnitude equates to an 11.32% increase in FTE enrollment. Other factors associated with FTE enrollment included state appropriations ($p \leq .05$) and statewide unemployment rates ($p \leq .05$). The full model, including two-way state and year fixed effects, suggest a 1-percentage point increase in the unemployment rate was associated with almost 4,000 additional students enrolling in postsecondary education.

State-level models also suggest an effect of direct admissions on college application behaviors. As previously noted, though applications to public community colleges and universities in Idaho rose in 2017-18, application numbers fell consistently from 2014-15 through 2015-16 and into the first year of direct admissions (2016-17). During this time, applications to public institutions across the United States continued to rise, increasing the mean difference between Idaho and the nation. Idaho's 15% increase in aggregate applications from 2016-17 to 2017-18, however, is positive and likely the result of the *Apply Idaho* launch, although we will be able to test this more accurately in

the future with more years of available data. In this model, however, we estimate direct admissions reduced the federal count of applications by over 6,400 ($p \leq .05$). It is also possible that the *Apply Idaho* system actually received more applications, but those applications do not definitionally qualify for inclusion in the federal data. Increased state appropriations were associated with increased applications to college ($p \leq .001$) in Idaho.

Table 5. *State-level difference-in-differences estimates of the effect of direct admissions*.

	FTE Enrollment		Applications	
Direct Admissions (Treat x Post)	4,674.00	**6,831.67***	-17,499.00	**-6,417.68***
	(215,337.00)	(3,020.97)	(126,582.00)	(3,076.50)
Net Tuition Revenue ($1M)		-5.54		76.50**
		(11.70)		(28.51)
State Appropriations ($1M)		9.39***		72.05***
		(2.51)		(12.03)
Gini Coefficient		-73,987.30		54,571.06
		(82,531.35)		(125,599.27)
Unemployment Rate		3,988.19*		-796.90
		(1,496.99)		(1,081.83)
High School Attainment (%)		1,948.00		92.50
		(1,496.99)		(1,594.11)
BA Attainment (%)		-1,465.92		-2,046.70
		(1,126.93)		(1,770.42)
High School Sr. Population		0.72		-0.23
		(0.75)		(0.43)
State & Year Fixed Effects	N	Y	N	Y
Adjusted R^2	0.001	0.999	0.002	0.992
N	400	400	400	400

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$
Source(s): American Community Survey, Bureau of Labor Statistics, Common Core of Data, Integrated Postsecondary Education Data System, and State Higher Education Executive Officers Association.
Note(s): Counterfactual group includes entire national sample; Academic years 2010-11 through 2017-18; Table reports coefficients and robust standard errors clustered at the state level (in parentheses); Figures rounded to hundredths; Financial predictors scaled by $1M and inflation adjusted to CPI (2018).

In summary, the state-level models show significant impacts on enrollment and applications. However, more years of data may be necessary to fully understand the effect of direct admissions on applications.

Difference-in-Difference: Institution-Level Models

The second set of models ("institution-level") presented compare outcome changes by institution in Idaho to changes across institutions using an example Midwestern state, Illinois. Outcomes and

control variables are at the college-by-year level. All data come from IPEDS and encompass 1,510 postsecondary institutions.[16]

At the institutional level, models focus on exploring changes in the enrollment of undergraduate students generally, but also further consider these changes across geographic, socioeconomic, and racial contexts. The first primary outcome of interest is undergraduate enrollment, a count of all students enrolled for credit each fall at the baccalaureate level and below. This outcome is similar to the often-reported *headcount* and will capture changes to the overall size of institutions' student bodies.[17] The remaining three outcomes consider demographic changes to institutions' entering cohorts of undergraduate students. Outcome two (in-state students) counts the number of first-time, degree-seeking undergraduates who reside in the same state as the institution to capture changes in college-going behavior, as well as out-of-state migration. Outcome three (percent Pell) reports the proportion first-time, full-time students who received a federal need-based Pell grant to capture changes in the enrollment of low-income students. Outcome four (percent minority) considers changes in the racial composition of institutions' entire student bodies, reporting the proportion who are not White.[18] Table 6 presents outcome trends in these variables over time from academic year 2010-11 through 2016-17 (the most recent available year in IPEDS).

As previously observed in the state-level models, undergraduate enrollment has fallen consistently through 2016-17, including for institutions in Illinois—down a cumulative 17% (1,528 students) since 2010-11. Idahoan institutions exhibit the same sharp increase in enrollment from 2010-11 to 2012-13 (up 13.36%), then a general decline into 2015-16 (down 8.74% from 2012-13 to 2015-16). Following the implementation of direct admissions, however, institutions Idaho experienced an increase in undergraduate enrollment of 2.5% (204 students) from 2015-16 to 2016-17. At the same time, enrollment in Illinois continued to decline, down 272 students (3.52%).[19] This metric has consistently fallen in Illinois, down 8.18% (91 students) through 2016-17. The same trend was observed in Idaho (down 99 students or 10.22%) through 2015-16, but the number of in-state students rose after the adoption of direct admissions from 2015-16 to 2016-17 by 89 (10.23%).

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[16] Beginning with all postsecondary institutions in the United States, we limited the sample to degree-granting, public, two- and four-year institutions who have first-time, full-time undergraduates and do not exclusively operate programs via distance education. Any missing data from campuses were linearly interpolated so long as at least two years of data were present across the time horizon. Any remaining cases with missing outcomes or covariate controls were removed from the sample (n=70).

[17] The headcount measure is an academic year count of all undergraduate students enrolled in for-credit courses (including for dual-enrollment) at the institution, whereas the undergraduate enrollment measure is a fall count of only students enrolled in a 4- or 5-year bachelor's degree program, an associate degree program, or a vocational or technical program.

[18] It is important to note this category includes students who are Black/African American, Hispanic, Asian, Native American, Pacific Islander, multiracial, and students whose race is unknown. While disaggregating this group would be preferable, Idaho's student population is approximately 74 percent White, leaving very small counts of students who fit into other racial categories, which might not produce reliable results in a statistical model.

[19] Data on in-state student counts for first-time students were not collected until the 2013-14 academic year.

The proportion of low-income (Pell) students has consistently declined across the nation and in both Idaho and Illinois, down a cumulative 7.8 percentage points in Idaho and 4.5 percentage points in Illinois compared to 2010-11. Conversely, the proportion of undergraduates who are racial minorities has risen in each state, up 3.5 percentage points in Idaho since 2011-12 (following a one-year decline of 4.1 percentage points) and up 5.3 percentage points in Illinois since 2010-11.

Outcome trends for Idaho using three comparison groups—all institutions in the nation, institutions in contiguous states, and institutions in Illinois—are plotted in Figure 6. Two observations should be noted here. The first is Idaho's general volatility in undergraduate enrollment. While an increase was observed in 2016-17 following direct admissions, this change appears to be consistent with increases and decreases since 2012-13. The second observation concerns Idaho's general decline then sharp increase in the number of in-state undergraduate students. This trend is similar to that of Illinois, but counter to national and contiguous comparison groups. In both of these cases, it is likely volatility in Idaho's high school senior population (i.e., the available pool of future college students) that drives this volatility in enrollment.

Table 6. *Outcome trends for institutions in Idaho and Illinois by year*.

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
UG Enrollment							
Idaho	7,881	8,349	8,934	8,570	8,698	8,153	8,357
Illinois	8,988	8,862	8,540	8,366	8,083	7,732	7,460
In-State Students							
Idaho	-	-	-	969	888	870	959
Illinois	-	-	-	1,112	1,074	1,046	1,021
Percent Pell							
Idaho	55.2	56.9	56.2	53.6	52.2	48.1	47.4
Illinois	53.2	54.3	52.6	53.7	52.9	50.4	48.7
Percent Minority							
Idaho	26.1	22.0	22.5	23.8	24.2	25.1	25.5
Illinois	37.2	38.6	39.6	40.3	41.2	42.2	42.5

Source(s): Integrated Postsecondary Education Data System.
Note(s): Table reports means by year for colleges in Idaho and in Illinois; Figures rounded to tenths; Data on the number of first-time, in-state students was not collected by IPEDS until 2013-14; UG enrollment represents undergraduate enrollment; In-state students covers first-time undergraduates who are classified as in-state students; Percent Pell covers first-time, full-time undergraduate students who received a federal Pell grant; Percent racial minority covers undergraduate students who are not White; The first year of direct admissions was 2016-17.

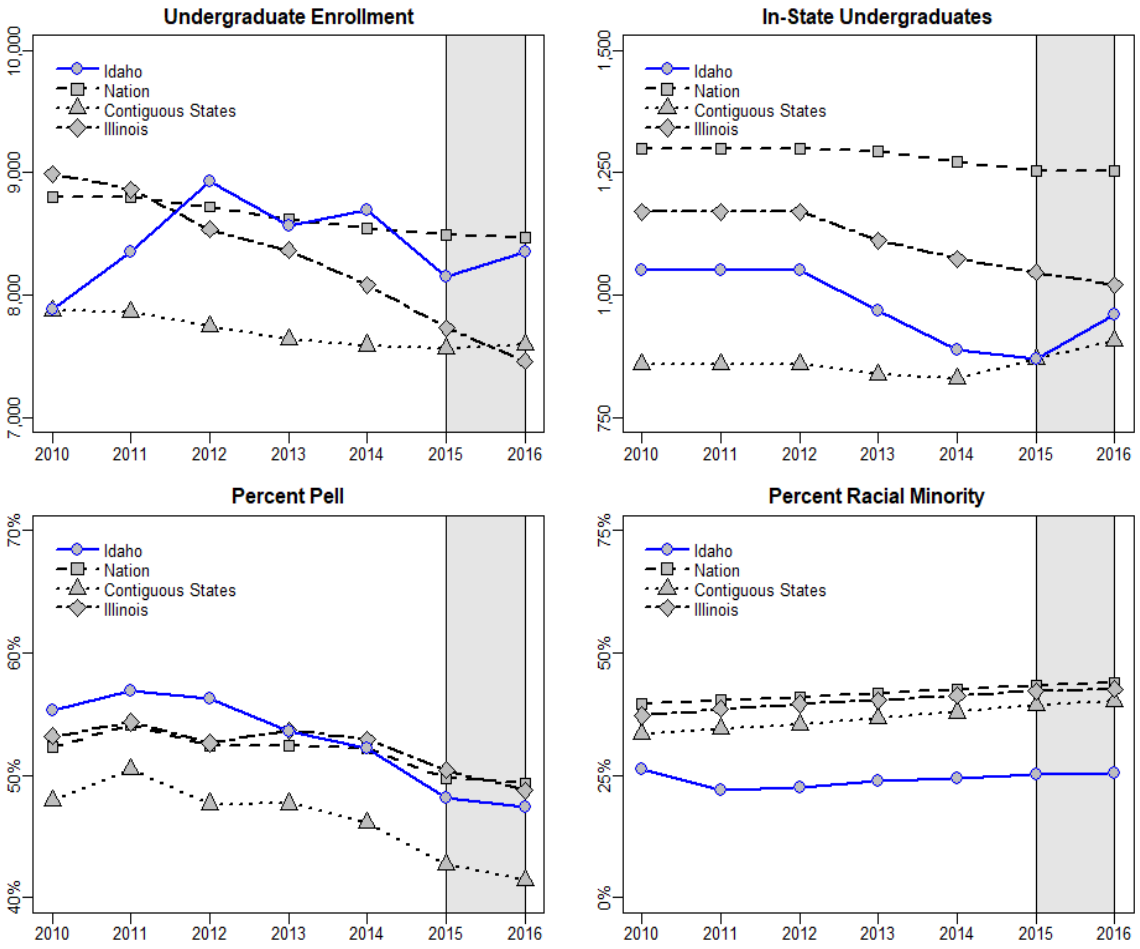

Figure 6. *Institution-level outcome trends for Idaho and comparison groups*.

