

ABSTRACT

WORSHAM, RACHEL ELIZABETH. The Residency Determination Service: State Policy as a Barrier to College Access for Underserved Students? (Under the direction of Dr. Paul Umbach).

In 2013, the North Carolina General Assembly tasked state education agencies with creating a centralized residency determination process that allows a third party to determine students' eligibility for in-state-resident tuition. This system, called the Residency Determination Service (RDS), supplanted the existing structure in which individual universities determined residency classification themselves. Now students applying to college in North Carolina must fill out an online residency application called the interview during which they must submit information about themselves and their parents or guardians. While this process was designed to ease the residency determination process at universities, prior literature on processes similar to the RDS indicate that the form could serve as a barrier to college access for underserved students. The purpose of this study was to assess the impact of the RDS on college access for North Carolinians seeking to attend an in-state, public two or four-year college. Using a difference-in-differences analytic approach and secondary data from the Integrated Postsecondary Education System, I sought to understand the effect of the RDS on enrollment volume at public two and four-year colleges in North Carolina overall, for residents and non-residents, and for low-income, White, Black, and Latinx students. The dataset spanned academic years 2013-2014 through 2018-2019 with treatment defined in 2017. The treatment group for this study comprised both public two and four-year colleges in North Carolina. I constructed four control groups for my analyses: all qualifying two and four-year colleges in the United States (U.S.), all qualifying two and four-year colleges in geographically contiguous states, all qualifying two and four-year colleges in the southeastern region of the U.S., and a statistically derived group created with inverse probability weights. I found that the RDS had no impact on

overall, resident, non-resident, and Latinx enrollment. I also found that the RDS negatively impacted enrollment for Black students and those receiving Pell grants at two-year colleges, but increased their enrollment at four-year colleges. Finally, my analyses revealed that the policy was associated with an increase in White enrollment at two-year colleges and a decrease in White enrollment at four-year colleges. While these results were statistically significant, the effect sizes were very small averaging five and 14 percent of a standard deviation at two and four-year colleges, respectively. Therefore, I conclude that the RDS did not have a substantive impact on enrollment in North Carolina. The results of this study not only inform future tuition residency policy in North Carolina but also inform the decision making of policymakers in other states who may attempt to adopt the RDS for use in their own higher education system.

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The Residency Determination Service: State Policy as a Barrier to College Access for
Underserved Students?

by
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DEDICATION

To the students and staff at J.M. Morehead High School.

BIOGRAPHY

Rachel Worsham has worked in college access for seven years. She began her career as a College Adviser at J.M. Morehead High School in Eden, North Carolina, with the Carolina College Advising Corps. She received her Bachelor's in History and Peace, War, and Defense at the University of North Carolina at Chapel Hill in 2011 and her Master's in Higher Education Administration at North Carolina State University in 2019. During her time at NC State, Rachel has worked as a graduate assistant in living-learning initiatives, the STEM department, and the Belk Center for Community College Leadership and Research. She also served as a postsecondary access adviser at the Emily Krzyzewski Center. In her spare time, Rachel participates in triathlons, cooks, and sings at her church.

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CHAPTER 1: INTRODUCTION

Postsecondary education has increasingly become one of the most reliable ways to facilitate social mobility and ensure financial stability in the United States (Haveman & Smeeding, 2006). Recent work by Ma et al. (2019) found that the wage premium associated with associate and Bachelor's degrees were \$10,000 and \$25,000 per year, respectively. In addition to increased earnings, graduates are more likely to positively contribute to society by voting and volunteering (Ma et al., 2019). The legislature in North Carolina (NC) recognized the benefits of having an educated populace and made a commitment to educating the state's citizens by tasking the General Assembly with ensuring "that the benefits of the University of NC and other public institutions of higher education, as far as practicable, be extended to the people of the State free of expense" (N.C. Const. art. IX, § 9). This commitment is mostly fulfilled through discounted tuition rates (in-state resident tuition) for North Carolinians at public institutions paid for by state subsidies.

NC's commitment to educating its populace certainly comes at a cost to the state. During the 2019-2020 school year, the NC Community College System (NCCCS) and the University of NC System received \$1.1 billion and \$3.1 billion in appropriations from the state, respectively (North Carolina Office of State Budget and Management, 2019). A portion of this money was used to offset the cost of attendance for NC residents. Tuition at NC community colleges¹ for in-state students entering college in the fall of 2020 was \$2,432 as compared to \$8,576 for nonresident (out-of-state) students (North Carolina Community College System, 2020). Similarly, tuition at the state four-year flagship, the University of North Carolina at Chapel Hill, for in-state resident students entering college in fall of 2020 was \$3,509 as opposed to \$17,099

¹ "Community colleges" and "public, two-year colleges" will be used interchangeably throughout this paper.

for nonresident (out-of-state) students (The University of North Carolina, 2020a). Congruent with the state constitution's commitment to supporting NC citizens by reducing the cost of higher education, NC in-state resident tuition (ISRT) policy has mostly focused on regulating who benefits from these discounted rates. The most recent example of this type of legislation occurred when NC moved to deny Deferred Action for Childhood Arrival students ISRT and state financial aid (Cebulko & Silver, 2016).

Recently, the NC General Assembly's policy agenda has pivoted away from defining who was eligible for ISRT and toward regulating the mechanisms that determine eligibility for discounts. In 2013, in response to a lawsuit filed by a student who received inconsistent residency determinations across UNC System colleges (Fofaria, 2018b), the NC General Assembly tasked state education agencies with creating a centralized residency determination process that allows a third party to determine students' eligibility for ISRT. The resulting Residency Determination Service (RDS) is an online application that students file during the college application process. The RDS assigns each student a Residency Certification Number (RCN) that indicates their status as an in-state or out-of-state student. The RDS' residency determination for each student applies to all public colleges and universities in NC and supplants the existing structure in which individual universities determined residency classification themselves (Residency Determination Service, 2018a).

While the RDS' express purpose is not to limit those able to claim ISRT, the literature on an existing process in the college-going journey that has similar documentation requirements and application procedures—the Free Application for Federal Student Aid (FAFSA)—signals the potential for the RDS to act as a barrier to college access for low-income students and students of color. These concerns have been echoed in recent newspaper articles and a memo published by

the State Board of Community Colleges that cite the form's complexity as a potential barrier to college access for low-income, first-generation, and students of color (Fofaria, 2018a; State Board of Community Colleges, 2018)

Policy Overview

RDS History

Prior to 2017, a college applicant's residency status for tuition purposes was determined by individual college campuses that used factors like the number of years a student was enrolled in their high school and their home address to inform their decision (Residency Determination Service [RDS], 2018a). In 2013, after a lawsuit was filed by a student who received conflicting residency determinations at two UNC System institutions (Fofaria, 2018b), the NC General Assembly charged the UNC General Administration (UNC GA), the NC Community College System (NCCCS), the NC Independent Colleges and Universities (NCICU), and the NC State Education Assistance Authority (NCSEAA) with the task of creating a centralized and uniform process for determining whether a student is deemed in-state or out-of-state for tuition purposes (Residency Determination Service, 2018a). In addition to unifying the residency decision across campuses, the service is touted as an effort to simplify the application process for students. In an interview with a regional newspaper, Elizabeth McDuffie, executive director of the NCSEAA said the RDS "alleviates the need for students to answer questions on multiple institutional applications and ensures consistency for tuition purposes and financial aid consideration" ("N.C. rolling out new Residency Determination Service", 2017).

In 2015, after two years of development, the standards for determining residency status were codified into law in North Carolina General Statute section 116-143.1, and the General Assembly granted the NCSEAA the power to execute this system in Session Law 2015-241

(Residency Determination Service, 2018a). According to Vice President of Technology and Project Development at College Foundation, Inc., the non-profit that administers the RDS on behalf of NCSEAA, this new centralized residency service is the first of its kind in NC and the country (P.J. Kaiser, personal communication, February 26, 2018). The RDS was implemented at all NCICU institutions in December of 2016. In February 2017, all NCCCS institutions and all UNC system institutions began the process of implementing the RDS. Finally, graduate and professional schools were required to implement the RDS in 2018 (Residency Determination Service, 2018b). Private institutions were included in this mandate as residency affects students' eligibility for state financial aid (Residency Determination Service, 2018a).

Total operating costs of the RDS are \$3.6 million annually, which covers costs like staffing and website maintenance, and is paid for by each participating agency (NCCCS, UNC System, and NCICU). The SEAA determines how much each institution owes to the system by calculating three-year average new enrollments for each agency as a percentage of sector total. The SEAA then applies each sector's percent of total new enrollments to the annual operating costs, which determines how much each agency pays. For example, NCCCS enrollments account for a little over 50 percent of total new enrollments across colleges in NC. Therefore, the NCCCS is required to cover half of the cost of the RDS (\$1.8 million; State Board of Community Colleges, 2018)

Establishing Residency

In order to receive an in-state resident classification, students must be United States citizens and establish 12 months of uninterrupted domicile in NC. The RDS defines domicile as "one's permanent and primary established home" (Residency Determination Service, 2018a, p. 5). Regardless of the students' age, state law presumes that the home of a student's living parent

or legal guardian is their domicile unless proven otherwise. State law requires that the student prove their domicile through “domiciliary acts as confirmed by valid evidence”, which include actions like paying NC state taxes, registering to vote in the state, and obtaining a NC driver’s license (Residency Determination Service, 2018a).

To establish their residency and claim ISRT, students must complete the RDS online application, which the service calls the interview. Appendix A provides a visual representation of the RDS application process. Students can apply online through the RDS website. Once started, students have 25 calendar days to complete the interview and submit before the request is cancelled and students must begin again. During this interview, students are required to provide information about themselves and their parents in order to establish domicile. At minimum, students must provide information about living arrangements, including whether their home is rented or owned, social security numbers, or other unique identification numbers, license plate numbers, and tax information for themselves and their parents. Once they have completed the application, the system provides students their residency classification (either in or out of state) and a Residency Certification Number (RCN). It is important to note that the initial residency classification students receive upon completion of the form is subject to change once the system verifies the information provided with federal and state agencies. Students are notified of the status of their residency classification in an email within a week after finishing the online interview. RCNs remain valid for 15 months or as long as a student is continuously enrolled (counted as fall and spring semesters; Residency Determination Service, 2018a).

While the RDS interview is the same for students regardless of which public college they are applying to, the community college and UNC system require residency information at different points in the application process. Students are required to supply their RCN on all

community college applications in NC regardless of their residency claim. If a student fails to provide their RCN, their application will be considered incomplete and will not be reviewed by the college (Residency Determination Service, 2018a). Students applying to four-year public colleges are not required to provide their RCN on their application; however, they must supply their RCN to the university before census date (usually the 10th day of class) in order to receive ISRT (College Foundation of North Carolina, 2019).

Post Application Procedures

After initial consideration, students may be asked to complete post-application vetting procedures or voluntarily revisit their applications if they believe they, or the RDS administrators, have made a mistake. There are three types of post-application processes that students may participate in: reconsideration, appeal, or validation. RDS reconsideration is for students who have had a change in personal circumstance since completing the interview, need to correct errors in the data they submitted, did not submit required documentation, or were requested by their campus to complete reconsideration. To complete reconsideration, students are required to re-file the RDS interview in full.

Students who disagree with their classification but have not made mistakes or whose circumstances have not changed, may submit a request for an appeal (Residency Determination Service, 2018a). The appeal process requires students to submit additional documentation relevant to their request and to participate in a face-to-face appeal hearing with RDS administrators. Students must file for an appeal within 10 calendar days of receiving their residency determination. If they fail to request an appeal in this timeframe, students will need to request a reconsideration and file an appeal after the reconsideration process has ended. Finally, if a student disagrees with the verdict of their appeal request, they may take their case to the

NCSEAA Statewide Appeal Committee. It is important to note that the NCSEAA is exempt from the NC Administrative Procedure Act and is therefore not required to give reasoning for their residency classification decision (Residency Determination Service, 2018a). The RDS system does not inform institutions that students are undergoing reconsideration or appeal procedures, therefore, the onus is on the student to communicate this information with individual admissions offices. In addition to the reconsideration and appeals process, students may be asked to complete validation. As mentioned, after students complete the RDS interview, the data they have submitted is verified with federal and state agencies. If the information a student provides is suspect or not sufficient to establish domicile, the RDS administrators may request that students complete the validation process by submitting additional documentation (Residency Determination Service, 2018a).

Special Circumstances

As discussed, state law presumes that the home of a student's living parent or legal guardian is their domicile unless proven otherwise. Therefore, the RDS uses parental information to establish domicile in the state of NC. As a result, students with undocumented parents or those who are not able to acquire their parent's information will be automatically classified as out of state. In order to reverse this decision, students who believe themselves eligible for ISRT are required to immediately go through the appeals process, which involves a face-to-face interview and provision of alternative documentation (Residency Determination Service, 2018a).

Overview of the Literature: The RDS and the College-Going Process

Given that the RDS is a new system and the first of its kind (P.J. Kaiser, personal communication, February 26, 2018), there is little extant research exploring its effects on the college-going process. It is possible that, by eliminating the need for students to answer

residency questions on each college application, the RDS will ease the college-going process for students and increase access to the state's two and four-year colleges. However, when considered alongside literature that analyzes a similar form, the FAFSA, it is also possible that the RDS will serve as a barrier to college for underserved populations, such as low-income students and students of color. The FAFSA and the RDS share several features that make the FAFSA literature a useful tool to better understand and conceptualize the effects of the RDS on students: both forms are completed during the college application process, both are online, both ask for similar information from the student and the parents or guardians, and both involve post application documentation requests for selected applicants. Table 1 provides a comparison of the application location, documentation requirements, and application procedures for the FAFSA and the RDS.

Table 1.*FAFSA RDS comparison*

Application Location	FAFSA	RDS
Online application	Yes	Yes
Paper application	Yes	No
Documents Necessary		
Student's SSN, ARN, USCIS or ITIN	Yes	Yes
Parent's SSN, ARN, USCIS or ITIN	Yes	Yes
Student's federal taxes	Yes	Yes
Parent's federal taxes	Yes	Yes
Parent's state taxes	No	Yes
Address of permanent residence	No	Yes
Driver's license or vehicle registration	Yes	Yes
Military information	Yes	Yes
USCIS documentation	No	Yes
Application Procedures		
Required to complete college application	No	Yes
Post-Application Vetting Procedures	Yes	Yes

Note. Adapted from “Navigating FAFSA and RDS to prepare for college” by Residency Determination Service, 2017. Acronym definitions are as follows: social security number (SSN); alien registration number (ARN), United States citizenship and immigration services (USCIS), individual taxpayer identification number (ITIN).

Filing the FAFSA is an incredibly important step in the college application process, as it provides access to federal loans and grants to college-going students with financial need. Despite its importance in facilitating access to college, almost 30 percent of students who qualify for federal student aid do not file the FAFSA (Kantrowitz, 2011). The most common reasons students with financial need do not file the FAFSA include unreliable access to the internet, onerous documentation requirements (e.g., requiring financial information and tax forms) complex application procedures (e.g., post-application vetting processes), use of jargon (e.g., terms like “ward of the state” and “dislocated worker”), and lack of access to information

regarding the filing process (Advisory Committee on Student Financial Assistance, 2005; Bettinger et al., 2012; Bill & Melinda Gates Foundation, 2015; Dynarski & Scott-Clayton, 2006; Kantrowitz, 2011; King, 2004).

While all students filing the FAFSA face these impediments, they are especially difficult for low-income, Black, and Latinx students, who are likely to be the first in their families to attend college (first-generation; Bahr et al., 2018; Center for First Generation Student Success, n.d; Dynarski & Scott-Clayton, 2006; Redford & Mulvaney Hoyer, 2017). Students who encounter problems filing the FAFSA often turn to their family or community members for help (Perna, 2006a). However, first-generation students whose family members and social contacts have not had experience with higher education may not be able to access information about how to file the FAFSA or troubleshoot issues that arise from the complex nature of the application (Dynarski & Scott-Clayton, 2006). Given the similarities between the FAFSA and the RDS, specifically the format of the online interview, its documentation requirements, and its complex application procedures, the RDS may have detrimental effects on a students' ability to complete the college application process and enroll in college.

Study Overview and Research Questions

The purpose of this study was to assess the impact of the RDS on college access for North Carolinians seeking to attend an in-state, public two or four-year college. Guided by Herd and Moynihan's conceptual framework of administrative burden (2018), I utilized a difference-in-differences (DID) estimation strategy to answer the following questions:

1. How did the RDS affect enrollment volume for first-time, first-year students at North Carolina public two and four-year colleges?

2. How did the RDS affect enrollment volume for resident first-time, first-year students at North Carolina public two and four-year colleges?
3. How did the RDS affect enrollment volume for non-resident first-time, first-year students at North Carolina public two and four-year colleges?
4. Do the effects of the RDS on enrollment volume for first-time, first-year students at North Carolina public two and four-year colleges vary by race/ethnicity?
5. Do the effects of the RDS on enrollment volume for full-time, first-time students at North Carolina public two and four-year colleges vary by Pell grant² status?

The results of this study inform policymakers' understanding of the consequences of the RDS on enrollment. Findings for research question one helped determine whether the RDS precipitated an overall change in enrollment. A decline would indicate that the RDS prevented students from enrolling in college. Research questions two and three determined whether the RDS impacted the residential makeup of first-year cohorts. An increase in resident enrollment would suggest that the RDS met the state's goal of easing the residency application process for students. Changes to out-of-state enrollment could indicate the degree to which the RDS stopped students from falsifying their residency status or could indicate that the RDS served as a barrier to in-state classification. Finally, research questions four and five sought to understand the differential impact of the RDS on enrollment for historically underserved populations, specifically Black, Latinx, and low-income students.

² The Pell grant is a federal need-based grant provided to low-income students and is used as a proxy for low-income student enrollment. (Federal Student Aid, n.d.a)

Brief Overview of Conceptual Framework

This study was framed using Herd and Moynihan's (2018) framework of administrative burden. Drawing from previous literature in economics, psychology, and public administration, the authors define administrative burden as "the learning, psychological, and compliance costs that citizens experience in their interactions with government" (p. 22). Unlike much of the world, the U.S. social welfare system relies on targeting (a benefit is only given to a select few who qualify) to distribute public assistance (Currie, 2004; Herd & Moynihan, 2018; Kleven & Kopczuk, 2011). In order to ensure that benefits are given to only those in need, public assistance programs have implemented application processes with documentation requirements to confirm benefit eligibility. While these application procedures may be successful in ensuring that only those who qualify receive benefits, there is evidence that the administrative burden wrought by onerous application and documentation requirements can deter eligible individuals from applying for the program (Herd and Moynihan, 2018). In their framework, Herd and Moynihan (2018) both explore the factors that can prompt a state to construct administrative burdens and conceptualize how an individual's experience with administrative burden may affect their actions.

The authors begin by examining how state administrative capacity and political beliefs may cause policymakers to institute administrative burdens. Next, and most crucial for this study, the authors describe how learning costs (the time and effort spent when collecting information about the program), compliance costs (the burdens experienced while following administrative rules and requirements), and psychological costs (the stress, stigma, and loss of personal autonomy experienced by claimants filing for public assistance) may deter potential claimants from filing for a much needed public benefit. The authors argue that the degree to

which a person experiences learning, compliance, and psychological costs depends on their access to human capital resources such as information and assistance filing applications.

This study utilized Herd and Moynihan's concept of administrative burden to frame a discussion of related literature and develop a theory of action (introduced in chapter two) that describes how elements of the RDS application process may prevent certain students from successfully filing the RDS. In summary, the location of the RDS interview online, onerous documentation requirements, legalese within the application, and post-application vetting procedures pose high compliance costs for students seeking to apply to college in NC (Advisory Committee on Student Financial Assistance, 2005; Bettinger et al., 2012; Bill & Melinda Gates Foundation, 2015; Dynarski & Scott-Clayton, 2006; Kantrowitz, 2011; King, 2004). The ability for a student to successfully navigate the complexity of the RDS interview depends on their access to information and application assistance. Students whose parents did not attend college and students who reside in communities with low educational attainment face high learning costs, as they may not be able to rely on their immediate family or community members for information about the residency application (Dynarski & Scott-Clayton, 2006; Feeney & Heroff, 2013; Kim & Schneider, 2005). Students experiencing high learning and compliance costs may be more prone to experiencing psychological costs such as feelings of stress, stigma, and loss of autonomy, which may deter students from completing the online interview (Bertrand et al., 2006).

The degree to which a student experiences compliance, learning, and psychological costs while interacting with the RDS has implications for college enrollment. Students who are unable to complete the RDS interview will not be able to submit a college application to a NC community college, which would prevent enrollment. While an RCN is not required on UNC

system college applications, NC residents will not receive the discounted tuition rate unless they complete the RDS before the college's census date. Prior research has demonstrated a strong relationship between access to ISRT, cost of attendance, and likelihood of college enrollment (Amuedo-Dorantes & Sparber, 2012; Darolia & Potochnick, 2015; Dickson & Pender, 2013; Flores, 2010a; Flores, 2010b; Holzman, 2016; Kaushal, 2008; Kane, 1995, Long, 2004; Manski & Wise, 1989). It is possible that students who are unable to file the RDS and claim ISRT will choose not to enroll in college rather than pay the difference between the in-state and out-of-state tuition rate, which can be as much as \$14,000 per year. This study sought to understand whether the administrative burdens imposed by the RDS impact college enrollment for students who wish to attend college in NC.

Overview of Methods

Using data from the Integrated Postsecondary Data System (IPEDS), an annual survey of colleges administered by the National Center for Education Statistics, I employed a difference-in-differences approach to estimate the impact of the RDS implementation in 2017 on enrollment volume at NC public two or four-year colleges (treatment group) compared to public, two or four-year colleges in states without a centralized residency system (control group). In particular, I used four control groups to estimate the impact of the RDS on enrollment: colleges across the U.S., colleges in geographically contiguous states, colleges in the southeast, and colleges in a statistically derived control group.

I analyzed the effect of the RDS on community college and four-year college enrollment separately because the demographic makeup of the student bodies at these two types of institutions *and* the RDS-related application requirements are quite different. Community colleges have long served as an entry point into higher education for underserved communities,

as their open-access admissions policies and lower cost of attendance mitigate barriers to entry. As a result, community colleges enroll a higher percentage of low-income students and students of color than their four-year counterparts (Ginder et al., 2017). Given the demographic makeup of public two-year institutions and the literature that suggests that low-income students and students of color face more obstacles in the FAFSA-filing process (Bahr et al., 2018; Dynarski & Scott-Clayton, 2006), it was possible that the RDS would have a greater impact on college access for students seeking to attend a community college. Further, community colleges in NC enroll far fewer out-of-state students than their four-year counterparts. Therefore, it is likely that any changes in out-of-state enrollment due to the RDS would be most pronounced at four-year colleges. In addition, it was possible that, because community colleges require all students to file the RDS rather than only those claiming in-state status as is practice at UNC system institutions, I would observe larger enrollment effects at community colleges. Because of the differing application requirements and qualitative differences between students who attend community colleges versus four-year colleges, it is important to investigate the extent to which the RDS could serve as a barrier to postsecondary enrollment at these institution types separately.

My outcome measures were number of first-time, first-year students enrolled (RQ1), number of resident first-time, first-year students (RQ2), number of non-resident first-time, first-year students (RQ3), number of enrolled first-time, first-year students who are Latinx³ (RQ4), number of enrolled first-time, first-year students who are Black (RQ4), number of enrolled first-time, first-year students who are White (RQ4), and number of enrolled first-time, first-year students who are Pell grant recipients (RQ5). DID compares the treated and control groups

³ The data source for this project (IPEDS) uses “Hispanic” to define this population; however, I have chosen to refer to these students as “Latinx”. I have chosen to utilize “Latinx” because “Hispanic” often refers to people from primarily Spanish speaking countries. Latinx is considered more inclusive of all Latin American people, and avoids the gender binary inherent in the original Spanish word “Latino/a” (Torres, 2018)

before and after policy implementation by subtracting the difference in the treatment group outcome from the control group outcome before and after the intervention. Assuming that unobserved differences between the groups do not vary over time, DID isolates the effect of the intervention on those in the treatment group (Murnane & Willett, 2011).

Treatment for this study was defined in 2017, the year the RDS was implemented. The dataset spanned six years, with the first observations in the 2013-2014 school year and the last observations in the 2018-2019 school year. The full DID included covariates and institution and year fixed effects. I controlled for state and institution-level factors that influence students' decisions to attend college. These covariates fell into four categories: state political environment, state educational environment, health of state economy, and institutional characteristics. In addition to the canonical DID model, which estimates one aggregate post-treatment interaction term, I ran lags models that included an interaction term between each year post-policy and the treatment indicator. This model allowed me to estimate the impact of the RDS in each year after the policy was passed.

Summary

The results of this study build an understanding of the early effects of the RDS on college access in NC. While, due to its recency, I was unable to estimate the long-term effects of the RDS on enrollment, this study remains relevant and timely as other states may learn about this novel system and adopt similar policies without understanding the impact on students. The remainder of the dissertation is broken into four chapters. Chapter two reviews literature surrounding resident tuition policies, explains the theoretical framework in detail, and presents the theory of action for this study. Chapter three describes the methods, model, and limitations of

this study. Chapter four presents analysis and results. Chapter five presents a discussion of the results and outlined implications for policy and future research.

CHAPTER 2: LITERATURE REVIEW

Overview

The goal of this literature review is to present the potential effects of the RDS on college access by examining research on a similar form, the FAFSA. First, I contextualize the RDS within NC's in-state-resident tuition (ISRT) policy by discussing it alongside the national ISRT policy landscape. I then describe the theoretical framework for this study, Herd and Moynihan's (2018) framework of administrative burden. Then, by applying Herd and Moynihan's (2018) framework to literature that explores administrative burden within the FAFSA application, I present a theory of action that explores the RDS as a possible barrier to postsecondary enrollment. I begin by examining FAFSA research surrounding learning and compliance costs to understand how a student's lack of access to college knowledge could prevent them from overcoming the RDS' complex application procedures and documentation requirements. I then review the FAFSA literature's use of behavioral economics to understand how psychological costs could determine whether or not students are able and willing to file the RDS.

In-State-Resident Tuition Policies

Similar to direct financial aid from the state government to the student, ISRT reduces the cost of public college attendance in the state where the student resides. The purpose of these policies are to lower financial barriers to postsecondary education in an effort to induce citizens to attend college in-state and, hopefully, to remain in the state to work after graduation (Darolia & Potochnick, 2015). ISRT policies exist in all 50 states; however, the requirements students must meet to qualify for these discounts vary by state. Often these requirements are set by state legislatures, but in some cases they are determined by the state board of higher education. While

the body that sets requirements varies by state, residency determination decisions across the United States, except in NC, are made by offices within individual universities.

Generally, in order to prove residency, dependent students must be able to prove that their parents or legal guardians have lived in the state for a certain amount of time. This varies from six months in Arkansas to 24 months in Alaska (FinAid, n.d.a). Independent students are usually required to prove domicile in the state for the time set out by the legislature and are often required to prove self-sufficiency. Students establish residency by providing documents such as voter registration cards, selective service documentation, state income tax returns, and state drivers licenses to the universities to which they have applied (FinAid, n.d.a); however, documentation requirements vary across states. For example, in North Dakota students can establish domicile by providing evidence that they have graduated from a North Dakota high school (North Dakota University System, n.d.). In Georgia, a student or their parents (if the student is under 24) must be able to provide documentation showing payment of Georgia state income tax (The University of Georgia, n.d.).

In addition to the variation in the requisite domiciliary acts and the amount of time students need to reside in the state to be considered a resident, there is also variation in the processes students must complete to establish in-state residency at their institution. Some institutions, like the University of Oklahoma, make residency determinations based on information included in a students' application (e.g. permanent addresses and high school transcripts; The University of Oklahoma, n.d.). Other colleges require that students complete in-house residency applications. For example, students who seek to claim in-state tuition benefits at the University of Virginia (UVA) must fill out a PDF document which includes a series of questions regarding the students' and parents' employment, taxes, and primary residence.

Students are then required to email or fax the PDF along with any supporting documentation, such as a letter verifying Virginia employment, to the residency officer at UVA before the first day of the semester (The University of Virginia, n.d.).

The North Carolina Context

NC is a noteworthy example in the ISRT policy landscape because it is the only state in which universities do not make residency decisions for students. Rather, this decision is made by the Residency Determination Service (RDS), which is a centralized system administered by state education agencies. In order to receive a residency decision, students must complete an online application called the interview. After students complete the interview, they are given a unique identifier called a Residency Certification Number (RCN) that links their name to their residency determination. RCNs are required on applications for all community colleges in NC.

Applications without RCNs will not be considered complete by the admissions office. RCNs are not required on UNC system institutions' applications; however, students who do not provide an RCN will not be considered for ISRT. Residency determinations are valid for 15 months and remain valid as long as a student is continuously enrolled (summer months are not included in this count). Therefore, only those who believe their residency status has changed or those who took time off of school in the fall or the spring semester need to reapply for residency (College Foundation of North Carolina, 2019).

Students hoping to claim ISRT in NC must be U.S. citizens and establish domicile in the state for at least twelve months before the school term (Residency Determination Service, 2018a). To prove domicile, students must provide federal and state tax information, personal identifying information like social security numbers, driver's license numbers, information regarding whether their home is rented or owned, Citizenship and Immigration Services

documentation, vehicle registration information, and license plate numbers for both themselves and their parents during the interview (Residency Determination Service, 2018a).

It is important to note that, much like residency policy in other states, residency for dependent students is based on the domicile of their parents or legal guardian. This has important implications for students whose parents are undocumented or students who do not have contact with their parents or legal guardians. While students who are citizens are eligible for ISRT, students in NC whose parents are undocumented or those who are unable to provide information about their parents or legal guardians are automatically considered out-of-state for tuition purposes and must file an appeal with the RDS (Residency Determination Service, 2018a). As I will argue later, these additional steps to prove residency may prevent students from completing college applications and/or receiving ISRT, thereby preventing postsecondary enrollment.

In-State-Resident Tuition and College Access

The ability to access ISRT has proven to be an important factor in students' college choice processes. Research examining the effects of in-kind tuition subsidies on whether or not a student chooses to attend college has found that a \$1,000 change in price results in between a three and eight percentage point decrease in the likelihood of enrollment (Kane, 1995, Long, 2004; Manski & Wise, 1989). Low-income students are especially sensitive to price changes, as McPherson and Schapiro (1991) found that a \$150 increase in price over time led to a 1.6 percent decrease in enrollment among low-income populations. While this body of research establishes that changes in in-kind tuition subsidies from the state do affect students' college enrollment decisions, they are relatively outdated and do not lend insight into whether tuition subsidies themselves induce students to attend college. Because the provision of ISRT has been written into many states' constitutions, there has been little opportunity, until recently, for researchers to

examine the effects of a policy shock wherein a population that was previously not granted ISRT was given access to the benefit. Fortunately, recent policy that allows states to extend ISRT to undocumented students has given researchers an opportunity to examine whether ISRT policies increase college access. In 1996, the federal government passed the Illegal Immigration Reform and Immigrant Responsibility Act and the Personal Responsibility and Work Opportunity Reconciliation Act, which determined that undocumented students may attend colleges in the U.S. but can only receive ISRT benefits if states take it upon themselves to pass legislation allowing it (Olivas, 2009).

Recent research has exploited states' decisions to extend ISRT to undocumented students to understand whether ISRT policies increase college access. The majority of studies done on the effect of ISRT on undocumented students' enrollment has found that policies that allowed undocumented students to access ISRT increased their likelihood of enrollment (Amuedo-Dorantes & Sparber, 2012; Darolia & Potochnick, 2015; Dickson & Pender, 2013; Flores, 2010a; Flores, 2010b; Kaushal, 2008; Holzman, 2016). Consistent with the research examining policies that grant ISRT, research shows that policies banning undocumented students from ISRT status have deleterious effects on enrollment. In their study on the impact of banning ISRT for foreign-born non-citizens (FBNCs), Holzman (2016) found this policy had a negative impact on college enrollment, suggesting that forcing students to pay out-of-state tuition at public colleges depresses college-going. Bozick and colleagues (2016) found that states with laws denying ISRT to undocumented students decreased the probability of enrollment for Mexican FBNCs by 12.1 percentage points as compared to states with no ISRT policy. These findings are supported by Villarraga-Orjuela and Kerr (2017) who found that banning ISRT led to an 8.4 percentage point

decrease in enrollment overall for Hispanic FBNCs and a 12.6 percentage point decrease in enrollment for Hispanic FBNCs ages 18 to 20 years old.

The findings from the research on ISRT and undocumented student enrollment, as well as the body of literature on the effects of changes in ISRT, suggests that access to ISRT has a significant positive impact on college enrollment. North Carolinians now face a residency determination system that is more complex and requires more information than the system formerly used at individual institutions. Therefore, it is important to understand whether the policy limits access to ISRT, as this could have implications for postsecondary enrollment. In the next section of this literature review, I will present the theoretical framework for this study, administrative burden, and associated literature that analyzes take up of similar programs to conceptualize the RDS' potential to serve as a barrier to ISRT receipt and college enrollment.

Conceptual Framework: Administrative Burden

Like many other countries in the world, the United States offers a wide range of social programs that help those in need of access to food, shelter, healthcare, and education. The U.S. social welfare system distinguishes itself by relying mostly on targeting to distribute public benefits, wherein a benefit is only given to a select few, rather than universal policies (Currie, 2004; Herd and Moynihan, 2018; Kleven & Kopczuk, 2011). While targeting may be successful in ensuring that only those who need public assistance receive it, the onerous application and documentation requirements necessary to confirm eligibility can deter those who qualify from participating (Herd & Moynihan, 2018). Burdensome application procedures help explain why nearly 30 percent of Americans living in deep poverty in 2018 (those with incomes below 50 percent of the poverty line) were not enrolled in any public assistance program (Minton & Giannarelli, 2019).

Decades of research in fields ranging from economics to public administration have sought to understand why complicated application procedures may cause a person in need to forgo assistance. Economists, whose work has traditionally relied on a rational choice framework, posit that non-filing is the result of a cost benefit analysis wherein an individual weighs the extent to which an opportunity will maximize their utility. If the benefits of participating in the program outweigh the costs of applying to it, the actor will make the rational decision to apply for the program (Hernanz et al., 2004; Tierney & Venegas, 2009). A key error in this framework is that it supposes that a person's willingness to navigate burden is governed by desire. In this way, the rational choice framework does not take into account the effects of differential levels of human capital, such as access to resources like information, on the ability of individuals to access public assistance (Herd & Moynihan, 2018).

Behavioral economists have somewhat addressed the failings of the rational choice perspective by acknowledging that human decision making is rarely rational and more so governed by how an individual sees the world. Rather than making objective decisions based on a cost benefit analysis, individuals' responses to burdens, like that of a complicated application, are often framed by cognitive biases that can make burdens seem insurmountable. For example, individuals tend to favor present circumstances over the future. When faced with a long application that may take a considerable amount of time to complete, individuals may forgo finishing the application even if the long-term benefits are substantial (Bertrand et al., 2006).