Figure 7 plots Idaho's undergraduate enrollment and high school senior population over time. Across each year, changes in the size of the graduating class and postsecondary enrollment levels are visually related. Immediately prior to direct admissions, the decline in enrollment from 2014-15 to 2015-16 corresponded with a large decline in the high school senior population. Similarly, the enrollment gains of 2016-17 corresponded to larger high school graduating classes in 2016. While changes in enrollment outcomes could be influenced by direct admissions, it is also likely that the state's high school senior class size influences its undergraduate enrollment figures to a great extent.[20]

[20] Given the large population of members of The Church of Jesus Christ of Latter-Day Saints in Idaho, this volatility in the high-school senior classes may be driven by changes in Church policy concerning students' specialized training and service (mission) requirements. This feature of Idaho's population would not be well-captured in the statistical model.

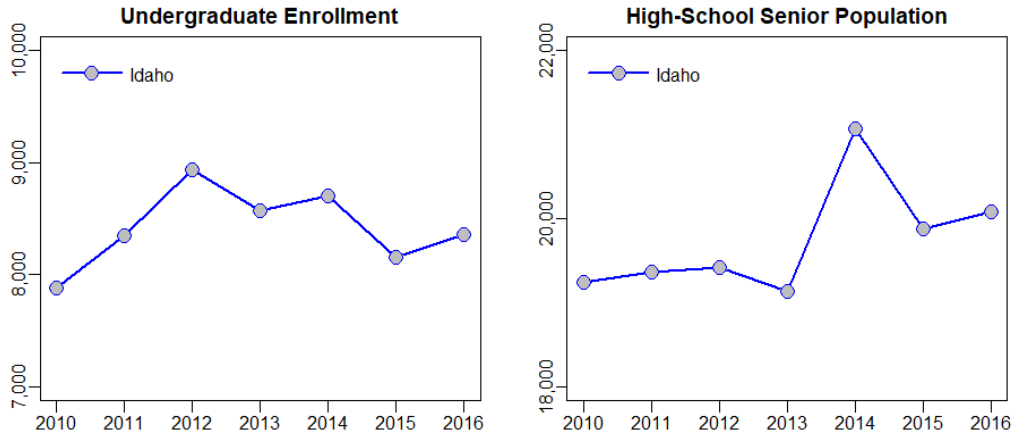

Figure 7. *Idaho's undergraduate enrollment and high school senior population over time*.

Table 7 reports descriptive statistics for the institution-level models that use covariate controls. Factors associated with college enrollment were retrieved from IPEDS, including institutional tuition and fee rates, state appropriations, spending on scholarships, and graduation rates (150% time). Financial variables were inflation-adjusted to the Consumer Price Index (2017). Compared to the state of interest (i.e., Illinois), institutions in Idaho have lower average tuition and fee rates, and spend less on average for scholarships and fellowships. Idaho's average state appropriations per institution are higher than those in Illinois, as are Idaho's graduation rates, likely given Illinois' 48-unit community college system (compared to only four community colleges in Idaho).

Table 7. *Descriptive statistics for institution-level models.*

	Idaho	Illinois
Tuition and Fees	4,737.71	5,002.36
	(1,900.71)	(3,433.23)
State Appropriations ($1M)	46.29	24.96
	(42.26)	(51.15)
Scholarships ($1M)	10.35	11.49
	(9.56)	(26.99)
Graduation Rate	32.52	30.52
	(15.17)	(16.98)

Source(s): Integrated Postsecondary Education Data System.
Note(s): Academic years 2010-11 through 2016-17; Table reports means and standard deviations (in parentheses); Figures rounded to hundredths; State appropriations and scholarship spending scaled by $1M; Financial predictors inflation adjusted to the Consumer Price Index (2017).

Estimates from institution-level models of the effect of direct admissions on the outcomes of interest are presented in Table 8, comparing outcome changes at institutions in Idaho to institutions in Illinois. After full covariate controls and college and year fixed effects, it is estimated that direct

admissions increased undergraduate enrollment at public community colleges and universities in Idaho by approximately 929 students ($p \leq .01$) and increased the number of in-state undergraduate students by nearly 101 ($p \leq .10$). Prior to direct admissions, the average undergraduate enrollment count in Idaho was approximately 8,431 (from 2010-11 through 2015-16). An increase of 929 students equates to an 11.02% increase. Similarly, Idaho's pre-policy average of in-state students was 909, equal to an 11.09 % increase. Other factors associated with undergraduate and in-state enrollment included institutional spending on scholarships and graduation rates. The institution-level models did not suggest an effect of direct admissions on the proportion of undergraduate students who were awarded Pell grants or were from racial minority groups.[21] As noted, the proportion of Pell-eligible students has consistently fallen across the United States since 2010-11. Furthermore, though not statistically-linked to direct admissions, Idaho has increased the proportion of undergraduates who are racial minorities by 3.5 percentage points since 2011-12.

Table 8. *Institution-level difference-in-differences estimates of the effect of direct admissions*.

	Undergraduate Enrollment		In-State Undergraduates		Percent Pell		Percent Racial Minority	
Direct Admissions (Treat X Post)	894.06	**929.36****	81.70	**100.81**+	-2.24	-1.97	-1.15	-0.87
	(2,480.66)	(345.54)	(377.72)	(58.70)	(5.82)	(1.89)	(10.52)	(1.69)
Tuition and Fees		0.03		0.04		0.00		0.00
		(0.17)		(0.04)		(0.01)		(0.00)
State Appropriations ($1M)		3.25		0.36		-0.01		-0.01
		(3.83)		(1.20)		(0.02)		(0.01)
Scholarships ($1M)		83.54***		10.38*		0.25		0.11+
		(20.11)		(4.69)		(0.18)		(0.06)
Graduation Rate		11.35		3.95*		-0.09		-0.03
		(8.42)		(1.72)		(0.09)		(0.04)
College & Year Fixed Effects	N	Y	N	Y	N	Y	N	Y
Adjusted R^2	0.003	0.989	0.003	0.973	0.006	0.849	0.034	0.988
N	67	67	67	67	67	67	67	67

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$
Source(s): Integrated Postsecondary Education Data System.
Note(s): Counterfactual group includes public institutions in Illinois (n=59); Academic years 2010-11 through 2016-17; Table reports coefficients and robust standard errors clustered at the college level (in parentheses); Figures rounded to hundredths; State appropriations and scholarship spending scaled by $1M; Financial predictors inflation-adjusted to the Consumer Price Index (2017); In-state undergraduates covers first-time students who are classified as in-state students; Percent Pell covers first-time, full-time undergraduate students who received a federal Pell grant; Percent racial minority covers undergraduate students who are not White.

The final institution-level model focuses on changes in applications at the community college and university level. As previously noted, IPEDS collects and reports the number of applications

[21] In the first year of Direct Admissions, Idaho translated letters into Chinese and Spanish. The translated letters were posted on the Board of Education's website but were not very well utilized. A better system of providing those letters to non-English speaking families could help increase racial minority participation (Howell, 2019).

submitted for a given academic year by institution.[22] Table 9 presents outcome trends in these variables over time from academic year 2010-11 through 2016-17, and Figure 8 plots these changes over time. Across two- and four-year institutions in Idaho, Illinois, and other comparison groups, the annual number of college applications received has generally increased. Both Idaho and Illinois, however, have years of decreased applications. While applications in Illinois rose by 15.24% (1,669 applications) from 2010-11 to 2013-14, they have declined annually through 2016-17 (down 956 applications or 7.57%). Similarly, applications to institutions in Idaho rose in 2011-12, 2013-14, and 2014-15, but declined in 2012-13, 2015-16, and 2016-17 (the first year of direct admissions). From 2014-15 through 2016-17, college applications in Idaho have fallen by 697 (11.95%). In the first year of direct admissions, the average number of applications submitted to institutions in Idaho fell 0.21% (11 applications).

Table 9. *Application trends for institutions in Idaho and Illinois by year*.

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Applications							
Idaho	4,070	4,974	4,813	5,383	5,833	5,147	5,136
Illinois	10,952	11,196	12,003	12,621	12,433	11,774	11,665

Source(s): Integrated Postsecondary Education Data System.
Note(s): Table reports means by year for colleges in Idaho and in Illinois; Figures rounded to hundredths; The first year of direct admissions was 2016-17.

[22] There is a high degree of missingness in application counts by campus. Though liner interpolation aided in preserving sample size, the final number of institutions in this set is 521, including 3 in Idaho and 11 in Illinois. The Idaho institutions include Boise State University, Lewis-Clark State College, and the University of Idaho. The Illinois institutions include Chicago State University, Eastern Illinois University, Illinois State University, Northeastern Illinois University, Northern Illinois University, Southern Illinois University-Carbondale, Southern Illinois University-Edwardsville, University of Illinois Chicago, University of Illinois Springfield, University of Illinois Urbana-Champaign, and Western Illinois University.

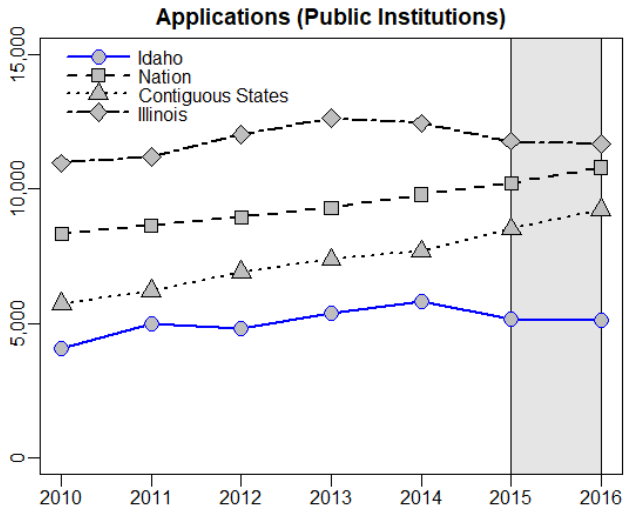

Figure 8. *Application trends for Idaho and comparison groups*.

Table 10. *Institution-level difference-in-differences estimate of the effect of direct admissions on applications.*

	Applications	
Direct Admissions (Treat x Post)	264.00	-562.91
	(5,495.20)	(911.96)
Tuition and Fees		-0.84
		(0.51)
State Appropriations ($1M)		13.34
		(12.20)
Scholarships ($1M)		140.14
		(95.15)
Graduation Rate		85.71
		(60.51)
College & Year Fixed Effects	N	Y
Adjusted R^2	0.088	0.962
N	98	98

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$
Source(s): Integrated Postsecondary Education Data System.
Note(s): Counterfactual group includes public institutions in Illinois (n=11); Academic years 2010-11 through 2016-17; Table reports coefficients and robust standard errors clustered at the college level (in parentheses); Figures rounded to hundredths; State appropriations and scholarship spending scaled by $1M; Financial predictors inflation adjusted to the Consumer Price Index (2017).

In the difference-in-difference institution-level models as shown in Table 10, we do not find significant effects on applications.

Generalized Synthetic Control Method: State-Level Models

Trend plots for the state-level outcomes of interest—enrollment and applications—are presented in Figure 9. The Treated (black) line represents outcomes in Idaho and the blue line represents a synthetic Idaho that did not implement direct admissions. The shaded area represents years in which direct admissions was active in Idaho. As seen by the FTE enrollment plot, Idaho's expected outcome is higher than its actual outcome, suggesting direct admissions may have had either no effect or even a negative effect on enrollment, though these plots do not test statistical significance of these outcome differences. The applications plot suggests aggregated applications in the state closely matched those of the synthetic weighted peer group both before and after the implementation of direct admissions, indicating that direct admissions may not have had a substantial effect on application behaviors.

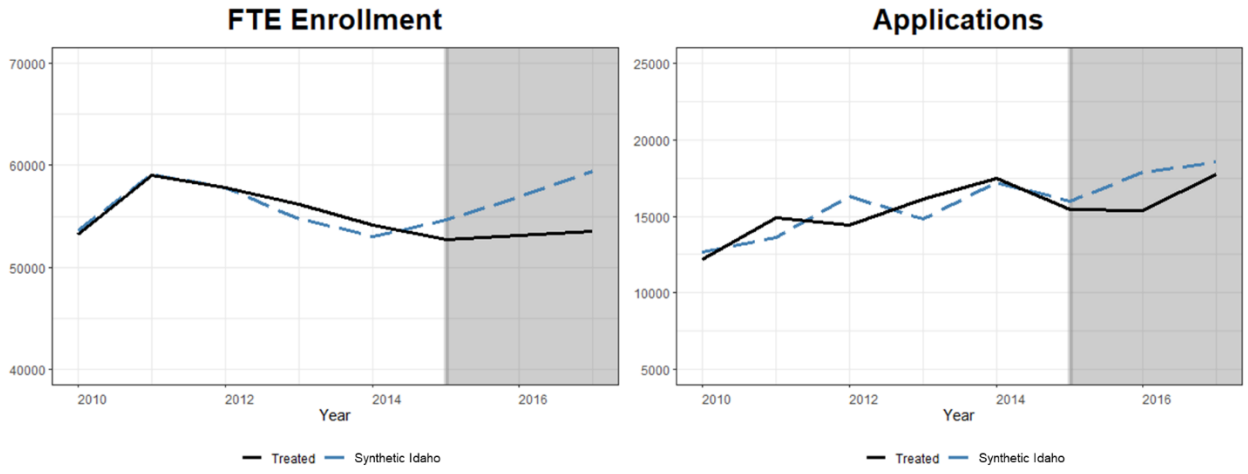

Figure 9. *State-level synthetic control counterfactual plots*.

Results for state-level models estimating the effect of direct admissions on FTE enrollment and aggregated applications to college are presented in Table 11. After incorporating full covariate controls and two-way state by year fixed effects, the treatment effect estimates for neither outcome reached statistical significance. As with prior models, the synthetic control estimates suggest state appropriations, net tuition revenue, and the high school senior population are related to FTE enrollment. Similarly, the high school senior population was significantly related to applications.

Table 11. *State-level synthetic control estimates of the effect of direct admissions*.

	FTE Enrollment	Applications
Direct Admissions	-4,853.00	-1,862.00
	(9,776.00)	(23,899.00)
Net Tuition Revenue ($1M)	-17.51**	7.82
	(5.82)	(5.10)
State Appropriations ($1M)	9.21+	3.41
	(2.50)	(2.89)
Gini Coefficient	9,235.56	46,580.13
	(66,880.00)	(56,900.00)
Unemployment Rate	1,450.28	-884.62
	(915.40)	(935.30)
High School Attainment (%)	742.21	-237.54
	(990.00)	(867.40)
BA Attainment (%)	-405.03	-26.31
	(708.40)	(674.50)
High School Sr. Population	-0.85*	1.36**
	(0.30)	(0.28)
State × Year Fixed Effects	Y	Y

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$
Source(s): American Community Survey, Bureau of Labor Statistics, Common Core of Data, Integrated Postsecondary Education Data System, and State Higher Education Executive Officers Association.
Note(s): Academic years 2010-11 through 2017-18; Table reports coefficients and standard errors (in parentheses); Figures rounded to hundredths; Financial predictors scaled by $1M and inflation adjusted using the Consumer Price Index (2018); Estimate for Direct Admissions was produced in the Average Treatment Effect on the Treated (ATT) framework.

In all, these findings do not support an effect of direct admissions on state-level FTE enrollment or students' aggregated application behaviors. As previously noted, however, FTE enrollment descriptively rose following the implementation of direct admissions, as did applications to Idaho's public colleges and universities. It is also likely that with more years of data, we would be able to take a more accurate look at the effects of direct admissions in Idaho. In addition, because only three institutions in Idaho report application data, it is possible that different results would be found if it was possible to use a larger sample, ideally one with all of the institutions in Idaho reporting.

Generalized Synthetic Control Method: Institution-Level Models

Because available data on applications only exist for one year following direct admissions, and because only three institutions in Idaho present with application data across the longitudinal panel due to systematic missingness, the institution-level synthetic control models focus only on enrollment outcomes. These outcomes include:

- total undergraduate enrollment,
- in-state, undergraduate student enrollment,
- the proportion of first-time students who are Pell eligible (i.e., low income), and
- the percent of undergraduate students who are from racial minority groups.

Trend plots for the institution-level outcomes of interest are presented in Figure 10. As seen by the undergraduate enrollment plot, enrollment at Idahoan institutions increased following the implementation of direct admissions—but to a level below that expected given the synthetic control group. Similarly, while enrollment did increase across the policy implementation horizon, enrollment declined sharply before policy implementation. Outcome trends for in-state student enrollment suggest direct admissions may have significantly increased the number of in-state students at Idahoan colleges and universities, given the sharp increase following the policy and the continued decline across the counterfactual group. The proportion of first-time, full-time undergraduate students eligible for Pell grants (i.e., low-income students) in Idaho's colleges and universities followed a similar trajectory to the weighted comparison group after direct admissions, indicating a likely statistically insignificant effect. Finally, Idaho's institutions increased the share of students that are from racial minority groups during a time when their weighted counterfactual peers experienced a sharp decline. In all, the plots suggest direct admissions may have significantly increased enrollment of in-state and racial minority students.

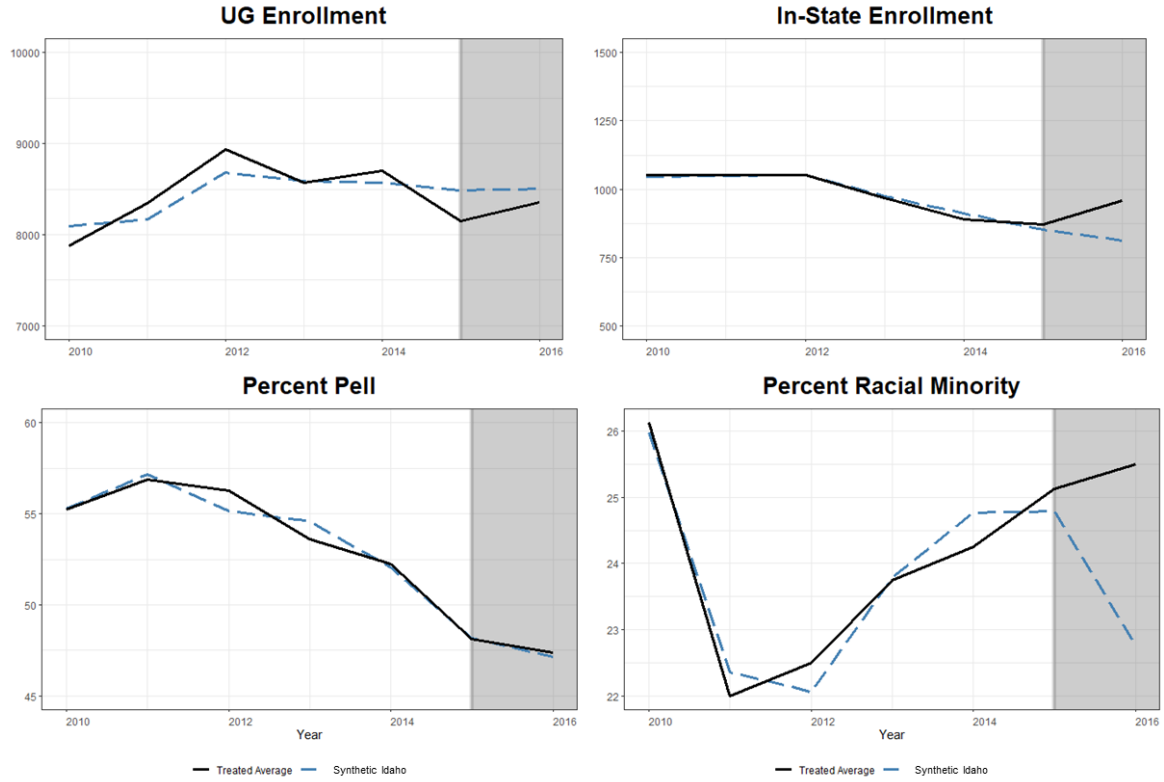

Figure 10. *Institution-level synthetic control counterfactual plots*.
Note: Data on in-state enrollments were not collected until 2013-14.

Results for institution-level models estimating the effect of direct admissions on FTE enrollment are presented in Table 12. After incorporating full covariate controls and two-way state by year fixed effects, the synthetic control models do not suggest significant effects of direct admissions on institutional undergraduate enrollment or enrollment shares of low-income (i.e., Pell) or racial minority students. However, the models do suggest that direct admissions was related to a statistically-significant increase in the enrollment of in-state, undergraduate students at Idahoan institutions. The estimate of 148 students ($p \leq .10$) is equal to a 16.3% increase. It is important to note that across all synthetic models in Table 12, institutional spending on scholarships was significantly related to student enrollment, as were tuition and fee rates for undergraduate and Pell students and state appropriations for overall undergraduate enrollment.

In all, estimates from the institution-level synthetic control models do provide evidence that direct admissions increased in-state student enrollment following implementation. While the enrollment of undergraduate, Pell-eligible, and minority undergraduate students descriptively rose across Idaho's colleges and universities following the implementation of direct admissions, these models do not provide evidence of a statistically significant relationship.

Table 12. *Institution-level synthetic control estimates of the effect of direct admissions.*

	Undergraduate Enrollment	In-State Undergraduates	Percent Pell	Percent Racial Minority
Direct Admissions	**-149.50**	**147.50+**	**0.23**	**2.75**
	(645.40)	(94.33)	(2.04)	(4.25)
Tuition and Fees	0.09*	-0.00	-0.00*	-0.00
	(0.05)	(0.01)	(0.00)	(0.00)
State Appropriations ($1M)	11.06***	0.25	-0.00	0.01
	(2.47)	(0.20)	(0.01)	(0.00)
Scholarships ($1M)	45.89***	2.42***	0.05*	0.02*
	(5.15)	(0.48)	(0.02)	(0.01)
Graduation Rate	1.30	-0.21	-0.03+	-0.02
	(2.39)	(0.32)	(0.01)	(0.01)
College × Year Fixed Effects	Y	Y	Y	Y

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$
Source(s): Integrated Postsecondary Education Data System.
Note(s): Academic years 2010-11 through 2016-17; Table reports coefficients and standard errors (in parentheses); Figures rounded to hundredths; State appropriations and scholarship spending scaled by $1M; Financial predictors inflation-adjusted to the Consumer Price Index (2017); In-state undergraduates covers first-time students who are classified as in-state students; Percent Pell covers first-time, full-time undergraduate students who received a federal Pell grant; Percent racial minority covers undergraduate students who are not White. Estimate for Direct Admissions was produced in the Average Treatment Effect on the Treated (ATT) framework.