While economists and behavioral economists have attempted to answer why individuals may forgo public assistance, those bodies of literature have not attempted to define or give a name to the burdens people face when interacting with public programs. The field of public administration has defined this phenomenon as red tape. Red tape are "rules, regulations, and

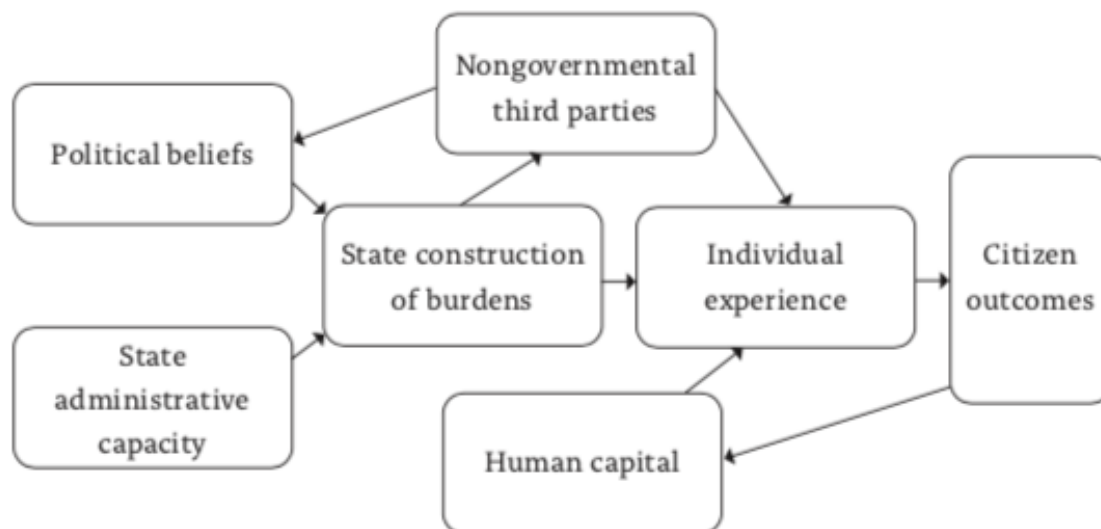
procedures that remain in force and entail a compliance burden, but do not advance the legitimate purposes the rules were intended to serve” (Bozeman, 2000, p.12). While Bozeman contends that red tape is inherently bad, Herd and Moynihan (2018) argue that often the rules, regulations, and procedures accompanying targeted public assistance are not always bad and often serve a legitimate purpose. In addition to the weaknesses in the way red tape is defined, much of the research surrounding red tape focuses upon how bureaucrats interact with red tape, not citizens attempting to qualify for the benefit.

Administrative Burden

Taken altogether, the body of work surrounding burdensome qualification processes within public programs leaves researchers “with something akin to the parable of the blind men each describing a different part of the elephant but unable to make sense of the whole” (Herd & Moynihan, 2018, p. 1). In response to the disparate literature on burden, Herd and Moynihan (2018) incorporated extant research from economics, psychology, and public administration to offer a definition for “the learning, psychological, and compliance costs that citizens experience in their interactions with government” (p. 22), which they call administrative burden. In addition to defining administrative burden, the authors conceptualize the forces that motivate a state to construct administrative burdens as well as to understand the individual’s experience with administrative burden and how it may affect their actions (shown in Figure 2).

Figure 2.

Herd and Moynihan's Framework of Administrative Burden (2018)



Note: Figure from *Administrative Burden: Policymaking by Other Means*. Russell Sage Foundation.

Starting at the left-hand side of the figure, Herd and Moynihan's (2018) framework begins by examining two factors that lead states to construct administrative burdens: state capacity and political beliefs. The authors argue that a state's ability to assume responsibility for certain tasks and minimize burden on the citizen are determined by their financial, administrative, and organizational capacity. States with little money, personnel capacity, or structure may not have the bandwidth to create easy to use systems or work with clients to troubleshoot issues in a timely manner. For example, as a result of years of budget cuts and increasing responsibility, the percent of callers that were unable to reach the Internal Revenue Service by phone increased from 37 to 75 percent in five years (Marr & Murray, 2016). This, understandably, could be quite consequential for someone needing tax documents to complete an application like the FAFSA or the RDS. Administrative burdens can also be influenced by

political beliefs. The authors posit that politicians may occasionally create administrative burdens to achieve policy goals rather than through the slower policymaking process. As seen in the model, nongovernmental third parties like lobbyists and special interest groups can encourage or discourage politicians from constructing administrative burdens.

In the case of the RDS, policymakers' decision to regulate residency determinations occurred after a lawsuit was filed by a student who received different residency decisions at two UNC System institutions (Fofaria, 2018b). It is likely that the legislature's decision to standardize the residency determination process across both public college systems was an effort to shield the state from future litigation. Additionally, by eliminating the need for students to answer residency questions on each college application, the RDS may be an attempt to ease the application process for students.

While the RDS may represent an attempt by policymakers to streamline the college application process and protect institutions from lawsuits, it is also possible that policymakers regulated residency determinations to achieve other policy goals. The RDS was created at a time when the state was decreasing appropriations to public institutions. A recent report from the Center on Budget and Policy Priorities found that state spending per college student in NC between 2008 and 2017 dropped 15.9 percentage points, or \$1,973 (Mitchell et al., 2017). Yet, almost paradoxically, NC public colleges and universities saw a 14 percent enrollment increase from fall 2005 to fall 2015 (Ma et al., 2017). The combination of increasing enrollment and decreasing state funding have led institutions to increase tuition, effectively shifting the burden of financing public education to students and their families (Ehrenberg, 2006). In a study on subsidy and tuition policies, Fethke (2007) found that decreases in a state's ability to support resident enrollment led to an increase in nonresident enrollment. Jaquette et al. (2017) found

similar results across public universities and noted that the relationship between state subsidies and nonresident enrollment was particularly strong at research universities. They argue that decreasing state support causes public institutions to act like their private peers and focus on attracting high paying, out-of-state students. Given these results and the recent declines in state appropriations in NC, it seems that the RDS may represent an effort to constrain the number of students eligible to receive ISRT. With fewer students able to claim residency and benefit from tuition subsidies, the legislature should be able to keep state appropriations down while universities maintain sufficient funding from out-of-state tuition revenues.

In addition to saving money, it is also possible that policy makers intended the RDS to achieve immigration policy goals by creating barriers to college access for students with undocumented parents. While it is important to note that there is no specific evidence to this point, it would be in line with the legislature's record of proposing and passing educational policy that is harmful to undocumented migrant families. Since President Barack Obama unveiled his administration's newest immigration policy, Deferred Action for Childhood Arrivals (DACA), in 2012, the NC legislature has introduced several bills aimed to not only deny ISRT to DACA students, but also ban them from attending public colleges in the state. While the effort to ban DACA students from attending public institutions failed in NC, these students remain ineligible for ISRT and other state financial aid. This policy effectively shut DACA students out of public higher education, as out-of-state rates are often too expensive for undocumented migrant families to pay out of pocket (Cebulko & Silver, 2016). As discussed later in the theory of action section, students who are eligible for ISRT that have undocumented parents are automatically considered out-of-state students and are required to go through a uniquely intensive appeals process. It is possible that the administrative burdens associated with this

process are too great for many students from migrant families to complete, which would prevent them from receiving the tuition benefit and enrolling in college.

The next part of the model, and most important for conceptualizing the effects of the RDS on students, details individuals' experiences with administrative burden and the possible consequences of that burden. Herd and Moynihan's (2018) framework is underlain by the basic assumption that any interaction between a government and its people will engender some costs, which are not always borne equally across parties. When state administrative capacity is minimal or the political will exists to obstruct access, potential claimants may experience more burdens when attempting to access public services. These burdens are created by both the policy design and its implementation and fall into three categories: learning costs, psychological costs, and compliance costs.

Learning costs refer to the time and effort individuals expend when collecting information about the features, eligibility requirements, and application procedures of a public program or benefit. For individuals filing the RDS, learning costs would include the time and effort spent learning about eligibility requirements for ISRT in NC, compiling a list of documents needed to complete the interview, and understanding the online application procedures. Learning costs are often evoked to explain why benefit take up within certain populations are low.

For example, Bartlett and colleagues (2004) found that over half of the 6 million nonparticipant households that were eligible for food stamps in the United States believed they did not qualify for the benefit. Many of these households cited confusion around program and eligibility rules for why they believed themselves ineligible. According to Herd and Moynihan's (2018) framework, if the effort necessary to find information on programs like the Food Stamp

Program is too high, qualifying individuals may be deterred from participating. This concept is buoyed by literature examining the effects of information on program take up. Studies have found people who already participate in a social program are more likely to access other services because the knowledge they gained applying to one program makes navigating other applications easier (Currie & Gruber 1996; Zedlewski et al. 1993). Additionally, several studies have found that informing individuals about their eligibility for an assistance program increases their likelihood of participation (Bettinger, et al., 2012; Daponte et al., 1999; Heckman & Smith, 2004). This information often comes from third parties, as shown in the framework, or from members within an individual's social or familial circle (Bourdieu, 1986; Perna & Titus, 2005).

The next category of administrative burden is compliance costs, which are the burdens experienced while following administrative rules and requirements. In the case of the RDS, compliance costs can include the time and energy spent completing the online interview, searching for the documentation to prove domicile, participating in post-application vetting procedures, and responding to requests made by system administrators. The consequences of compliance costs have been documented extensively in the literature. Currie (2003) found the average time individuals took to file an application for The Supplemental Nutrition Assistance Program (SNAP), which provides food-purchasing assistance, was five hours and cost \$10.31 (nearly 6 percent of the average monthly benefit at the time). She posited that the time and money necessary to complete the enrollment paperwork, for some, outweighed the benefit of the program and caused them to forgo the assistance. Efforts to reduce compliance costs such as consolidating multiple program applications into one, making application materials easy to access, and providing application help were all shown to increase uptake in popular public

programs like SNAP and Medicaid (Aizer 2003; Kopczuk & Pop-Eleches, 2007; Leininger et al., 2011; Schanzenbach, 2009).

The last type of administrative burden is psychological costs. These costs are linked in many ways to learning and compliance costs and refer to the stress of dealing with administrative processes, stigma associated with applying for or participating in public programs, and feelings of loss of personal autonomy while interacting with public programs. First, an application with high learning and compliance costs (application is difficult to learn about and complete) can cause stress among applicants and may deter them from completing the application process (Thorin & Irvin, 1992). Students who expend a great deal of time and effort learning about the RDS, gathering the requisite documentation, and attempting to complete the interview without error may feel that the tuition benefit is not worth the psychological cost of the application.

Next, applicants may experience stigma surrounding participation in programs like Food Stamps whose recipients are often categorized as “lazy” or somehow undeserving. These programs often see lower take up rates, as individuals do not want to be associated with these negative narratives. For example, in a survey of individuals likely eligible for Food Stamps, Bartlett and colleagues (2004) found that 27 percent of respondents indicated they would not apply to the program. Nearly half of these respondents explained their choice not to apply as a result of feelings of shame regarding their socioeconomic status and fear of being seen as poor. In addition to stigma surrounding participation in certain programs, individuals may also experience psychological costs related to stigma in program applications. Questions that force claimants to divulge information that they view as private or unnecessary (e.g. RDS interview questions about property and parental immigration status) may cause individuals to exit the process in the application phase, as the cost of revealing personal information may seem greater

than the benefit in question (Brodkin, 1992; Hacker, et al., 2011; Hacker, et al., 2015; Soss, 1999; Vargas Bustamante, et al., 2012).

Finally, if claimants feel an interaction with state processes is degrading or threatens their sense of autonomy, they may be less likely to follow through with application processes and participate in programs. For example, requiring applicants to go through processes that are usually reserved for those who are under suspicion of breaking the law, like being fingerprinted or drug tested, often lower application completion rates (Brodkin, 1992; Soss, 1999). Although high learning and compliance costs, as well as stigma surrounding programs and program participation can reduce program take up rates, Herd and Moynihan (2018) argue that access to human capital can mitigate the effects of these costs on claimant outcomes.

The final aspect of Herd and Moynihan's (2018) framework that affects individual experiences with state processes is their human capital. The authors describe human capital as a person's existing skills and access to resources such as education, social networks, and money that govern their ability to negotiate interactions with the state and cope with administrative burden. Human capital is especially crucial in reducing information and compliance costs, as those with the resources and social connections to get assistance learning about and navigating applications are far more likely to persist through administrative burdens (Herd & Moynihan, 2018). Access to human capital may also reduce certain psychological costs like stress, which are related to high compliance and learning costs. For instance, an individual who has others in their social network with experience filing the RDS will be able to seek help navigating the application thereby reducing their learning and compliance costs and alleviating the stress of the application.

While the authors argue human capital is crucial in navigating administrative burden, they also acknowledge that human capital is not equally distributed across the population. Oftentimes those most in need of public assistance (those with low incomes, less education, and communities of color) do not have access to the types of human capital resources that will help them overcome administrative burdens (Aizer, 2003; Brodtkin & Majmundar, 2010; Heckman & Smith, 2003; Hoxby & Avery, 2013). As seen in Figure 2, human capital not only affects the individual experience in isolation but forms a feedback loop with individual experience and citizen outcomes. As mentioned in the section on learning costs, individuals who successfully navigate one program application gain knowledge that helps them access other social programs (Currie & Gruber, 1996; Zedlewski et al., 1993). Their experience applying to public assistance programs could in turn influence the outcomes of others in their communities, as their expertise and assistance could decrease the compliance, learning, and psychological costs of applications. Thereby increasing program take up. In regard to the RDS, students who live in communities with high educational attainment will most likely be exposed to others who either have experience with the system or have contacts at local institutions that could help troubleshoot issues. Access to these social connections may help reduce the compliance, learning, and psychological costs associated with the application—in turn increasing the odds that a student will finish the interview and be able to apply to college and receive ISRT. Herd and Moynihan's (2018) conceptual framework of administrative burden not only offers a useful way to conceptualize how individuals may experience public assistance programs like Food Stamps and Medicaid, but it can also be extended to understand how students experience the college application process and help explain gaps in college enrollment.

Administrative Burden and College Access

Postsecondary education is undoubtedly one of the primary paths to social mobility in the United States. In 2019, the Bureau of Labor Statistics reported that, on average, Americans with a high school diploma earned about \$38,000 per year while those with an associate degree earned around \$45,000 and those with a bachelor's degree earned around \$65,000 (U.S. Bureau of Labor Statistics, 2019). Public colleges serve an important role in providing access to postsecondary education and the associated earnings premium, as these institutions enroll 73 percent of undergraduate students in the United States (Ginder et al., 2017). This is due, in part, to public colleges' low cost of attendance, which is facilitated by a tuition discount to students who reside in the state. Tuition at NC community colleges for in-state students entering college in the fall of 2020 was \$2,432 as compared to \$8,576 for nonresident (out-of-state) students (North Carolina Community College System, 2020). Similarly, tuition at the state four-year flagship, the University of North Carolina at Chapel Hill, for in-state resident students entering college in fall of 2020 was \$3,509 as opposed to \$17,099 for nonresident (out-of-state) students (The University of North Carolina at Chapel Hill, 2020a). Across the UNC System, which houses all 16 public four-year colleges, the difference between ISRT and non-resident tuition ranges from \$4,000 to \$14,000.

While postsecondary education certainly offers benefits and state tuition policies help reduce barriers to entry, enrollment gaps persist for low-income students and students of color. In 2018, there was between a 19 and 22 percentage point difference in enrollment rates between students in the two lowest SES quintiles and those in the highest. Additionally, 37 percent of both Black and Latinx 18 to 24 year olds enrolled in college as compared to 42 percent of White students (Ma et al., 2019). The racial and economic stratification in college enrollment suggests

that low-income students and students of Color face unique barriers to college entry. Among poor academic preparation and the rising cost of attendance, lack of access to college knowledge and resources to help navigate the complexities of the college-going process are some of the most persistent barriers to higher education for these students (Cabrera & LaNasa, 2001, Luna de la Rosa, 2006; Klasik, 2012, Perna, 2006a, 2006b). While informational barriers affect all aspects of the college-going process, one of the venues in which asymmetrical exposure to information about the college-application process is most apparent is the FAFSA (Dynarski & Scott-Clayton, 2006, 2013; Feeney & Heroff, 2013; Goldrick-Rab, 2016; Kim & Schneider, 2005; Klasik, 2012).

The FAFSA. The FAFSA, as it currently exists, has been deemed a barrier to college enrollment for students who may not have access to financial-aid-related college knowledge, specifically low-income, first-generation, and underrepresented students (Advisory Committee on Student Financial Assistance, 2005; Bill and Melinda Gates Foundation, 2015; Dynarski & Scott-Clayton, 2006, 2013; Goldrick-Rab, 2016; Perna, 2006b). The FAFSA is the gateway to all federal loans and grants, and completion of the form is especially crucial for students who cannot otherwise pay for college; however, many students who would qualify for federal aid do not file the FAFSA (Kantrowitz, 2011; Klasik, 2012). The most common reasons students do not file the FAFSA are that they have no information on how to apply, think the forms are too much work, do not have the appropriate documents, do not know what the FAFSA is, and miss the application deadline (Kantrowitz, 2009, 2011; King, 2004). Viewed through the lens of Herd and Moynihan's (2018) administrative burden framework, these reasons not only highlight the compliance costs wrought by the form's complexity and onerous documentation requirements as a barrier to completion, but also highlight the role information costs and human capital resources,

specifically access to information, as compounding factors that could prevent a student from filing the FAFSA.

There is evidence that the FAFSA is especially challenging for Black, Latinx, and low-income students. Using data from the High School Longitudinal Survey of 2009 (HSL:09), Bahr et al. (2018) found that 27 percent of Black and 34 percent of Latinx students did not complete the FAFSA (as compared to 18 percent of White students) because they did not have enough information about how to complete it. Additionally, 29 percent of students in the lowest income percentile did not file the FAFSA because they did not believe they qualified for the benefit (Bahr et al., 2018). The literature posits that these information asymmetries are due to lower levels of educational attainment within these groups. In particular, Black, Latinx, and low-income parents and families are less likely to have attended college, and thus may not be able to provide guidance on navigating administrative burdens within the financial aid process (Dynarski & Scott-Clayton, 2006; Feeney & Heroff, 2013; Kim & Schneider, 2005). This reflects Herd & Moynihan's (2018) argument that learning costs are often higher for those who have diminished access to human capital resources like form-specific information or connections with others who have navigated the administrative process in question.

The RDS. Although there has been no quasi-experimental research surrounding the effects of the RDS on college application and enrollment, there is some evidence that, like the FAFSA, the RDS poses a barrier to college access. In 2018, the NC Community College System commissioned a study that examined the user experience of students who started the interview but failed to complete. Overall, the report found that, between January 1, 2017 and January 1, 2018, 18,244 applicants (6 percent of total applicants) began the interview but did not finish. The report found that Black students did not finish the application at rates disproportionate to their

share of the total college-going population. While Black students only comprise 20 percent of enrollment at two and four-year colleges in NC, the report found that 34 percent of applicants who did not finish the RDS were Black. Conversely, White students comprise 57 percent of total two and four-year college enrollments, yet only 38 percent of non-finishers were White (North Carolina Community College System, 2019; Residency Determination Service, 2018b; The University of North Carolina System, 2020). Due to the nature of the interview questions about ethnicity, the data about Latinx students and completion was unclear.

In addition to exploring the demographic characteristics of those who did not complete, the report found that 40 percent of students who did not complete stopped out in the section that inquires about dependency status. The questions in this section include: “Are you a court appointed emancipated minor? Are you a ward of the state? Does someone other than your parent have legal guardianship of you? Are you married? Are one or both of your parents living? Do your parents provide 50% or more of your total cost of living? Total cost of living means the cost of your food, clothing, shelter, transportation, school or college tuition, and other incidental costs of living added together” (Residency Determination Service, 2018b). The report did not offer any insight into why this section in particular proved difficult to navigate for students.

While instructive, it is important to note that this report is limited in several ways. First, it only accounts for the number of students who could not or chose not to complete the RDS interview once initiated. Therefore, it does not reflect the experiences of those who became aware of the process and chose not to apply to NC colleges because of the system, or those who completed the initial interview, but could not complete the post-application vetting procedures. In addition, the report does not indicate what percentage of students who did not finish were applying to community colleges versus four-year colleges. This omission is vital, as students

who are applying to community colleges must file the application, while those applying to UNC system institutions need only file if they hope to claim ISRT.

After the report was completed, the State Board of Community Colleges issued a memo stating their concern about the RDS' impact on enrollment, writing, "The mission of the North Carolina Community College System is to 'open the door to high- quality, accessible educational opportunities that minimize barriers to postsecondary education, maximize student success, develop a globally and multi-culturally competent workforce, and improve the lives and well-being of individuals.' As it currently exists, the residency law as implemented through RDS creates, rather than minimizes, barriers for our students." (State Board of Community College, 2018, p. 5). These concerns are supported by a series of articles about the RDS published by EdNC, an education news outlet in NC. In an interview with the reporter, the director of college and career readiness at Isothermal Community College said many of her students "had started the process, but [said] that it just wasn't going to work out. That they just couldn't go to college" (Fofaria, 2018a). One student, whose parents are undocumented, recalled his experience with the RDS. "I answered the questions, and I kept providing more documentation. I just kept providing information until I couldn't provide any more. I was questioning it. I wondered if it was really worth going through all this just to get my education" (Fofaria, 2018a).

Several student affairs practitioners interviewed in the article argued that the form was potentially harmful to their low-income, first-generation, and students of color who cannot afford out-of-state tuition rates and are often on the margins of enrollment. Many were concerned that the administrative burdens associated with filing the RDS would dissuade students from attending college altogether. Given the concern voiced by the NCCCS system, accounts from student affairs practitioners and students, and the shortcomings of the report discussed above, it

is important to consider other elements of the RDS that constitute administrative burdens and also understand the broader effects of the RDS on enrollment disaggregated by sector and demographic characteristics.

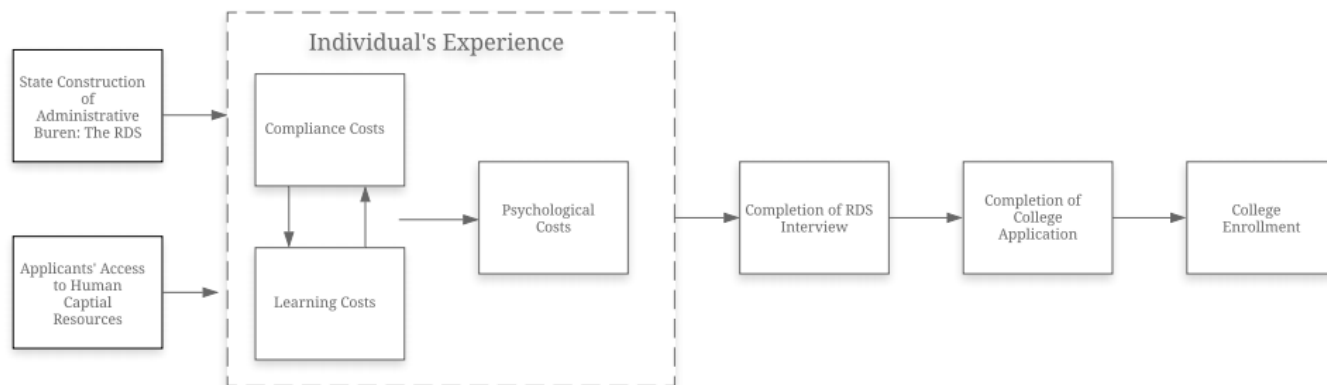
Theory of Action: The RDS as a Barrier to College

Research on FAFSA filing rates suggests that the FAFSA serves as a barrier to college enrollment for students who do not have access to the resources that could help them navigate the administrative burdens associated with the application (Advisory Committee on Student Financial Assistance, 2005; Bettinger et al., 2012; Bill & Melinda Gates Foundation, 2015; Dynarski & Scott-Clayton, 2006; Kantrowitz, 2011; King, 2004). This line of research has direct implications for students encountering the RDS, as the RDS and the FAFSA share similar structural and procedural features. Specifically, both forms are completed during the college application process, both are online, both ask for similar information from the student and the parents or guardians, and both involve post application documentation requests for selected applicants.

To better understand the elements of the RDS that may deter students from completing the process, it is instructive to examine the extant research on the effects of a similar application in the college application process- the Free Application for Federal Student Aid- on college access. The next portion of this literature review will explore the similarities between the FAFSA and the RDS in depth through the lens of Herd and Moynihan's (2018) conceptual framework of administrative burden. These two bodies of literature converge to form a theory of action that conceptualizes how administrative burden could prevent students, especially those who are low-income, first-generation and underrepresented, from applying to the RDS. While administrative burden has not been applied directly to empirical literature on the college-going process, the

benefit associated with the RDS, in-state tuition, is a form of public assistance thereby making this study an appropriate application of the framework.

Adapted from Herd & Moynihan's (2018) framework of administrative burden, the theory of action for this project, as seen in Figure 3, begins with state construction of the RDS in 2017. The nature of the policy, in conjunction with an individual's access to human capital resources, contribute to their experience with the policy. A student's experience completing the RDS interview is shaped by the interaction between learning and compliance costs and the degree to which this interaction contributes to psychological costs. The extent to which students experience these three costs determines their ability to file the RDS. As mentioned, if students applying to community colleges do not complete the RDS interview, their applications will not be reviewed by NCCCS system institutions, which would prevent them from enrolling in college. NC resident students applying to UNC system institutions who do not complete the RDS cannot receive ISRT. Given prior research that has established a strong connection between access to ISRT and likelihood of college enrollment (Amuedo-Dorantes & Sparber, 2012; Darolia & Potochnick, 2015; Dickson & Pender, 2013; Flores, 2010a; Flores, 2010b; Holzman, 2016; Kaushal, 2008; Kane, 1995, Long, 2004; Manski & Wise, 1989) and the magnitude of the tuition discount for NC residents (as much as \$14,000), it is likely that many students who are unable to file the RDS and claim ISRT will be unable to make up the difference between tuition rates and will choose not to enroll in college.

Figure 3*The RDS as a Barrier to College: Theory of Action*

Note: Figure adapted from *Administrative Burden: Policymaking by other means*. Russell Sage Foundation.

In the next section of the literature review, I will expand on the theory of action, specifically how learning, compliance, and psychological costs interact to determine students' outcomes. I will begin by considering how learning costs could prevent certain students from filing the RDS. In particular, I will draw on the FAFSA literature's use of social capital theory to better understand how the lack of college knowledge within social networks could prevent students from navigating the RDS interview. I will then detail the steps to complete the RDS interview and will utilize FAFSA literature to identify potential compliance costs students could face while applying for residency. I will examine how the design of the RDS interview process, specifically complex application procedures and documentation requirements, in conjunction with high learning costs could inhibit students from completing the form. Finally, I will look to the FAFSA literature's use of behavioral economics to understand the potential psychological costs that could arise as a student files the RDS.

Learning Costs

The first type of administrative burden in Herd and Moynihan's model (2018) is learning costs, which refer to the time and energy spent learning about a program, its eligibility requirements, and application procedures. As seen in the theory of action, there is a positive relationship between learning costs and compliance costs—as an application's complexity increases, so does the amount of information one needs to complete the form. The degree to which applicants experience and are able to overcome compliance costs and the associated learning costs is often determined by their access to human capital resources like information and assistance filing applications. This concept has borne out clearly in the FAFSA literature.

While all students who file the FAFSA must navigate the form's complexity, a student's ability to complete the application relies heavily on their access to the information and resources that help them complete the form. Specifically, the literature on FAFSA completion finds that the complicated nature of the FAFSA is either exacerbated or alleviated by the degree of college knowledge in students' families, communities, and schools (Cabrera & LaNasa, 2001, Luna de la Rosa, 2006; Perna, 2006a; Tierney & Venegas, 2009). Rather than framing the conversation around learning costs and the influence of human capital, financial aid and college-choice scholars often utilize social capital theory to make sense of the informational barriers that prevent students from completing the college-going journey.

Social capital, as it relates to college-going, refers to the knowledge about norms and processes of applying to and enrolling in college that are transmitted by social networks (e.g., family and friends; Bourdieu, 1986; Kim & Schneider, 2005; Perna, 2006a; Perna & Titus, 2005). Students are often exposed to college knowledge first in their homes (Perna, 2006a). Continuing-generation students, those whose parents have gone to college, are able to acquire

information about college from their parents, as they have had direct experience with higher education. Even if a student's parents cannot answer their college questions, students whose parents have gone to college are more likely to possess a social network rich with college knowledge that will help them navigate the complexities of the FAFSA (Dynarski & Scott-Clayton, 2006; Feeney & Heroff, 2013; Kim & Schneider, 2005). Conversely, students whose parents did not attend college may not be able to rely on their immediate family members for information about the financial aid and residency application. Unfortunately, the literature finds distinct racial and socio-economic patterns when comparing the demographic makeup of first and continuing generation students.

Continuing generation students are more likely to be White and middle to upper income and first-generation students are more likely to be low-income, Black, and Latinx (Center for First Generation Student Success, n.d; Dynarski & Scott-Clayton, 2006; Redford et al., 2017). These patterns play out clearly in the FAFSA application process, as findings from a study on FAFSA filing behaviors revealed that Black, Latinx, and low-income students were more likely to cite lack of information about how to complete the FAFSA as a reason for non-filing (Bahr, et al, 2018). These findings not only reflect the consequences of diminished access to social capital in networks that could transmit college knowledge, but also reflect the demographic differences between first and continuing-generation students.

The informational asymmetries low-income and students of Color often face regarding the FAFSA serve to heighten the barriers to postsecondary enrollment erected by the complicated nature of the form (Dynarski & Scott-Clayton, 2006; Feeney & Heroff, 2013; Kim & Schneider, 2005). This may also be true of the RDS. Because the RDS is a new process, most students and families will not have had experience completing it. However, like with the

FAFSA, students from highly educated and high income backgrounds will be better able to seek out answers in their social networks and troubleshoot any problems that they may encounter (Feeney & Heroff, 2013).

Low-income, Black, and Latinx students, on the other hand, are more likely to be first-generation college students and may not have people in their social networks who have experience interacting with higher education (Perna, 2006a), which could prevent them from getting help completing the RDS. This is likely to play out when students encounter issues filing the form, have questions about appropriate documentation, or are selected for validation. While there is a published RDS help hotline, students and parents can also contact admissions representatives at public colleges to troubleshoot small issues with their RDS interview. Students and families who have not had experience interacting with the college admissions process may not know that colleges employ admissions representatives to help students complete applications and that these individuals can help with residency issues. Additionally, as time passes since implementation, more students and families will have experience interacting with the RDS. First-generation students who live in communities with low educational attainment may not have social contacts who have completed the RDS and would not be able to turn to those individuals for help. The informational asymmetries between first and continuing generation students interacting with the RDS may have implications for college access. Students who encounter problems in the interview and, as a result, are unable to file the RDS will not be able to apply to or enroll in a NC public community college and will not be able to receive ISRT at UNC system institutions.

As mentioned, learning costs are often exacerbated by the degree of complexity in an application. In the next section of the literature review, I will explore the literature on

compliance costs in the financial aid application process and discuss how they may also appear in the RDS interview.

Compliance Costs

Like many application forms for targeted public assistance, the FAFSA exerts compliance costs on potential claimants. In particular, financial aid research has identified the location of the form online, the information required to file, and the post-application vetting procedures as particularly burdensome for college-going individuals (Advisory Committee on Student Financial Assistance, 2005; Cox, 2016; Dynarski & Scott-Clayton, 2006; Dynarski & Scott-Clayton, 2013; Feeney & Heroff, 2013; Goldrick-Rab, 2016). There is a positive relationship between learning and compliance costs -- the more complicated the application is, the more applicants need to know to complete it. The degree to which these compliance costs affect students' outcomes depends on their access to informational resources, as these are crucial in troubleshooting issues and overcoming complexity. Unfortunately, the RDS shares many of the same application procedures and requirements as the FAFSA, which indicates that the compliance costs that serve as a barrier to financial aid receipt may also serve as a barrier to college application completion, ISRT receipt, and, by extension, college enrollment.

Accessing the Form. The first step students must take to file for financial aid and establish residency is to make an account on the form's respective website. By housing these forms online, the system administrators presume that students are easily able to access the internet. College access researchers have criticized this assumption as it relates to the FAFSA and have identified limited internet access as a barrier to completion (Dynarski & Scott-Clayton, 2006; Advisory Committee on Student Financial Assistance, 2005). According to a 2016 Pew Research Center report, only 53 percent of Americans whose annual income is \$30,000 or below

have access to broadband internet in their homes as compared to 93 percent in the \$75,000 plus income bracket (Pew Research Center, 2018). Additionally, estimates from the U.S. Census Bureau (2017a) suggest that while around 21 percent of White households did not have broadband internet access or a computer, 30 percent and 36 percent of Latinx and Black households, respectively, did not have either of these resources.

Low-income students and students of color who wish to file these forms, but do not have access to the internet at home, are restricted to filing while they are at school or when internet equipped public spaces or businesses are open. Often, the times that students have stable internet access are during the workday when they might not be able to speak to their parents whose information is crucial for completing both the RDS and the FAFSA (Dynarski & Scott-Clayton, 2006; Advisory Committee on Student Financial Assistance, 2005). While it seems FAFSA administrators anticipated this barrier by publishing a paper FAFSA that students can mail in, RDS administrators did not extend that option to students. The lack of an alternative paper filing option will likely affect low-income students whose families cannot afford home internet or computers, as these students will only be able to file the RDS at school or in a business equipped with free WIFI. These public spaces are often only open during business hours when students' parents or guardians, whose information is required in the RDS interview, are at work. Therefore, a student would need to coordinate with their parents or guardians to take time off during the day to file the form together or would need to gather all of the documentation beforehand so they can complete the interview themselves. Students whose parents or guardians are unable to take time off or are unwilling to allow their student access to the necessary documentation without supervision will not be able to complete the RDS interview. Students

unable to file the RDS will be unable to complete their community college applications and the ISRT qualification requirements at UNC system institutions.

Gathering Documentation. In addition to requiring access to the internet, both the FAFSA and the RDS require students to amass information about themselves and their parents that is not always easily accessible. In order to file the FAFSA, students must have federal tax information and personal identifying information like social security numbers for themselves and their parents, driver's license numbers, and any military documentation that may apply (Goldrick-Rab, 2016). The RDS requires the same information in addition to parents' state taxes, information regarding whether their home is rented or owned, Citizenship and Immigration Services documentation, vehicle registration information, and license plate numbers (Residency Determination Service, 2018a). Not only is this paperwork difficult to amass for some students and families, but also, by requiring parental information, the financial aid system is making assumptions about students' relationships with their parents that may not be true (Advisory Committee on Student Financial Assistance, 2005; Cox, 2016; Dynarski & Scott-Clayton, 2013; Feeney & Heroff, 2013; Goldrick-Rab, 2016).

Both the FAFSA and the RDS rest on the assumption that students are living with their parents or legal guardians and that those parties are willing and able to supply the necessary paperwork for the student to complete the forms. These assumptions complicate the residency and financial aid process for students who do not live or have a relationship with their parents or legal guardians, who are experiencing homelessness, who are in the foster care system, and whose parents refuse to provide the necessary paperwork (Dynarski & Scott-Clayton, 2013; Feeney & Heroff, 2013). Students who are unable to provide parental information for reasons of homelessness or estrangement may, in the case of the FAFSA, apply for a dependency override,

and, in the case of the RDS, request an appeal, as they will be determined out-of-state without the necessary paperwork. However, in order to successfully change their status from dependent to independent or non-resident to resident, students must provide proof of their custodial or living situation. This process is often emotionally painful and protracted, which may prevent students on the cusp of pursuing a postsecondary opportunity from taking the steps to prove their claims (Advisory Committee on Student Financial Assistance, 2005; Kantrowitz, 2011).

Completing the Form. Document requirements aside, the content of the forms themselves could prove difficult for students who may not understand the legal terms included. Both the FAFSA and RDS use legal jargon like “emancipated minor” and “ward of the state” which may be unfamiliar to applicants (Advisory Committee on Student Financial Assistance, 2005; Bill & Melinda Gates Foundation, 2015; Taylor & Bicak, 2019). In fact, the RDS user experience study commissioned by the State Board of Community Colleges found that, of the students who stopped out of the application, 40 percent of them closed the application in the section where the system asks whether the student is an emancipated minor or ward of the state (Residency Determination Service, 2018b).