Summary

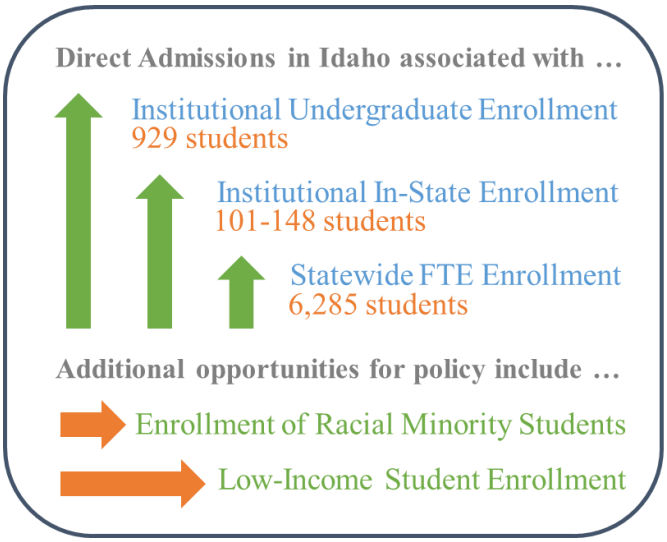

Figure 11. *Summary of findings and policy opportunities*.

A summary of findings across the difference-in-differences and synthetic control models is included in Figure 11. In all, Idaho's implementation of direct admissions was associated with a statistically significant increase in undergraduate enrollment of 929 students (11.02%; $p \leq .01$) at the institutional level, as well as institutional increases in in-state enrollment between 101 and 148 students (11.09-16.3%, $p \leq .10$). Similarly, direct admissions was associated with a statistically-significant, statewide increase in FTE enrollment of 6,285 students (11.32%, $p \leq .10$). It was hypothesized that direct admissions would also influence the application behaviors of students, the proportion of entering classes that are Pell-eligible (i.e., low-income), and the racial composition of institutions' undergraduate student bodies. However, results from our models do not suggest direct admissions directly influenced these outcomes other than in a descriptive way. In all, these findings suggest direct admissions may be a low-cost and effective mechanism to increase institutional and statewide enrollment in postsecondary education, particularly for in-state students.

Translating Direct Admissions to Midwestern States

This section considers the translation of direct admissions to states within the Midwestern region and describes the development of statistical models by the Research Team to approximate potential impacts of policy adoption across the region and in a select group of states.

Idaho differs from the rest of the nation on many observable and unobservable factors, including its college-going rate and education governance structure. For example, consider differences between Idaho and Illinois, Idaho has 8 public institutions compared to 60 in Illinois and serves over 106,000 undergraduate students annually compared to nearly 450,000. To the fullest extent possible, these factors were controlled for within the quasi-experimental estimation strategies used to estimate the effect of direct admissions in Idaho. The nominal values from significant findings from these estimates, however, should not be taken as expected outcomes in other states since there are important differences in magnitude across state settings.

Descriptive Estimates

Given observed changes in Idaho, it is likely other states would see positive increases in students' college-going behavior. Potential outcomes for Great Lakes states include:

- Increasing postsecondary applications and enrollment,
- Reducing gaps in access by race, socioeconomic status, and geography, and
- Leveraging community college systems to expand postsecondary access.

Important implications for a direct admissions policy do not only include the short-term goals of college enrollment, but also long-term influences on regional and state economies, including the educational attainment rate of a state's working-age population and the proportion of jobs in a given region that require a college credential.

For example, the observed increase in statewide FTE enrollment in Idaho of 11.32% represented nearly 6,300 students. A comparable increase in Michigan, however, would represent over 46,000 students, and in Wisconsin, over 25,700 students. Taking the findings from this report, a summary of these possible effects is detailed in Table 13, which shows possible enrollment outcome changes across the Great Lakes region and its states for each outcome estimated to have been positively influenced by direct admissions. For example, were the Great Lakes region to adopt direct admissions and experience comparable proportional increases to statewide FTE enrollment as Idaho, each state could expect to see an average FTE increase of over 35,000 students, ranging from 46,592 students in Ohio to 23,289 students in Minnesota. The cumulative increase in FTE enrollment across the region would be just over 210,400 students. Similarly, public institutions operating within the Great Lakes states could experience an average increase in undergraduate

enrollment of more than 960 students (11.02%) *per institution*, representing nearly 6,500 new undergraduate students in aggregate.

Table 13. *Possible state- and institution-level effects with adoption of direct admissions at modeled effect sizes*.

		Estimated Effect	Average Possible Effect							Total
			Great Lakes	Illinois	Indiana	Michigan	Minnesota	Ohio	Wisconsin	
State	FTE	11.32%	35,069	41,639	27,069	46,080	23,289	46,592	25,743	**210,412**
Institution	UG	11.02%	963	929	1,980	1,119	622	888	951	**6,489**
	In-State	11.09%	138	125	327	166	78	133	133	**962**
		16.30%	203	183	481	244	114	196	195	**1,413**

Source(s): Integrated Postsecondary Education Data System and the State Higher Education Executive Officers Association.
Note(s): Authors' calculations; Table identifies estimated effect from difference-in-differences and synthetic control models and extrapolates potential outcomes given pre-treatment period (2010-11 through 2015-16) means by region/state; FTE is an estimated average statewide (or regional) effect, while UG Enrollment and In-State Enrollment are per-institution effects; Total is aggregated across the Great Lakes states; Figures rounded.

Generalized Additive Modeling

The goal of a generalized additive model is not to *explain* a phenomenon in the causal-inference framework, but to fit observed data as closely as appropriate to identify how changes in those observations may be related to the outcome in question.

The results from the generalized additive model are presented in Table 14 for the Great Lakes region in total, as well as for the states of Illinois and Minnesota. The models suggest the Great Lakes states, on average, could have increased FTE enrollment by 9,400 students ($p \leq .05$) using a direct admissions system. This average, per-state increase equates to a 3.03 % increase in FTE enrollment. Similarly, under direct admissions, Illinois could have increased FTE enrollment by nearly 28,400 students, or 7.72% ($p \leq .01$). For statewide aggregated applications to college, the additive model identified significant effects for Illinois and Minnesota in this example. Under these conditions, Illinois might have increased applications by almost 6,050 (4.62%, $p \leq .10$), and Minnesota by over 13.06% (nearly 10,800 applications, $p \leq .10$).[23]

Given the possibility to positively increase statewide FTE enrollment and college applications, as well as in-state and undergraduate student enrollment, through a direct admissions policy, the

[23] It is also important to note each model performed well (i.e., achieved good fit), with parametric and non-parametric coefficients in the FTE model accounting for 99.9% of deviance in outcomes of Great Lakes states; the applications model covered 99.6% of deviance.

diffusion of direct admissions policies to Midwestern states holds strong potential for states and their students.

Table 14. *Generalized additive modeling estimates of potential effects of direct admissions in selected regions/states*.

	FTE Enrollment	Applications
Great Lakes	**9,400.39***	-1,458.56
	(4,432.67)	(5,313.50)
Illinois	**28,388.81****	**6,041.93+**
	(5,135.20)	(2,757.12)
Minnesota	-2,823.35	**10,768.20+**
	(2,412.63)	(4,703.69)

+ $p \leq .10$; * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$
Source(s): American Community Survey, Common Core of Data, Integrated Postsecondary Education Data System, and State Higher Education Executive Officers Association.
Notes(s): Tables reports coefficients (constant linear coefficients for the direct admissions indicator estimated by the generalized additive modeling fitting process) and standard errors (in parentheses) estimated using generalized additive models; Figures rounded to hundredths.

Public Policy Recommendations

This section provides salient public policy recommendations for states considering the adoption of direct admissions or related college-access policies and reflects on evidence generated in this report by the Research Team, as well as on prior research conducted in the field of higher education.

By 2020, 65% of all jobs will require some postsecondary credential, with 35% of all jobs requiring at least a bachelor's degree (Carnevale, Smith, & Strohl, 2013). Even in states where an individual can secure a "good job" without a bachelor's degree, the number of good jobs has fallen (Carnevale, Strohl, Cheah, & Ridley, 2017).[24] Though many state workforce economies have not fully recovered from the Great Recession,[25] 97% of all good jobs that are recovered or created across the nation go to college graduates (Carnevale, Jayasundera, & Gulish, 2015b). Further, the type of work available to the average American has changed: The number of good jobs in blue-collar occupations has held steady since 1991, while the number of skilled-service occupations (requiring a college credential or some form of postsecondary training) has grown by 3 million (Carnevale et al., 2017). Those good jobs for individuals who hold at least an associate degree have increased from 3.8 million to 7 million, while good jobs for the high-school-educated population have fallen from 15 million to 13 million (Carnevale et al., 2017). The lack of a more educated workforce has implications for local state economies and for national competitiveness in the global economy (Zumeta, Breneman, Callan, & Finney, 2012).

Despite a pressing need for a more educated workforce, the nation and its states are met with college educational attainment rates that have moved little across the last decade. With a need to have 65% of the working population (age 25-64) having attained some postsecondary credential, only 47.6% of Americans held at least a certificate in 2017, creating an "urgent and growing need for talent" (Lumina Foundation, 2019).

As drivers of postsecondary educational attainment, states have a unique opportunity to contribute to national and local economic improvements by ensuring more individuals apply to and enroll in institutions of higher education—and ultimately earn a credential. Education pays for individuals and their families, as well as for the states and communities in which they reside (Oreopoulous & Petronijevic, 2013). As previously noted, college-educated individuals earn higher nominal labor-market wages (Webber, 2014), realize more upward social mobility (Chetty et al., 2017), and are

[24] The Georgetown Center on Education and the Workforce defines a "good job" as one that pays at least $35,000 annually ($17 per hour, consistent with living-wage levels) for individuals under age 45 and $45,000 ($22 per hour) for individuals age 45 and older. The median pay for these jobs is $55,000 annually.
[25] As of 2015, the nation had still not recovered approximately 6 million jobs (Carnevale, Jayasundera, & Gulish, 2015a).

more likely to be employed and contribute higher-shares toward state tax revenues (Abel & Deitz, 2014). Graduates are also more likely to be more civically engaged, less likely to be incarcerated, and more likely to contribute to charitable causes (Trostel, 2015), and individuals with any postsecondary education are less likely to rely on public assistance and more likely lead healthier lifestyles—directly reducing healthcare costs (Ma, Pender, & Welch, 2016). In all, a more educated populous is good for the nation and its states.

The federal government, states, and institutions have implemented a variety of mechanisms seeking to increase access, enrollment, and completion in public higher education, including through increased operating appropriations and financial aid, tuition-free ("promise") programs, tax credits and deductions for individuals, targeted college-going support and information for students, academic preparation or coaching, "nudges," and more (Page & Scott-Clayton, 2016). Just as most American families face growing financial constraints (Kavanaugh, 2019; Pew, 2015), states' need to invest in postsecondary education come at a time of pressing budget challenges (Finney, 2014). Unfunded pension costs, Medicaid, K-12 education, corrections, and debt service represent growing state-budget concerns (National Association of State Budget Officers, 2019), with many states facing budget deficits (Pew, 2019). While continued support to institutions by way of appropriations and to students by way of financial aid or tuition-control measures are required, states also need new, innovative, yet low-cost mechanisms to increase postsecondary access and attainment.

Any strategy to increase educational attainment must also reflect the growing diversity of the American populous. While one-fifth of all states have lost population since 2016 (Frey, 2018a), coming generations are increasingly low-income and comprised predominately of families of color (Frey, 2018b). Within the next three decades, Asian, Hispanic, and multi-racial populations in the United States are expected to double (Frey, 2015), and the subpopulation expected to be the largest contributor to growth in the workforce (Hispanics) is also the least educated, on average, and earns the lowest wages of all racial groups (Chetty et al., 2017). States and their public institutions of higher education must identify low-cost mechanisms to increase postsecondary enrollment while ensuring identified mechanisms do not hold unintended consequences for low-income and racial minority students. Previous strategies, like merit-based aid or Top 10% admissions plans disproportionately benefit higher-income, White students (Cortes, 2010; Dynarski & Scott-Clayton, 2013).

Direct admissions is an exceptionally low-cost policy option, only requiring a state longitudinal data system and, if chosen, paper and postage for acceptance letters.[26] Further, evidence from the Research Team's evaluation of direct admissions in Idaho and application to Great Lakes states suggest the policy holds the potential to increase applications to public colleges and to improve

[26] Idaho has now begun the transition to electronic (e-mail) letters, further reducing the cost of direct admissions.

statewide FTE and in-state undergraduate enrollment. Direct admissions may not only sidestep the traditional admissions process by proactively admitting students to college, but may also eliminate many reasons why students do not apply, including onerous application forms, inconsistent admissions processes across institutions, considerable application fees, and a lack of transparent information for students and families (Page & Scott-Clayton, 2016). A proactive admissions system may also signal to students, parents, and K-12 schools that a postsecondary credential is attainable (Venezia & Jaeger, 2013), particularly for low-income and racial minority students who do not apply to or enroll in higher education at the same rates as their higher-income and majority peers (Hamrick & Stage, 2004; Institute of Education Sciences, 2018). In all, a direct admissions system is a viable, low-cost policy option to support college enrollment across racial, socioeconomic, and geographic contexts.

We offer four policy recommendations. Each of these recommendations is considered in detail below, given evidence generated in this report, as well as prior research conducted in the field of higher education.

States should consider direct admissions policies as effective and low-cost mechanisms to increase the enrollment of students in public higher education.

Evidence from our evaluation of Idaho's direct admissions policy and extrapolated models to Midwestern states suggests direct admissions as a broad education policy holds the potential to increase statewide FTE enrollment and college applications, as well as the enrollment of in-state and undergraduate students. Further, information from Idaho's adoption of direct admissions suggests the policy is an exceptionally affordable policy alternative, leveraging a statewide longitudinal data system and either posted or e-mailed acceptance letters.

The descriptive changes to students' college-going application and enrollment behaviors observed in Idaho following direct admissions, as well as the significant findings presented in this report are supported by prior research. Targeted information for students and families can improve college knowledge and influence subsequent enrollment (Bettinger, Long, Oreopoulous, & Sanbonmatsu, 2012; Castleman & Page, 2015). Additionally, in an experiment with elements of a direct admission system (where students, parents, and principals received personalized mailings encouraging students to apply to a selective institution), high-achieving, low-income students in one state applied to college at rates more than 2.5 times that of peers who did not receive the mailings (67% compared to 26%), and 27% enrolled in a selective institution compared to only 12% in the control group (Dynarski, Libassi, Michelmore, & Owen, 2018). For students who are low-income, first generation, from rural areas, and of color, these findings highlight the instrumentality of similar interventions on enrollment prospects. Finally, a study on Texas's

automatic admissions policy (Top 10%) showed reduced income-based inequalities by helping students better match to higher-quality institutions (Cortes & Lincove, 2019).

To date, Idaho has successfully implemented a direct admissions system, and, in fall 2017, South Dakota announced it would begin proactive admissions for the high school class of 2018 (Gewertz, 2017; South Dakota Department of Education, 2019). Other states are also considering direct admissions policies and variations of proactive admissions, including those in the Great Lakes region. Earlier this year, the Illinois state legislature enacted the *Public University Uniform Admission Act*, a law developing a pilot program to automatically admit high-performing Illinois high school graduates to a portion of the state's public institutions of higher education.[27]

States should explore policies related to direct admissions systems (*e.g.*, common applications), regardless of their decision to adopt direct admissions.

Even if a state is not administratively or politically able to adopt a complete direct admissions system, there are still relatively low-cost ways to increase students' college application and enrollment behaviors. One tool is the adoption of a statewide common application. A common application allows students to use a single application to apply to multiple institutions at once, thereby simplifying the college-application process and making it easier, faster, and more straightforward for students and families. Common applications may also encourage students to explore more postsecondary options—particularly at public institutions in their own state, reducing the odds a student goes out of state for college—and increase college choice options given the simplicity of the application process. An important component of common applications to increase access and equity is a fee-free application for students, further eliminating informational and financial constraints in the college-search process (Hoxby & Avery, 2013). To date, California, Idaho, Iowa, Texas, and Wisconsin offer state- or system-wide common applications, though none have adopted a fully fee-free application.[28]

Widely-used college admissions policies—like admissions staff recruiting, campus visits, and traditional college-access programs—are typically less effective at reaching low-income students (Hoxby & Turner, 2013). A common application that eliminates barriers to college admission (i.e., numerous applications across several webpages with separate deadlines, fees, and requirements) is likely transformational for at-risk student populations, including those who are low-income, first generation, from rural areas, and students of color. A study of the Common Application showed

[27] See Public Act 101-0448 (HB0026) of the 101st Illinois General Assembly for further detail. The uniform admission pilot program begins academic year 2020-2021.
[28] Apply Idaho was fee-free for in-state, immediate high-school graduates beginning fall 2017; For more information on common applications in these states, see Education Commission of the States (2016), Idaho State Board of Education (2019a), and University of California (2019).

institutions benefited from using a common application: Total applications increased by 5.7 to 7.0%, and, for some campuses, acceptance rates declined given increasing application numbers, which in turn increased institutional prestige (Liu, Ehrenberg, & Mrdjenovic, 2007). The Common Application was also associated with an increase in the percentage of students of color enrolling at Common Application institutions. Recent evidence also suggests institutional adoptions of a common application allowed campuses to attract more foreign and out-of-state students (Knight & Schiff, 2019). More research is needed on state- and system-wide common applications, but existing evidence suggests a simplification of the college admissions process benefits both institutions and students, particularly those from low-income and racial minority communities.

States should maintain their focus on the identification and adoption of policies seeking to increase the enrollment of low-income and racial minority students.

While available evidence from this report does not support the notion that the direct admissions system in Idaho increased the application and enrollment behaviors of low-income and racial minority students, this does not mean other states may not improve similar outcomes for these populations with a direct admissions system—or that states are without other policy alternatives to support low-income students and communities of color as they access public higher education. Not only is a focus on low-income and racial minority students a state imperative given pressing workforce needs, but public institutions (and state flagships, in particular) across the Great Lakes region have long-standing and *growing* gaps in socioeconomic and racial access (Peters & Voight, 2018).[29] Fortunately, a variety of empirically supported strategies are available given variation in states' political and fiscal capacities.

Long and Riley (2007) categorize students' barriers to access in three primary areas: financial constraints, informational constraints, and academic constraints. States should, therefore, focus on the identification and implementation of college-access strategies spanning these areas. **Need-based financial aid** and tuition subsidies increase enrollment (Long, 2008; Deming & Dynarski, 2009; Dynarski & Scott-Clayton, 2013). Further, need-based aid improves the likelihood students enroll in four-year institutions and ultimately complete a bachelor's degree (Castleman & Long, 2013), including students who are first-generation and low-income (Page, Castleman, & Sahadewo, 2016). In general, need-based aid programs are preferred to merit-based programs, whose benefits disproportionately accrue to higher-income students and may hold unintended consequences for student choice (Dynarski, 2000; Cohodes & Goodman, 2014). Similarly, emerging evidence suggests **place-based scholarship ("promise") programs** could support low-

[29] The states included in the analysis were Illinois (UI-UC), Indiana (IU-Bloomington), Michigan (UM-Ann Arbor), Minnesota (UM-Twin Cities), Ohio (The OSU), and Wisconsin (UW-Madison).

income, racial minority, and students who do not have access to other existing student financial aid programs. Nearly 550 promise programs operate across the nation (Perna & Leigh, 2018), and subsequent evaluations suggest these programs increase immediate college enrollment, postsecondary credit accumulation, and completion across a variety of social, state, and institutional contexts (see Andrews, DesJardins, & Ranchhod, 2010; Bifulco, Rubenstein, & Sohn, 2019; Carruthers & Fox, 2016; Carruthers, Fox, & Jepsen, 2018; Gurantz, 2019; Page, Iriti, Lowry, & Anthony, 2018).

Students face a complex maze in the college search and application process (Klasik, 2012), and many do not make rational decisions when deciding where to apply to or enroll in higher education (Smith, Hurwitz, & Howell, 2015; Smith, Pender, & Howell, 2013). Therefore, **targeted and transparent information mechanisms**—on college options, financial aid availability, enrollment deadlines, major choice, and the like—are powerful tools at states' disposal. Empowering students and families with information improves outcomes, including enrollment and retention (Castleman & Page, 2014; Stephan & Rosenbaum, 2013), and support services like college coaching and academic advising have been shown to be particularly impactful for first-generation and low-income students (Avery, Howell, & Page, 2014; Carell & Sacerdote, 2013; Hurwitz & Howell, 2014). Finally, interventions to provide **academic support services** to students ease the transition to college and improve degree-attainment outcomes. Low-income and racial minority students often do not have access to college-preparation coursework in high school and are often required to take a remedial or developmental course when entering college (Goldrick-Rab, 2010; Rosenbaum, Deil-Amen, & Person, 2006), delaying access to credit-bearing courses and reducing degree-attainment rates (Bailey, Jeong, & Cho, 2010; Martorell & McFarlin, 2011). [30] Interventions like broad access to dual-enrollment, offering dual-enrollment for free to low income students, or Advanced Placement® courses and others seeking to increase students' level of college preparation have been shown to reduce the need for remedial coursework and increase subsequent college enrollment and completion (Edmunds et al., 2012; Jackson, 2010; Karp, 2015).

States should partner with researchers and policy organizations in the design and evaluation of direct admissions, common application, and related policies.

Whether it concerns the design and implementation of a direct admissions system or a state- or system-wide common application, or discussions and evaluations of existing policies and programs, states should continue to partner with researchers and policy organizations. Researchers can provide a high degree of technical support from an unbiased, third-party point of view—while

[30] Half of all undergraduates take at least one remedial course, with the average taking 2.6 remedial courses (Scott-Clayton, Crosta, & Belfield, 2014). Scott-Clayton et al. (2014) estimate the annual cost of remedial coursework to be nearly $7 billion.

also considering the national, state, and regional implications of public policies concerning higher education and workforce development. Researchers can also provide empirical evidence on successful (and unsuccessful) policy designs and diffusions across other states, relating each to the context within another given state, and provide evidentiary support for programmatic features to address statewide goals (e.g., How can this policy better serve low-income students).

Conclusion

States need a new and innovative, yet low-cost mechanism to increase access and enrollment in postsecondary education. Not only is increased educational attainment required to fuel the modern workforce, but persistent gaps in college access and completion across racial, socioeconomic, and geographic contexts present real challenges for states and their communities. To address its educational attainment rate, increase postsecondary enrollment, and reduce out-of-state migration, the state of Idaho leveraged its data capacity to create a direct admissions system. By proactively admitting high school graduates to public institutions through direct admissions, Idaho saw marked increases in college applications and enrollment.