Furthermore, in the RDS interview, the language used to define residency has a different meaning in the context of education residency law than it does in other public spheres. For example, the definition of a “legal resident” for purposes like voting is different than that of a “resident for tuition purposes” (Residency Determination Service, 2018a) By NC law, a legal resident is a person who has had a physical presence in the state for one day and has the intention of making NC their permanent home (N.C. Gen. Stat. § 116-14-143.1). Establishing legal residency for tuition purposes, however, requires that a person establish domicile in the state for at least 12 months before the school term (Residency Determination Service, 2018a). This slight

difference in wording could be very confusing and generate learning costs for those unfamiliar with legal and education jargon specifically low-income and first-generation students whose families have not had experience with higher education (Advisory Committee on Student Financial Assistance, 2005; Dynarski & Scott-Clayton, 2006; Taylor & Bica, 2019). The FAFSA and RDS' use of specialized language could lead students to make mistakes on their applications, which has implications for their receipt of in-state tuition benefits. While students who make mistakes on the FAFSA are able to access the already completed form, make changes to the question with an error, and resubmit, students who make mistakes on the RDS are required to submit a reconsideration request. This involves completing the entire RDS interview again, which leaves students vulnerable to making additional mistakes on the application (Residency Determination Service, 2018a).

In addition to utilizing legal jargon in the interview, the RDS is only published in English, which could prevent non-English-speaking students and families from completing the RDS interview. Auerbach's (2004) study of a college access outreach program to Spanish-speaking families found that parents were more likely to engage in their student's college-going process if they were given information in their primary language. In order to address language barriers the FAFSA has published an application entirely in Spanish. The RDS is only accessible in English. Parents who do not speak English may be reluctant, or have difficulty helping their students complete the RDS.

Complete Post-Application Vetting. Students who complete and submit the FAFSA and the RDS interview may not necessarily be finished with the process, as there is the possibility that they could be selected for post-application vetting. Students applying to the RDS whose residency claim is deemed suspect after the system verifies a student's responses with state and

federal agencies may be asked to complete validation, a process during which they must provide additional documentation to system administrators. Students have a set amount of time in which they can complete validation and must have access to a computer and a scanner to scan and submit documents online (Residency Determination Service, 2018a). This process is akin to FAFSA verification in which students are asked to provide documentation that expands upon or proves their financial circumstances.

Similar to the process of gathering documents to complete the FAFSA and the RDS, locating the information necessary to complete post-application vetting may be especially difficult for students who do not have access to their parents or whose parents refuse to provide the information (Advisory Committee on Student Financial Assistance, 2005; Cox, 2016; Dynarski & Scott-Clayton, 2006). Additionally, students may not know they were selected for RDS validation, or they may not understand what it entails. In a study on the FAFSA verification process, Cochrane et al. (2010) found that 62 percent of low-income students in their sample that were selected for verification did not know the status of their application or thought it was complete. Fifteen percent of their sample understood that their application was incomplete but did not know how to proceed to complete verification. These findings indicate that low-income students may not have the resources or experience with higher education necessary to easily navigate the verification process. This not only has implications for their receipt of financial aid, but also college enrollment, as a recent study found that Pell-eligible students selected for FAFSA verification were 2.3 percentage points less likely to enroll in college than other low-income students who were not selected for verification (Oster et al., 2020). Low-income students' difficulty with verification signals that this group may not have the resources or the

know-how to complete RDS validation, which could prevent them from completing their college applications, receiving ISRT, and enrolling in college.

FAFSA literature establishes that the location of the form online, the information required to file, the language used, and the post-application vetting procedures serve as barriers to the receipt of aid. Because the RDS shares several of these elements, it is reasonable to infer that these same issues might serve as a barrier to RDS completion. Unfortunately, the literature finds that this complexity and the associated learning costs are not the only obstacle to FAFSA completion and college enrollment. In the next section, I will discuss the psychological costs and consequent behaviors that could arise as a result of high learning and compliance costs.

Psychological Costs

Psychological costs arise when the effort of learning about and complying with application procedures cause individuals to feel stressed, stigmatized, or lacking autonomy. Financial aid researchers have framed their research surrounding psychological costs using concepts from behavioral economics, which examines how people engage in economic decision making through a cognitive psychological lens (Bertrand et al., 2006). When applied to FAFSA completion, behavioral economics attempts to explain why high learning and compliance costs would deter students who would benefit from financial aid from filing the FAFSA. The literature on FAFSA completion has identified several behavioral patterns that help explain decision making: time inconsistency, default behavior, and identity salience. While any person can engage in these behaviors regardless of socioeconomic status, they manifest in more pronounced ways and carry larger consequences for low-income individuals and people of color (Bertrand et al., 2006). Due to the similarities in both application processes and documentation demands, the

lessons learned from applying behavioral economics to the study of FAFSA completion can also apply to this study of the RDS.

The first two concepts I will discuss, time inconsistency and default behavior, arise when excessive time and effort are needed to both understand applications and file them. Time inconsistency, the unwillingness to sacrifice time in the present for future rewards, is often referenced in FAFSA literature as a reason why students do not file (Bertrand et al., 2006; Dynarski & Scott-Clayton, 2006; Madrian & Shea, 2001). Applying for aid requires a considerable time investment. Dynarski & Scott-Clayton (2008) estimate that it takes a family, on average, 10 hours to complete the FAFSA. In addition, due to information requirements and confusing language, it is unlikely that a low-income or first-generation student can file the FAFSA in one attempt without help or interruption (Dynarski & Scott-Clayton, 2006; Madrian, 2014). The rewards for filing the FAFSA are not instant, and therefore many students and families procrastinate; sometimes causing them to miss filing deadlines (Kantrowitz, 2009, 2011). Understanding the similarities between the forms, it is reasonable to suppose that time inconsistent behavior might also affect students applying for the RDS, especially those who are experiencing homelessness or do not have contact with their parents, which could cause them to miss application deadlines.

Another behavior used to understand decision making is default behavior. Behavioral economists have found that the default option provided to people greatly affects their decision making (Duflo & Saez, 2003; Madrian & Shea, 2001; Samuelson & Zeckhauser, 1988). In the context of college-going, default behavior intersects interestingly with administrative burdens and social capital. Students whose parents and social contacts have gone to college are more likely to conform to this norm and attend college as well. This behavior is reinforced by the

support their social network often provides, which not only cements college-going as their default option, but also equips them with the knowledge and resources to overcome problems that may arise during the application process (Duflo & Saez, 2003; Dynarski & Scott-Clayton, 2006). Conversely, low-income and students of Color often experience much weaker institutional and social support regarding college-going. High educational attainment is likely not the norm in their communities, and even if the student did aspire to attend college, they are often not connected to resources that both encourage college-going and help them navigate the application process (Perna, 2006a). Therefore, their default option is to not go to college. In a study of Boston Public Schools students, Avery and Kane (2004) found that, at the beginning of their senior year, 65 percent of low-income students reported plans to go to college; however, less than 25 percent enrolled in college the following fall. The researchers found that students did not explicitly decide not to attend college. Instead, they encountered a minor obstacle within the application process and were unable to access the informational resources and support to help them overcome the issue. Therefore, the students resorted to their default option, and did not enroll in college.

As discussed, the learning and compliance costs associated with the RDS have the potential to be quite onerous. These administrative burdens may be especially difficult to overcome for students who do not have access to individuals within their social networks that can assist them in the interview process. The results of Kane and Avery's (2004) study indicate that students who do not have access to college-knowledge within their high schools, homes, and communities may not be able to overcome the learning and compliance costs associated with the RDS. If these students also live in communities where the default option is not to attend college, they may abandon the RDS interview, and the college-going process entirely.

In addition to overly complex application procedures and a lack of information deterring students from applying for financial aid, there is also evidence that identity salience, or feelings of stigma or loss of autonomy stemming from being forced to reveal sensitive information, may cause a student to exit the financial aid application process (Bertrand et al., 2006). Because federal financial aid is a targeted program designed to only extend the benefit to those with financial need, the FAFSA asks multiple questions about earnings and welfare (Dynarski & Scott-Clayton, 2008). These questions repeatedly remind low-income filers and their families about their poverty, which may dissuade students from filing the form (Dynarski & Scott-Clayton, 2006). Similarly, the RDS is designed to determine a student's eligibility for ISRT, therefore, the RDS asks multiple questions about a student's living situation, their property holdings, and the legal documentation status of themselves and their parents. These questions could prove emotionally damaging for students whose nuclear family is not intact or those who are experiencing housing insecurity or homelessness (47 and 17 percent of college students, respectively; Baker-Smith et al., 2020), which could prevent them from completing their RDS interview.

Identity salience may have a particularly harmful effect on children of undocumented immigrants. Even though U.S. citizens who are children of undocumented parents have the right to claim ISRT in NC, the system initially classifies these students as out-of-state because it relies on their parent's information for residency determination. Students of undocumented parents are then required to request an appeal wherein they are forced to expose their parent's documentation status. There is evidence that this requirement may prevent students from filing the RDS. The literature on healthcare compliance finds that undocumented people are less likely to seek out medical care because of concerns about being reported to authorities (Hacker, et al.,

2011; Hacker, et al., 2015; Vargas Bustamante, et al., 2012). Similarly, fears about deportation fueled by upticks in Immigration and Customs Enforcement arrests and removals of unauthorized immigrants during the Obama and Trump administrations (Gramlich, 2020) may prompt undocumented parents to refuse to provide their information to their child; therefore preventing them from filing the RDS. The RDS' demands on students of undocumented immigrants may have a particularly detrimental effect on college enrollment for Latinx students in NC, as 83 percent of undocumented people in the state hail from Mexico and other countries in Central America (Migration Policy Institute, n.d.).

Summary

The purpose of this chapter was to explore the potential for the RDS to serve as a barrier to college enrollment for low-income students and students of color. It began by outlining the national policy landscape surrounding ISRT and exploring research confirming the important role of ISRT in promoting college enrollment. It then introduced the theoretical framework for this study, Herd and Moynihan's (2018) administrative burden. Next, it utilized the theoretical framework and extant literature on the FAFSA to construct a theory of action that explains the RDS' potential to serve as a barrier to college enrollment. The body of literature on financial aid revealed that the complexity of the FAFSA in concert with lack of information about the process converge to erect barriers to financial aid receipt, especially for low-income, Black, and Latinx students. Due to the similarities between application processes, the lessons from financial aid literature indicate that the RDS could prevent low-income students and students of color from completing the residency interview. Failure to complete the RDS has implications for college enrollment, as, without an RCN, students applying to community colleges cannot complete their admissions applications and students applying to UNC system institutions cannot receive ISRT.

Unfortunately, because the policy is so new, researchers have not yet examined the effects of the RDS on these students' application and enrollment. The lessons learned from financial aid research make an excellent case for immediate scholarly inquiry.

CHAPTER 3: METHODOLOGY

Overview

The purpose of this study was to explore the effects of the RDS on enrollment at public, two and four-year colleges in NC. Guided by Herd and Moynihan's conceptual framework of administrative burden (2018), I utilized a difference-in-differences (DID) estimation strategy to answer the following questions:

1. How did the RDS affect enrollment volume for first-time, first-year students at North Carolina public two and four-year colleges?
2. How did the RDS affect enrollment volume for resident first-time, first-year students at North Carolina public two and four-year colleges?
3. How did the RDS affect enrollment volume for non-resident first-time, first-year students at North Carolina public two and four-year colleges?
4. Do the effects of the RDS on enrollment volume for first-time, first-year students at North Carolina public two and four-year colleges vary by race/ethnicity?
5. Do the effects of the RDS on enrollment volume for full-time, first-time students at North Carolina public two and four-year colleges vary by Pell grant status?

The results of this study helped uncover the consequences of the RDS on college student enrollment, particularly among those who already face high barriers to college access. This knowledge will help inform future changes to NC residency policy and will also provide empirical evidence detailing the effects of the policy on college access for policymakers in other states considering adopting the RDS or similar centralized residency systems.

Data and Sample

The dataset for this study included all qualifying public two and four-year colleges in the United States between the 2013-2014 and 2018-2019 school years. These data were drawn primarily from the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS). IPEDS comprises data from several interrelated surveys administered annually at colleges and universities nationwide that accept Title IV funding. These surveys collect information about institutional characteristics, enrollments, completion, financial aid, and staffing (National Center for Education Statistics, n.d.-a). Data used to construct covariates that are not found in IPEDS were drawn from other sources like the United States Census Bureau, the National Governors Association, and state legislature websites.

Analytic Approach

In order to estimate the impact of the RDS on college enrollment volume for institutions in NC (treatment group), it was critical that my analysis isolate and separate out the influence of other factors that might affect enrollment volume. The preferred way to isolate external factors that may bias results is through random assignment to treatment and control groups. In the case of this study, this would require randomly choosing institutions to include the RDS on their application (treatment group) and allowing the remaining institutions to determine residency within their admissions offices (control group). Random assignment ensures that the composition of treatment and control groups are similar, which allows the researcher to estimate the effect of the policy or intervention without concern that the makeup of the groups will bias the treatment effect (Murnane & Willett, 2011). While random assignment is considered the "gold standard" of research in the social sciences, it is not always feasible or ethical. Because the RDS was implemented across the state of NC in the spring and fall of 2017, evaluating this policy through

random assignment to treatment and control was not possible. Therefore, I utilized a quasi-experimental technique, specifically DID, to estimate the impact of the RDS on college enrollment volume for institutions in NC (treatment group) compared to institutions in other states that do not have the RDS interview as a part of their residency determination process (control group).

Originating in econometrics, DID offers researchers a way to estimate a quasi-causal treatment effect by utilizing trends in the control group to estimate what would have happened to the treatment group (institutions in NC) had the RDS not been implemented (Murnane & Willett, 2011). DID compares the treated and control groups before and after an intervention by subtracting the difference in the treatment group outcome variable (denoted by t subscript) from the control group outcome variable (denoted by c subscript), before (denoted by 0 subscript) and after the intervention (denoted by 1 subscript), as in the following equation (1):

$$DID = (Y_{t1} - Y_{c1}) - (Y_{t0} - Y_{c0}) \quad (1)$$

If unobserved differences between the treatment and control groups do not vary over time, DID isolates the effect of the policy on the treated (Murnane & Willett, 2011).

While the main DID model is effective in detecting aggregate changes between the pre and post-policy period, it does not offer insight into the strength of the treatment effect over time (Furquim et al., 2020). In the case of the RDS, it is possible that the policy had a large initial impact on enrollment and then abated as high school counselors and students learned more about the system. To address this concern, I ran a variant of the main DID model called a lags model. Instead of including one post policy indicator variable, the lags model includes an interaction term between a variable for each year in the analysis and the treatment indicator (Furquim et al.,

2020). By including treatment interaction terms for each year post-policy, I was able to observe annual changes in the outcome variables over time.

Variables

Policy Implementation

In my analysis, I defined treatment as beginning in the Fall of 2017. While RDS implementation began in February 2017, it took nine months for all colleges to fully adopt the system into their applications. For 9 UNC System and 26 NCCCS institutions, treatment was defined in the fall of 2017, as the RDS was implemented before their final fall 2017 application deadline. Therefore, it is reasonable to expect that some students applying for the fall 2017 term would be required to file the RDS. Treatment for the remaining institutions (7 UNC System and 32 NCCCS) was defined in fall 2018, as the RDS was not implemented until after the beginning of the 2017 fall semester and I could not expect to see treatment effects until the following fall. See Appendix B for implementation date and treatment semester. By defining treatment in the fall of 2017 and 2018, I was able to detect the early effects of the RDS on enrollment volume.

Treatment and Control Groups

There were two treatment groups for this study. The first included all two-year public institutions in NC (n=58) and the second included all UNC system institutions in NC (n=16). I chose to study the effects of this policy at two and four-year colleges separately because the requirements for filing the RDS and the demographic makeup of the student bodies at these two types of institutions are quite different. All students who apply to NC community colleges must file the RDS as a part of the application process. If they fail to file, their application will not be reviewed by the community college. Four-year colleges only require the RDS for students wishing to claim ISRT and students may file at any time during the application process.

Furthermore, I expected to observe a larger effect at two-year colleges because they enroll a disproportionately large number of low-income, Black, and Latinx students (Carnevale et al., 2018; Ma et al., 2019). Being that research on the financial aid process highlights the negative impacts of complexity and information asymmetries on FAFSA completion in underrepresented student groups (Advisory Committee on Student Financial Assistance, 2005; Bettinger et al., 2012; Bill & Melinda Gates Foundation, 2015; Dynarski & Scott-Clayton, 2006; Kantrowitz, 2011; King, 2004), it was prudent to understand whether the effects of a similar form vary by institution type.

Using a “local and focal” matching strategy, I constructed four comparison groups for each treatment group (Furquim et al, 2020; Hillman et al., 2015; Shadish et al., 2002). This matching strategy uses both geographically (local) and statistically (focal) derived neighbors to construct comparison groups. The local matches for this project included one comparison group with all qualifying two or four-year public institutions in the United States, one that contains qualifying institutions in geographically contiguous states, and one with qualifying institutions in the southeastern region of the United States. I constructed the focal comparison group by using inverse probability weighting (IPW) to estimate a group of control institutions that exhibited similar enrollment outcomes in the base year of the study, 2013 (Hillman et al., 2015).

There are many advantages to including multiple control groups. First, running the same model on multiple groups allowed me to assess the robustness of my findings. Statistically significant results in more than one model is an indication that the results are due to the policy and not some other confounding factor. Similarly, multiple comparison groups help to rule out alternative explanations for findings. For example, if I utilize all states in the union as a comparison group and find no statistically significant treatment effect, it is possible that there is a

treatment effect, but the comparison group is too dissimilar to estimate an accurate counterfactual. Running this same model on alternative comparison groups would allow me to understand whether those results reflect reality or whether they were driven by the composition of the control group (Hillman, et al., 2015; Meyer, 1995)

The first comparison group included all qualifying two or four-year public institutions in the United States (four-year n=599; two-year n=762). While this strategy has been used in policy research (Backes, 2012; Delaney & Kearney, 2016), it is possible that the social, economic, and political conditions across the United States differ from those in NC, which would lead to a poor estimate of the counterfactual. To ensure results are robust to differences across regions of the United States, the second comparison group comprised community colleges or four-year public colleges in geographically contiguous states (Georgia, South Carolina, Tennessee, and Virginia; four-year n=56; two-year n=76) and the third group contained all qualifying institutions in the southeast (Georgia, South Carolina, Tennessee, Virginia, West Virginia, Florida, Louisiana, Kentucky, Arkansas, Mississippi, and Alabama; four-year n=156; two-year n=173). Estimating the counterfactual using nearby states as a comparison has been employed widely in quasi-experimental policy research (Dynarski, 2000; Flores, 2010b; Hillman et al., 2015; Kramer et al., 2018; Whatley, 2019; Zhang & Ness, 2010). Proponents of this method argue that nearby states share similar social, political, and economic characteristics and also take part in policy diffusion whereby practices and policies in one state bleed over into the next (Kramer et al., 2018; Shadish et al, 2002). Therefore, one could expect that the policy would have a similar effect if enacted in a comparison state rather than NC.

In addition to these local matches, I utilized IPW to estimate a focal control group. Specifically, I matched institutions using their enrollment outcomes (overall enrollment,

enrollment by racial/ethnic group, Pell enrollment, in-state and out-of-state enrollment) in the base year of the study⁴ (Hillman et al., 2015; four-year n=379; two-year n=573). By creating a statistically derived comparison group, I ensured that the treatment and control groups exhibited similar pre-treatment outcome trends, which should reduce the risk of parallel trends violations (Furquim et al, 2020).

To calculate the inverse probability weights (w) I utilized a logistic regression model to estimate each institution's likelihood of being in the treatment group based on their enrollment outcomes in the base year of the study. To ensure common support, I dropped observations with propensities above the lowest maximum and below the highest minimum. This reduced each sample by around 50 observations for the residence analysis and 200 observations for the models examining enrollment overall, by race/ethnicity, and for Pell recipients. Additionally, I checked if there were any remaining observations with propensity scores less than 0.01 or greater than 0.99, as this would denote a near perfect probability of treatment. There were no observations with extreme propensity scores. These procedures help ensure that each observation in the sample has a comparable matched value. Table 2 includes summary statistics of the propensity scores for each treatment and control group and Appendix C shows evidence of overlap.

⁴ For the overall enrollment, enrollment by racial/ethnic group, Pell enrollment outcomes I utilized 2013 as the base year. For the in-state enrollment analysis, I utilized 2012 because IPEDS only reports this metric in even years (i.e. 2012, 2014, 2016, etc.).

Table 2.*Average propensities of full sample*

	Mean	SD	Min	Max
NC Community Colleges	0.10	0.03	0.04	0.18
NC Four-Year Colleges	0.09	0.03	0.02	0.17
Control Community Colleges	0.04	0.02	0.02	0.09
Control Four-Year Colleges	0.03	0.03	0.02	0.29

Next, I transformed the resulting propensity score (p) into an inverse probability weight using the following equations:

For treated individuals when estimating the average treatment effect on the treated (ATT),

$$w = 1 \quad (2)$$

For control individuals when estimating the ATT,

$$w = 1/(1 - p) \quad (3)$$

After creating these weights, I checked the balance of the outcomes across treatment and control groups. Tables 3 and 4 confirms that the inverse probability weights reduced median standardized bias across all outcomes. I then applied the weights to each year in the dataset. By emphasizing the outcomes of institutions which were more likely to be in the treatment group, but were placed in the control group and vice versa, inverse probability weights create treatment and control groups that mirror each other in composition (Austin & Stuart, 2015).

Table 3.*Percent standardized bias before and after weighting two-year colleges*

	Before Weighting			After Weighting		
	T Mean	C Mean	% Bias	T Mean	C Mean	% Bias
Two Year Colleges						
Total First-Year Enrollment	747.61	811.06	8.30	747.61	687.15	8.00
Black Enrollment	201.58	153.02	18.30	201.58	135.71	24.80
Latinx Enrollment	60.49	73.20	14.50	60.49	52.05	9.60
White Enrollment	405.61	479.84	18.50	405.61	404.98	0.20
Pell Enrollment	250.86	300.23	21.10	250.86	243.77	3.00
Resident Enrollment	712.26	998.90	40.20	712.26	716.06	0.50
Non-Resident Enrollment	20.793	38.024	38.7	20.793	21.273	1.1
	Mean: 22.80			Mean: 6.74		
	Median: 18.50			Median: 3.00		

Table 4.*Percent standardized bias before and after weighting four-year colleges*

	Before Weighting			After Weighting		
	T Mean	C Mean	% Bias	T Mean	C Mean	% Bias
Four Year Colleges						
Total First-Year Enrollment	1953.90	1619.90	22.60	1953.50	2061.50	7.30
Black Enrollment	351.47	227.21	46.40	351.47	471.24	44.70
Latinx Enrollment	112.73	85.95	27.40	112.73	94.83	18.30
White Enrollment	1251.10	1109.10	12.30	1251.10	1269.60	1.60
Pell Enrollment	676.27	537.83	36.50	676.27	746.62	19.30
Resident Enrollment	1668.60	1209.90	45.50	1668.60	1311.60	35.40
Non-Resident Enrollment	243.53	177.42	36	243.53	178.04	35.6
	Mean: 32.39			Mean: 23.17		
	Median: 36.00			Median: 19.30		

In order to be considered for inclusion in the control groups, institutions must be located in states that have not experienced any changes in residency law between 2013 and 2019. To determine eligibility, I searched state legislative documents for changes to residency policy. Upon this search, I found that Oregon passed a law (H.B. 2670) in 2015 that allows in-state tuition for students who formerly resided in Oregon but relocated due to their or their parent's position with the military, state or federal government, or a humanitarian organization and have not established residency elsewhere (Oregon Legislative Information, 2015). While unlikely, it is possible that this legislation caused an increase in in-state residents attending Oregon colleges and universities in and after 2015. Because such a change in the pre-period could impact parallel trends, I chose to remove Oregon from the analysis. Additionally, I removed Nebraska and the District of Columbia from the analysis, as the nature of their state legislature made it difficult to compare the state political environment to NC. I will discuss this decision at length in the data preparation section later in this chapter.

Outcomes

For the first research question, I measured overall enrollment volume using the number of first-time, degree/certificate seeking students entering in the fall reported by each institution to IPEDS. If the DID model detected a drop in the number of first-time, degree/certificate seeking students, then this could indicate that the RDS is preventing students from enrolling in college.

The second research question examined the impact of the RDS on resident (in-state) enrollment. The RDS was advertised as a means to ease the process of qualifying for ISRT. If this policy was successful in its stated mission, I would expect to observe an increase in the number of in-state students enrolling in NC's colleges and universities. For this analysis, I utilized the number of first-time, degree/certificate seeking in-state students entering in the fall.

It is important to note that this information is only reported every other year, therefore, my analyses for this research question only include 2012, 2014, 2016, and 2018.

The third research question sought to understand the impact of the RDS on non-resident (out-of-state) enrollment. Because the RDS requires students to prove their residency status, it is less likely that students will be able to falsely claim ISRT. Additionally, the theoretical framework for this study, administrative burden, indicates that the RDS may be difficult for some students to complete. This could lead to more students being classified as out-of-state. If this policy does pose an administrative burden or makes it more difficult for students to falsify their residency status, I would expect to observe an increase in the number of out-of-state students enrolling in NC's postsecondary institutions. For this analysis, I utilized the number of first-time, degree/certificate seeking out-of-state students entering in the fall. As with in-state enrollment, this information is only reported every other year.

To answer the fourth research question and determine whether the impact of the RDS on enrollment varies by race, I utilized the number of White, Black, and Latinx first-time, degree/certificate seeking students entering in the fall. A more precipitous decline in the number of first-time, degree/certificate seeking students who are Black and Latinx than for first-time, degree/certificate seeking students who are White could indicate that the RDS is affecting those who are less likely to have access to college knowledge.

Finally, to answer the fifth research question, I utilized the number of full-time, first-time undergraduates awarded Pell grants for each academic year as reported by institutions to IPEDS. It is important to note that IPEDS only stores this data for full-time students. Therefore, this analysis will not represent all first-time students. A decline in the number of students receiving

need-based aid could suggest that the RDS is disproportionately affecting low-income students who, like Black and Latinx students, are less likely to have access to information about college.

Covariates

One of the most pressing concerns in causal inference research is omitted variable bias, which occurs when a statistical model leaves out variables that affect the outcome. This leads to biased results, as the model is not able to separate out the influence of the treatment on the outcome (Murnane & Willett, 2011). In order to mitigate the risk of omitted variable bias, I included several control variables to account for broader social, economic and political trends and institutional characteristics that might influence enrollment at two and four-year colleges. These variables fell into six categories: state political environment, state educational environment, health of the state economy, institutional characteristics, institution fixed effects, and year fixed effects.

The first group of controls, state political environment, accounted for political factors that may affect a student's decision or ability to go to college. For each year in the analysis, I included whether or not the state's governor was a Republican, the proportion of Republicans in the state Senate, and the proportion of Republicans in the state House of Representatives. Several studies have found that the presence of a Republican governor and high levels of Republican control in the state legislature are associated with policies, like reduced state appropriations to higher education, that limit access to higher education for low-income students (McLendon et al., 2009; McLendon et al., 2011). Including these covariates helped separate out the effects of education policy agendas on college enrollment.

The next group of covariates, state educational environment, took into account the degree to which each state facilitates college-going for its citizenry. In their study on policy's influence

on college enrollment patterns, Perna and Titus (2005) found that increasing the amount of direct appropriations to higher education induces students to attend college in-state. To account for the influence of state support for higher education, I included dollar amounts of state higher education support per \$1,000 of personal income and support per capita. Additionally, much of the literature on college access asserts that students whose parents have attended college are more likely to attend college (Hossler et al., 1999; Perna, 2006a; Perna & Titus, 2005). Students hailing from states with high levels of educational attainment may be more likely to attend college; therefore, I included the percent of each state's population with a Bachelor's degree to account for the influence of educational attainment on enrollment.

Next I controlled for the health of the state economy, which included state unemployment rates and each state's income-to-poverty ratio. Economic conditions exert a strong influence on a students' decision to attend college, as students assess the costs and benefits of attending college before deciding to pursue postsecondary education (Perna, 2006a). Prior research has shown a negative relationship between the health of a state's economy and college attendance rates because prospective students face fewer opportunity costs when there are limited employment options (Barr & Turner, 2013). I included the United States Bureau of Labor Statistics' seasonally adjusted⁵ state unemployment rates, a common metric to measure economic health (Delaney & Kearney, 2016), and median income in my analysis to control for the influence of a weak economy on the college-going process. I chose to use the United States Bureau of Labor Statistics' unemployment data because it is collected every month and combines data from the Current Employment Statistics survey, the Current Population survey, and state unemployment

⁵ Seasonal adjustment is a common technique used in labor research that removes the influence of predictable seasonal patterns (e.g., hiring of short-term staff during the holiday shopping season) in order to estimate the real change in unemployment (U.S. Bureau of Labor Statistics, 2001)

insurance systems. Together, these sources provide the most accurate and up to date measure of state unemployment (U.S. Bureau of Labor Statistics, 2018). I also included each state's income-to-poverty ratio, which utilizes family income to report how many people in a state live below the poverty threshold (U.S. Census Bureau, n.d.). Prior literature has established a strong positive connection between a family's ability to pay for college, and a student's likelihood of enrollment (Cabrera & LaNasa, 2001; Ma et al., 2019; Perna, 2006b). States with a higher proportion of individuals below the poverty threshold may experience different college-going patterns, as the cost of higher education is often prohibitive to low-income students.

The fourth group of covariates, institutional characteristics, included institution's set tuition as reported to IPEDS, whether or not the institution has a tuition promise program, and entering class size. Cost of attendance is often cited as one of the most important factors students consider in the college-going process (Cabrera & LaNasa, 2001; Luna de la Rosa, 2006; Perna, 2006b; Tierney & Venegas, 2009). Institutions with lower tuition may attract more students, as the costs of exiting the workforce and investing a degree are much lower. I also controlled for the presence of tuition promise programs, which are place-based financial awards that go beyond existing financial aid (Perna & Leigh, 2017). Institutions that offer additional financial aid may induce more low-income students to enroll in a particular year. Controlling for these programs separated out the effects of these incentives from the effects of the RDS on enrollment. Additionally, for the models where the outcome is a subset of the entering class (e.g. number of Black students enrolled), I controlled for entering class size in order to separate the effects of net changes in enrollment from the effect of the RDS on the outcome.

Finally, I included institution-level and year fixed effects. Fixed effects control for all time-invariant factors that may influence the outcome of interest. Institution-level fixed effects

controlled for factors like college mission, which may affect students' enrollment decisions. For example, colleges that have a historic mission of educating students of color, like Historically Black Colleges and Universities, are likely to attract more Black and Latinx students than their predominantly White counterparts. Year fixed effects controlled for threats to identification applicable to all institutions, like broad demographic shifts or country-wide economic downturns. Including institution and year fixed effects greatly reduces the possibility of omitted variable bias and strengthens the ability of the DID models to isolate the effects of the RDS on enrollment (Angrist & Pischke, 2009). Table 5 provides a list of variables and data sources.

Table 5.*Variables included in analyses and their sources*

Variable	Source	Variable Name	Measurement Level
Dependent Variables			
Fall first-time enrollment volume	IPEDS	EFTOTAL	Continuous
Fall first-time enrollment volume by residence	IPEDS	INSTATE/OOSTATE	Continuous
Fall first-time enrollment volume by race	IPEDS	EFBKAAT, EFHISPT, EFWHITT	Continuous
Full-time, first-time awarded Pell	IPEDS	SFA	Continuous
Treatment Variables			
Post Policy Indicator In North Carolina	College Foundation of North Carolina (CFNC) CFNC	POST TREAT	Binary: 1=Y 0=N Binary: 1=Y 0=N
Covariates			
Republican governor	National Governors Assoc.	RGOV	Binary: 1=Y 0=N
% of Republicans in legislature	State legislature websites State Higher Education Executive Officers Association (SHEEO)	PRLEG	Continuous
Higher Ed \$ Per Capita	SHEEO	SPENDPERCAP	Continuous
Higher Ed \$ per \$1,000 of Income	U.S. Census Bureau	SPENDPER1K	Continuous
% with Bachelor's degree	U.S. Bureau of Labor Statistics	PBACH	Continuous
Unemployment rate	U.S. Census Bureau	UNEMPLOY	Continuous
Income-to-poverty ratio	IPEDS	INCPOV	Continuous
Institution's cost of attendance	IPEDS	chg2ay3	Continuous
Fall first-time enrollment volume*	IPEDS	EFTOTAL	Continuous
Institution has tuition promise program	Upenn AHEAD Center	PROMISE	Binary: 1=Y 0=N

Note: *covariate is only used in models 8-56 as presented in Table 6

Empirical Strategy

While the statistical model in (1) provides a general DID model, I utilized the following regression model to adjust for the aforementioned covariates in my DID estimates.

$$Y_{ist} = \beta_1 Post * RDS + \gamma X_{ist} + \lambda X_i + \delta X_t + \varepsilon_{ist} \quad (4)$$

In this equation, Y_{ist} is the series of outcomes (number of first-year students, number of in-state first-year students, number of out-of-state first-year students, number of enrolled first-year students who are Latinx, or Black, or White, and number of enrolled first-year students who are Pell recipients) for i institution, in s state during t fall semester. The coefficient β_1 on the interaction term $Post * RDS$ estimated the effect of the policy change for treated institutions for each year after the implementation of the RDS. γX_{ist} represents a vector of state and institution-level covariates. λX_i are institution fixed effects and δX_t are year fixed effects. I clustered standard errors at the institution level in order to account for correlation between institutions across years (Abadie et al., 2017). I ran the regression model several times to explore the multiple outcomes and multiple comparison groups in my analysis. Table 6 provides an overview of these analyses.

Table 6.*Description of models*

Outcome Variable	Research Question	Model Group	Treatment Group	Comparison Group
Overall fall enrollment volume	1	1	2-Year Colleges	All U.S.
		2	2-Year Colleges	Geographically Contiguous
		3	2-Year Colleges	Southeast
		4	2-Year Colleges	Matched
		5	4-Year Colleges	All U.S.
		6	4-Year Colleges	Geographically Contiguous
		7	4-Year Colleges	Southeast
		8	4-Year Colleges	Matched
		9	2-Year Colleges	All U.S.
		10	2-Year Colleges	Geographically Contiguous
Number of entering students who are in-State	2	11	2-Year Colleges	Southeast
		12	2-Year Colleges	Matched
		13	4-Year Colleges	All U.S.
		14	4-Year Colleges	Geographically Contiguous
		15	4-Year Colleges	Southeast
		16	4-Year Colleges	Matched
		17	2-Year Colleges	All U.S.
		18	2-Year Colleges	Geographically Contiguous
Number of entering students who are out-of-state	3	19	2-Year Colleges	Southeast
		20	2-Year Colleges	Matched
		21	4-Year Colleges	All U.S.
		22	4-Year Colleges	Geographically Contiguous
		23	4-Year Colleges	Southeast
		24	4-Year Colleges	Matched
		25	2-Year Colleges	All U.S.
		26	2-Year Colleges	Geographically Contiguous
Number of entering students who are Latinx	4	27	2-Year Colleges	Southeast
		28	2-Year Colleges	Matched
		29	4-Year Colleges	All U.S.
		30	4-Year Colleges	Geographically Contiguous
		31	4-Year Colleges	Southeast
		32	4-Year Colleges	Matched

Table 6 (continued).

		33	2-Year Colleges	All U.S.
		34	2-Year Colleges	Geographically Contiguous
		35	2-Year Colleges	Southeast
Number of entering students who are Black	4	36	2-Year Colleges	Matched
		37	4-Year Colleges	All U.S.
		38	4-Year Colleges	Geographically Contiguous
		39	4-Year Colleges	Southeast
		40	4-Year Colleges	Matched
		41	2-Year Colleges	All U.S.
		42	2-Year Colleges	Geographically Contiguous
Number of entering students who are White	4	43	2-Year Colleges	Southeast
		44	2-Year Colleges	Matched
		45	4-Year Colleges	All U.S.
		46	4-Year Colleges	Geographically Contiguous
		47	4-Year Colleges	Southeast
		48	4-Year Colleges	Matched
		49	2-Year Colleges	All U.S.
Number of entering students who are Pell Recipients	5	50	2-Year Colleges	Geographically Contiguous
		51	2-Year Colleges	Southeast
		52	2-Year Colleges	Matched
		53	4-Year Colleges	All U.S.
		54	4-Year Colleges	Geographically Contiguous
		55	4-Year Colleges	Southeast
		56	4-Year Colleges	Matched

For the lags analysis, I used the following model to estimate the impact of the RDS on enrollment over time:

$$Y_{ist} = \sum_j^q \delta_j \text{treat}_{it}(t = k + j) + \gamma X_{ist} + \lambda X_i + \delta X_t + \varepsilon_{ist}. \quad (5)$$

The terms in this equation are identical to the main DID model explained above; however, instead of including one post-policy indicator ($\beta_1 \text{Post} * \text{RDS}$), this model includes an interaction term between the treatment variable and the year indicator for each year after the policy was implemented, represented by $\sum_j^q \delta_j \text{treat}_{it}(t = k + j)$. The indicators in the summation term consist of q years after policy implementation occurring at time k . This

produces one δ_j regression coefficient for each j th year after k that is an interaction between the year in question and the treatment indicator. These interaction terms allowed me to observe the effect of the policy over time (Furquim et al., 2020). It is important to note that I did not run a lags analysis for the in-state and out-of-state analyses, as there is only one year of data post-policy.

Data Preparation

While institutions are required to complete the surveys that comprise IPEDS annually, there was missing data. There were 40 colleges in the data set (0.3% of observations) that were missing data for the outcome variables for every year of the study. Because there was no way to correct for this missingness, I dropped these observations. Additionally, there were 63 institutions (0.5% of observations) that changed sector (moved from a two to a four-year college and vice versa) over the course of the study. I was concerned that a sector change may influence enrollment outcomes, as two-year colleges generally enroll more low-income students and students of color. Therefore, I eliminated these institutions from the sample to protect against parallel trends violations.

The 20 Pennsylvania State University constituent campuses were missing enrollment data for the 2018-2019 school year. For these institutions, I utilized the last observation carry forward method as practiced by IPEDS administrators (National Center for Education Statistics, n.d.-b). Often employed in longitudinal studies, this method uses an observation's last known value to fill in missing values in later time points (Salkind, 2010). While this method may introduce bias due to changes in social, political, and economic conditions between years, in the case of this study, the prior year's observations are likely not vastly different from the missing time point. Finally, following the example of prior literature (e.g. McLendon et al, 2014), I removed

institutions in Nebraska and the District of Columbia from the analysis (n=7). Both states have unicameral (non-partisan) state legislatures, which prevents controlling for partisan influences—key covariates in my DID model.

Descriptive Statistics

Tables 7 and 8 display the summary statistics for the treatment groups and each comparison group. To understand the differences between the treatment and control groups, Tables 9 and 10 show the means for treatment and control on each variable and the difference between them. Of particular note from Tables 7-10, the NC legislature contributes more money per capita and per \$1,000 of personal income and the colleges, on average, have a lower cost of attendance than colleges in control states. Additionally, the political makeup of NC's state government is similar to the bordering states and states in the same region but is quite different than the average across the country. Finally, the means for enrollment (overall, enrollment by race/ethnicity, Pell, in-state, and out-of-state) vary widely across treatment and comparison groups. As expected, the matched comparison group exhibits means that are closest to those in NC. The differences provide evidence for the use of controls in the analyses, which will determine whether these differences are statistically significant.

Between two and four-year colleges, the community colleges both in and outside of NC enroll a higher proportion of Black, Latinx, low-income, and in-state students than their four-year counterparts. Conversely, four-year institutions enroll more out-of-state students. These differences justify my decision to complete the analysis on these colleges separately, as it is likely I will observe heterogeneous effects.

Table 7.*Descriptive for two-year colleges*

Variable	NC		Control Colleges in All States		Control Colleges in Geographically Contiguous States		Control Colleges in the Southeast		Matched Colleges	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total First-Year Enrollment	636.30	699.33	1180.85	1295.01	1113.19	1206.29	928.17	974.68	757.87	661.92
Black Enrollment	150.77	224.19	175.19	292.01	287.43	352.42	252.35	317.25	136.49	220.53
Latinx Enrollment	66.47	90.59	301.06	558.68	102.18	279.12	72.81	230.41	81.69	105.46
White Enrollment	345.03	335.76	526.23	576.87	609.79	523.10	520.35	435.86	437.71	374.71
Pell Enrollment	210.71	193.65	387.37	414.75	412.76	390.26	401.96	358.38	268.56	222.48
Resident Enrollment	652.01	681.57	1123.55	1243.96	1043.14	1060.57	880.24	880.75	949.00	757.42
Non-Resident Enrollment	19.28	45.57	46.61	144.28	47.53	110.56	40.25	85.39	38.48	121.26
% Senate Republicans	0.68	0.02	0.53	0.18	0.63	0.11	0.64	0.09	0.56	0.17
% House Republicans	0.63	0.01	0.52	0.16	0.66	0.05	0.62	0.08	0.55	0.15
Republican Governor	0.67	0.47	0.59	0.49	0.74	0.44	0.74	0.44	0.65	0.48
Higher Ed \$ Per Capita	401.47	11.55	301.60	89.48	243.88	33.62	277.55	47.42	292.90	92.13
Higher Ed \$ per \$1,000 of Income	9.54	0.48	6.24	1.94	5.49	1.02	6.80	1.68	6.24	2.06

Table 7 (continued).

% with Bachelor's degree	0.27	0.02	0.29	0.05	0.29	0.04	0.25	0.05	0.28	0.05
Unemployment rate	5.58	1.31	5.27	1.46	5.20	1.42	5.47	1.35	5.15	1.42
Income-to-poverty ratio	0.16	0.02	0.14	0.03	0.14	0.03	0.16	0.03	0.14	0.03
Median Income	49623.33	3037.73	57944.58	9825.85	55479.92	9146.98	49307.85	8448.08	56344.81	9665.20
Tuition and Fees	2375.87	250.32	4150.33	2062.19	4169.17	1109.29	3871.37	1033.53	4376.86	1869.73
Promise Program	0.04	0.20	0.10	0.30	0.25	0.44	0.16	0.36	0.09	0.28
N	348		4572		456		1,038		3,438	

Table 8.*Descriptive for four-year colleges*

Variable	NC		Control Colleges in All States		Control Colleges in Geographically Contiguous States		Control Colleges in the Southeast		Matched Colleges	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total First-Year Enrollment	2070.39	1448.17	1846.25	1822.43	1899.31	1462.59	2036.20	1893.45	1647.30	1548.26
Black Enrollment	457.74	432.26	203.65	277.01	395.12	342.79	381.73	391.63	228.13	272.36
Latinx Enrollment	136.50	111.76	308.29	635.56	123.81	125.58	284.66	835.66	102.84	118.32
White Enrollment	1200.39	1170.07	1004.60	1098.06	1100.81	1084.57	1126.21	1116.72	1103.84	1148.31
Pell Enrollment	759.71	413.41	635.47	585.24	652.88	422.65	716.79	653.92	536.80	386.19
Resident Enrollment	1779.53	1246.47	1482.66	1443.24	1511.10	1103.93	1644.85	1613.09	1235.36	998.87
Non-Resident Enrollment	263.91	213.87	290.91	527.55	340.78	489.28	333.12	578.26	193.96	185.99
% Senate Republicans	0.68	0.02	0.57	0.17	0.64	0.10	0.64	0.09	0.60	0.16
% House Republicans	0.63	0.01	0.55	0.16	0.66	0.05	0.63	0.07	0.58	0.14
Republican Governor	0.67	0.47	0.62	0.49	0.78	0.42	0.78	0.42	0.68	0.46
Higher Ed \$ Per Capita	401.47	11.60	267.89	86.30	251.27	36.22	259.04	48.21	252.02	75.98
Higher Ed \$ per \$1,000 of Income	9.54	0.48	5.60	1.90	5.71	1.07	6.21	1.63	5.48	1.76

Table 8 (continued).

% with Bachelor's degree	0.27	0.02	0.28	0.05	0.29	0.04	0.25	0.05	0.27	0.05
Unemployment rate	5.58	1.31	5.19	1.39	5.30	1.44	5.49	1.30	5.15	1.35
Income-to-poverty ratio	0.16	0.02	0.14	0.03	0.14	0.03	0.16	0.03	0.14	0.03
Median Income	49623.33	3049.28	56926.17	9407.78	55030.19	8630.40	49508.45	7363.01	54642.71	8919.71
Tuition and Fees	6584.16	1351.33	8434.46	3240.07	9240.64	3586.15	7447.45	3185.89	8795.05	3080.60
Promise Program	0.03	0.17	0.06	0.23	0.00	0.00	0.03	0.18	0.06	0.23
N	96		3594		336		936		2274	

Table 9.*Differences between treatment and control for two-year colleges*

Variable	Treated	Colleges in All States	Difference Between Treat and Control	Colleges in Geographically Contiguous States	Difference Between Treat and Control	Control Colleges in Southeast	Difference Between Treat and Control	Matched Colleges	Difference Between Treat and Control
Total First-Year Enrollment	636.30	1180.85	-544.55	1113.19	-476.89	928.17	-291.87	757.87	-121.57
Black Enrollment	150.77	175.19	-24.41	287.43	-136.66	252.35	-101.58	136.49	14.28
Latinx Enrollment	66.47	301.06	-234.59	102.18	-35.71	72.81	-6.34	81.69	-15.22
White Enrollment	345.03	526.23	-181.20	609.79	-264.76	520.35	-175.33	437.71	-92.68
Pell Enrollment	210.71	387.37	-176.66	412.76	-202.05	401.96	-191.24	268.56	-57.85
Resident Enrollment	652.01	1123.55	-471.54	1043.14	-391.12	880.24	-228.23	949.00	-296.99
Non-Resident Enrollment	19.28	46.61	-27.32	47.53	-28.24	40.25	-20.97	38.48	-19.20
% Senate Republicans	0.68	0.53	0.15	0.63	0.04	0.64	0.03	0.56	0.12
% House Republicans	0.63	0.52	0.11	0.66	-0.03	0.62	0.00	0.55	0.07
Republican Governor	0.67	0.59	0.07	0.74	-0.07	0.74	-0.07	0.65	0.02
Higher Ed \$ Per Capita	401.47	301.60	99.87	243.88	157.59	277.55	123.92	292.90	108.57
Higher Ed \$ per \$1,000 of Income	9.54	6.24	3.30	5.49	4.05	6.80	2.74	6.24	3.30
% with Bachelor's degree	0.27	0.29	-0.01	0.29	-0.02	0.25	0.02	0.28	-0.01
Unemployment rate	5.58	5.27	0.32	5.20	0.38	5.47	0.12	5.15	0.44
Income-to-poverty ratio	0.16	0.14	0.02	0.14	0.02	0.16	-0.01	0.14	0.02
Median Income	49623.33	57944.58	-8321.25	55479.92	-5856.59	49307.85	315.48	56344.81	-6721.48

Table 9 (continued).

Tuition and Fees	2375.87	4150.33	-1774.46	4169.17	-1793.29	3871.37	-1495.50	4376.86	-2000.98
Promise Program	0.04	0.10	-0.06	0.25	-0.21	0.16	-0.11	0.09	-0.04

Table 10.*Differences between treatment and control for four-year colleges*

Variable	Treated	Colleges in All States	Difference Between Treat and Control	Colleges in Geographically Contiguous States	Difference Between Treat and Control	Control Colleges in Southeast	Difference Between Treat and Control	Matched Colleges	Difference Between Treat and Control
Total First-Year Enrollment	2070.39	1846.25	224.14	1899.31	171.07	2036.20	34.18	1647.30	423.09
Black Enrollment	457.74	203.65	254.09	395.12	62.62	381.73	76.01	228.13	229.61
Latinx Enrollment	136.50	308.29	-171.79	123.81	12.69	284.66	-148.16	102.84	33.66
White Enrollment	1200.39	1004.60	195.78	1100.81	99.58	1126.21	74.17	1103.84	96.54
Pell Enrollment	759.71	635.47	124.24	652.88	106.82	716.79	42.92	536.80	222.91
Resident Enrollment	1779.53	1482.66	296.87	1511.10	268.43	1644.85	134.68	1235.36	544.17
Non-Resident Enrollment	263.91	290.91	-27.00	340.78	-76.87	333.12	-69.21	193.96	69.95
% Senate Republicans	0.68	0.57	0.11	0.64	0.04	0.64	0.04	0.60	0.08
% House Republicans	0.63	0.55	0.08	0.66	-0.03	0.63	0.00	0.58	0.05
Republican Governor	0.67	0.62	0.05	0.78	-0.11	0.78	-0.11	0.68	-0.02
Higher Ed \$ Per Capita	401.47	267.89	133.58	251.27	150.21	259.04	142.44	252.02	149.46
Higher Ed \$ per \$1,000 of Income	9.54	5.60	3.95	5.71	3.83	6.21	3.33	5.48	4.06
% with Bachelor's degree	0.27	0.28	-0.01	0.29	-0.02	0.25	0.02	0.27	0.00
Unemployment rate	5.58	5.19	0.39	5.30	0.28	5.49	0.09	5.15	0.43
Income-to-poverty ratio	0.16	0.14	0.02	0.14	0.01	0.16	0.00	0.14	0.02
Median Income	49623.33	56926.17	-7302.84	55030.19	-5406.86	49508.45	114.88	54642.71	-5019.38

Table 10 (continued).

Tuition and Fees	6584.16	8434.46	-1850.30	9240.64	-2656.48	7447.45	-863.29	8795.05	-2210.89
Promise Program	0.03	0.06	-0.03	0.00	0.03	0.03	0.00	0.06	-0.03

Assumptions

In order to utilize DID to estimate the quasi-causal effect of an intervention three assumptions must hold: (1) the allocation of the treatment cannot be related to the outcome, (2) the treatment and control group must exhibit parallel trends pre-treatment, and (3) the Stable Unit Treatment Value Assumption (SUTVA) must hold (Wing et al., 2018; Murnane & Willett, 2011). Below I discuss how I satisfy each assumption.

Allocation of Treatment

The first assumption of DID requires that the allocation of the treatment be independent of the outcome of interest. In the case of this study, the allocation of treatment assumption would be violated if the federal government directed NC policymakers to implement the RDS because of enrollment patterns at NC public institutions. Given that the RDS was created at the direction of the NC General Assembly, there is no indication that assignment of treatment was related to the outcome.

Parallel Trends

In order to utilize DID to estimate the quasi-causal effect of the RDS on enrollment, I must establish that trends in enrollment volume for the two groups of colleges (in NC and not in NC) in the pre-treatment time period were similar (parallel) to one another prior to RDS implementation (Wing et al., 2018; Murnane & Willett, 2011). Satisfying the parallel trends assumption allows me to confidently utilize the comparison group to estimate what would have happened to enrollment volume at NC colleges had the RDS not been implemented. I tested the parallel trends assumption in two ways for each potential control group: a visual inspection of graphed means and leads models.

I began by graphing mean enrollment percentages for each outcome (all entering first-time students, in-state and out-of-state first-time students, Black and Latinx first-time students, and first-time students receiving the Pell Grant) at NC colleges and non-NC colleges over time. If the comparison group serves as a good counterfactual, I would expect to see that the lines tracking the outcomes move in tandem in the years prior to the fall 2017 treatment (Wing et al., 2018). As seen in Appendix D the majority of the models pass the visual inspection. I will discuss these graphs in detail in chapter four.

Next, I ran a leads model for each outcome. Leads models include an interaction term between the treatment indicator and year variables for each year in the analysis. Statistically significant interaction terms pre-policy would indicate that outcomes for the treatment and control groups were not changing at the same rate before treatment. While these terms are useful in displaying which years in the pre-period may violate parallel trends, they do not indicate whether the year to year changes pre-policy overall were statistically significant. To determine whether the interaction terms, considered as a whole, were statistically significant, I completed a joint test of significance. This test determines whether the differences between these terms are different than zero. Statistically significant interaction terms pre-policy in conjunction with a statistically significant joint test would indicate that the outcomes for the treatment and control groups were not moving in a similar pattern and that the control group cannot be used to estimate the counterfactual (Murnane & Willett, 2011). As seen in Appendix E, nine of the 56 models returned both statistically significant interaction terms pre-policy and a statistically significant joint test of significance. These results will be discussed at length in Chapter Four.

SUTVA

The last DID assumption, SUTVA, has two components. First, this assumption requires that the treatment assigned to one institution does not affect the behavior of another institution. This assumption would be violated if institutions in the states that comprise the control group adopted the RDS or a similar system as a result of RDS implementation in NC (Wing et al., 2018; Murnane & Willett, 2011). As SUTVA is an exclusion restriction, I cannot verify that this assumption holds from the data itself. In order to satisfy this assumption, I read the residency legislation for each state in the control group, verified residency procedures with individual institutions, and confirmed that no other state has adopted a system similar to the RDS. SUTVA also requires that the treatment is well-defined and there is only one version of the treatment (Murnane & Willett, 2011). By the nature of NC residency policy, all public institutions in the state are required to utilize the RDS for residency determinations. There are no exceptions to the policy, therefore I can be confident that this component of SUTVA is satisfied.

Robustness Checks

Due to the longitudinal nature of the data, there is concern that the DID model may identify a secular trend, which is any broader societal and economic trend, and misattribute its effect on the outcomes to the policy (Wing et al., 2018). There are two ways to confirm that the DID models are robust to external influences: the leads models and a placebo analysis. Similar to their use in diagnosing violations of the parallel trends assumption, the interaction terms between treatment and the years leading up to the policy in the leads analysis allow the researcher to identify the influence of secular trends on the model. If the interaction terms pre-policy and the joint hypothesis test are not statistically significant, I can be reasonably sure that any changes I observe in the DID models are due to the policy and not a broader economic or societal trend. As

discussed, nine of the 56 models returned both statistically significant interaction terms pre-policy and a statistically significant joint test of significance. If these corresponding DID and lags estimates for these models detect a treatment effect, I cannot, with confidence, report that these changes were due to the RDS.

In addition to running leads models, I ran a placebo analysis for each outcome. Placebo analyses utilize the main DID models in the study, but instead of placing the treatment indicator on the year the policy was enacted, I placed the treatment indicator in a year before the policy was enacted (2015 for overall, Latinx, Black, White, and Pell enrollment; 2014 for in-state and out-of-state enrollment). If the DID models are robust to external factors, I expect the interaction term between the treatment and the post-period indicator to not be statistically significant (Wing et al., 2018). As seen in Appendix F, there were 11 models wherein the placebo year was statistically significant; however, only three coincided with a model that also estimated a statistically significant treatment effect. I discussed the implications of this in chapter four.

Limitations

There are a few important limitations to this study. First, because of the recency of the policy and data collection practices at the National Center for Education Statistics, I was only able to analyze two years post-policy. As such, the results of this study represent the early effects of the RDS on college enrollment. Next, I do not have access to student-level data to assess the effects of the RDS on college-going decisions. Therefore, I have limited ability to control for the factors that may influence application and enrollment decisions at the student-level such as demonstrated academic achievement. Additionally, IPEDS, the primary data source, does not store application data for community colleges. Because students are required to file the RDS to complete community college applications, it would be optimal to examine how the RDS affected

college application volume. However, because community colleges are open access—meaning, all who apply are admitted—enrollment volume served as a suitable substitute.

Further, I theorized that the RDS may be especially difficult for students with undocumented parents. I was unable to test the impact of the RDS on these students, as the data are not available in IPEDS. Instead, I used Latinx student enrollment as a proxy because many undocumented individuals in NC immigrated from Mexico and other Central American countries (Migration Policy Institute, n.d.). This strategy likely masked the effects of the RDS on children of undocumented parents. Additionally, IPEDS also only stores Pell recipient data for full-time, first-time students. Therefore, the analysis observing the effects of the RDS on the number of Pell recipients enrolled did not represent all first-time students. Similarly, IPEDS only requires institutions to report the residence of their incoming class every other year, so the analyses on changes to in-state enrollment only included 2012, 2014, 2016, and 2018.

Finally, IPEDS does not capture information about first-generation status. The financial aid literature indicates that first-generation students face higher barriers to FAFSA completion due to their diminished access to financial-aid-related college knowledge (Bill and Melinda Gates Foundation, 2015; Dynarski & Scott-Clayton, 2006, 2013; Goldrick-Rab, 2016; Perna, 2006b). It would be optimal to test the effects of the RDS on enrollment for first-generation students. However, because of data limitations I could only include outcomes for students who are most likely to be first-generation college students and who have also demonstrated difficulty with forms like the RDS (low-income, Black, and Latinx students; Bahr, et al., 2018).

Summary

This study utilized a quasi-experimental estimation technique, specifically difference-in-difference, to understand the impact of the RDS implementation on enrollment patterns at NC's

58 community colleges and 16 public four-year colleges. The dependent variables are the number of first-time, first-year students at two and four-year colleges, the number of enrolled first-year students at two and four-year colleges who are in-state, the number of enrolled first-year students at two and four-year colleges who are out-of-state, the number of enrolled first-year students at two and four-year colleges who are Latinx, or Black, or White, and the number of enrolled full-time, first-year students at two and four-year colleges who are Pell recipients. This study utilized four comparison groups for each treatment group: all two or four-year public institutions in the United States, two or four-year colleges in geographically contiguous states (South Carolina, Tennessee, Georgia, and Virginia), two or four-year colleges in the southeastern region of the U.S. (Georgia, South Carolina, Tennessee, Virginia, West Virginia, Florida, Louisiana, Kentucky, Arkansas, Mississippi, and Alabama), and two or four-year colleges in a statistically matched sample. Each model included covariates and state fixed effects. I clustered standard errors at the institution level. I completed placebo and leads analyses to confirm that the models were robust to secular trends.

CHAPTER 4: RESULTS

Overview

This study examines the impact of the RDS on college enrollment at NC public two and four-year colleges. Specifically, I employed a difference-in-difference estimation strategy to estimate the impact of the policy on enrollment overall, for resident (in-state) and non-resident (out-of-state) students, for Latinx, Black, and White students, and for Pell grant recipients. Using four comparison groups, I estimated these models on both two and four-year public colleges separately to understand whether the policy had heterogeneous effects on enrollment by sector.

The first section of this chapter reviews the parallel trends assumption and presents evidence that the criteria for using DID as an estimation strategy was met. The second section presents the results of the DID and lags analysis, which informed my understanding of the impact of the RDS both overall and over time. Finally, I conclude this chapter with a section detailing the results of robustness checks.

Parallel Trends Assumption

DID is a useful tool to estimate the quasi-causal impact of policy interventions in natural experiment contexts. Using trends in the treatment and control group pre-intervention, DID estimates the outcome trends for the treatment group had the intervention in question never been implemented. The difference between this counterfactual and the treatment group's actual outcomes post-intervention is the effect of the treatment (Murnane & Willett, 2011). In order to confidently use DID to estimate the counterfactual for this study, enrollment trends must be similar between NC colleges and colleges in the various comparison groups in the pre-treatment time period (Furquim et al., 2020). I tested the parallel trends assumption in two ways: a visual inspection of the raw means of each outcome for both treatment and control graphed over time

and leads models. Table 11 shows a summary of the parallel trends violations that will be discussed below. In Table 11, an X notes that the model failed a particular parallel trends test. Models wherein all boxes are shaded failed the parallel trends tests and should not be considered reliable estimates of the impact of the RDS on enrollment.

Table 11.*Parallel trends violations*

	Overall		In-State		Out-of-State		Latinx		Black		White		Pell	
	Two-Year	Four-Year	Two-Year	Four-Year	Two-Year	Four-Year	Two-Year	Four-Year	Two-Year	Four-Year	Two-Year	Four-Year	Two-Year	Four-Year
All US														
Graph						X			X	X		X		
Leads				X		X		X						
Geographically Contiguous														
Graph														
Leads				X		X								
Southeast														
Graph		X								X				X
Leads				X		X								
Matched														
Graph						X			X	X		X		
Leads				X		X								

Notes: X indicates violation. Model fails parallel trends if leads test indicates violation.

Visual Inspection

To complete the visual inspection, I graphed mean enrollment for each outcome (all entering first-time students, in-state first-time students, out-of-state first-time students, Black and Latinx first-time students, and first-time students receiving the Pell Grant) at NC colleges and non-NC colleges over time. If the model adheres to the parallel trends assumption, the lines tracking the outcomes will move in tandem in the years prior to the fall 2017 treatment (Wing et al., 2018). For the most part, as seen in Appendix D, the treatment and comparison states followed similar trends prior to treatment.

The slope of the lines for treatment and control in 11 out of 56 models appear to be quite different, which could be an indication that these groups were not behaving similarly prior to treatment. Specifically, the trend lines for treatment and control crossover one another in the model testing changes to overall enrollment at four-year colleges using the southeast as the control group, the models examining changes to out-of-state enrollment at four-year colleges using the overall and matched control groups, the models tracking changes to Black enrollment at two-year colleges using all U.S. states and matched states as the control group, and the model capturing changes to Pell enrollment using southeastern states as the control group. In all of the models tracking Black enrollment at four-year colleges, save the model using geographically contiguous states as the comparison group, and the models examining White enrollment using all U.S. states and matched states as the control group, the slope of the line for colleges in NC appears to be much steeper than the slope of the line for the comparison group.

While the visual inspection of the raw means for treatment and control indicate that the models discussed above may not meet the parallel trends assumption, these graphs do not provide evidence that the changes in the outcomes year to year in the pre-treatment time period

were statistically significant. Additionally, these graphs only display changes in the mean of the outcome variable over time, and do not take into account any other factors that may impact the outcome. To confirm that the models do indeed fail the parallel trends assumption, I will examine the results of the leads model.

Leads Models

As discussed, the leads model is a variant of the main DID model and included an interaction term between the year and treatment indicators (in this case, whether or not the college was in NC) for each year leading up to policy implementation. It is important to note that I have excluded the year prior to treatment (2016) to avoid problems of multicollinearity and Ashenfelter's Dip (Furquim et al., 2020). If my models meet the parallel trends assumption, then I would expect to see statistically significant differences ($p < .05$) in the interaction terms only on or after the year the policy was implemented. Additionally, I would expect the results of a joint test of significance between the interaction terms to not be statistically significant. Models fail the parallel trends assumption if both interaction terms pre-policy and the joint test are statistically significant.

As seen in Table 12, nine models failed the leads test. Eight of these nine models are within the analyses of in-state and out-of-state enrollment at four-year universities. As mentioned, IPEDS only requires institutions to report data for this outcome every other year, therefore, the leads model is assessing the change in enrollment between 2012 and 2014. It is possible that, if 2013 were included, the change in enrollment would be more gradual and the joint test would not be statistically significant. However, because these data are not available, I must assume that these models cannot estimate an accurate counterfactual. See Appendix E for full leads results.

Table 12.*Summary of leads models*

	Overall		In-State	
	Two-Year	Four-Year	Two-Year	Four-Year
All US				
2012			-9.06 (16.90)	-87.78*** (21.98)
2013	-0.05 (48.14)	-8.80 (54.88)		
2014	19.65 (34.08)	6.83 (32.67)	5.12 (11.93)	-41.44** (13.12)
2015	-0.38 (21.03)	-17.47 (32.13)		
Joint Test F Statistic	0.88	0.23	0.55	9.25***
Geographically Contiguous				
2012			67.64* (31.15)	-320.67* (122.92)
2013	37.65 (103.21)	-193.12 (155.31)		
2014	73.97 (58.16)	-91.61 (85.81)	-78.69* (32.84)	169.18 (133.49)
2015	-11.83 (25.47)	-14.94 (44.16)		
Joint Test F Statistic	1.42	0.54	2.88	5.01***
Southeast				
2012			-44.50 (54.21)	-122.02*** (30.22)
2013	95.45 (66.79)	42.13 (99.92)		
2014	64.66 (47.15)	66.59 (65.89)	-0.30 (33.94)	-86.45* (39.22)
2015	10.68 (23.59)	-3.55 (41.80)		

Table 12 (continued).

Joint Test F Statistic	0.79	0.76	1.04	8.27***	0.33	9.26***
Matched						
2012			27.56 (18.95)	-85.73*** (21.77)	-13.85 (13.77)	57.95*** (16.96)
2013	69.30 (47.95)	40.33 (98.16)				
2014	61.26 (33.22)	49.45 (57.27)	22.36 (15.25)	-37.44** (13.12)	-9.47 (10.39)	24.04 (14.02)
2015	4.78 (20.70)	-3.35 (40.08)				
Joint Test F Statistic	1.49	0.5	1.28	8.91***	0.55	6.44**

Table 12 (continued).

	Latinx		Black		White	
	Two-Year	Four-Year	Two-Year	Four-Year	Two-Year	Four-Year
All US						
2013	4.51 (8.51)	59.19*** (12.20)	28.11** (10.27)	-24.07 (18.58)	-13.05 (10.78)	-15.31 (28.06)
2014	8.36 (6.92)	47.50*** (9.59)	15.35 (8.98)	-26.60 (18.24)	-6.49 (9.92)	-13.38 (20.27)
2015	8.55* (4.31)	27.19*** (6.98)	4.83 (4.35)	-4.55 (11.21)	-1.48 (6.01)	-23.44 (22.71)
Joint Test F Statistic	1.47	10.23***	2.51	0.93	0.51	0.46
Geographically Contiguous						
2013	-13.24 (12.05)	3.10 (21.62)	-6.03 (26.33)	58.82 (107.73)	-17.09 (29.56)	12.39 (60.79)
2014	-1.43 (6.88)	9.80 (13.77)	9.81 (14.85)	0.11 (48.01)	-22.16 (16.62)	-8.72 (39.54)
2015	-1.32 (4.20)	4.64 (6.75)	6.92 (6.31)	15.24 (17.24)	-7.06 (7.34)	-13.32 (25.77)
Joint Test F Statistic	1.17	0.37	0.67	1.30	0.80	0.31
Southeast						
2013	-11.59 (9.82)	-14.51 (18.60)	15.84 (14.51)	7.43 (35.24)	-12.74 (16.70)	45.81 (41.32)
2014	-2.91 (5.38)	-1.74 (12.36)	11.40 (12.04)	-4.57 (28.58)	-8.59 (13.80)	18.06 (29.35)
2015	-0.20 (3.69)	4.37 (6.86)	0.36 (5.25)	7.30 (17.01)	2.52 (6.46)	-16.00 (24.88)
Joint Test F Statistic	0.56	0.66	0.55	0.33	0.50	1.43
Matched						
2013	-2.25 (4.59)	7.75 (9.05)	19.70* (8.46)	-57.04 (36.42)	-1.82 (8.40)	41.24 (40.01)
2014	-0.80 (3.89)	11.13 (7.86)	11.99 (7.96)	-23.27 (33.65)	3.27 (8.54)	-3.66 (27.03)
2015	-0.19 (2.88)	3.76 (6.19)	1.99 (3.78)	3.73 (17.23)	6.44 (5.29)	-18.38 (24.22)
Joint Test F Statistic	0.14	0.67	2.08	1.65	0.71	2.36

Table 12 (continued).

	Pell	
	Two- Year	Four-Year
All US		
2013	-10.88 (13.64)	-14.01 (22.11)
2014	-10.02 (10.96)	-10.61 (17.83)
2015	-0.37 (4.43)	-9.75 (16.96)
Joint Test F Statistic	0.32	0.18
Geographically Contiguous		
2013	68.80* (32.64)	-30.81 (66.47)
2014	-22.56 (19.45)	-24.86 (36.00)
2015	2.14 (9.91)	7.15 (20.38)
Joint Test F Statistic	1.76	0.41
Southeast		
2013	13.07 (21.68)	11.11 (35.78)
2014	-3.08 (17.46)	11.80 (26.88)
2015	7.89 (7.79)	-2.48 (19.84)
Joint Test F Statistic	0.69	0.15
Matched		
2013	6.09 (10.31)	-68.43* (33.90)
2014	6.75 (8.86)	-27.62 (22.62)
2015	7.60 (4.10)	-8.82 (15.97)
Joint Test F Statistic	1.26	1.52

Note: * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

Standard errors clustered at four-year institution.

Taken together, the results of the visual inspection of parallel trends and the leads test suggest that nine of the 56 models failed the parallel trends assumption. These models, which are shaded in Table 11, failed the leads test and the results of these models will not be taken into consideration in discussion of the findings. Interestingly, of the 11 models that failed the visual inspection, only two showed statistically significant leads terms or failed the joint significance test. Because the leads test provides a more objective assessment of changes in the outcome prior to treatment, I conclude that the models that did not fail the leads test or joint significance test did indeed meet the parallel trends assumption.

Results

This section presents results from the DID and lags models, which estimate the impact of the RDS on enrollment. Models were run using the *xtreg* command in STATA. I used the *fe* command to estimate year and institution fixed effects and standard errors were clustered at the institution level. First, I discuss the effect of the policy on overall, in-state, and out-of-state enrollment. Next, I present results from the models focused on changes to Black, Latinx, and White enrollment post-policy. Finally, I show changes to enrollment for Pell recipients. As mentioned, I estimated the DID and lags models on two and four-year colleges separately. Summary tables for results are presented in the text. For the full tables, see appendices G-I.

Overall Enrollment, In-State, and Out-of-State Enrollment

Table 13 highlights the results for the impact of the RDS on overall, in-state, and out-of-state enrollment at two and four-year colleges. Full tables can be found in Appendix G.

Table 13.*Results Summary for RDS' Impact on Overall and In-State Enrollment*

	Overall		In-state		Out-of-state	
	Two-Year	Four-Year	Two-Year	Four-Year	Two-Year	Four-Year
All US						
Overall Post	-14.57 (27.55)	54.01 (48.21)	2.14 (12.23)	28.01~ (24.01)	-7.09 (10.28)	-38.26~ (23.24)
2017	-31.04 (40.33)	17.73 (57.26)				
2018	-7.55 (26.00)	73.35 (51.40)				
Geographically Contiguous						
Overall Post	-55.17 (36.40)	-8.11 (61.21)	2.79 (15.45)	78.27~ (47.72)	-0.88 (12.74)	-111.41**~ (39.63)
2017	-51.31 (39.79)	-12.04 (65.93)				
2018	-76.13 (49.44)	7.69 (78.26)				
Southeast						
Overall Post	-33.39 (25.27)	-4.72 (57.63)	-47.54 (35.96)	85.53*~ (40.94)	11.27 (16.96)	-104.61*~ (40.35)
2017	-43.97 (36.14)	-48.34 (64.95)				
2018	-24.51 (24.47)	28.31 (65.09)				
Matched						
Overall Post	-37.33 (25.01)	-38.70 (46.42)	-11.58 (12.37)	40.08~ (23.67)	-11.02 (6.90)	-20.30~ (15.71)
2017	-49.36 (36.37)	-57.00 (51.20)				
2018	-24.33 (21.26)	-9.83 (64.92)				

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. ~ fails parallel trends assumptions. Standard errors clustered at institution. Overall post refers to the results of the main DID model. 2017 and 2018 refer to the results for the lags model.

Two-Year Colleges. Results of the DID and lags analyses indicate that the RDS had no impact on overall enrollment at two-year colleges in NC. Across all models the direction of the coefficient was consistently negative; however none were statistically significant. Additionally, the effect sizes were very small ranging from one to six percent of a standard deviation. Similarly, the DID models assessing changes to in-state and out-of-state enrollment yielded null results. Interestingly, while the models testing changes to in-state enrollment using southeastern and matched states returned a negative coefficient, the coefficients for the models using all states and those in bordering states was positive. The direction of the coefficients for the out-of-state analyses are similarly inconsistent, as all models save that using southeastern states as a comparison group returned negative coefficients. Consistent with the model examining changes to overall enrollment the effect sizes were very small and ranged from less than one to six percent of a standard deviation.