Through this project, the Research Team rigorously evaluated Idaho's direct admissions policy and extrapolated models to Great Lakes states—which ultimately suggest direct admissions as a broad education policy holds the potential to increase statewide FTE enrollment and college applications, as well as the enrollment of in-state and undergraduate students. States in the Midwestern region should consider direct admissions as a low-cost, viable policy alternative to support postsecondary enrollment and attainment.

Overview of the Larger Direct Admissions Project

This section describes the objectives and scope of this work on direct admissions policies, including intended outcomes, deliverables, and future opportunities.

With generous support from the Joyce Foundation, the objectives of this project include:

1. Generating sophisticated estimates of potential impacts from direct admissions policies.
2. Disseminating direct admissions policies to Midwestern states.

Dissemination of the direct admissions policy idea will take place through broad dissemination of this report and through a public convening. In December 2019, the Research Team and Advisory Board will convene a national meeting of researchers, postsecondary education leaders, and policymakers to discuss direct admissions as a broad education policy, to present this and other work on evaluations of direct admissions, and to support coalition-building and strategic planning toward the adoption of these policies in attendees' states. Understanding that public policies are most effectively spread through learning from early adopters (i.e., Idaho) and statewide, cross-sector partnerships (e.g., state government and institutions), the convening will engage each of these parties to discuss and potentially design a direct admissions policy in their state (Shipan & Volden, 2008). The convening will also focus on identifying policies related to direct admissions (e.g., common applications) that may also influence students' application and enrollment behavior, particularly across racial, socioeconomic, and geographic contexts, and on isolating existing state policies that may influence the adoption and performance of direct admissions or related policies, such as the higher education coordination structure and level of party control in the state (McLendon, Hearn, & Deaton, 2006). Policymakers and agency representatives from states that currently operate these polices will speak regarding their systems and to share early outcomes from these programs. Additionally, representatives from states considering direct admissions, nationally prominent education researchers, and education foundation partners will join the convening.

Estimates of potential impacts of direct admissions are included in this report and will be further developed in related academic publications currently in progress by Jennifer Delaney and Taylor Odle. Additionally, continued research in this area is expected, which may focus on collaborations with states as they implement and evaluate direct admissions or related systems, including the conduction of randomized control trials and quasi-experimental studies to further understand the potential effects of direct admissions on students and states.

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Since its creation in 1947 by the Illinois General Assembly, the University of Illinois Institute of Government and Public Affairs (IGPA) has played an important role in connecting decision makers in Illinois with scholarly research and analysis. In the university's founding documents of IGPA, the authors sought to create a space to "investigate specific, practical problems that arise at all levels of government."

Research Team

Dr. Jennifer A. Delaney, University of Illinois at Urbana-Champaign

Jennifer A. Delaney is an associate professor of higher education at the University of Illinois at Urbana–Champaign (UIUC) in the Department of Education Policy, Organization and Leadership. She has been director of the Forum on the Future of Public Education since 2016.

Dr. Manuel S. González Canché, University of Pennsylvania

Manuel S. González Canché is an Associate Professor of Higher Education at the University of Pennsylvania, where he is also the inaugural faculty director of the Hub for Equity, Anti-Oppression, Research and Development and an affiliated faculty in Education Policy.

Taylor K. Odle, University of Pennsylvania

Taylor K. Odle is a Ph.D. student in higher education (Graduate School of Education) and A.M. candidate in statistics (Wharton School) at the University of Pennsylvania. He was previously Assistant Director of Fiscal Policy and Research at the Tennessee Higher Education Commission.

Advisory Board

Dr. Joni E. Finney, *University of Pennsylvania*

Dr. Finney is Professor of Practice at the University of Pennsylvania and Director of the Institute for Research on Higher Education (IRHE).

Dr. Aaron Horn, *Midwestern Higher Education Compact*

Dr. Horn is the associate vice president of research at the Midwestern Higher Education Compact (MHEC).

Dr. David A. Tandberg, *State Higher Education Executive Officers Association*

Dr. Tandberg serves as vice president for policy research and strategic initiatives at SHEEO where he leads policy evaluation and research initiatives in an effort to connect empirical research to state practice and policy.

Dr. Noel Radomski, *Wisconsin Center for the Advancement of Postsecondary Education*

Dr. Radomski is WISCAPE's managing director.

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Appendix

Text of the six-institution admissions letter sent to students in Idaho in 2016

Idaho State Board of Education

650 W. State Street • Room 307 • Boise, ID • 83702
P.O. Box 83720 • Boise, ID • 83720-0037

You've Worked Hard. You're Prepared. You're Ready for College.

Dear [Name],

September 1, 2016

Congratulations! You have been accepted to the following Idaho public higher education institutions for the fall 2017 semester.

College of Southern Idaho; College of Western Idaho; Eastern Idaho Technical College; Idaho State University; Lewis-Clark State College; North Idaho College

This acceptance is based upon your academic achievements through your junior year of high school. Your grades, college entrance exam scores (ACT or SAT), and other college preparatory activities during your senior year may qualify you to be admitted to the state's other public universities based on their individual admission requirements. We encourage you to discuss this possibility with your college and career advisor and your college of interest.

Now that you have been accepted, please visit **NextSteps.Idaho.gov**, where you can learn more about the institutions and degree programs offered, find contact information for the institutions listed above and review other helpful information. Even though you have been accepted, you will still need to submit an admissions application along with your official high school transcript to the college or university of your choice in order to enroll for classes next fall. You will also need to graduate from high school this school year.

Your Next Steps

You can find the admissions applications for all of Idaho's public colleges and universities online at **NextSteps.Idaho.gov**. If a college or university to which you are applying charges an application fee, the fee you pay will be credited to your tuition bill when you arrive on campus in the fall. You may apply to as many colleges and universities as you would like, but your application fee will only be credited back by the institution you attend. Your application *must be completed by February 15, 2017,* in order to take advantage of this opportunity. If you miss the February 15th deadline, you may still submit an application, but your admission is no longer guaranteed.

You may be eligible for free financial aid - up to $5,815 of federal aid and up to $7,000 of state scholarships for college per year. Learn more about Idaho's scholarship offerings, federal student financial aid and how to apply at **NextSteps.Idaho.gov.**

On behalf of the Idaho State Board of Education, we welcome you to college and look forward to having you on one of our campuses next fall.

Sincerely,

Emma Atchley, President
Idaho State Board of Education

NEXT STEPS IDAHO

NextSteps.Idaho.gov

Examples of Common Applications Used in US States[31]

California

- The University of California System allows undergraduate students to apply to all nine of their campuses using a single application.[32]
    - Students can apply to one or multiple institutions using the common application.
    - Qualified students are offered a spot at a UC campus, but not necessarily the campus of their choice.
    - There is a $70 application fee per campus. An application fee waiver is available for low-income students.
- The UC common application has been shown to be efficient and cost-effective. While students must supply personal data (GPA, standardized test scores, essays, etc.) through the online application, data is matched to high school level data to provide admissions officers information on students who have overcome obstacles in under-resourced K-12 schools.[33]

Iowa

- Started in 2016, the Iowa Public Universities Application Portal[34] allows prospective undergraduate students to apply to the three Regent campuses in Iowa (University of Northern Iowa, University of Iowa, and Iowa State University).[35]
    - Use of the Iowa Public Universities Application Portal is optional, as individual campus admissions processes continue.
    - Application fees apply for each campus to which a student applies (amounts vary).
    - Students must supply personal data (GPA, standardized test scores, essays, etc.) through the online application. There is no state-level data match in the Iowa system.

Texas

- Developed following the 1996 US Supreme Court decision in *Hopwood v. Texas*, *Apply Texas* allows students to apply to any public university in Texas along with participating community and private colleges. A total of 57 institutions participate.[36]
    - Texas also has guaranteed admission for the Top 10% of each high school class.
    - Application fees apply for each campus to which a student applies (amounts vary).
    - *Apply Texas* can also be to apply for some institutional scholarships.[37]

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[31] For more information on common application use across states, please see: Education Commission of the States (2016). *Is there a 50-state status on common applications used by public institutions?* https://www.ecs.org/state-information-request-the-use-of-common-applications-by-public-institutions/

[32] The University of California Common Application: http://admission.universityofcalifornia.edu/

[33] 2016 University of California Undergraduate Applications Report: http://regents.universityofcalifornia.edu/regmeet/jan16/e2.pdf

[34] Iowa Public Universities Application Portal: https://apply.regents.iowa.gov/

[35] Iowa Public Universities Application Portal FAQs: http://www.iowaregents.edu/media/cms/faqs-pdf816F4155.pdf

[36] *Apply Texas*: https://www.applytexas.org/adappc/gen/c_start.WBX

[37] *Apply Texas* Advisory Committee (includes a link to statues): http://www.thecb.state.tx.us/index.cfm?objectid=656B65E1-9124-2E49-843267AFC2B2CAB9

Wisconsin

- The University of Wisconsin System has one website that allows students to apply to 24 UW system campuses. However, each campus has different application requirements, so the system works more like a clearinghouse for applications than a common application.[38]
- Application fees apply for each campus to which a student applies (amounts vary).

South Dakota

- South Dakota uses proactive (direct) admissions for both undergraduates[39] and high school dual credit students. This admission process applies to nine campuses in SD, but only students above the admissions threshold are admitted and receive letters.[40]
- The SD system offers guaranteed general acceptance, which makes students automatically eligibility for admission. However, each student must also apply, pay the application fee, and submit his or her official high school transcripts by December 1st in order to be accepted. In addition, some majors have additional admissions requirements, students may need to complete remedial education, and the SD School of Mines maintains separate admissions requirements.[41]

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[38] Apply Wisconsin: https://apply.wisconsin.edu/

[39] Gewertz, C. (11/19/217). Good Common-Core Test Scores Get You Accepted to College in This State. *Education Week Blog.*
http://blogs.edweek.org/edweek/high_school_and_beyond/2017/09/south_dakota_guarantees_college_admission_for_good_smarter_balanced_scores.html?cmp=eml-enl-eu-news3&M=58203372&U=1687885
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[40] Howell, Mehl, Kock, & Steckelerg (2017).
South Dakota Board of Regents. March 28-30, 2017 meeting. Agenda Item 6-P. *Proactive admissions.*
https://www.sdbor.edu/the-board/agendaitems/2014AgendaItems/2017%20Agenda%20Items/March2817/6_P_BOR0317.pdf

[41] Howell, Mehl, Kock, & Steckelerg (2017).
South Dakota application: https://apply.sdbor.edu/login.cfm
South Dakota application paper version: https://www.sdbor.edu/administrative-offices/tech-affairs/Documents/common_ug_application_2011_2.pdf
South Dakota proactive admissions website for students: http://sdmylife.com/students/accepted/

Methodological Appendix

Difference-in-Differences

Difference-in-differences allows treatment and control groups to be compared a) before and after treatment and b) across years. This means-based estimation strategy leverages changes across states and time (e.g., Idaho in 2017-18 compared to Idaho in 2015-16 compared to other states across the same time). This method approximates the effect of direct admissions on an outcome of interest (Angrist & Pischke, 2009; Imbens & Wooldridge, 2009), all while controlling for known and unknown factors (Cellini, 2008). The estimation is visually presented in Figure 12.