Four-Year Colleges. Similar to their two-year counterparts, four-year colleges in NC did not experience changes in overall enrollment after the RDS was implemented. All models, save the analysis using all U.S. states as a comparison group, returned negative coefficients and the effect sizes ranged from less than one to three percent of a standard deviation. The analyses concerning in-state enrollment produced limited evidence that the RDS impacted enrollment at four-year colleges. Specifically, the analysis utilizing southeastern states as the comparison group found that in-state enrollment increased by 85 students ($\beta=85.53, p<0.05, d=0.07$) after the RDS was implemented. The analyses examining out-of-state enrollment indicate that the non-resident student population decreased by 105 ($\beta=-104.61, p<0.05, d=0.23$) to 111 ($\beta=-111.41, p<0.05, d=0.20$) students after the RDS was passed. Despite this evidence, all models examining

in-state and out-of-state enrollment at four-year colleges failed the leads test. Therefore, these results cannot be considered as reliable estimates of the impact of the RDS.

Enrollment by Racial/Ethnic Group

The next set of models examines the impact of the RDS on Latinx, Black, and White enrollment at two and four-year colleges, which are summarized in Table 14. Full tables can be found in Appendix H.

Table 14.

Results Summary for RDS' Impact on Latinx, Black, and White Enrollment

	Latinx		Black		White	
	Two-Year	Four-Year	Two-Year	Four-Year	Two-Year	Four-Year
All US						
Overall Post	-3.63 (5.82)	-25.89*~ (12.48)	-18.36* (7.70)	52.41* (26.39)	7.09 (7.69)	-19.83 (27.93)
2017	-2.19 (7.28)	-27.79*~ (13.42)	-23.97* (11.03)	78.82* (37.30)	5.43 (9.97)	-39.94 (29.92)
2018	-4.24 (5.83)	-24.88~ (13.00)	-15.96* (6.88)	38.32+ (22.36)	7.79 (7.48)	-9.09 (29.34)
Geographically Contiguous						
Overall Post	-3.32 (5.84)	-4.08 (12.40)	-4.91 (7.76)	65.96* (27.83)	5.99 (10.22)	-38.92 (32.15)
2017	-2.31 (5.98)	-4.49 (12.09)	-10.70 (8.22)	70.83* (30.72)	11.42 (10.38)	-43.27 (33.62)
2018	-8.83 (8.53)	-2.43 (17.49)	26.69* (11.57)	46.43 (32.43)	-23.63 (15.64)	-21.46 (41.88)
Southeast						
Overall Post	-1.72 (4.82)	13.96 (11.45)	-11.54+ (6.41)	32.71 (26.45)	13.72+ (8.09)	-47.71 (31.09)
2017	-0.01 (5.33)	12.09 (11.71)	-12.08 (7.71)	63.41+ (32.83)	9.48 (9.39)	-62.60* (31.89)
2018	-3.16 (5.26)	15.37 (12.56)	-11.09 (6.92)	9.46 (25.29)	17.28* (8.54)	-36.44 (33.80)

Table 14 (continued).

Matched						
Overall Post	-0.53 (3.96)	3.83 (10.61)	-9.55+ (5.66)	43.21* (18.04)	3.60 (7.12)	-43.26 (28.11)
2017	-1.19 (5.51)	-1.20 (11.64)	-11.85 (7.95)	53.14* (22.74)	3.96 (9.24)	-37.20 (31.86)
2018	0.18 (2.93)	11.75 (10.83)	-7.08 (4.48)	27.61 (20.27)	3.22 (6.11)	-52.79+ (31.81)

Notes: + $p < 0.10$ * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$. ~ fails parallel trends assumptions. Standard errors clustered at institution. Overall post refers to the results of the main DID model. 2017 and 2018 refer to the results for the lags model.

Two-Year Colleges. Results from the DID and lags models suggest that the RDS had no impact on Latinx enrollment at two-year colleges in NC. While all models returned negative coefficients, they were not statistically significant and the effect sizes were very small (all less than two percent of a standard deviation). Conversely, the next set of models found that the number of Black students enrolled decreased after the RDS was implemented. The model utilizing all U.S. states as a comparison group found that Black enrollment decreased by 18 ($\beta = -18.36$, $p < 0.05$, $d = 0.06$) students after the RDS was implemented. The lags analysis for this group found that enrollment effects were larger in the first year of the policy, with two-year colleges experiencing a decrease of 24 ($\beta = -23.87$, $p < 0.05$, $d = 0.08$) Black students in 2017 and 16 ($\beta = -15.96$, $p < 0.05$, $d = 0.06$) in 2018. Confirming these results, the analysis utilizing southeastern and matched states as a comparison group found marginally significant decreases of 12 ($\beta = -11.52$, $p = 0.07$, $d = 0.05$) and 10 ($\beta = -9.55$, $p = 0.09$, $d = 0.05$) Black students overall after the policy. Contrary to the direction of the findings presented for this outcome, the lags analysis using colleges in bordering states found a 27 student increase in enrollment in 2018 ($\beta = 26.69$, $p < 0.05$, $d = 0.05$). While it appears that the RDS did impact enrollment for Black students at two-year colleges, the effect sizes across these models were very small.

Finally, the DID and lags analyses investigating the impact of the RDS on White enrollment found limited evidence that the policy had an impact. Three of the four models yielded null results; however, the direction of the coefficient was positive. Mirroring these results, the analyses with southeastern states as a control group found a marginally significant increase of 14 ($\beta=13.72, p=0.09, d=0.03$) White students after the policy was implemented. The lags analysis indicates that the policy had a delayed effect, as the coefficient on the 2018 interaction term was statistically significant, suggesting a 17 ($\beta=17.28, p<0.05, d=0.04$) student increase in White enrollment that year.

Four-Year Colleges. Consistent with the DID and lags results at two-year colleges, the models suggest that the RDS did not impact Latinx enrollment at four-year colleges. While the DID and lags models using all U.S. states as a comparison group suggest that there were decreases in enrollment (DID $\beta=-25.89, p<0.05, d=0.04$; Lags 2017 $\beta=-27.79, p<0.05, d=0.04$), this model did not meet the parallel trends assumption and should not be considered an accurate estimation of the policy's impact. The three other models, which did meet the parallel trends assumption, returned a mix of positive and negative coefficients; however, none were statistically significant.

Unlike Black enrollment at two-year colleges, the DID and lags models suggest that enrollment for these students increased at four-year colleges after the RDS was implemented. The models including all U.S., geographically contiguous, and matched states indicated an enrollment increase of 52 ($\beta=52.41, p<0.05, d=0.18$), 66 ($\beta=65.96, p<0.05, d=0.18$), and 43 ($\beta=43.21, p<0.05, d=0.16$) Black students, respectively. The lags analyses suggest that impact of the policy weakened overtime, as the effect sizes for the 2017 interaction term were larger than those in 2018 and in almost all of the models the 2017 interaction term was the only statistically

significant coefficient. Specifically, in the analysis with all U.S. states as the comparison group, Black student enrollment increased by 79 ($\beta=78.82$, $p<0.05$, $d=0.27$) in 2017 and 38 ($\beta=38.32$, $p=0.09$, $d=0.13$) in 2018. The analyses employing bordering and matched states as the comparison group yielded an increase of 71 ($\beta=70.83$, $p<0.05$, $d=0.19$) and 53 ($\beta=53.14$, $p<0.05$, $d=0.19$) Black students in 2017, respectively. Finally, while marginally significant, the model with southeastern states in the control group returned an increase of 63 ($\beta=63.41$, $p=0.06$, $d=0.17$) Black students in 2017. Unlike the analyses of Black student enrollment at two-year colleges and the results for changes in enrollment for other student groups so far, the effect sizes for changes to Black student enrollment at four-year colleges were substantially larger. This indicates that the RDS had a particularly strong impact on enrollment for Black students at four-year colleges.

Reflecting the results of the analyses examining changes to White enrollment at two-year colleges, there is very limited evidence that the RDS impacted enrollment for these students at four-year institutions. None of the coefficients for the DID models were statistically significant, and the effect sizes were quite small (ranging from one to three percent of a standard deviation). The lags analyses show some indication of changes to enrollment; however the year in which these changes occurred was not consistent. The model using southeastern states as the comparison group found that White enrollment fell by 63 ($\beta=-62.60$, $p<0.05$, $d=0.06$) students in 2017, while the model using matched states found that enrollment decreased by 53 ($\beta=-72.79$, $p=0.10$, $d=0.05$) students in 2018.

Enrollment of Pell Recipients

The last set of models explores the impact of the RDS on enrollment for Pell recipients. These results are summarized in Table 15 with full tables in Appendix I.

Table 15.*Results Summary for RDS' Impact on Pell Enrollment*

	Pell	
	Two-Year	Four-Year
All US		
Overall Post	-6.07 (7.87)	31.20 (19.56)
2017	10.68 (11.40)	57.95* (23.06)
2018	-13.21+ (8.15)	16.92 (21.28)
Geographically Contiguous		
Overall Post	10.30 (10.56)	72.58** (21.48)
2017	15.16 (11.26)	75.73** (23.37)
2018	-16.20 (18.12)	59.98* (29.94)
Southeast		
Overall Post	-0.11 (9.94)	23.78 (21.70)
2017	15.54 (12.16)	43.39+ (25.41)
2018	-13.23 (11.29)	8.94 (24.30)
Matched		
Overall Post	-7.37 (5.98)	51.26** (18.02)
2017	1.89 (8.60)	63.18** (21.30)
2018	-17.34** (5.75)	32.52 (22.50)

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution. Overall post refers to the results of the main DID model. 2017 and 2018 refer to the results for the lags model.

Two-Year Colleges. The results of the DID and lags models offer some evidence that enrollment of Pell recipients was impacted by the implementation of the RDS. The DID models

suggest that there were no changes to Pell enrollment, as the coefficients were not statistically significant and the effect sizes were small (ranging from one to three percent of a standard deviation). While the DID models yielded null results, the lags models indicate decreases of Pell enrollment in the second year the RDS was in operation. Specifically, the models using all U.S. states and matched states indicated a decrease of 13 ($\beta=-13.21, p=0.10, d=0.03$) and 17 ($\beta=-17.34, p<0.05, d=0.07$) students in 2018, respectively.

Four-Year Colleges. In contrast to the effects of the RDS at two-year colleges, my analyses suggest that enrollment for Pell recipients increased at four-year colleges in the wake of the policy. In addition to the change in direction of the coefficients, the effect sizes in these models are larger than those observed at two-year colleges. The DID models using geographically contiguous and matched states found a 73 ($\beta=72.58, p<0.01, d=0.17$) and 51 ($\beta=51.26, p<0.01, d=0.13$) student increase in Pell recipients, respectively, post-policy. The lags models indicate that the policy was most impactful in the first year it was implemented, as the effect size and statistical significance decrease over time. The models utilizing all U.S. states as a comparison group found an increase of 57 ($\beta=57.95, p<0.05, d=0.10$) students in 2017 with no change in 2018. Similarly, the models that included southeastern and matched states found increases of 43 ($\beta=43.39, p=0.09, d=0.07$) and 63 ($\beta=63.18, p<0.01, d=0.16$) students in 2017, respectively. Finally, the analysis employing geographically contiguous states as the control group found an increase of 76 ($\beta=75.73, p<0.01, d=0.18$) Pell recipients in 2017 and 60 ($\beta=59.98, p<0.05, d=0.14$) recipients in 2018.

Robustness Checks

While the inclusion of covariates and fixed effects help ensure that the model is correctly associating changes in the outcome with the intervention in question, there is still concern that the DID model may identify a secular trend, which is any broader economic or demographic trend, and misattribute its effect to the policy (Wing et al., 2018). To confirm that the DID models are robust to secular trends, I ran leads models and placebo analyses, which help identify the presence of external influences that impacted the outcomes in question prior to policy implementation. This section presents results from the leads and placebo analyses. As in the main DID and lags analyses, models were run using the *xtreg* command in STATA. I used the *fe* command to estimate year and institution fixed effects and I clustered standard errors at the institution level. Additionally, I estimated the DID and lags models on two and four-year colleges separately. Summary tables for results are presented in the text. For the full tables, see appendices E and F.

Leads Models

In addition to their ability to diagnose parallel trends violations, the pre-policy year and treatment interaction terms and joint hypothesis test included in the leads analysis allow the researcher to identify the influence of secular trends on the model. If the pre-policy interaction terms and joint hypothesis test are not statistically significant, I can report with confidence that changes to the outcome observed in the main DID and lags models are as a result of the RDS.

As discussed in the parallel trends section and displayed in Appendix E, nine of the 56 models showed both statistically significant pre-policy interaction terms and a statistically significant joint hypothesis test. Four of these models corresponded with DID models that indicated a statistically significant relationship between the RDS and the outcome. Specifically,

the DID model investigating Latinx enrollment at four-year colleges using all U.S. states as the comparison group, the DID models investigating in-state and out-of-state enrollment at four-year colleges using southeastern states as the comparison group, and the DID models examining out-of-state enrollment using geographically contiguous states to construct the control group. The results of the leads test provide evidence that point estimates for these models are not robust to external influences and should not be considered as evidence of the RDS' impact on enrollment.

Placebo Models

Another means to diagnose the presence of confounding secular trends is the placebo test. The models for these analyses mirror the main DID models; however, instead of placing treatment in the year the policy was implemented, I created a faux treatment indicator in a year prior to the policy. For the models examining overall, Black, Latinx, White, and Pell enrollment I placed treatment in 2015. Because IPEDS only reports data for resident and non-resident enrollment every other year, I utilized 2014 as the faux implementation year for that outcome. See Table 16 for a summary of the placebo models and Appendix F for full tables

Table 16*Summary of Results for Placebo Models*

	Overall		In State		Out-of-State	
	Two-Year	Four-Year	Two-Year	Four-Year	Two-Year	Four-Year
All US						
RDS*Placebo	-30.75	21.13	28.83	72.84***	0.42	-57.76**
Year	(31.42)	(35.89)	(20.92)	(21.43)	(5.55)	(18.03)
Geographically Contiguous						
RDS*Placebo	339.36***	-189.58	37.01	49.80	-5.79	-54.91
Year	(96.54)	(161.72)	(19.25)	(52.59)	(20.74)	(41.66)
Southeast						
RDS*Placebo	-58.72	-4.97	65.68	123.74***	14.02	-116.81***
Year	(48.66)	(59.80)	(74.47)	(30.20)	(9.73)	(28.81)
Matched						
RDS*Placebo	-64.42*	17.71	-6.29	86.44***	-3.92	-48.09**
Year	(31.95)	(43.48)	(7.74)	(22.00)	(5.28)	(15.60)

Table 16 (continued).

	Latinx		Black		White		Pell	
	Two-Year	Four-Year	Two-Year	Four-Year	Two-Year	Four-Year	Two-Year	Four-Year
All US								
RDS*Placebo Year	-0.63 (5.86)	-37.05*** (8.35)	-14.89 (8.01)	21.13 (35.89)	9.91 (8.34)	11.91 (17.55)	11.34 (10.96)	14.96 (16.56)
Geographically Contiguous								
RDS*Placebo Year	-7.16 (9.39)	24.49 (19.58)	-34.36 (32.61)	57.65 (78.95)	70.26* (34.56)	-64.77 (70.21)	158.93*** (42.57)	31.18 (46.80)
Southeast								
RDS*Placebo Year	0.26 (4.67)	-1.55 (9.87)	-0.47 (12.14)	-1.05 (23.44)	3.45 (14.32)	-17.80 (27.78)	8.19 (19.03)	-6.63 (23.27)
Matched								
RDS*Placebo Year	-0.81 (2.89)	-13.87 (7.16)	-7.62 (7.28)	21.59 (26.03)	1.76 (7.81)	1.75 (24.51)	-2.91 (10.41)	12.99 (18.97)

Eleven of the 56 placebo models were statistically significant; however only three of these models coincided with DID models that estimated a statistically significant treatment effect. The models that both failed the placebo analysis and indicated a treatment effect were the same as the models that failed the leads test discussed above. This adds further evidence to my conclusion that the changes to enrollment detected by these models were not due to the RDS and should not be considered alongside other evidence of a treatment effect.

Summary

This chapter presented results from my analysis which sought to understand the impact of the RDS on enrollment at two and four-year colleges in NC. I began by reviewing the parallel trends assumption and presented evidence that the majority of my models met the assumption. Next, I discussed the results of my DID and lags models. I found that the RDS did not have an impact on overall, in-state, out-of-state or Latinx enrollment at two-year colleges in NC. Additionally, I observed that the RDS had no effect on overall or Latinx enrollment at four-year colleges. Perhaps due to the nature of the data, I was unable to determine whether the RDS affected resident and non-resident enrollment at four-year colleges as these models did not meet the parallel trends assumption. There was evidence that Black and Pell recipient enrollment declined and White enrollment increased at two-year colleges in the wake of the policy. Conversely, Black and Pell enrollment increased while White enrollment decreased at four-year colleges. I concluded by performing a series of robustness checks and found that the majority of the models were robust to external, confounding influences. I will discuss these findings and their implications for future policy, practice, and research in chapter five.

CHAPTER 5: DISCUSSION

Summary of Results

Drawing on Herd and Moynihan's (2018) framework of administrative burden, this study sought to explore the impact of the RDS on enrollment at two and four-year colleges in NC. Using enrollment trends in four comparison groups (colleges in all U.S. states, geographically contiguous states, states in the southeastern region of the U.S., and a statistically derived group), this study employed a DID estimation strategy to answer the following research questions:

1. How did the RDS affect enrollment volume for first-time, first-year students at North Carolina public two and four-year colleges?
2. How did the RDS affect enrollment volume for resident first-time, first-year students at North Carolina public two and four-year colleges?
3. How did the RDS affect enrollment volume for non-resident first-time, first-year students at North Carolina public two and four-year colleges?
4. Do the effects of the RDS on enrollment volume for first-time, first-year students at North Carolina public two and four-year colleges vary by race/ethnicity?
5. Do the effects of the RDS on enrollment volume for full-time, first-time students at North Carolina public two and four-year colleges vary by Pell grant status?

The results of my analysis indicate the RDS did not affect overall, in-state, out-of-state, or Latinx enrollment at two-year colleges in NC. Conversely, there was evidence that the RDS precipitated a decline in enrollment for Black students and Pell recipients at these institutions. At four-year colleges, I found that the RDS did not impact overall and Latinx enrollment; however, there were increases in enrollment for Black students and Pell recipients. I was unable to determine the impact of the RDS on resident and non-resident enrollment at four-year colleges,

as these models did not meet the parallel trends assumption. While statistically significant, the effect sizes I observed were very small, which indicates that the RDS did not have a substantial impact on enrollment in NC. Placebo and leads analyses indicated that the results of this study were robust to external, confounding influences.

The remainder of this chapter will discuss the aforementioned results. Specifically, I will attempt to understand the effect sizes, variation in enrollment patterns across sector, and strength of the treatment effect across time. After this discussion I will present considerations for policymakers and suggestions for future policy and practice. Finally, I will discuss avenues for future quantitative and qualitative research on this topic.

Discussion of Results

Strength of Treatment Effect

While I did find statistically significant changes to enrollment at NC colleges for some groups of students, the magnitude of effect sizes for my analyses were fairly small. There has been no agreed upon standard metric for evaluating the magnitude of effect sizes in education research; however, scholars have suggested that effect sizes between 20 and 25 percent of a standard deviation should be considered substantively important (Bloom et al. 2008; Lipsey et al., 2012). In this study point estimates ranged from three to seven percent of a standard deviation and averaged five percent for two-year colleges. Effect sizes were larger at four-year colleges, ranging from four to 27 percent of a standard deviation with an average of 14 percent. Readers and decisionmakers should keep these effect sizes in mind when evaluating the impact of the RDS on enrollment. I explore potential explanations for differences across sector below.

The difference in magnitude of effect size between two and four-year colleges could be due to the demographic makeup of the student bodies and timing of RDS completion at each

college. Community colleges typically enroll a larger number of low-income, first-generation, and students of color (Ginder et al., 2017). Prior research notes that these students often face barriers as they move through the college application process, especially as they file for financial aid (Bahr et al., 2018; Dynarski & Scott-Clayton, 2006). It is possible that the RDS does not have a large added effect on enrollment at community colleges because the students who fail to finish the RDS also struggle to complete the college application and the FAFSA. Because community college students are required to file the RDS before they apply to college, it is possible that the true effects of the RDS are on application volume rather than enrollment volume. At four-year colleges, students may complete the RDS at any time before the university's census date (usually the 10th day of class; College Foundation of North Carolina, 2019). Therefore, it is less likely that the RDS impacted application volume more so than enrollment volume.

In the following sections, I will discuss the findings of my analyses beginning with the null results for overall enrollment, resident and non-resident enrollment, and Latinx enrollment. I will then discuss the changes to enrollment for Black, Pell, and White students in the wake of RDS implementation. While these results were statistically significant, the effect sizes were small. I will offer explanations for these changes; however, the reader should keep in mind that these results likely have limited practical significance.

Overall Enrollment

My first research question sought to determine whether the RDS precipitated changes in overall enrollment at two and four-year colleges in NC. The analyses revealed that there were no aggregate changes in enrollment at institutions after the RDS was implemented. These results indicate that the RDS did not impact the number of students enrolled at NC public colleges.

Resident and Non-Resident Enrollment

According to the NCSEAA, the RDS was designed to “alleviate the need for students to answer questions on multiple institutional applications and ensure consistency for tuition purposes and financial aid consideration” (“N.C. rolling out new Residency Determination Service”, 2017). If the RDS was successful in easing barriers to ISRT for NC’s students, I would expect to observe an increase in the number of students classified as residents. However, my analyses indicated that there was no statistically significant change in resident enrollment in NC after the RDS was implemented.

While the RDS was advertised as a way to ease the residency determination process for students and colleges, I theorized in chapter two that the state may also reap the benefits of the system. The RDS was implemented at a time when the state was decreasing appropriations to its public institutions (Mitchell et al., 2017). Recent research has found that state appropriations were negatively associated with non-resident enrollment- meaning, colleges may supplement lost income in appropriations by enrolling more out-of-state students (Fethke, 2007; Jaquette et al., 2017). Given this research and the recent declines in state appropriations in NC, the RDS could represent an effort to curb the number of students eligible to receive resident tuition rates. Additionally, I argued that, because of the unique administrative burdens shouldered by students of undocumented parents, the RDS may be an attempt by the NC legislature to prevent families with undocumented members from receiving public benefits. If the RDS was designed to limit access to ISRT, I might expect to observe an increase in the number of out-of-state students enrolling in NC public colleges; however, my models detected no such change.

Together, the results for the analysis of changes to in-state and out-of-state enrollment indicate that the RDS resulted in no substantive change to the residential makeup of colleges’

incoming classes. These results suggest that the RDS produced the same results as the former manual process by which admissions professionals reviewed students' information and determined residency in-house. It is important to note that, due to parallel trends violations, I was unable to complete this analysis at four-year colleges and universities. Therefore, the discussion of these results only pertain to two-year colleges.

Latinx Enrollment

The results of my analyses indicated that the RDS did not impact enrollment for Latinx students at either two or four-year colleges in NC. This finding was surprising, as I theorized that the RDS may be particularly onerous for this population. In particular, I argued that, because students of color (including Latinx and Black students) are more likely to be first-generation, these students may not have access to the social capital resources necessary to navigate and troubleshoot problems with the RDS. Additionally, I reasoned that Latinx students may face barriers to RDS completion as a result of immigration documentation within their families. While not all undocumented individuals are Latinx, a large proportion of undocumented people in NC immigrated from Mexico and other Central American countries (Migration Policy Institute, n.d.). According to state law, a student's domicile is based on their parents' place of residence and citizenship status. While they qualify for ISRT, citizens whose parents are undocumented are initially deemed out-of-state by the RDS and must complete post-application vetting procedures to correct their residency status. I argued that this added step, in addition to privacy concerns (Hacker, et al., 2011; Hacker, et al., 2015; Vargas Bustamante, et al., 2012), may deter students with undocumented parents from completing the form. Despite literature that suggests Latinx students may face difficulties filing the RDS due to lack of access to social capital resources or immigration documentation, I found that the RDS did not impact enrollment

for Latinx students. As I will argue below, the results of my analyses may be explained by the importance that Latinx families place on education, students and families' prior experience navigating administrative burden, or data limitations.

Prior literature on ordeal mechanisms argues that only individuals who anticipate deriving a great deal of utility from the service will persevere through an onerous application process (Herd & Moynihan, 2018). In a survey administered by the Pew Research Center, 88 percent of Latinx individuals over the age of 16 agreed that a college degree was necessary to get ahead in life as compared to 74 percent of all Americans who reported the same (Pew Hispanic Center, 2009; Pew Research Social & Demographic Trends, 2009). Similarly, 86 percent of Latinx parents with children under the age of 18 believe it is important for their child to earn a college degree, while 79 and 67 percent of Black and White parents place the same emphasis on college education, respectively (Stepler, 2016). These survey results are supported by decades of literature chronicling the high value that Latinx households and communities place on education (Ceja, 2004; Gillanders & Jimenez, 2004; Mello, 2009; Reese et al., 1995). Researchers have explained these high aspirations as a result of a unique cultural emphasis on the connection between education and moral development, as well as the express role of the parent in helping their children access a high quality education (Hill & Torres, 2010; Reese et al., 1995). Given this body of research, it is possible that the degree of importance that Latinx students and families place on higher education may prompt them to persist through administrative burdens imposed by the application process, thereby explaining why I observed null effects for this population.

Herd and Moynihan's framework of administrative burden (2018) provides further insight into these results. Several studies have found that individuals who already participate in

social programs are more likely to access public services, as the knowledge gained from applying to one program makes it easier to apply to others (Currie & Gruber 1996; Zedlewski et al. 1993). Additionally, those who have individuals in their network who have experience applying to social programs are often able to draw on others' experiences to overcome barriers to completion (Bourdieu, 1986; Herd & Moynihan, 2018; Perna & Titus, 2005). The impact of prior experience on the degree to which a claimant experiences learning, compliance, and psychological costs may explain why Latinx student enrollment was not impacted by the RDS. As discussed in the literature review, the RDS and the FAFSA share similar documentation requirements and application processes. When filing the FAFSA, students whose parents are undocumented are unable to utilize the Data Retrieval Tool (DRT), which transfers tax information from the Internal Revenue Service (IRS) to the FAFSA (Federal Student Aid, n.d.b.). Students who are unable to transfer this information using the DRT are more likely to be selected for verification wherein they are required to submit documentation validating their income (FinAid, n.d.b.). These same students will be required to complete RDS validation, as they are automatically considered out-of-state. Given that students of undocumented parents are required to complete RDS validation and are likely required to complete FAFSA verification, it is possible that the RDS has no added effect on enrollment. It is also possible that students with undocumented parents have other individuals in their social networks who have completed FAFSA verification with their students. Access to the accumulated college knowledge in Latinx students' social networks may have alleviated the administrative burdens posed by the RDS. Increased access to accumulated college knowledge, alongside cultural norms surrounding education, may help explain why I observed a relationship between the RDS and enrollment for

other underserved groups, but no relationship between the implementation of the RDS and Latinx enrollment.

Finally, the null results I observed for Latinx enrollment could be explained by data limitations. As discussed, I theorized that the RDS would be especially difficult for students whose parents are undocumented. Due to the nature of the data source I was unable to identify these students, and therefore used Latinx students as a proxy. Correctly identifying undocumented students and families is a common issue in education research and is often addressed using proxies (Chin & Juhn, 2011; Villarraga-Orjuela & Kerr, 2017). However, researchers have acknowledged that this identification strategy likely masks the true impact of interventions on the population of interest. In the context of this study, it is likely that the number of students with undocumented parents in the Latinx population is fairly small and any impacts that the RDS had on their enrollment was undetectable by my current estimation strategy. It is possible that the effects of the RDS in a state with a larger undocumented population would be different. Policymakers in other states should keep in mind the limited external validity of this study when considering the impact of the RDS outside of the context of NC.

Black and Pell Enrollment

While my analyses did not detect changes in aggregate enrollment after the RDS, the policy negatively affected enrollment for Black students and Pell recipients at two-year colleges and positively affected their enrollment at four-year colleges. The changes to Black enrollment were fairly robust regardless of control group, but the changes to Pell enrollment, specifically at two-year colleges, were not evident across all models. This indicates that the evidence of the effects of the RDS on low-income enrollment may be weak. Further, although the findings of these analyses were statistically significant, the effect sizes across analyses for Black and Pell

students were small, which calls into question the practical significance of these findings.

Regardless, in this section I present potential explanations for the changes to Black and Pell enrollment I observed after the RDS was implemented.

As expected given the theoretical framework for this study, I observed a 12 to 24 student decrease (five to eight percent of a standard deviation) in Black enrollment and a 13 to 17 student decrease (one to three percent of a standard deviation) in enrollment of Pell recipients at two-year colleges. Using Herd and Moynihan's administrative burden to frame my theory of action, I posited that the learning, compliance, and psychological costs imposed by the RDS may deter some students from completing the application (Herd & Moynihan, 2018). In particular, I argued that students who are more likely to be first-generation (low-income students and students of color) may not have access to the social capital resources to overcome barriers experienced when accessing the form, gathering the appropriate documentation, filing the form, and completing post-application vetting procedures.

In addition to decreases in enrollment among low-income students and students of color, I argued that I would observe heterogeneous effects across sector, as community colleges are open access and enroll a larger population of low-income, Black, and Latinx students than do their four-year counterparts (Carnevale et al., 2018; Ma et al., 2019). While I did observe heterogeneous effects, the direction of the coefficients at four-year colleges were unexpected. Contrary to my findings at two-year colleges, I found that Black student enrollment increased by 38 to 79 students (13 to 27 percent of a standard deviation) and Pell recipient enrollment increased by 43 to 79 students (seven to 17 percent of a standard deviation) at four-year colleges. Prior literature indicates that the concentration of enrollment changes among Black and low-income students, as well as heterogeneous effects across college sector, could be attributed to

differences in the college application for two and four-year colleges and the uneven distribution of social capital resources across student groups and college sector. I will discuss the potential for these factors to affect Black enrollment at two and four-year colleges below.

Application Processes. The application processes for two and four-year colleges are quite different, which, combined with insights from behavioral economics, may help explain why I observed heterogeneous effects across college sector. Students applying to two-year colleges must complete the RDS before they submit their college applications otherwise their application will be considered incomplete and will not be reviewed. Conversely, students applying to four-year colleges may submit their applications without filing the RDS; however, they must provide their RCN prior to the university's census date to receive ISRT. In addition to the differences in the timing of RDS submission, the application requirements for these institutions are quite different. To apply to two-year colleges in NC, students must supply personal information and a high school transcript. Students applying to four-year colleges must submit these items along with an SAT or ACT score, an essay, teacher recommendations, as well as a resume or list of activities (Holzman et al., 2019). To satisfy the admissions requirements for four-year colleges, students commit a substantial amount of time to their applications, often beginning the process a year before enrollment (Klasik, 2012).

Literature on the sunk cost effect finds individuals are often compelled to continue a behavior or venture as a result of previously invested time and effort (Arkes & Blumer, 1985). Because applicants to four-year colleges invest a great deal of time into their applications and are not required to complete the RDS before submitting, they may be more willing to persist through administrative burdens to complete the RDS. Furthermore, it is possible that students applying to four-year colleges will be admitted before they complete the RDS. Behavioral economics,

specifically the concept of time inconsistency, notes that claimants are often unwilling to sacrifice time in the present for the possibility of future rewards (Bertrand et al., 2006; Dynarski & Scott-Clayton, 2006; Madrian & Shea, 2001). The offer of admission prior to form completion may induce students to persist through the RDS interview, as there is an assured reward at the end of the process.

Conversely, students applying to two-year colleges face a much more streamlined application process; however, they must complete their RDS before they submit their college application. Students applying to two-year colleges likely have not invested the same amount of time and effort in their applications as their peers planning to attend four-year institutions. Therefore, these students may not feel compelled to complete the process as a result of prior resources invested (Arkes & Blumer, 1985). Furthermore, as students cannot receive an acceptance letter before they file the RDS, community college applicants may exhibit time inconsistent behaviors and perceive the administrative burdens of the RDS as more onerous and form completion less worthwhile (Bertrand et al., 2006; Dynarski & Scott-Clayton, 2006; Madrian & Shea, 2001). The differences between application procedures and the investment required for each may explain why I observed opposite effects at two and four-year colleges for Black and Pell enrollment.

Social Capital Resources. Alongside students' responses to application processes, differential access to social capital resources across demographic groups and college sector may help explain the heterogeneous effects of the RDS. When faced with barriers in the college application process, students often turn to individuals in their homes, communities, and schools for assistance (Perna, 2006a). Decades of research on college-going indicates that exposure to informational resources not only encourages college-going aspirations, but also helps students

navigate application processes (Belasco, 2013; Bryan et al., 2011; Holcomb-McCoy, 2010; Kim & Schneider, 2005; McDonough, 2005; Plank & Jordan, 2001). However, Black students and low-income students are less likely than their White and higher income peers to have individuals in their social network with experience navigating higher education (Bahr et al., 2018; Center for First Generation Student Success, n.d; Dynarski & Scott-Clayton, 2006; Redford & Mulvaney Hoyer, 2017). Additionally, these students are less likely to seek advising services within their high schools and are more likely to attend schools with understaffed counseling departments (Corwin, et al., 2004; McDonough, 2007). As such, low-income and students of color are less likely to have access to the information resources needed to overcome barriers to RDS completion, which would impact their ability to apply to two-year colleges and receive ISRT at four-year colleges.

The differential access to college knowledge resources across racial and socioeconomic lines may help explain why I observed decreases in enrollment for Black students and Pell recipients at two-year colleges; however, this does not explain the increase in enrollment for these groups observed at four-year colleges. These divergent effects could be due to differences in social capital resources offered by two and four-year colleges.

Community colleges are often smaller and less-well-resourced than four-year public institutions. Consequently, these institutions cannot provide resources like intensive advising and staff members are often burdened with additional responsibilities outside of their job duties (Calcagno et al., 2008; National Academic Advising Association, 2011). In light of these disparities across sector, it is possible that four-year colleges in NC are better equipped to field student questions about the RDS, which could explain increases in enrollment for certain students at these colleges.

To explore this possibility, I contacted the admissions offices at several two and four-year colleges in NC and asked their standard procedure for fielding student questions about the RDS. Overwhelmingly, the two-year college representatives reported that they do not have the capacity within their departments to address these questions and instead refer students to the RDS helpline. While some four-year colleges refer students to the RDS administrators, other admissions professionals noted that they do their best to answer students' questions in-house. Staff at two four-year institutions noted that they have a residency manager on staff who answers students' questions and helps them complete the residency process. At one institution this staff member not only helps field questions, but also checks new applicants' residency determination against other information in the application like high school transcripts. If there appears to be a discrepancy, this person reaches out to the student to inform them that their residency application may have an error. Similarly, another institution instructs its admissions staff to alert the admissions office to any apparent discrepancies between a students' residency application and their college application. The department then sends an automated email to students informing them of the potential error.

Four-year colleges' ability to answer questions about the RDS and, in the case of at least two institutions, alert students to mistakes on their application may help to supplement the college knowledge that is often inaccessible to low-income students and students of color. Prior literature notes that guidance and informational resources are especially impactful for low-income students and students of color (Belasco, 2013; Holcomb-McCoy, 2010; Kim & Schneider, 2005; Plank & Jordan, 2001). For example, Belasco (2013) found that, among students who received college counseling, low-income students experienced a much larger increase in the likelihood of enrollment than counselees from higher-socioeconomic

backgrounds. The distinct impact that informational resources can have on underserved students may explain why Black students and Pell recipients experienced increases in enrollment at institutions with the capacity to provide application support.

White Enrollment

Consistent with my findings for the analyses estimating the impact of the RDS on low-income students and students of color, I found that the effect of the RDS on White enrollment varied across college sector. While the models examining the impact of the RDS at community colleges found a 14 to 17 student (three to four percent of a standard deviation) increase in White enrollment, the analyses at four-year institutions found that the RDS precipitated a 53 to 63 student (five to six percent of a standard deviation) decrease in White enrollment. As observed with Black and Pell enrollment, the effect sizes for the analyses of White enrollment were small. Additionally, the results for White enrollment were not robust across all models, as only one or two models indicated a change in enrollment for this group. This, in conjunction with the small effect sizes, indicates that the RDS did not have a meaningful impact on White enrollment. Regardless, I will offer potential explanations for these findings. In particular, I argue that the differential impacts of the RDS across sector can be explained by White students' access to social capital.

As mentioned, students applying to NC community colleges must fill out the RDS before they complete their applications and those applying to four-year colleges are encouraged to file the RDS before application submission. As the RDS was new in 2017, it is likely that even continuing generation students required help with the form. By completing the RDS early in the college application process, students may have been compelled to reach out to their networks for assistance sooner than they would have prior to RDS implementation. This could be especially

true for White students, as they are more likely than students of color to engage college advising resources at their high schools (Herndon et al., 1996; Orozco et al., 2010) and are more likely to have individuals in their families and communities who have experience with higher education (Bahr et al., 2018; Center for First Generation Student Success, n.d; Dynarski & Scott-Clayton, 2006; Redford & Mulvaney Hoyer, 2017). Students with the social capital resources to acquire assistance with the RDS interview may have turned to these resources to assist with other parts of the college-going process like the college application and the FAFSA. Additional assistance on these items may prevent students from making mistakes on their applications or being deterred by barriers. Furthermore, early college knowledge interventions may inform students about other schools to add to their application list or additional enrollment steps like attending orientation and filing the FAFSA. In this way, by reaching out for help early on, students are decreasing their learning costs, which may in turn lower compliance and psychological costs (Herd & Moynihan, 2018).

Policies requiring community college hopefuls to file the RDS prior to application submission, as well as White students' increased likelihood of having access to college knowledge resources could explain why I observed increases in White enrollment at two-year colleges after policy implementation. Increased exposure to college advising as a result of the RDS could also explain the decrease in White enrollment at four-year colleges. Prior research has found that contact with college counselors induces students to apply to more colleges (Bryan et al., 2011) and more selective institutions (Castleman & Goodman, 2014; Cunha, et al., 2018). It is possible that students who were prompted to engage advising services may have added additional colleges to their application list, including private and out-of-state colleges. As White students are more likely to engage in advising (Herndon et al., 1996; Orozco et al., 2010), it is

possible that these students were diverted away from NC public colleges as a result of early contact with an adviser prompted by the RDS.

Timing of Treatment Effect

The lags analyses revealed that, for the most part, the RDS was most impactful in the first year it was implemented (2017). This was expected given the nature of the policy and its novelty. When discussing treatment effects over time, it is important to consider how those tasked with carrying out the policy are required to implement new systems (O'Donnell, 2008). Principal-agent theory posits that policy implementers may not immediately change their behavior to match mandates, which causes a lag in the detectable treatment effect (Braun & Guston, 2003). This behavior was unlikely in the case of the RDS, as colleges were not permitted to use both the RDS and manual residency processes at the same time. In other words, colleges were required to include a field for residency certification numbers on their applications after the policy was passed, which supplanted the manual process. As such, I expected to observe a treatment effect shortly after the policy was implemented.

It is also important to consider whether policy implementers and those whom the policy is affecting have the knowledge to navigate the new system. When the RDS was implemented, students and those who assist with the college-going process (college staff, high school counselors, college access nonprofits) had no experience with the system. Prior literature indicates that potential claimants experience fewer administrative burdens if they or someone they know has had experience filing for benefit in question (Currie & Gruber 1996; Zedlewski et al. 1993). Given this research, I expected the largest impacts to be in the first year of the policy and then wane over time as students and their networks became more familiar with the RDS.

Considerations for Policymakers

The results of this study provide early evidence of the impact of the RDS on college enrollment at public institutions in NC. Below I will discuss the implications of these findings for policymakers. I begin this section by outlining the benefits of the RDS, then I discuss the drawbacks, and finally I discuss suggestions for policy and practice.

Benefits of the RDS

The results of my study indicate that the RDS may increase access to four-year institutions for Black and low-income students. This finding is encouraging for the health of the state economy, workforce development, and social mobility for historically underserved populations. North Carolinians with a bachelors' degree earn over \$10,000 more annually than those with some college or an associate's degree (U.S. Census Bureau, 2017b). In addition to these private benefits, those with a college degree pay more in taxes, are more likely to vote, and are less likely to require public assistance (Ma et al., 2019). Increasing access to postsecondary credentials, especially those with higher accompanying wage premiums, for historically underserved populations is a benefit that policymakers should consider when evaluating the future necessity of this policy.

Additionally, in my conversations with admissions professionals, these staff noted that the RDS did ease their application review. Rather than taking the time to determine a students' residency themselves, they were able to sort students' applications using residency certification numbers. It is possible that, by skipping this step in the application review, admissions professionals are able to process applications more quickly. Despite this anecdotal evidence, it is not clear whether this increased efficiency justifies the cost of the RDS to the state (\$3.6 million annually; State Board of Community Colleges, 2018).

Drawbacks of the RDS

While the effect sizes were fairly small, the results of my study indicated that enrollment for Black students and Pell recipients decreased at two-year colleges and increased at four-year colleges. This is especially problematic, as low-income students and students of color are more likely to attend community colleges than their White and higher income peers (Ginder et al., 2017). Being that a central portion of the NCCCS's mission is to "open the door to high-quality, accessible educational opportunities that minimize barriers to postsecondary education" (State Board of Community College, 2018, p. 5), policymakers should consider whether the RDS impacts these colleges' ability to fulfil their mission.

In addition to unfavorable enrollment trends in the wake of the RDS, community colleges may experience more difficulty financing the system. In the current cost-sharing arrangement, community colleges cover half of RDS' operating costs, as the NCCCS accounts for half of new enrollments in the state. (State Board of Community Colleges, 2018). Given that each applicant is processed the same way by the RDS regardless of the sector to which they are applying, this arrangement seems logical. However, it is possible that the bill for the RDS' services is more burdensome for the community college system, as these institutions are generally less-well-funded than their four-year counterparts (Kahlenberg, 2015; Yuen, 2020). In addition to receiving less revenue due to lower tuition rates, the community college system receives about \$2 billion less in annual appropriations from the state than four-year colleges (North Carolina Office of State Budget and Management, 2019). This cost-sharing agreement in conjunction with enrollment declines for Black and low-income students at community colleges suggests that policymakers should consider the RDS's potential to increase stratification between the state's two and four-year colleges.

Suggestions for Policy and Practice

My analyses found that the RDS had no impact on resident or non-resident enrollment at two-year colleges in the state (the results for four-year colleges were inconclusive). This suggests that the transition from the manual residency determination process within institutions' admissions offices to the RDS resulted in no change to the residential makeup of incoming classes. Given these findings, the mixed results across college sector, and the current cost-sharing agreement, it is important for policymakers to consider whether the RDS is worth the cost to the state and its public colleges. To begin this process, I suggest that policymakers commission a formal cost-benefit analysis of the RDS. Cost-benefit analysis is a method for evaluating interventions that considers both the program's impact on desired outcomes and whether resources are being used effectively (Belfield, 2015). While my study provided evidence of the impact of the RDS on enrollment, it did not shed light on the system's efficacy. A cost-benefit analysis of the RDS would help policymakers better understand whether the \$3.6 million spent annually is worth the returns from greater efficiency in admissions offices, increased access to four-year colleges for some students, and protection from lawsuits regarding inconsistent residency determinations.

Next, it is important for NC policymakers to consider whether the RDS should be applied to all colleges in NC. As mentioned, the RDS was created, at least in part, in response to a lawsuit concerning variation in residency decisions across UNC system institutions (Fofaria, 2018b). Given the role of two-year colleges in serving their local communities, as well as their open access admissions policies, it is probable that only a small proportion of students apply to more than one NCCCS institution. Therefore, it is less likely that the NCCCS system would be sued as a result of a student receiving inconsistent residency decisions across institutions.

Additionally, community colleges enroll far fewer non-resident students than four-year colleges. Over the course of the years in this study, non-residents, on average, made up three percent of the community college population while they accounted for nearly 13 percent of the overall population at four-year colleges. This indicates that two-year colleges were likely not expending a great deal of effort making residency determinations before the policy was passed. Perhaps the RDS is most useful at institutions that typically attract many out-of-state students, such as selective colleges like the University of North Carolina at Chapel Hill and North Carolina State University or colleges that are located near state borders. Policymakers should consider eliminating the RDS requirement at some, if not all, community colleges in NC.

If the RDS remains required for both two and four-year college applications, I suggest that policymakers consider standardizing the timing of RDS submission across sector. In the discussion of the results, I argued that enrollment increases among Black and low-income students at four-year colleges may be due, in part, to the timing of RDS submission for four-year colleges. Allowing community college students to submit the RDS after they have applied to college would not only give these applicants more time to complete the interview but would likely reduce any confusion for applicants applying to both two and four-year colleges.

I also urge the state legislature to provide funds so that NC colleges can hire staff within their admissions offices whose role is to assist students as they file the RDS. Earlier in this chapter, I contended that the increases in enrollment at four-year colleges could be a result of these college's capacity to serve as social capital resources. In my conversations with admissions professionals, I found that four-year colleges are often able to answer students' questions about the RDS as well as identify and contact students about mistakes in their application. I suggest that UNC and NCCCS institutions hire in-house RDS liaisons who are available to help students

navigate the RDS rather than direct students to the helpline. This additional support, in concert with a change to the application timeline at two-year colleges, could reduce some of the administrative burdens students face as they file the RDS.

Finally, the research presented in this dissertation has fairly limited external validity, as factors like state demographics may affect the impact of centralized residency systems on enrollment. Given this, I suggest that policymakers outside of NC considering implementing a system similar to the RDS think critically about the demographic characteristics of their state before moving forward with legislation. Simply because the RDS did not have a large impact on enrollment in NC does not mean that it would not affect enrollment in other state contexts. For example, states with large immigrant populations like Texas and Arizona may experience larger enrollment declines upon implementing a system similar to the RDS because more students will live with undocumented parents. As with all policy decisions, it is important to consider the external validity of existing research on the topic, as well as the state context when deciding whether the potential costs are worth the benefits of a policy intervention.

Implications for Research

The results of this study begin to build an understanding of the impact of the RDS on college access in NC; however, there is much work to be done to fully understand whether determining residency through a centralized process is worth the investment from state agencies.

Quantitative Research

One of the most important limitations of this study is the number of years of data available post policy. While I had sufficient data to estimate a difference-in-difference model, the results of these analyses only reflect the early impact of the RDS on college enrollment. Literature on education policy notes that treatment effects are often not stable over time

(Furquim et al, 2020; Long, 2011; Stange, 2015). In the case of the RDS, I observed evidence that the treatment effect was strongest in the first year of the study and waned over time. I argued this was likely due to students and high school staffs' inexperience with the system in the first year after implementation. I suggest that future researchers replicate this study with additional years of data to better understand the impact of the RDS on enrollment over time.

In addition to studying this issue with more years of data, I suggest that future researchers explore using a synthetic control analytic design to study the RDS. Rather than using a variety of comparison groups as I did in this study, synthetic control estimates a weighted average of units in a "donor pool" to estimate the counterfactual. This method, in theory, is more effective in emulating characteristics of the treated observation than using local or focal matches (Cunningham, 2021). In addition, researchers do not have to concern themselves with satisfying the parallel trends assumption to use synthetic control. Results from a synthetic control study would create a more robust understanding of the impact of the RDS on college access.

As discussed above, it is possible that the largest impacts of the RDS are not on enrollment volume, but instead application volume. This is especially true at community colleges where students must file the RDS before applying to college. I argued that the small effect sizes I observed may be due to the fact that other existing processes, like the FAFSA, cause students to exit the college-going journey before they can enroll. It is possible that, rather than further impeding enrollment, the RDS is prompting students to stop out of the application processes earlier. While I hoped to study the impact of the RDS on application volume, this information is not available on IPEDS for two-year colleges. Further, the application data that are available are not disaggregated by race or Pell eligibility, which would have impacted my ability to understand the heterogeneous effects of the policy. These data are likely available through

Freedom of Information Act requests; however, those requests were not feasible for the timeline of this dissertation.

Qualitative Research

There are many avenues for future qualitative research on the RDS. While the user experience study commissioned by the State Board of Community Colleges helps researchers understand where students stop out of the RDS interview (Residency Determination Service, 2018b), it does not shed light on why. To answer this question, I suggest that researchers perform cognitive interviews with students as they file the RDS. Typically used in survey research, cognitive interviews shed light on participants' thought processes and decision making while filling out surveys. In these interviews, the researcher asks students to verbalize their thoughts as they move through a document (Tourangeau et al., 2000). When applied to the RDS, cognitive interviews would help researchers understand what students think the questions are asking and what parts of the interview are difficult or burdensome to complete.

To help explain my results, I spoke to college staff about their experiences with the RDS; however, this was not a focus of this project. Future research should interview college admissions staff to understand how they adapt their policies and practices to accommodate new state policy. Additionally, researchers should seek to understand whether the RDS eased application review for admissions professionals and increased their efficiency. This would help policymakers make the case for maintaining the use of the RDS in NC.

Finally, due to the nature of the data source, I was unable to determine the impact of the RDS on enrollment for students with undocumented parents. As mentioned, these students must go through post-application vetting procedures to qualify for ISRT, which I argued may impact their ability to complete the college-going process. While I hoped that using Latinx students as a

proxy would suffice as a means to uncover the effects of the policy on students with undocumented parents, it is likely that it masked the impacts. The inability to correctly identify migrant students and families has persisted in quantitative education research, as these individuals are often concerned about privacy (Chin & Juhn, 2011; Villarraga-Orjuela & Kerr, 2017). In the context of the RDS, it is possible that this issue is best solved through qualitative research. Using contacts in schools or college access nonprofits, researchers should attempt to identify students with undocumented parents who are completing the RDS and capture their experiences navigating the interview. This will likely lend some understanding of the impacts of the RDS on this population.

Theory

Because Herd and Moynihan's framework of administrative burden was published so recently, this dissertation is one of the first studies to apply the framework to issues of college access. This framework is especially apt for education policy research, as it explores not only the forces behind policy creation, but also claimants' experiences interacting with the policy and their eventual outcomes. In particular, I suggest that researchers interested in residency, financial aid, and student immigration policy utilize Herd and Moynihan's (2018) framework to inform their theories of action.

While much of the research informed by Herd and Moynihan's framework conceptualizes administrative burden as a barrier to welfare and resources (Herd & Moynihan, 2018; Herd et al., 2013), this study provides evidence that administrative burden may not always be problematic. As I found upon speaking to admissions professionals, the RDS decreased the amount of time they spent evaluating each application. This increase in efficiency could be especially impactful in admissions offices, like at the University of North Carolina at Chapel

Hill, that review over 30,000 applications per admissions cycle (The University of North Carolina at Chapel Hill, 2020b). Furthermore, I found that the administrative burdens posed by the RDS did not have a substantial impact on enrollment at NC colleges. Future research examining policies and programs with an application component should not only consider the negative impacts of administrative burdens, but also the possibility that the burden will help claimants or organizations.

In addition to adding to the literature on administrative burden, the results of my conversations with admissions professionals exemplify the role of third parties in individual's encounters with administrative burden. In their framework, Herd and Moynihan (2018) write that third parties can serve an important role in decreasing administrative burden for claimants. For example, hospitals often help patients enroll in public health insurance programs as a part of patient care. In regard to the RDS, my conversations with admissions professionals revealed that colleges may serve an important role in decreasing learning and compliance costs as many noted that they help students troubleshoot issues with the interview and identify possible misclassifications. Future research on the RDS and administrative burden as a whole should examine the role of third parties more closely in reducing learning, compliance, and psychological costs.

Conclusion

Ensuring that all students have access to low-cost, high-quality postsecondary credentials is vital in ensuring the health and prosperity of the state and its constituents (Ma et al., 2019). Recognizing the public benefits of an educated populace, the NC state constitution tasks the General Assembly with ensuring that public institutions of higher education "as far as practicable, be extended to the people of the State free of expense" (N.C. Const. art. IX, § 9). The

state accomplishes this through providing North Carolinians a discounted tuition rate (ISRT) at UNC and NCCCS institutions, which can save students \$20,000 to \$50,000 over the term of their enrollment.

In 2013, citing instances of inconsistent residency determinations across institutions, the NC General Assembly ordered state education agencies to create a centralized residency determination process that allows a third party to determine eligibility for discounted tuition rates. The resulting RDS was implemented across institutions in NC in 2017. Since then, students applying to NC public institutions must file the RDS to become eligible for ISRT. While the RDS' purpose is not to limit those able to claim ISRT, Herd and Moynihan's (2018) framework of administrative burden, as well as the literature on the FAFSA warns of the potential for the RDS to act as a barrier to college enrollment for low-income students and students of color (Advisory Committee on Student Financial Assistance, 2005; Bettinger et al., 2012; Bill & Melinda Gates Foundation, 2015; Dynarski & Scott-Clayton, 2006; Kantrowitz, 2011; King, 2004).

This study sought to explore the impact of the RDS on college access for students attending two and four-year colleges in NC. Using a difference-in-difference analytic approach, I estimated the effect of the policy on overall enrollment, resident and non-resident enrollment, enrollment by racial/ethnic group, and Pell recipient enrollment. The results of my analyses indicated that the RDS did not impact overall, in-state, out-of-state, or Latinx enrollment at community colleges. Similarly, at four-year colleges, I found that the RDS did not impact overall or Latinx enrollment. While there was evidence that the RDS precipitated a decline in enrollment for Black students and Pell recipients at two-year colleges, enrollment for these groups increased at four-year institutions. Finally, I found that White enrollment increased at two-year colleges

and decreased at four-year colleges following the implementation of the RDS. I theorized that these mixed results may be driven by variation in the application processes at two and four-year colleges, as well as differences in access to social capital resources across student demographic groups and college sector.

In light of these findings, I urged policymakers to consider the utility of the RDS, as the transition from the former manual residency determination process to the RDS did not impact the resident and non-resident makeup of entering cohorts. Additionally, results that the RDS may impede enrollment for underserved students at the institutions that perform an oversized role in serving them (community colleges) is cause for reconsideration. I suggest that the state complete a cost-benefit study to determine whether the policy is meeting the state's goals and whether the \$3.6 million spent on the system annually would be better used elsewhere. I also recommend that the RDS requirement be waived for community college applicants, the timing of RDS submission be standardized across colleges, and institutions invest in staff whose purpose is to help students navigate the RDS. I encourage future researchers to continue this work on the RDS in an effort to provide a substantial body of evidence that can be employed by policy makers in NC and those in other states considering adopting a similar centralized residency determination system.

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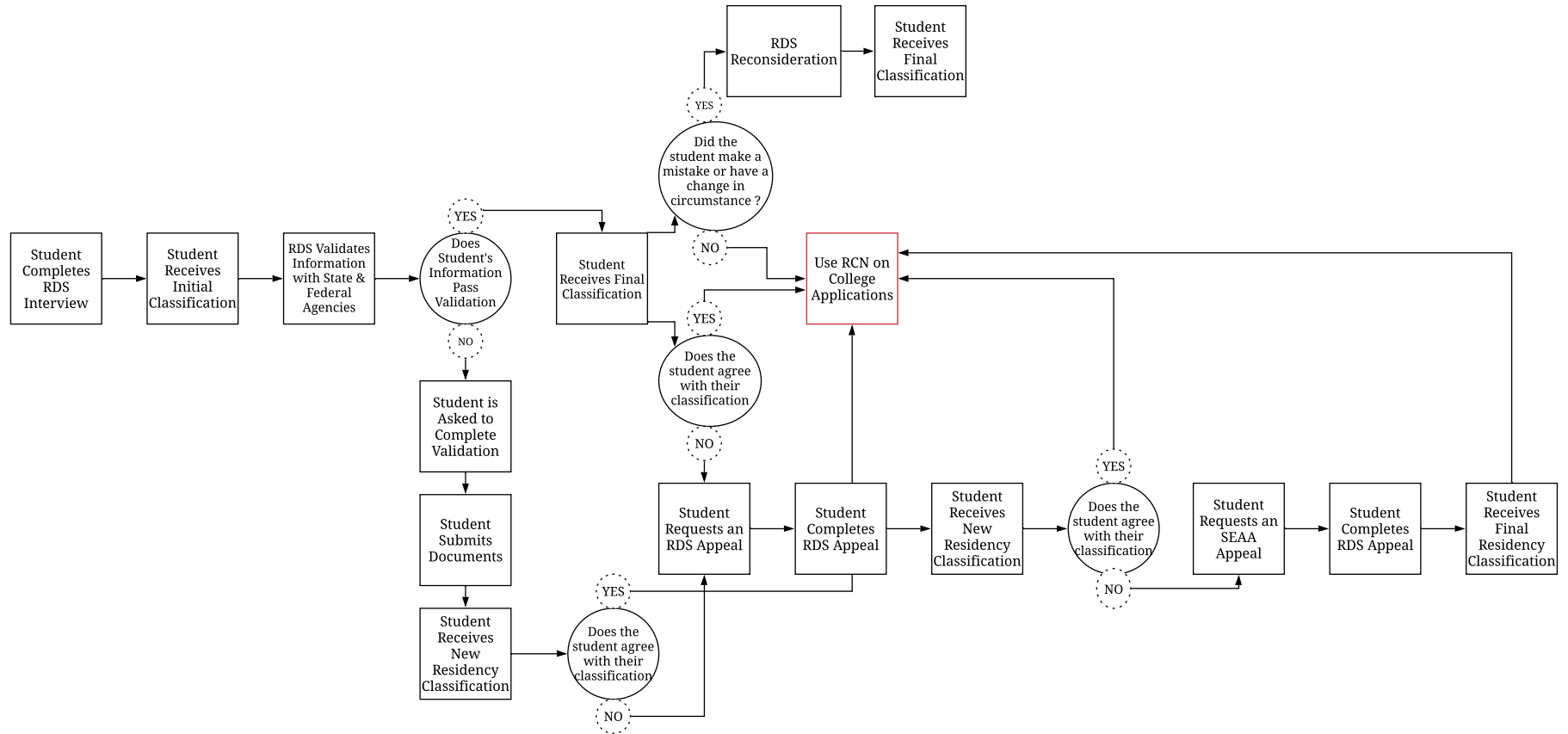
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APPENDICES

Appendix A

Figure 1.

RDS Filing Process



Appendix B

Table 17.

Date of RDS implementation and treatment semester

Campus	Date Implemented	Fall Application Deadline	Treatment Semester
UNC System Institutions			
Appalachian State University	20-Feb-17	1-Feb	Fall 2018
Fayetteville State University	20-Feb-17	30-June	Fall 2017
North Carolina A&T State University	20-Feb-17	30-June	Fall 2017
North Carolina Central University	20-Feb-17	1-Aug	Fall 2017
North Carolina State University	20-Feb-17	15-Jan	Fall 2018
UNC Asheville	20-Feb-17	1-Feb	Fall 2018
UNC Chapel Hill	20-Feb-17	15-Jan	Fall 2018
UNC Charlotte	20-Feb-17	1-Feb	Fall 2018
UNC Pembroke	20-Feb-17	30-June	Fall 2017
UNC Wilmington	20-Feb-17	1-Feb	Fall 2018
Western Carolina University	20-Feb-17	1-March	Fall 2017
UNC Greensboro	22-Feb-17	1-March	Fall 2017
UNC School of the Arts	22-Feb-17	15-March	Fall 2017
Winston-Salem State University	23-Feb-17	15-March	Fall 2017
Elizabeth City State University	27-Feb-17	1-Aug	Fall 2017
East Carolina University	2-Mar-17	1-March	Fall 2018
NC Community College System Institutions			
Randolph Community College	20-Feb-17	-*	Fall 2017
Alamance Community College	13-Mar-17	-	Fall 2017
Central Piedmont Community College	13-Mar-17	-	Fall 2017
Forsyth Technical Community College	13-Mar-17	-	Fall 2017
Guilford Technical Community College	13-Mar-17	-	Fall 2017
Bladen Community College	7-May-17	-	Fall 2017
Cape Fear Community College	7-May-17	-	Fall 2017
College of the Albemarle	7-May-17	-	Fall 2017
Davidson County Community College	7-May-17	-	Fall 2017
Durham Technical Community College	7-May-17	-	Fall 2017
McDowell Technical Community College	7-May-17	-	Fall 2017

Table 17 (continued).

Roanoke-Chowan Community College	7-May-17	-	Fall 2017
Rowan-Cabarrus Community College	7-May-17	-	Fall 2017
Sampson Community College	7-May-17	-	Fall 2017
Stanly Community College	7-May-17	-	Fall 2017
Cleveland Community College	26-Jun-17	-	Fall 2017
Fayetteville Technical Community College	26-Jun-17	-	Fall 2017
Halifax Community College	26-Jun-17	-	Fall 2017
Martin Community College	26-Jun-17	-	Fall 2017
Mayland Community College	26-Jun-17	-	Fall 2017
Mitchell Community College	26-Jun-17	-	Fall 2017
Montgomery Community College	26-Jun-17	-	Fall 2017
Pamlico Community College	26-Jun-17	-	Fall 2017
Piedmont Community College	26-Jun-17	-	Fall 2017
Southeastern Community College	26-Jun-17	-	Fall 2017
Tri-County Community College	26-Jun-17	-	Fall 2017
Caldwell Community College and Technical Institute	6-Sep-17	-	Fall 2018
Central Carolina Community College	6-Sep-17	-	Fall 2018
Coastal Carolina Community College	6-Sep-17	-	Fall 2018
Haywood Community College	6-Sep-17	-	Fall 2018
Isothermal Community College	6-Sep-17	-	Fall 2018
Johnston Community College	6-Sep-17	-	Fall 2018
Nash Community College	6-Sep-17	-	Fall 2018
Pitt Community College	6-Sep-17	-	Fall 2018
Richmond Community College	6-Sep-17	-	Fall 2018
Wayne Community College	6-Sep-17	-	Fall 2018
Wilson Community College	6-Sep-17	-	Fall 2018
Brunswick Community College	18-Sep-17	-	Fall 2018
Edgecombe Community College	18-Sep-17	-	Fall 2018
James Sprunt Community College	18-Sep-17	-	Fall 2018
Robeson Community College	18-Sep-17	-	Fall 2018
Rockingham Community College	18-Sep-17	-	Fall 2018
Surry Community College	18-Sep-17	-	Fall 2018
Vance-Granville Community College	18-Sep-17	-	Fall 2018
Wake Technical Community College	18-Sep-17	-	Fall 2018
Western Piedmont Community College	18-Sep-17	-	Fall 2018
Wilkes Community College	18-Sep-17	-	Fall 2018

Table 17 (continued).

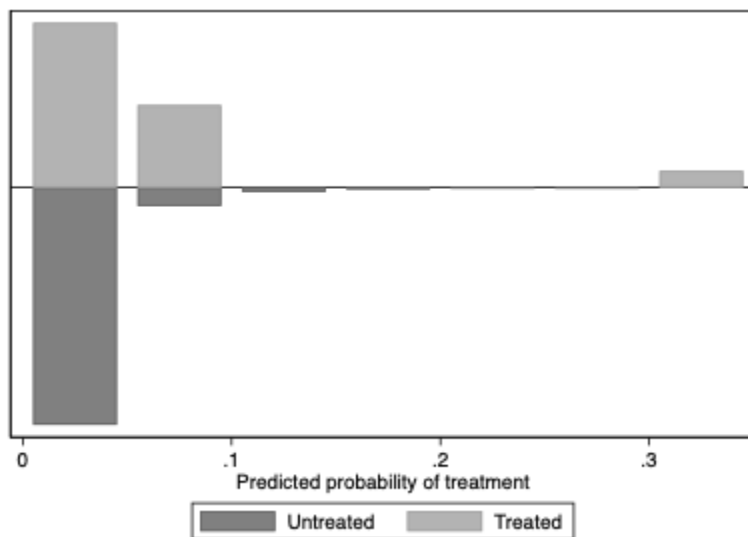
Asheville-Buncombe Technical Community College	2-Oct-17	-	Fall 2018
Beaufort County Community College	2-Oct-17	-	Fall 2018
Blue Ridge Community College	2-Oct-17	-	Fall 2018
Carteret Community College	2-Oct-17	-	Fall 2018
Catawba Valley Community College	2-Oct-17	-	Fall 2018
Craven Community College	2-Oct-17	-	Fall 2018
Gaston College	2-Oct-17	-	Fall 2018
Lenoir Community College	2-Oct-17	-	Fall 2018
Sandhills Community College	2-Oct-17	-	Fall 2018
South Piedmont Community College	2-Oct-17	-	Fall 2018
Southwestern Community College	2-Oct-17	-	Fall 2018

Note: *Community college deadlines are typically the week before the first week of class in August

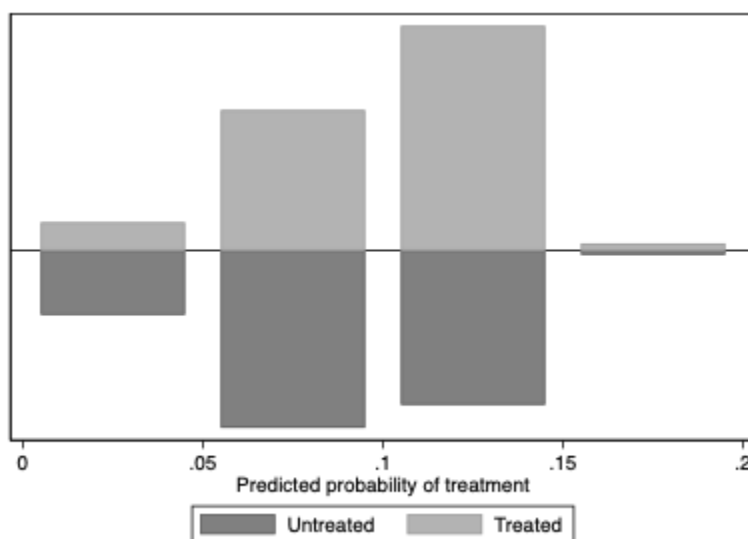
Appendix C

Figure 4.

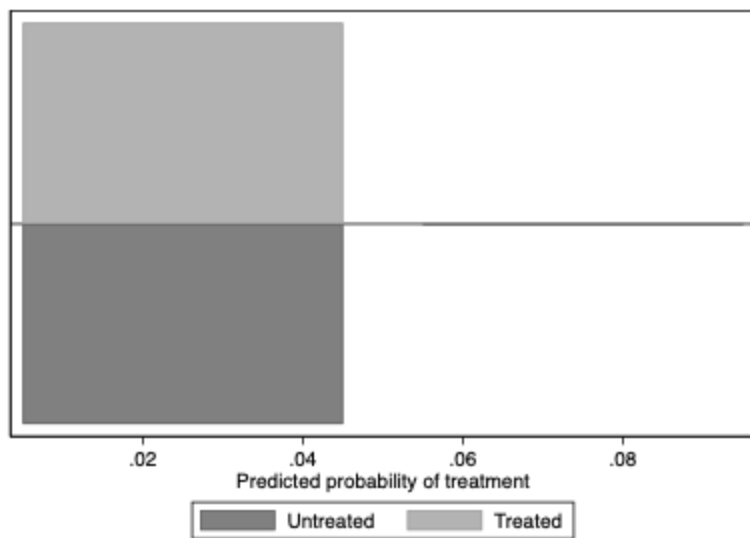
Propensity Score Overlap



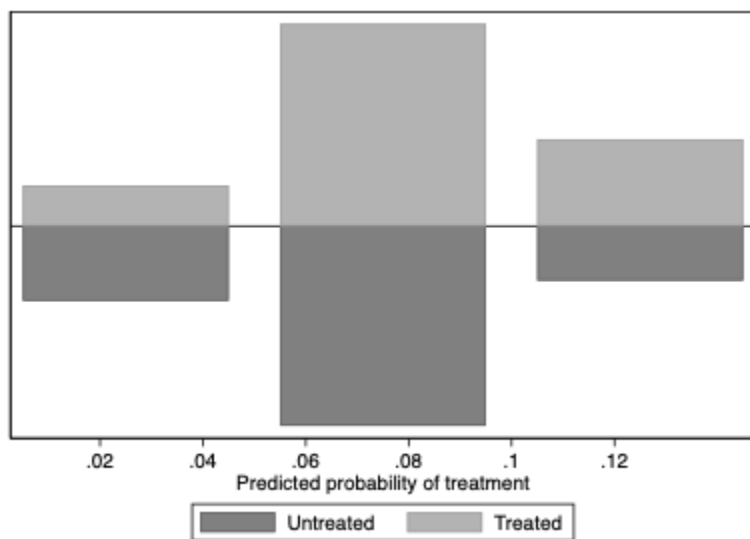
Note: This graph shows propensity scores for enrollment overall, by racial ethnic group, and Pell status at four-year colleges.



Note: This graph shows propensity scores for enrollment overall, by racial ethnic group, and Pell status at two-year colleges.



Note: This graph shows propensity scores for in-state resident outcome at four-year colleges.



Note: This graph shows propensity scores for in-state resident outcome at two-year colleges.

Appendix D

Figure 5.

Parallel trends plots for total enrollment at two-year colleges

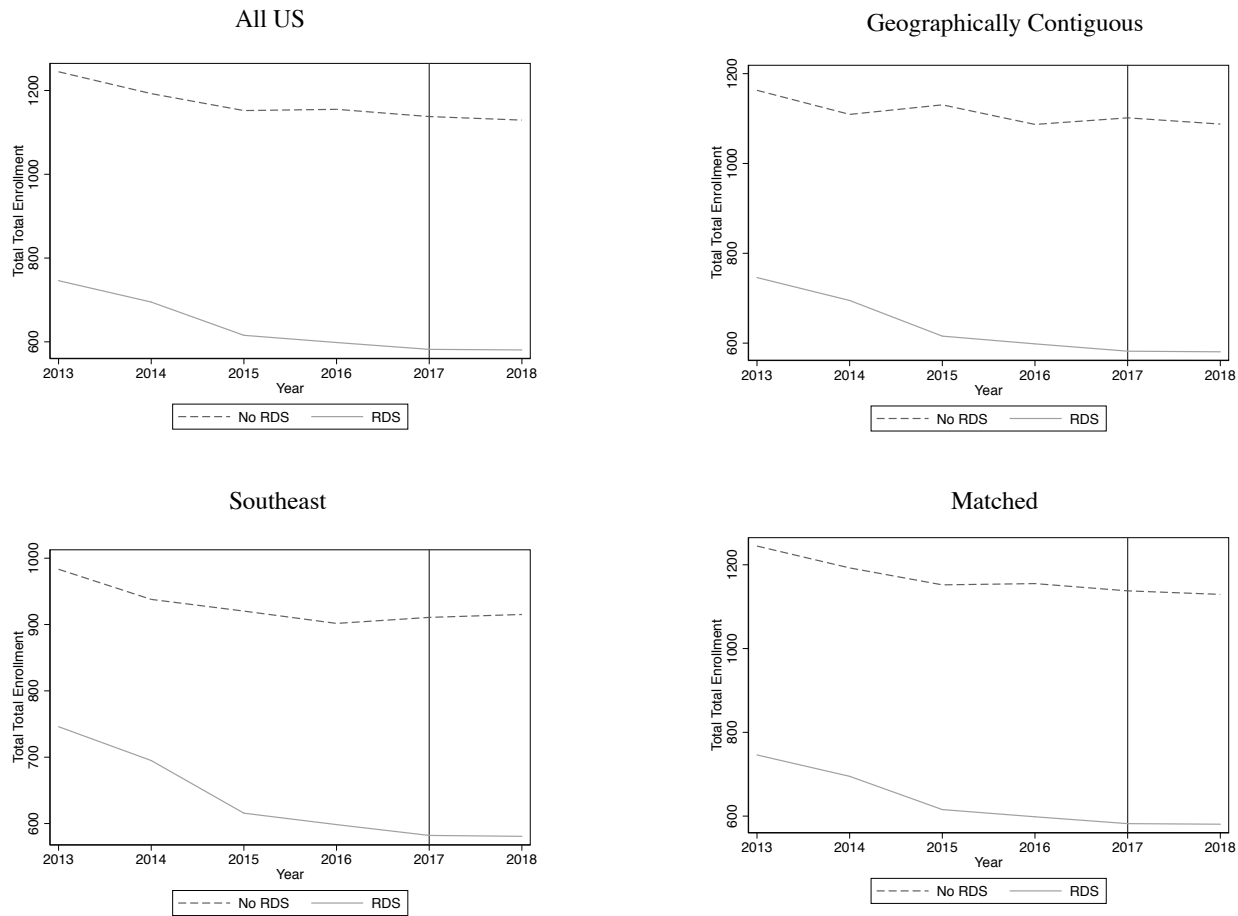


Figure 6.