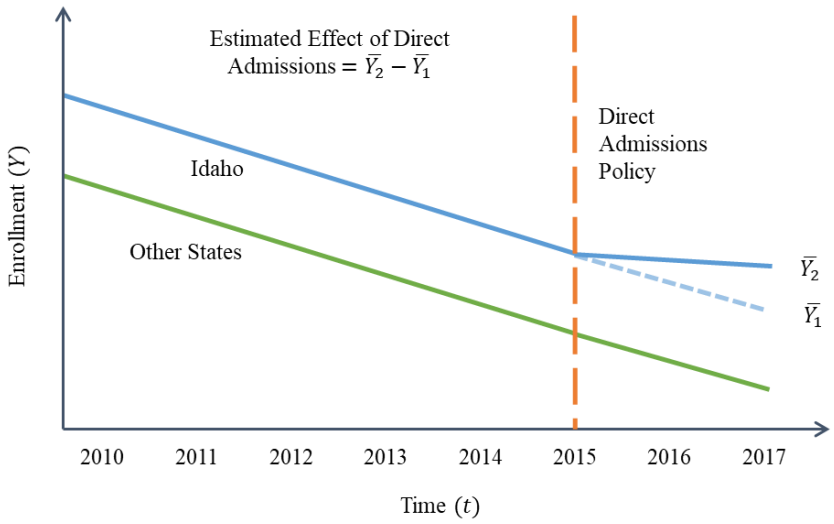

Figure 12. *Difference-in-differences estimation strategy*.

Differences between Idaho and other states on an outcome are observed prior to the direct admissions policy (i.e., the gap between the blue and green line prior to the orange band), as are differences between Idaho and other states after direct admissions (i.e., after the orange band). What is *unobservable* is Idaho's outcome *without* direct admissions (i.e., an outcome if the state had never implemented the policy). Difference-in-differences attempts to construct this unknown value ($\bar{Y}_1$) and uses the observed (actual) outcome ($\bar{Y}_2$) to estimate the effect of the policy.

Difference-in-differences assumes treatment and control groups exhibit parallel outcome trends prior to an intervention (i.e., that enrollment was declining in both states at similar rates before direct admissions). If this assumption is met, any outcome change that increases or decreases the difference between treatment and control groups in the post-treatment period is considered equal to the effect of the policy (β below). Under this assumption, the first "difference" is between the average outcome $\bar{Y}_{t=0}^{\text{Idaho}}$ in Idaho before and after $\bar{Y}_{t=1}^{\text{Idaho}}$ the intervention. The second "difference" is between outcomes $\bar{Y}^{\text{Nation}}$ in other states, also before and after direct admissions. The "difference-in-differences" estimate is the difference between the two, such that

$$(\bar{Y}_{t=1}^{\text{Idaho}} - \bar{Y}_{t=0}^{\text{Idaho}}) - (\bar{Y}_{t=1}^{\text{Nation}} - \bar{Y}_{t=0}^{\text{Nation}}) = \beta\,. \quad (1)$$

This "unconditional" estimate (β) shown in equation 1 is the raw difference (for example) between a) enrollment in Idaho before and after direct admissions and b) between other states before and after Idaho's direct admissions adoption. This estimate, however, does not account for external factors associated with college enrollment (e.g., financial aid), common state-specific factors across years, or general changes over time. To do so, important observable characteristics of states should be included in the regression, including factors associated with college-going behaviors (e.g., educational attainment rates and high school populations, among others). By doing so, the final estimate is free of effects from changes in these factors. Fixed effects functionally ensure comparisons are made between units and themselves over time (Cellini, 2008). We use two types of fixed effects in our models – state fixed effects (controlling for each state) and year fixed effects (controlling for each calendar year included in the model). State fixed effects eliminate bias from external factors within states, and year fixed effects control changes common to all states over time (Imai & Kim, 2019). Incorporating each of these factors produces a more robust difference-in-differences estimate of the effect of direct admissions on student and state outcomes, exhibited in the following equation:

$$y_{st} = \alpha_0 + \beta(\text{Treat} \times \text{Post})_{st} + \delta \text{X}_{st} + \rho_s + \pi_t + \varepsilon_{st}\,, \quad (2)$$

where y_{st} is the outcome of interest for state s in year t, conditioned on state (ρ_i) and year (π_t) fixed effects. [42] The product of $(\text{Treat} \times \text{Post})_{st}$ is a binary indicator identifying the state of Idaho (Treat_i) and post-policy years (Post_{st}), which takes a value of 1 for Idaho in 2016-17 (the first year direct admissions students could have enrolled in college) and for each subsequent year in which the policy is in place; the value is 0 for years in which the policy is not in place and for all other states. X_{st} represents a matrix of the time-variant, state-characteristic controls (external factors). β is the causal effect estimate of direct admissions on y_{st}, the parameter of interest.[43]

Our specific approach in estimating the effect of Idaho's policy has several components. Because difference-in-differences can be applied to multiple groups over time, and because of available longitudinal education data sources, the effect of direct admissions can be considered at both the macro (state) and micro (institution) level. Both state- and institution-level models were estimated with the above equation, considering application and enrollment behaviors following the implementation of direct admissions. Further, comparison groups for Idaho are varied across state and institutional models: State models use all other states in the nation, and, while seeking to consider future influences of direct admissions in Midwestern states, institutional models will focus on community colleges and universities in Illinois.

Generalized Synthetic Control Method

The synthetic control method is very similar to the difference-in-differences estimation strategy. Both quasi-experimental methods compare average outcomes among treatment and control groups before and after a policy change, with observed differences following a policy's implementation

[42] α_0 is a traditional constant and ε_{it} is an assumed $\text{N}_{\text{iid}}^{\sim}(\mu, \sigma^2)$ error term.
[43] Robust standard errors are clustered at the state level to control serial correlation (Cellini, 2008).

approximating the effect of the policy on a given outcome (Cunningham, 2018). Recall, however, that difference-in-differences a) required selection of a counterfactual (control) comparison group (e.g., Illinois) and b) relied heavily on the underlying assumption that treatment and control groups exhibited parallel trends prior to treatment. Instead of using a subset of states or institutions as a comparison group, the synthetic control method uses *all* available comparison points in the data set but weights units to create a nearly identical comparison group to the treatment group, which also allows the parallel-trends assumption to be relaxed (Rubin & González Canché, 2019). For example, if FTE enrollment is the outcome of interest, synthetic control a) observes real FTE enrollment of the treatment group across the entire time horizon, b) weights FTE enrollment of all other (control) units to mirror that of the treatment group using information prior to the policy change, and c) compares differences between the treatment and synthetic control group after the policy change. By generating a synthetic treatment unit whose outcomes mirror that of the treatment group prior to the policy change, concerns regarding the selection of an optimal comparison group (as in difference-in-differences) are reduced (Cunningham, 2018), and the synthetic unit can be considered a suitable comparison group given its statistically indistinguishable difference from the treatment group (Rubin & González Canché, 2019). The strategy is exhibited by Figure 13.

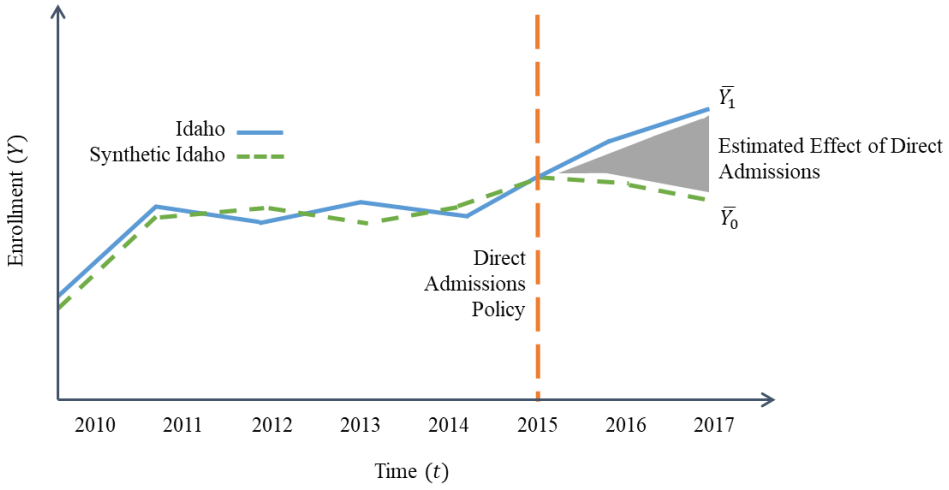

Figure 13. *Synthetic control estimation strategy*.

In this generalization of the difference-in-differences strategy, a synthetic Idaho is constructed through the model's[44] optimal weighting process so that the average outcome of the comparison group ($\bar{Y}_{t=0}^{\text{Nation}}$) is mathematically as close as possible to the average outcome of the treatment group ($\bar{Y}_{t=0}^{\text{Idaho}}$) in the pre-treatment period ($t = 0$), illustrated by the overlapping solid (blue) and dashed (green) lines in Figure 15 (Rubin & González Canché, 2019). Following the implementation of direct admissions, $\bar{Y}_0$ represents an approximation of what *could* have happened if Idaho had not implemented the policy (i.e., the average outcome of the weighted comparison

[44] Generalized synthetic control models were estimated using gsynth in the synth library of R under the same model as provided by Equation 1. Two-way state (or institution, when relevant) and year fixed effects were incorporated. Additionally, cross validation was used for up to 4 unobserved factors. Estimates and standard errors were estimated with parametric methods across 1,000 bootstrap samples.

group) and $\bar{Y}_1$ is the true observed outcome in Idaho (Abadie, Diamond, & Hainmueller, 2010, 2011). The difference between $\bar{Y}_1$ and $\bar{Y}_0$ is the causal inference estimate of the effect of direct admissions. Mathematically, the overall goal is to identify a treatment effect β, where

$$\beta = \bar{Y}^{\text{Idaho}}_{\text{treat}=1} - \hat{Y}^{\text{Idaho}}_{\text{treat}=0} , \tag{3}$$

or the difference between Idaho's outcomes if it had $(\text{treat} = 1)$ and had not $(\text{treat} = 0)$ implemented direct admissions. Because $\hat{Y}^{\text{Idaho}}_{\text{treat}=0}$ is unknown, the synthetic control method instead estimates β by weighting outcome Y for each control unit i at time t by w_i^*, so that

$$\sum w_i^* Y_{it} \approx \hat{Y}^{\text{Idaho}}_{\text{treat}=0} \text{ , such that} \tag{4}$$

$$\beta = \bar{Y}^{\text{Idaho}}_{\text{treat}=1} - \sum w_i^* Y_{it} , \tag{5}$$

as described by (Rubin & González Canché, 2019). A data-driven approach guides the selection of optimal weights w_i^* using information in the pre-treatment period.[45] The synthetic control method then compares group mean differences before and after policy implementation to estimate the effect of a policy on a given outcome of interest.

Synthetic control allows important observable characteristics to be controlled for within models. Additionally, the generalized form of the synthetic control method provides for the inclusion of linear state (or institution, as used in different models) and year fixed effects. As with the prior difference-in-differences models, generalized synthetic control models are estimated across state- and institution-level outcomes using the same datasets for each level and outcome of interest as before. For both sets of models, the full universe of other units (i.e., states or institutions across the nation) are used to construct an optimal counterfactual group, rather than relying on a selected institution, state, or region. The goal of each model and estimation strategy is to produce causal-inference estimates of the effect of direct admissions on students' application and enrollment behaviors, with a particular focus on racial, socioeconomic, and geographic contexts.

Difference-in-differences and the generalized synthetic control method are complementary, quasi-experimental estimation strategies that provide strong causal-inference evidence of the effect of a policy in a natural experiment setting. Here, both methods were used to estimate the effect of direct admissions in Idaho across state- and institution-level outcomes associated with students' college-going behaviors, including applications and enrollment. As with all quasi-experimental techniques, difference-in-differences and the synthetic control method have limitations, though evidence from both methodological approaches provides robust evidence on the likely effect of the policy on outcomes of interest.

Generalized Additive Modeling

Recall the quasi-experimental estimation strategies of difference-in-differences and generalized synthetic control provided approximations of the *causal* effect of direct admissions on state and

[45] Weights are ≥ 0 and sum to 1.

institutional outcomes of interest in Idaho. These methods principally concerned themselves with a) constructing an environment similar to that of a true random experiment and b) isolating the effect of one factor (i.e., direct admissions) on outcome changes. Outside of this causal-inference framework, machine learning strategies can be employed to consider the relationships between an outcome and a set of related factors (or policies) when the chief aim is not to *explain*, but to observe and predict. Generalized additive modeling (GAM) is one such practice that performs well in practice and is able to exploit highly complex and nonlinear relationships within data (Berk, 2016). Observations and estimations derived from generalized additive models are also suitable for forecasting, allowing relationships between an outcome (e.g., enrollment) and predictors (e.g., tuition and fees, high school seniors, and unemployment) to be examined over time in states with and without direct admissions to estimate possible outcomes through a data-driven process.

Generalized additive models are a form of regression that maintain the linear combination (i.e., additive) nature of traditional regression model estimation while allowing non-linear functions to be applied to predictors (James, Witten, Hastie, & Tibshirani, 2017). By allowing a data-driven algorithm to fit tightly to observations, complex relationships between state (or institutional) variables and students' outcomes can be identified over time. Changes in these relationships following the implementation of direct admissions (for example) may likely be due to policy adoption, and both the base relationship and post-policy trend changes can be extrapolated to other states in a framework similar to forecasting. Forecasting is a procedure where information on previous outcomes—or factors related to those outcomes—is used to predict future outcomes. For example, one may use the demographic and academic composition of an incoming freshmen class, as well as prior graduation rates, to predict the graduation rate for that incoming cohort. Formally, generalized additive models apply k smoothing splines (a special function defined piecewise by polynomials) across the response plane (a plane fit in a three dimensional space that represents the response surface defined by a model), allowing the regression fit to respond to variance in observations for each predictor while also reducing bias through tuning parameters meant to control the influence of individual coefficients (Berk, 2016).

In practice, suppose the outcome of interest Y (e.g., FTE enrollment) for state i is as a linear combination of p predictors (e.g., net tuition, state appropriations, educational attainment rates, high school senior population, etc.). A multiple linear regression model for y_i can be written as

$$y_i = \alpha_0 + \beta_1 \text{Tuition}_i + \beta_2 \text{Appropriations}_i + \cdots + \beta_p \text{X}_i + \varepsilon_i \ , \qquad (6)$$

where each $\beta_{1\dots p}$ represents a constant linear association between a given predictor X and y_i. Here, α_0 is a traditional intercept.[46]As described by Berk (2016) and James et al. (2017), to allow for non-linear relationships between predictors and the outcome, all or a subset of linear $\beta_{1\dots p}$ terms are replaced with non-linear ("smooth") functions, re-writing the equation such that,

$$y_i = \alpha_0 + \sum_{j=1}^{p} f_j(\text{X}_{ij}) + \varepsilon_i \ , \text{ or} \qquad (7)$$

$$y_i = \alpha_0 + f_1(\text{Tuition}_i) + f_2(\text{Appropriations}_i) + \delta \text{X}_i + \varepsilon_i \ , \qquad (8)$$

[46] ε_{it} is an assumed $\text{N}_{\text{iid}}^{\sim}(\mu, \sigma^2)$ error term.

where non-linear functions would be estimated for Tuition and Appropriations and the other predictors in $\mathbf{X}_i$ in this example, and α_0 will be fixed at the mean of y.[47] As previously noted, the goal of a generalized additive model is not to *explain* a phenomenon in a causal-inference framework, but to fit observed data as closely as appropriate to identify how changes in those observations may be related to the outcome in question.

To examine the influence of direct admissions using a generalized additive model, two additional terms are included in the above estimation equation: $f_j(\text{Year}_i)$, meant to allow each f_j to vary by state (or institution) over time, and $\beta\text{DirectAdmissions}_{it}$, a dichotomous indicator equal to 1 for Idaho (or institutions in Idaho) in years when direct admissions existed and 0 otherwise, similar to the difference-in-differences interaction term. Using the state-level data employed in the difference-in-differences and generalized synthetic control models, the following additive model was estimated for states in the Great Lakes region for FTE enrollment and application outcomes:

$$y_{it} = \alpha_0 + \beta\text{DirectAdmissions}_{it} + f_1(\text{Tuition}_{it}) + f_2(\text{Appropriations}_{it}) + f_3(\text{HS Seniors}_{it}) + \delta\mathbf{X}_{it} + f_j(\text{Year}_i) + \varepsilon_{it} \quad , \tag{9}$$

where $\delta\mathbf{X}_{it}$ includes state i's Gini coefficient, unemployment rate, high school educational attainment rate, and bachelor's-degree attainment rate in each year t.[48] It is common to only smooth numeric predictors, including those with large variance (Berk, 2016). In our model the variables included in $\delta\mathbf{X}_{it}$ are assumed to be linear, but the variables separated out in the equation (Net Tuition, Appropriations, HS Seniors) are smoothed.[49]

Plots of smoothed predictors are included in Figure 14 for models fitting FTE enrollment and, in Figure 15, for models fitting aggregated statewide applications. The plots show the extent of non-linearity between these predictors and a given outcome. The vertical axis is centered at the mean of each outcome and the horizontal axis represents observed values of each predictor. Each point is an observation, and each line represents the estimated plane (i.e., relationship).[50] As evidenced

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[47] A separate f_j is estimated for each smoothed predictor through a repeated back-fitting process meant to minimize the penalized regression sum of squares with respect to all p f_js (Berk, 2016). Under this model, δX_i still represents a matrix of covariates related to the outcome that are not smoothed but are estimated with traditional β coefficients of constant linear association with y_i. In this framework, these coefficients can still be considered "held constant" for interpretation, but f_j coefficients have no interpretable meaning (Berk, 2016). Generalized additive models are superior to traditional linear ("straight-line") regression when non-linear relationships exist between predictors and an outcome (Faraway, 2014), and may achieve more accurate predictions (James et al., 2017). If there are *not* non-linear relationships, the fitting algorithm will perform akin to traditional linear modeling and not impose non-linearity upon the response surface (Faraway, 2014).

[48] Generalized additive models were estimated using gam in the mgcv library of R. A normal distribution was assumed, a restricted maximum likelihood function was employed for optimal smoothing, and eight knots (smoothing spline points) were distributed across the response surface.

[49] Not all numeric predictors could be smoothed given dimensionality constraints. Fitting four predictors with smoothing functions required reducing the number of knots to $k = 8$.

[50] The shaded regions represent ± 2 standard errors for fitted values, and rug plots identify observation density.

by the plotted response surface, net tuition revenue and the high school senior population have highly nonlinear relationships with statewide FTE enrollment and college applications.

Figure 14 suggests, holding other predictors constant, FTE enrollment increases as net tuition revenue (a function of tuition and fee rates) increase until ~$2B, then decline until functionally leveling-off at ~$3B. FTE enrollment is relatively flat as the high school senior population grows toward ~80,000 students, where it thereby increases rapidly until facing a sharp decline at ~120,000 students, holding other factors constant. This relationship likely reflects capacity constraints at postsecondary institutions. Statewide applications to college decline as net tuition revenue increases until total revenues approach ~$2B, where they remain relatively flat (Figure 15). Similarly, applications grow in a relatively linear fashion with the high school senior population until ~120,000 students, whereby applications decline again, *ceteris paribus*. State appropriations are modeled to have a small, linear relationship to each outcome. In all, these plots suggest the generalized additive model may have identified non-linear, complex relationships that can be accounted for while examining the potential effect of direct admissions.

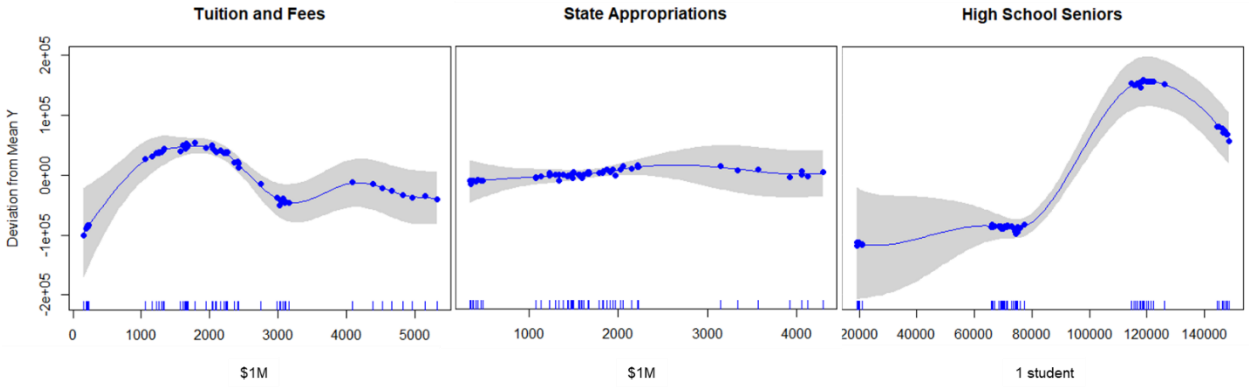

Figure 14. *GAM smooth functions for selected predictors on statewide FTE (Y).*

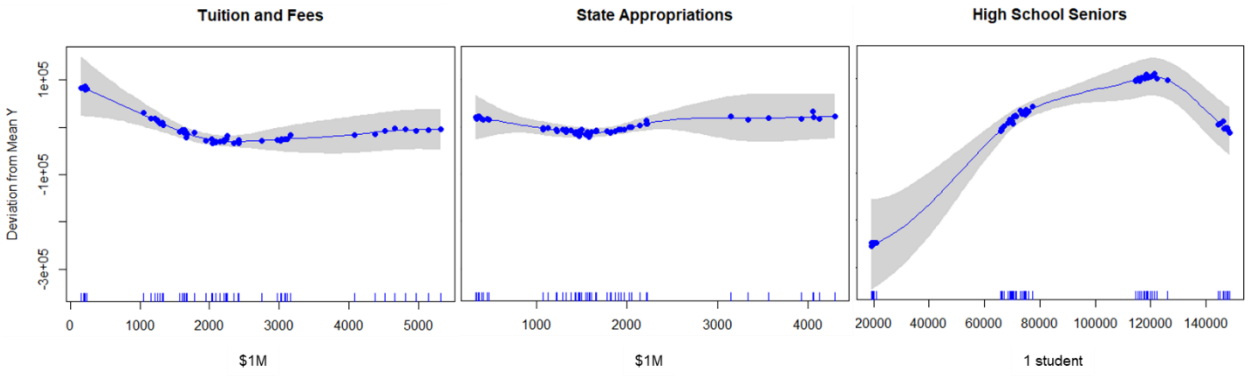

Figure 15. *GAM smooth functions for selected predictors on state aggregated college applications (Y).*