Parallel trends plots for total enrollment at four-year colleges

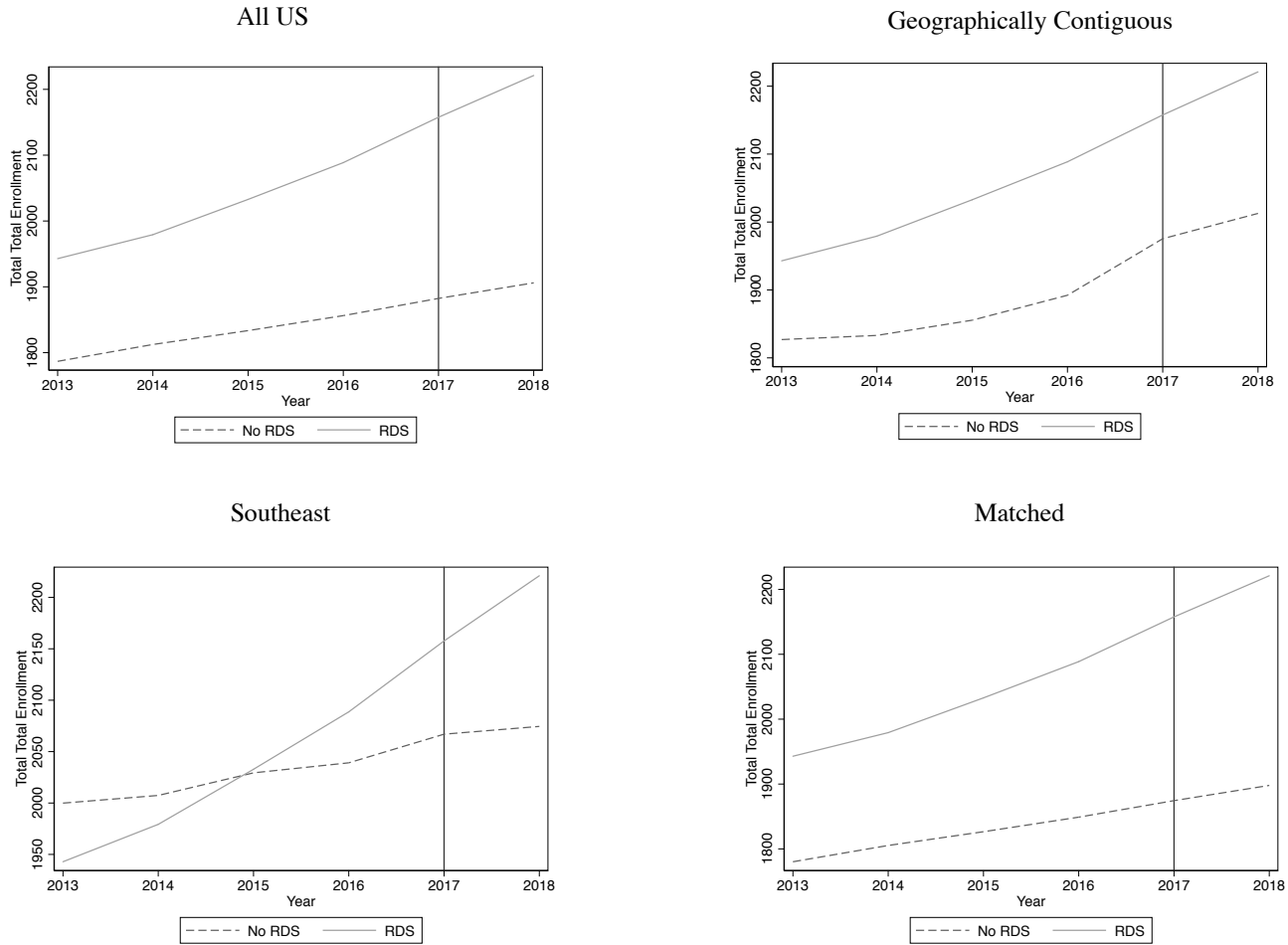


Figure 7.

Parallel trends plots for in-state enrollment at two-year colleges

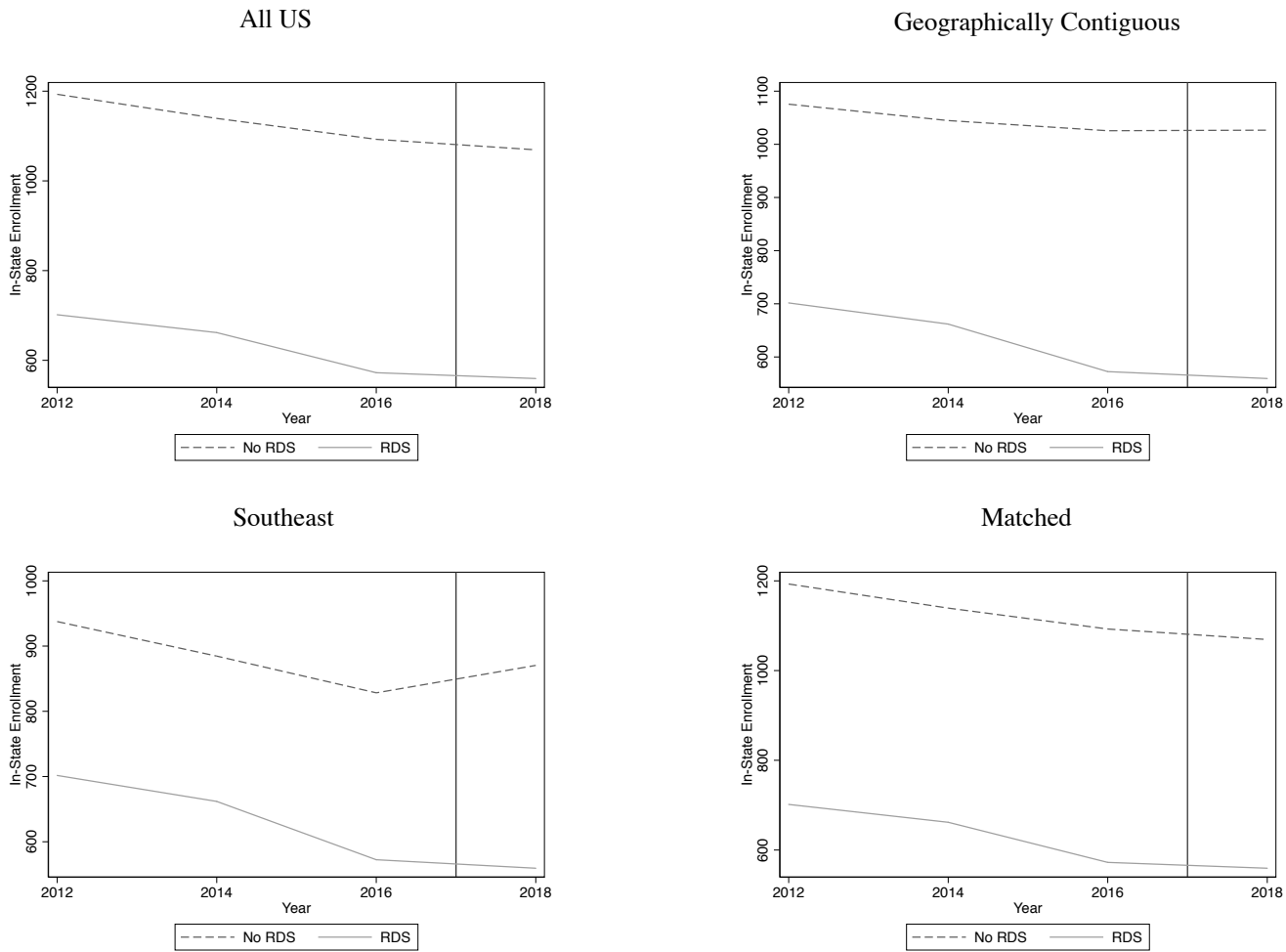


Figure 8.

Parallel trends plots for in-state enrollment at four-year colleges

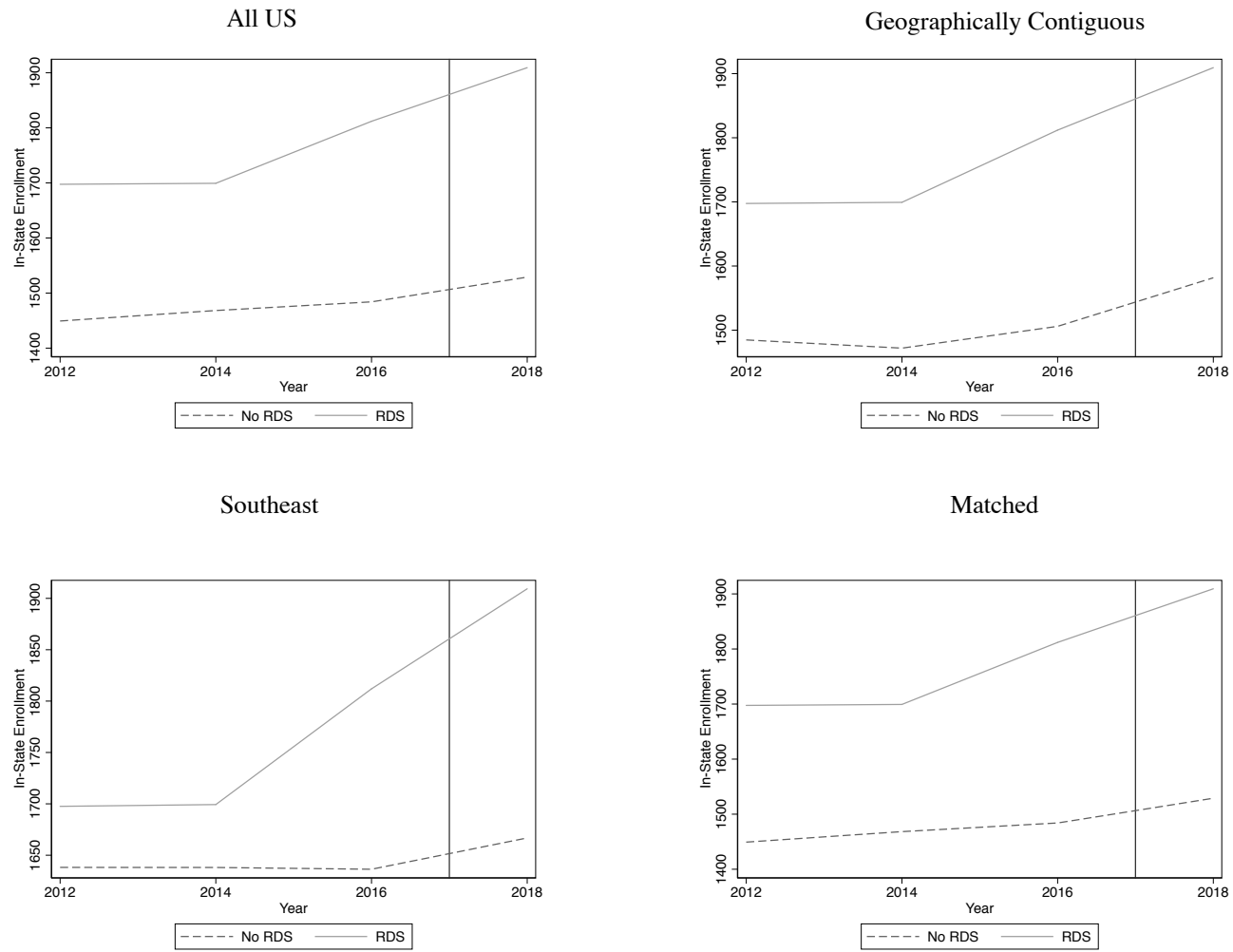


Figure 9.

Parallel trends plots for out-of-state enrollment at two-year colleges

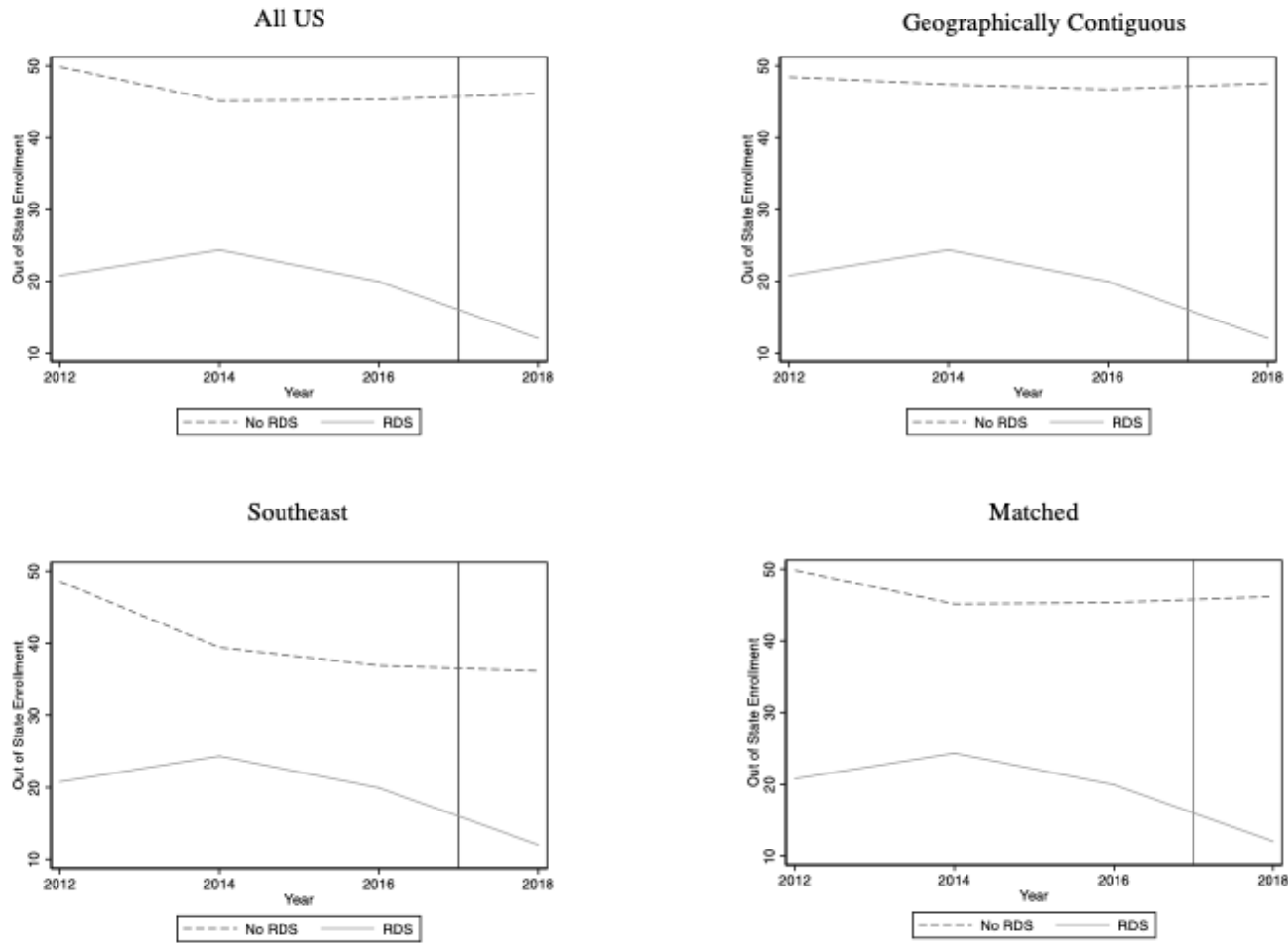


Figure 10.

Parallel trends plots for out-of-state enrollment at four-year colleges

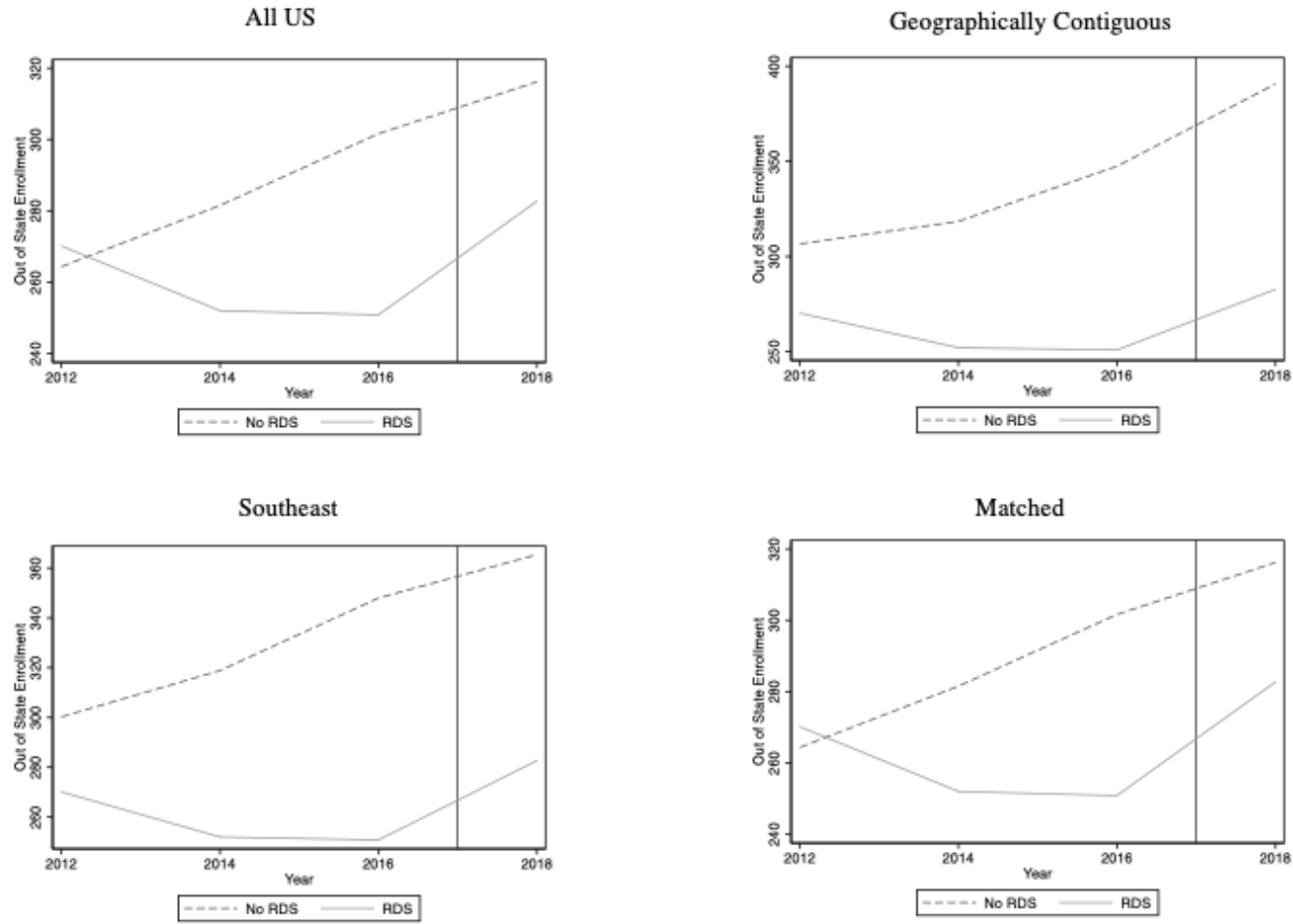


Figure 11.

Parallel trends plots for Latinx enrollment at two-year colleges

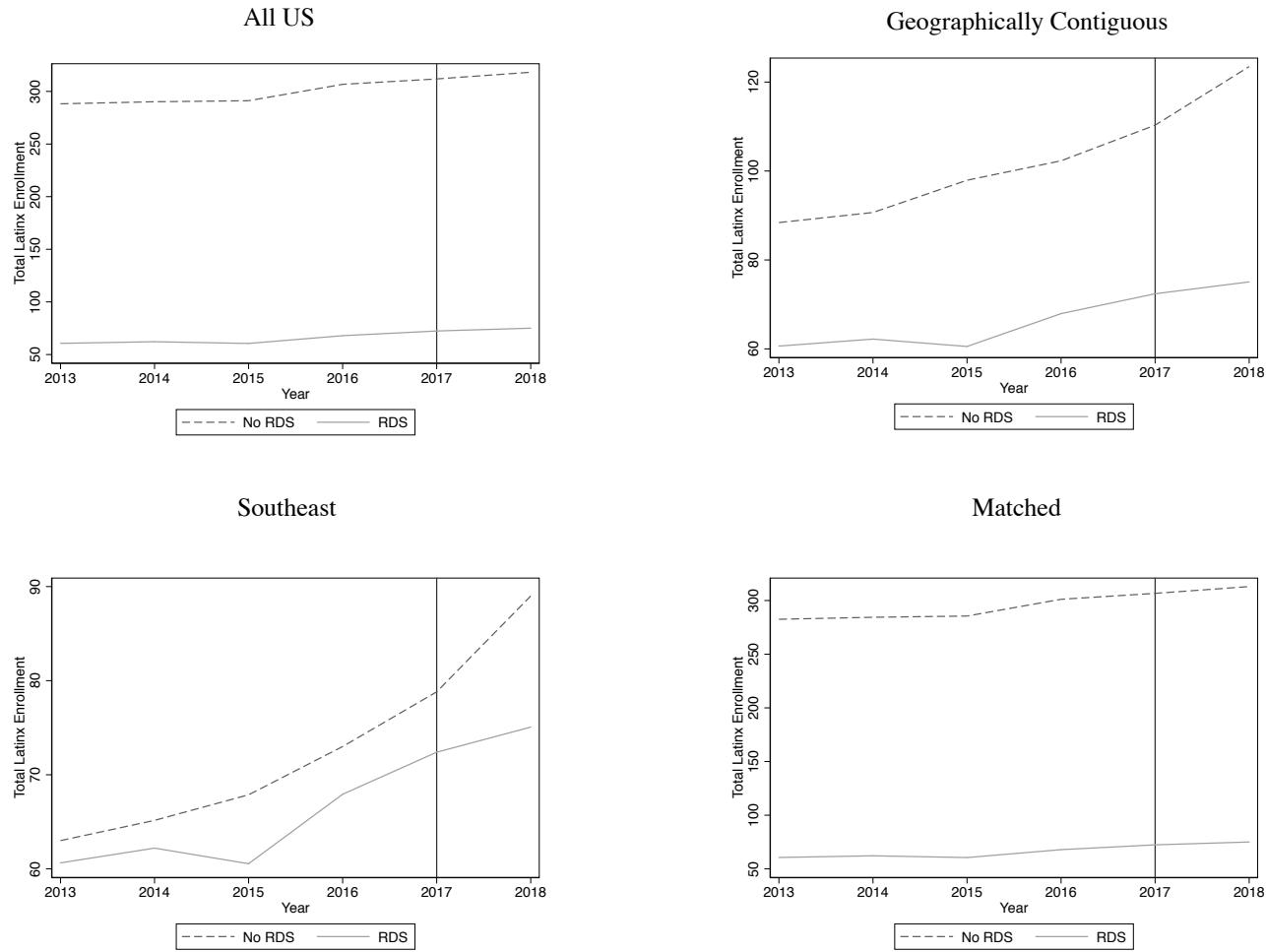


Figure 12.

Parallel trends plots for Latinx enrollment at four-year colleges

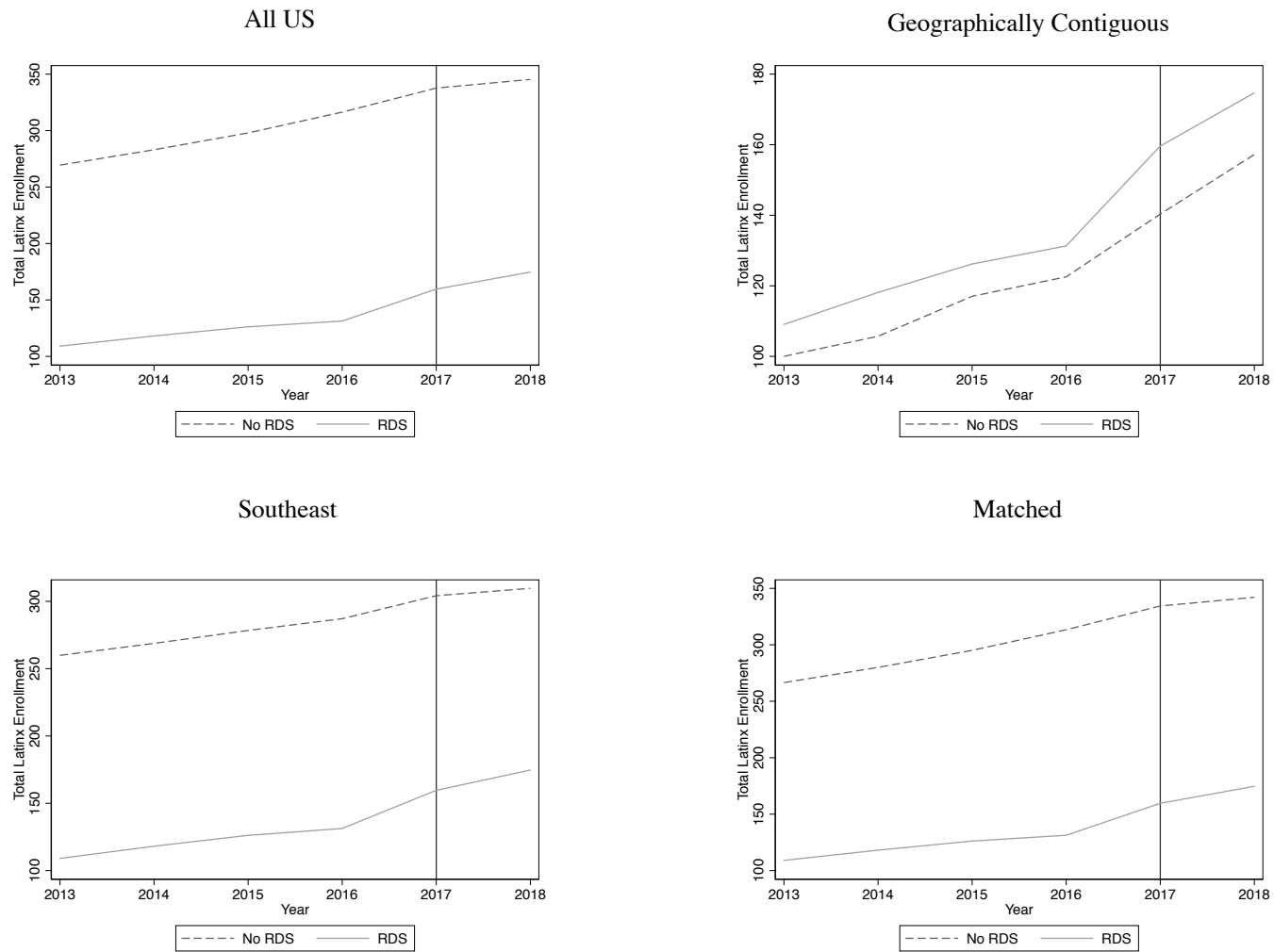


Figure 13.

Parallel trends plots for Black enrollment at two-year colleges

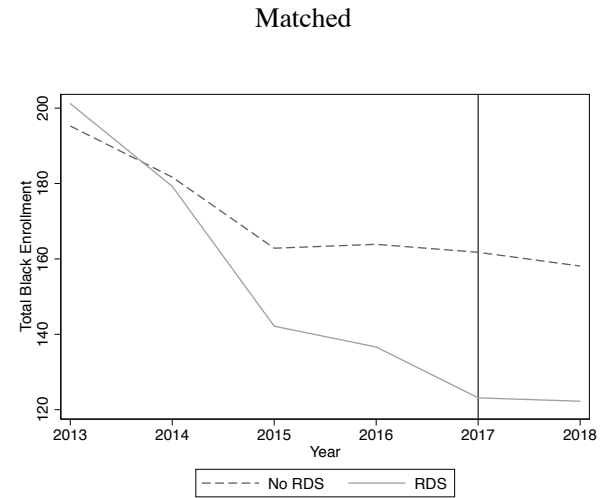
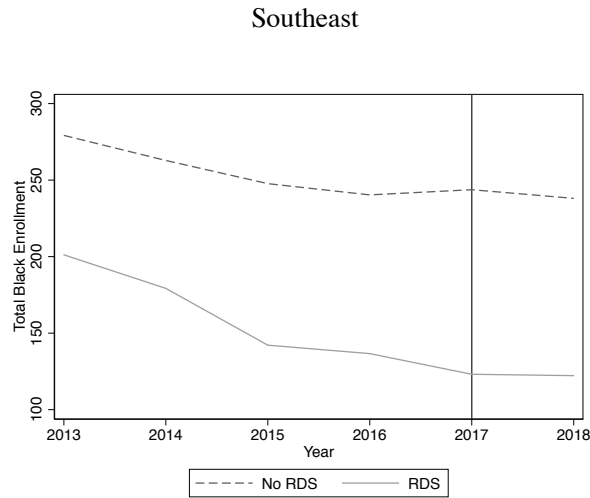
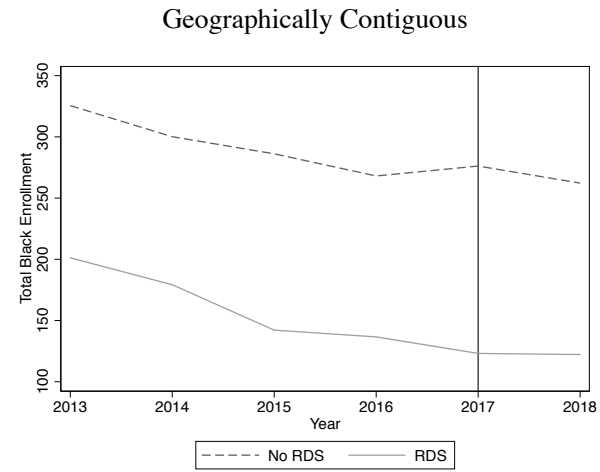
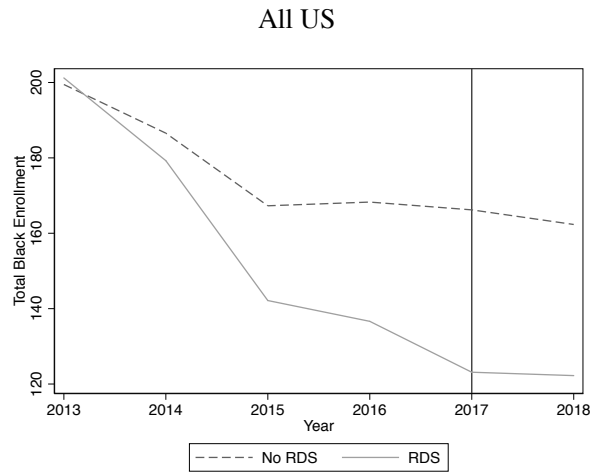


Figure 14.

Parallel trends plots for Black enrollment at four-year colleges

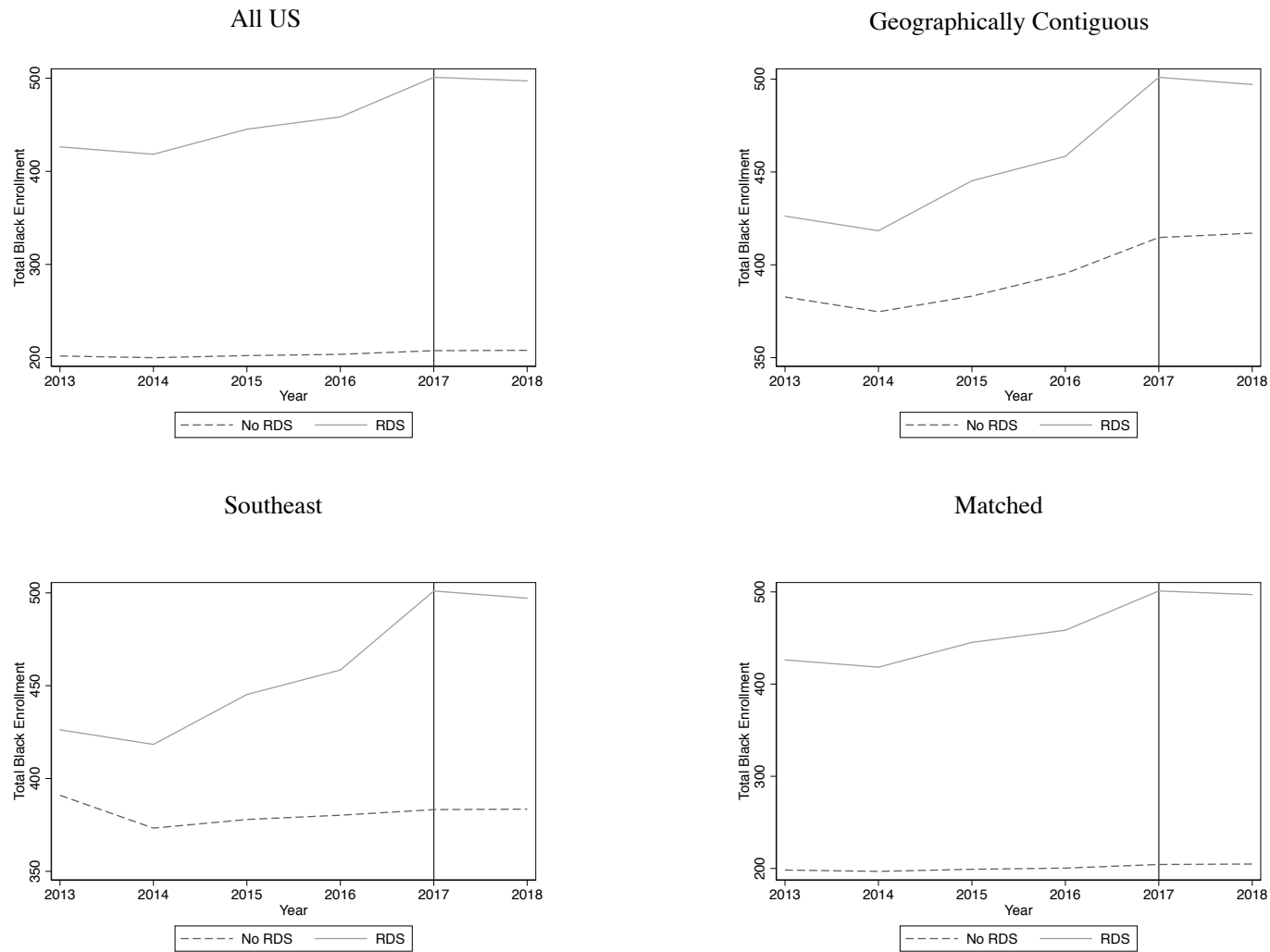


Figure 15.

Parallel trends plots for White enrollment at two-year colleges

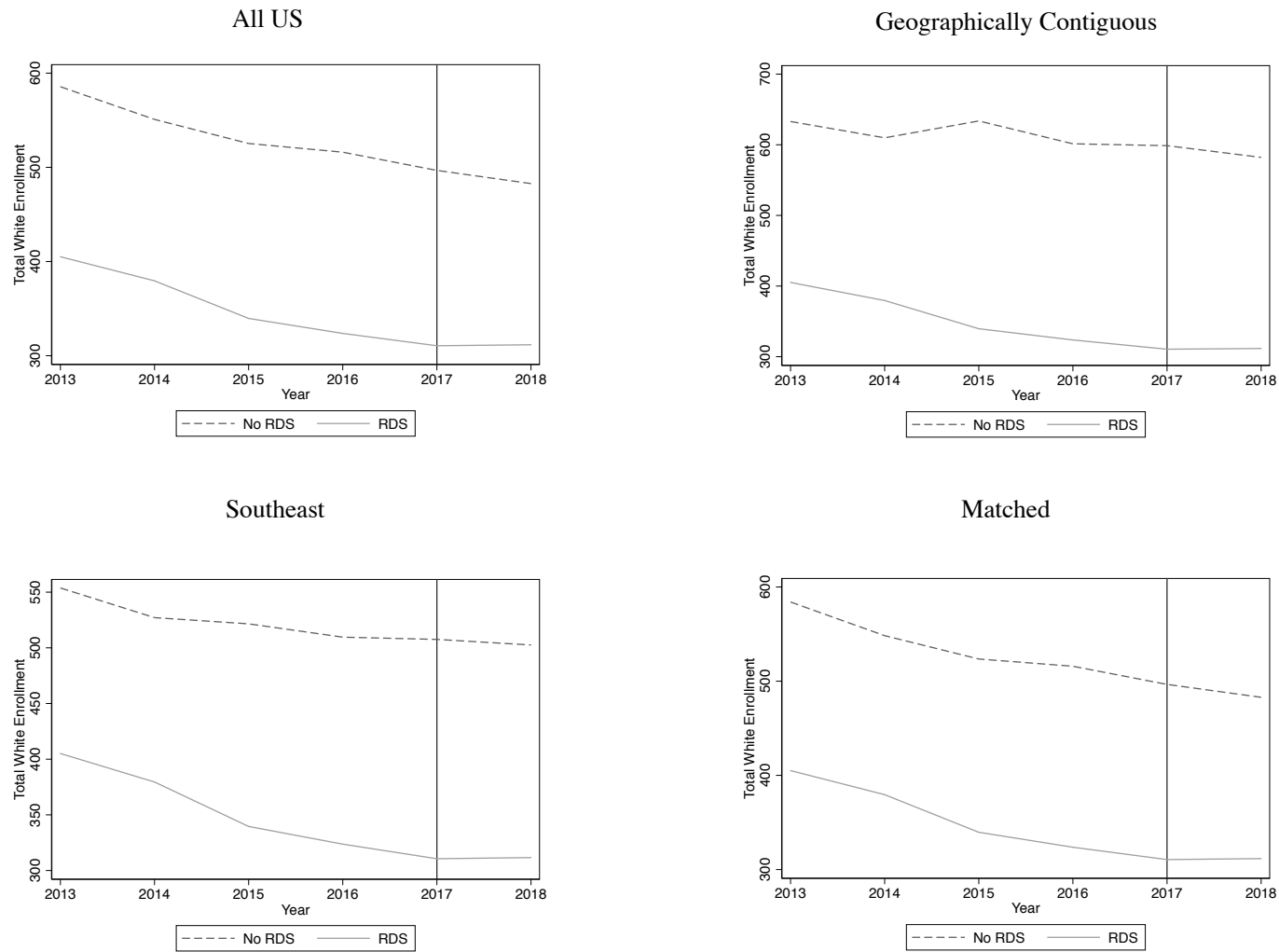


Figure 16.

Parallel trends plots for White enrollment at four-year colleges

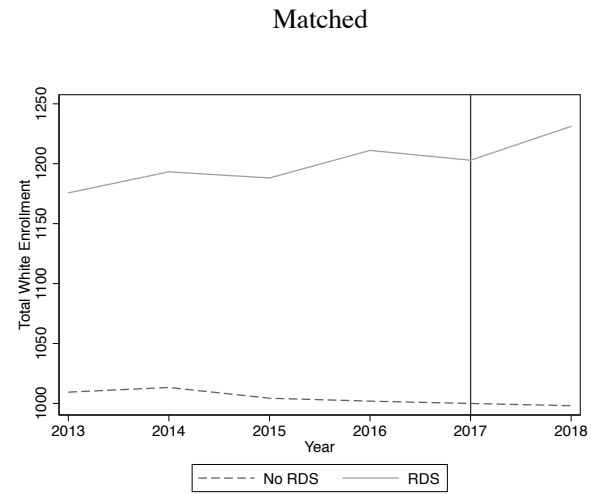
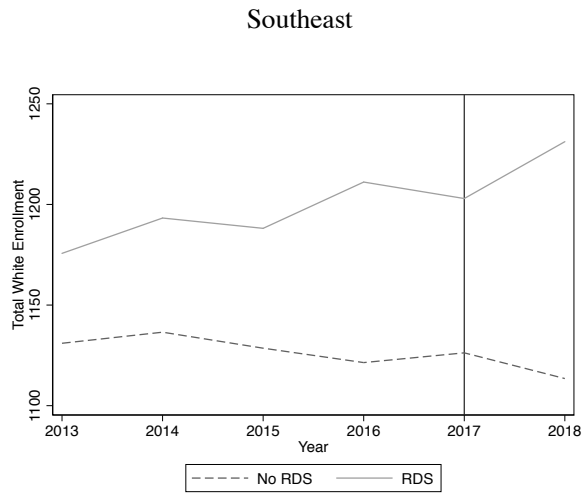
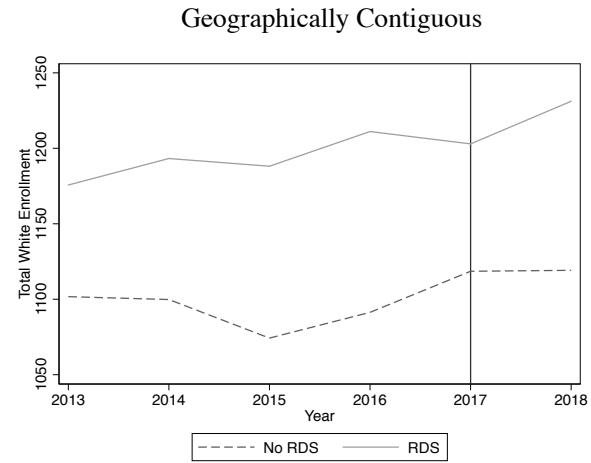
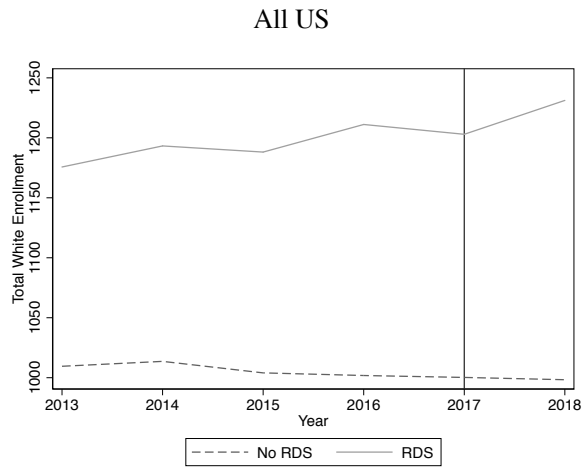


Figure 17.

Parallel trends plots for Pell enrollment at two-year colleges

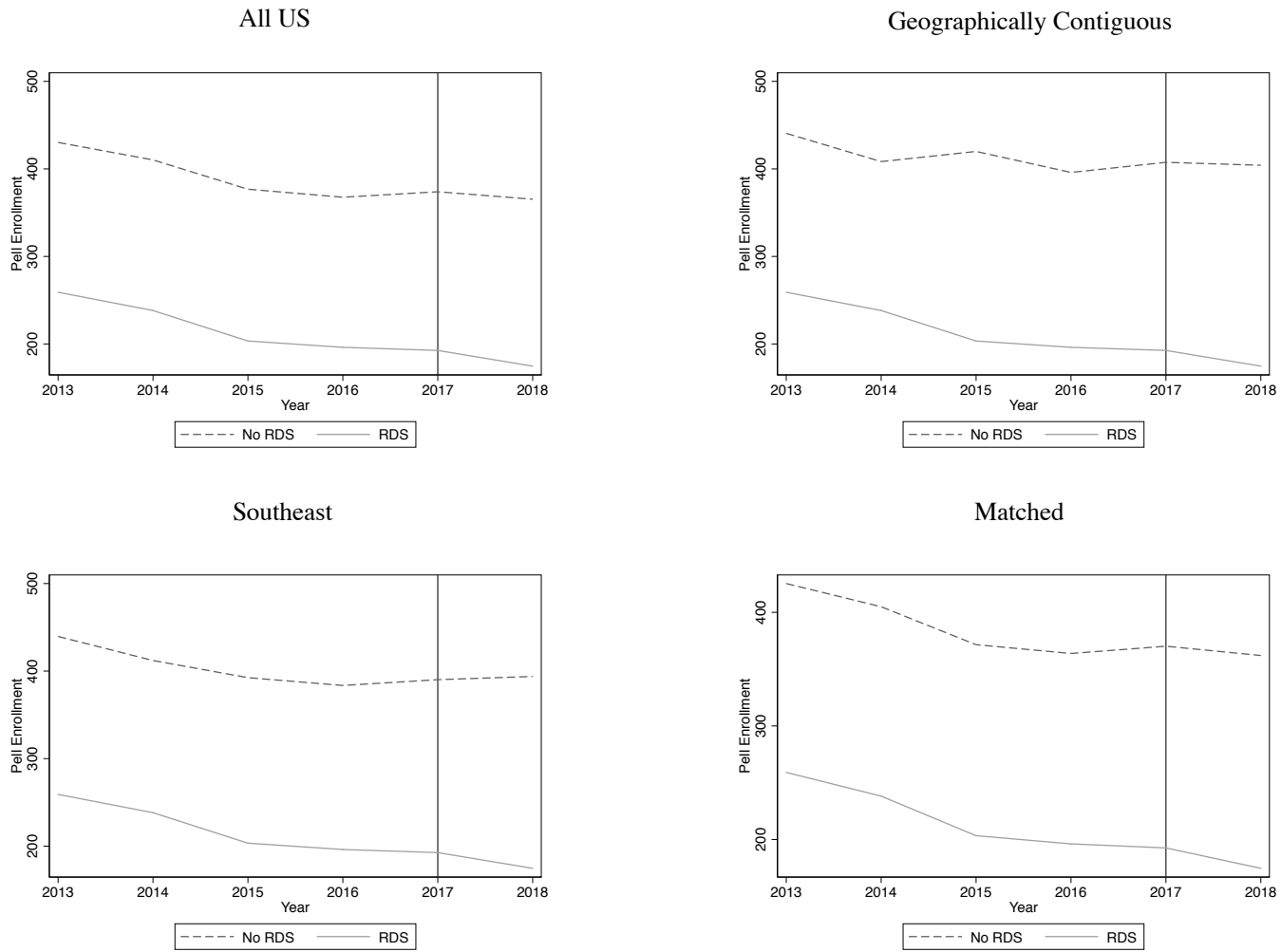
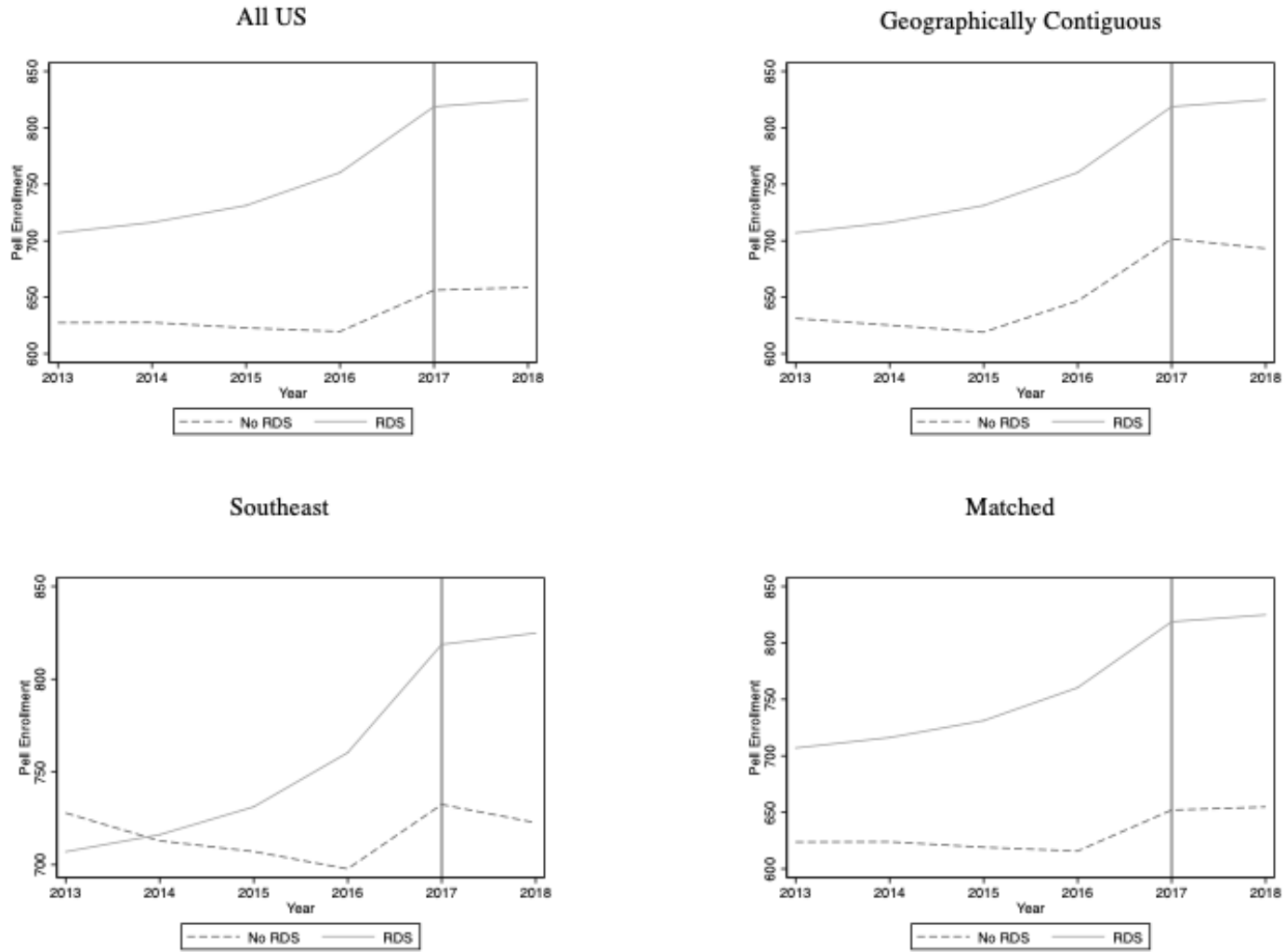


Figure 18.

Parallel trends plots for Pell enrollment at four-year colleges



Appendix E

Table 18.

Leads results for overall enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2013	-0.05 (48.14)	37.65 (103.21)	95.45 (66.79)	69.30 (47.95)	-8.80 (54.88)	-193.12 (155.31)	42.13 (99.92)	40.33 (98.16)
NC*2014	19.65 (34.08)	73.97 (58.16)	64.66 (47.15)	61.26 (33.22)	6.83 (32.67)	-91.61 (85.81)	66.59 (65.89)	49.45 (57.27)
NC*2015	-0.38 (21.03)	-11.83 (25.47)	10.68 (23.59)	4.78 (20.70)	-17.47 (32.13)	-14.94 (44.16)	-3.55 (41.80)	-3.35 (40.08)
Treatment	-11.18 (23.07)	-63.02 (39.79)	-42.18 (28.48)	-38.09 (27.08)	49.68 (39.75)	11.16 (65.27)	-5.43 (53.97)	-40.12 (48.49)
% Senate Republicans	-90.53 (95.23)	3058.05*** (704.45)	-25.29 (181.99)	-54.54 (54.25)	-82.99 (98.58)	-348.36 (1134.68)	7.77 (185.56)	138.58 (223.42)
% House Republicans	251.27* (110.09)	629.99** (219.66)	405.99*** (118.03)	132.55 (75.87)	-571.78** (173.74)	119.56 (404.10)	-284.18 (223.50)	-501.21 (266.45)
Republican Governor	6.82 (13.44)	-12.67 (27.26)	-29.35 (18.64)	-19.82 (13.42)	-24.85 (19.57)	20.22 (48.62)	-64.46* (25.91)	-90.64 (47.75)
Higher Ed \$ Per Capita	0.64 (0.63)	-1.74 (2.75)	-2.65 (1.97)	-0.61 (0.53)	2.15** (0.82)	-1.96 (5.07)	7.77 (4.00)	5.33* (2.32)
Higher Ed \$ per \$1,000 of Income	-8.77 (33.23)	281.35* (136.47)	99.44 (78.17)	41.11 (27.65)	-67.13 (41.53)	75.57 (241.24)	-263.77 (154.65)	-167.04 (102.63)
% with Bachelor's degree	-707.95* (347.28)	1135.01 (701.12)	923.81* (362.92)	-160.16 (277.42)	114.72 (349.05)	-469.88 (877.39)	775.15 (677.29)	-322.19 (736.13)

Table 18 (continued).

Unemployment rate	20.11 (15.17)	-79.47* (36.98)	-27.68 (19.03)	-2.98 (12.54)	30.70* (13.01)	43.48 (65.43)	29.96 (28.51)	56.38* (28.62)
Income-to-poverty ratio	-179.94 (327.03)	-2526.51*** (701.29)	-1323.75* (511.92)	-436.01 (224.20)	-1219.04** (392.71)	1086.16 (1202.44)	-440.05 (603.80)	-1956.58 (1132.02)
Median Income	-0.01 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.01 (0.00)	0.01* (0.01)	0.01 (0.03)	-0.01 (0.01)	-0.01 (0.01)
Tuition	-0.00 (0.01)	-0.05 (0.04)	-0.04 (0.03)	-0.01 (0.02)	0.01 (0.01)	-0.02 (0.03)	0.04 (0.03)	-0.03 (0.03)
Promise Program	3.77 (38.54)	-0.80 (40.81)	17.66 (24.04)	42.78 (34.95)	-3.18 (43.41)	36.87 (103.17)	-63.42 (114.22)	-51.78 (77.20)
2014	-24.98 (14.92)	-107.85** (40.76)	-49.88 (32.02)	-19.24 (13.14)	18.51 (17.06)	63.13 (100.74)	-59.75 (42.28)	39.05 (35.60)
2015	-52.06* (24.37)	-163.96* (69.91)	-84.66 (62.14)	-21.36 (19.65)	31.19 (30.35)	123.06 (198.20)	-53.73 (80.84)	78.64 (69.58)
2016	-32.06 (32.24)	-310.66** (103.05)	-117.73 (84.98)	-16.72 (25.26)	20.27 (38.43)	194.56 (264.11)	-52.67 (97.94)	100.30 (93.02)
2017	-28.33 (42.63)	-394.41** (143.93)	-140.80 (116.29)	-7.91 (34.60)	11.05 (51.67)	316.29 (368.30)	-76.09 (131.05)	93.82 (130.61)
2018	-10.79 (57.80)	-302.08 (167.46)	-87.65 (137.67)	31.61 (47.95)	11.60 (65.51)	371.29 (448.04)	-121.22 (160.31)	145.20 (140.63)
Constant	1377.22*** (313.27)	-2355.32* (1151.15)	924.33 (680.93)	1031.79*** (263.22)	1206.36*** (361.45)	1083.45 (2072.51)	1946.93* (772.87)	2394.11*** (651.72)
Joint Hypothesis Test F Statistic	0.88	1.42	0.79	1.49	0.23	0.54	0.76	0.5
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 19.

Leads results for in-state enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2012	-9.06 (16.90)	67.64* (31.15)	-44.50 (54.21)	27.56 (18.95)	-87.78*** (21.98)	-320.67* (122.92)	-122.02*** (30.22)	-85.73*** (21.77)
NC*2014	5.12 (11.93)	-78.69* (32.84)	-0.30 (33.94)	22.36 (15.25)	-41.44** (13.12)	169.18 (133.49)	-86.45* (39.22)	-37.44** (13.12)
Treatment	-0.19 (14.40)	151.97* (67.27)	-76.21 (58.31)	0.65 (11.83)	-16.18 (22.32)	-471.30 (254.32)	27.19 (38.58)	-4.10 (21.90)
% Senate Republicans	61.71 (34.68)	-3.68 (54.31)	197.84 (160.63)	22.53 (25.04)	46.96 (48.84)	42.96 (269.41)	111.33 (91.34)	17.22 (56.94)
% House Republicans	-66.76 (69.76)	390.67* (154.71)	-11.96 (107.88)	-9.83 (31.51)	-110.11 (56.78)	-1075.22 (572.12)	-144.20 (98.21)	-113.91 (65.06)
Republican Governor	1.23 (5.47)	110.46* (45.43)	-5.86 (10.38)	-6.57 (4.58)	-2.16 (8.40)	-350.59* (174.56)	7.95 (16.22)	-0.23 (9.70)
Higher Ed \$ Per Capita	0.61 (0.35)	-7.81* (3.21)	2.91 (2.61)	0.23 (0.20)	0.01 (0.33)	21.68 (12.14)	-3.09 (2.11)	0.13 (0.39)
Higher Ed \$ per \$1,000 of Income	-33.64* (16.85)	172.09* (77.46)	-98.62 (84.42)	-15.09 (9.43)	2.27 (16.86)	-558.54 (309.51)	89.82 (78.38)	-7.28 (19.19)
% with Bachelor's degree	-31.08 (298.36)	-1087.96* (468.59)	741.67 (496.09)	-73.82 (213.87)	149.67 (163.74)	3303.20 (1958.29)	-455.76 (642.15)	166.81 (189.55)

Table 19 (continued).

Unemployment rate	7.88 (4.60)	25.53** (9.45)	13.47 (8.95)	-2.44 (4.62)	7.94 (4.41)	-50.51 (33.79)	9.88 (15.38)	8.38 (5.00)
Income-to-poverty ratio	288.49 (283.67)	311.19 (182.00)	1323.80 (1149.04)	122.89 (139.06)	109.71 (186.98)	270.90 (1018.35)	416.27 (410.84)	199.33 (204.40)
Median Income	0.00 (0.00)	0.05* (0.02)	-0.00 (0.01)	0.00 (0.00)	-0.00 (0.00)	-0.15 (0.08)	0.01 (0.01)	-0.00 (0.00)
Tuition	-0.01 (0.01)	0.01 (0.01)	0.00 (0.03)	-0.01 (0.01)	-0.00 (0.00)	-0.01 (0.01)	-0.01 (0.01)	0.01 (0.01)
Promise Program	-1.23 (11.55)	-2.84 (8.84)	-2.64 (12.71)	17.35 (15.58)	26.55 (14.66)	-105.55** (33.79)	-25.60 (21.78)	-27.89 (18.97)
Total Class	0.79*** (0.14)	0.97*** (0.02)	0.94*** (0.04)	0.68*** (0.16)	0.77*** (0.03)	0.76*** (0.06)	0.76*** (0.05)	0.81*** (0.03)
2014	-8.88 (12.05)	43.29* (19.79)	-29.63 (31.10)	-12.53 (12.98)	-0.85 (9.98)	-125.72 (72.81)	10.92 (22.72)	-7.51 (11.53)
2016	-23.30 (19.82)	-12.73 (7.10)	-40.52 (67.31)	-20.10 (20.84)	-5.04 (20.70)	46.31* (22.15)	1.94 (47.88)	-13.36 (23.86)
2018	-44.99 (36.40)	0.00 (0.01)	-60.44 (89.00)	-41.68 (36.28)	4.70 (30.46)	0.00 (0.01)	31.28 (58.69)	-7.31 (35.91)
Constant	69.08 (251.91)	-1957.99* (750.59)	-526.76 (390.93)	260.03 (183.49)	27.88 (140.91)	5874.46* (2942.50)	-276.65 (345.28)	55.24 (154.04)
Joint Hypothesis Test F Statistic	0.55	2.88	1.04	1.28	9.25***	5.01***	8.27***	8.91***
N	3280	536	924	3028	2460	288	688	2460

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 20.

Leads results for ot-of-state enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2012	-9.72 (11.52)	-41.56 (27.57)	-9.52 (11.67)	-13.85 (13.77)	73.92*** (18.21)	381.67** (121.97)	123.03*** (28.60)	57.95*** (16.96)
NC*2014	-10.94 (8.25)	31.79 (31.66)	-11.27 (16.21)	-9.47 (10.39)	31.54* (12.91)	-185.22 (134.64)	84.76* (39.98)	24.04 (14.02)
Treatment	-13.50 (10.70)	-78.51 (63.74)	8.79 (16.22)	-17.06 (9.14)	-2.05 (20.14)	530.98* (252.47)	-45.58 (38.01)	8.02 (14.70)
% Senate Republicans	-54.57 (29.13)	-28.42 (47.33)	-51.23 (41.78)	-24.09 (22.35)	-32.59 (45.52)	-171.75 (225.98)	-125.38 (88.06)	-22.97 (36.15)
% House Republicans	89.46 (57.69)	-190.68 (124.63)	-37.72 (30.44)	45.44 (39.55)	94.92 (54.44)	1376.39* (550.29)	168.64 (91.57)	85.24 (54.95)
Republican Governor	-3.70 (4.36)	-56.77 (43.50)	4.29 (5.99)	-0.73 (3.40)	-1.50 (6.17)	402.46* (172.16)	-13.41 (16.21)	1.45 (4.65)
Higher Ed \$ Per Capita	-0.45 (0.28)	3.39 (2.91)	-0.08 (0.55)	-0.25 (0.22)	-0.06 (0.28)	-25.52* (12.00)	2.78 (2.05)	-0.08 (0.28)
Higher Ed \$ per \$1,000 of Income	25.59 (13.42)	-68.08 (74.10)	2.97 (18.85)	13.55 (10.42)	-2.97 (15.72)	599.13 (308.62)	-88.24 (76.00)	8.27 (15.26)
% with Bachelor's degree	270.81 (275.97)	287.58 (509.34)	-436.61 (315.09)	355.38 (277.29)	79.06 (154.04)	-3509.60 (1935.83)	814.67 (653.00)	37.76 (133.49)
Unemployment rate	-4.38 (3.39)	-16.50* (8.21)	-4.35 (3.19)	2.07 (3.92)	-6.54 (4.40)	68.57* (33.67)	-12.78 (16.14)	-6.58 (4.00)

Table 20 (continued).

Income-to-poverty ratio	-140.16 (173.77)	-207.00 (176.02)	-264.70 (190.85)	-11.09 (94.28)	-87.45 (194.15)	-355.34 (1022.07)	-327.03 (402.76)	-142.86 (169.20)
Median Income	-0.00 (0.00)	-0.03 (0.02)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.18* (0.08)	-0.01 (0.01)	0.00 (0.00)
Tuition	0.01 (0.01)	-0.01 (0.01)	0.02 (0.02)	0.00 (0.01)	-0.00 (0.00)	0.01 (0.01)	0.00 (0.01)	-0.02* (0.01)
Promise Program	-3.25 (9.97)	4.38 (7.29)	9.26* (4.68)	-15.08 (12.06)	-28.99* (11.47)	123.24*** (34.81)	12.35 (22.48)	18.37 (17.10)
Total Class	0.19 (0.13)	0.02* (0.01)	0.05*** (0.01)	0.20 (0.14)	0.19*** (0.02)	0.21*** (0.05)	0.22*** (0.05)	0.10*** (0.02)
2014	5.79 (12.12)	-24.35 (18.11)	-7.71 (11.01)	16.13 (12.27)	4.61 (8.75)	144.92* (71.80)	-16.71 (21.05)	-0.71 (8.67)
2016	14.22 (20.27)	0.86 (6.54)	-27.35 (30.22)	30.76 (22.01)	14.37 (18.63)	-50.49* (21.96)	-6.17 (47.86)	7.89 (18.99)
2018	34.7 (36.72)	0.00 (0.00)	-33.29 (7.88)	53.98 (388.43)	27.37 (27.22)	0.00 (0.00)	-25.74 (52.07)	20.75 (29.84)
Constant	-195.35 (226.91)	1042.67 (688.69)	116.88 (128.63)	-227.63 (204.22)	102.69 (138.53)	-6742.46* (2856.05)	303.82 (308.23)	79.19 (132.86)
Joint Hypothesis Test F Statistic	0.92	1.34	0.33	0.55	9.20***	8.37***	9.26***	6.44**
N	3280	536	924	3216	2460	288	688	1608

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 21.

Leads results for Latinx enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2013	4.51 (8.51)	-13.24 (12.05)	-11.59 (9.82)	-2.25 (4.59)	59.19*** (12.20)	3.10 (21.62)	-14.51 (18.60)	7.75 (9.05)
NC*2014	8.36 (6.92)	-1.43 (6.88)	-2.91 (5.38)	-0.80 (3.89)	47.50*** (9.59)	9.80 (13.77)	-1.74 (12.36)	11.13 (7.86)
NC*2015	8.55* (4.31)	-1.32 (4.20)	-0.20 (3.69)	-0.19 (2.88)	27.19*** (6.98)	4.64 (6.75)	4.37 (6.86)	3.76 (6.19)
Treatment	0.29 (4.64)	-2.90 (6.03)	-0.66 (5.33)	-0.44 (4.11)	0.65 (10.82)	-3.88 (13.18)	15.85 (11.28)	4.26 (11.07)
% Senate Republicans	7.94 (19.02)	-83.27 (82.10)	-44.18 (48.75)	-0.27 (8.69)	5.36 (25.64)	118.31 (127.29)	-96.53* (40.48)	-52.00 (28.56)
% House Republicans	96.67*** (23.48)	-21.45 (54.58)	-11.77 (19.90)	-11.44 (12.70)	148.52*** (32.61)	-19.67 (65.50)	25.78 (39.64)	-9.32 (39.13)
Republican Governor	-1.49 (3.37)	-5.86 (5.37)	4.88 (4.69)	-2.88 (2.52)	3.44 (4.45)	-8.51 (8.12)	17.31** (6.12)	-5.75 (5.68)
Higher Ed \$ Per Capita	0.01 (0.18)	-0.14 (0.42)	-0.34 (0.40)	-0.06 (0.07)	0.18 (0.25)	1.04 (0.77)	-0.73 (0.71)	0.28 (0.26)
Higher Ed \$ per \$1,000 of Income	2.69 (8.63)	25.99 (17.52)	21.85 (16.71)	2.1 (3.31)	-2.32 (12.20)	-20.81 (32.18)	38.77 (29.91)	-7.87 (11.48)
% with Bachelor's degree	44.10 (50.35)	87.42 (62.94)	29.45 (51.78)	48.82 (30.96)	-131.74 (74.86)	-56.90 (116.14)	-85.31 (122.83)	29.01 (85.46)
Unemployment rate	-1.12 (2.88)	-7.98 (4.28)	0.32 (2.86)	-1.29 (1.19)	-8.31* (3.69)	-5.25 (7.99)	2.82 (4.55)	-4.86 (3.02)

Table 21 (continued).

Income-to-poverty ratio	29.46 (63.22)	-56.97 (91.81)	43.56 (83.11)	-41.3 (31.60)	-289.92** (102.82)	-16.09 (168.89)	115.16 (109.61)	140.00 (113.57)
	0.00* (0.00)	-0.00 (0.00)	0.00* (0.00)	0.00*** (0.00)	0.00* (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Median Income	0.00 (0.00)	0.00 (0.01)	-0.01 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.01 (0.01)	0.00 (0.00)
Tuition	16.45* (8.37)	-7.16 (4.47)	-4.97 (4.71)	-4.09 (4.30)	8.70 (11.77)	-15.79 (16.24)	5.56 (17.70)	-1.29 (10.90)
Promise Program	0.17*** (0.02)	0.06*** (0.01)	0.08** (0.02)	0.08*** (0.02)	0.22*** (0.02)	0.10*** (0.01)	0.16*** (0.04)	0.08*** (0.01)
Total Class	5.16 (4.14)	1.23 (7.29)	10.58 (8.15)	0.74 (1.73)	-5.34 (5.32)	-14.66 (12.91)	21.02* (9.70)	-5.59 (4.52)
2014	10.69 (7.36)	8.92 (14.00)	17.46 (15.37)	0.64 (2.88)	-5.95 (9.49)	-24.12 (22.04)	35.93* (17.93)	-0.54 (9.75)
2015	19.70* (9.48)	12.10 (19.00)	20.65 (21.11)	3.11 (3.55)	-2.79 (11.83)	-36.59 (30.84)	44.60 (23.02)	-2.27 (12.52)
2016	20.14 (12.68)	14.10 (27.16)	27.17 (27.84)	2.5 (4.47)	0.40 (16.33)	-45.21 (42.11)	67.67* (31.44)	2.72 (16.57)
2017	20.61 (15.72)	24.85 (33.43)	35.91 (31.84)	3.66 (5.46)	-4.15 (20.43)	-45.85 (52.59)	74.76 (38.77)	1.37 (19.42)
2018	-48.39 (73.05)	40.49 (146.34)	-203.20* (90.12)	-75.73* (37.21)	-113.33 (113.2)	-296.63 (232.29)	-240.47 (141.35)	-111.94 (98.35)
Constant								
Joint Hypothesis Test F Statistic	1.47	1.17	0.56	0.14	10.23***	0.37	0.66	.67
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 22.

Leads results for Black enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2013	28.11** (10.27)	-6.03 (26.33)	15.84 (14.51)	19.70* (8.46)	-24.07 (18.58)	58.82 (107.73)	7.43 (35.24)	-57.04 (36.42)
NC*2014	15.35 (8.98)	9.81 (14.85)	11.40 (12.04)	11.99 (7.96)	-26.60 (18.24)	0.11 (48.01)	-4.57 (28.58)	-23.27 (33.65)
NC*2015	4.83 (4.35)	6.92 (6.31)	0.36 (5.25)	1.99 (3.78)	-4.55 (11.21)	15.24 (17.24)	7.30 (17.01)	3.73 (17.23)
Treatment	-12.51* (6.14)	-4.78 (8.16)	-13.34 (6.93)	-10.03 (5.92)	41.68* (21.04)	63.94* (30.90)	34.38 (24.91)	47.30* (18.74)
% Senate Republicans	10.47 (16.93)	-440.00* (210.06)	47.58 (47.75)	7.03 (14.64)	6.41 (24.69)	55.87 (591.48)	-59.42 (89.17)	-51.08 (82.88)
% House Republicans	63.86** (24.30)	-121.48 (63.63)	-11.50 (32.22)	36.22 (20.17)	-31.90 (45.26)	-242.90 (158.19)	-98.48 (93.11)	-109.12 (258.91)
Republican Governor	2.61 (4.19)	-6.77 (7.46)	8.55 (4.77)	2.33 (3.38)	-3.81 (4.72)	-2.21 (36.84)	-1.01 (8.20)	15.91 (12.11)
Higher Ed \$ Per Capita	0.30 (0.16)	1.62* (0.82)	1.69** (0.60)	0.12 (0.14)	-0.22 (0.13)	0.31 (3.99)	0.49 (1.70)	-0.96 (0.77)
Higher Ed \$ per \$1,000 of Income	-20.22* (7.83)	-43.21 (43.17)	-55.45* (22.10)	-10.02 (6.59)	12.37 (7.26)	-25.02 (168.89)	-26.64 (60.17)	50.24 (31.38)
% with Bachelor's degree	-68.23 (54.32)	-131.00 (163.50)	-129.23 (120.84)	-67.30 (55.25)	-128.25 (73.97)	-179.70 (424.35)	-514.78* (246.09)	-778.55** (295.69)

Table 22 (continued).

Unemployment rate	6.75 (4.09)	7.73 (11.45)	7.46 (4.73)	6.64* (3.02)	-0.11 (2.58)	-56.38 (54.46)	4.54 (12.07)	8.77 (11.12)
Income-to-poverty ratio	6.83 (67.54)	30.65 (234.13)	117.56 (133.03)	2.05 (53.59)	-61.16 (94.59)	-465.42 (886.64)	-370.75 (276.21)	-241.15 (350.23)
Median Income	0.00 (0.00)	-0.01* (0.00)	-0.01* (0.00)	0.00 (0.00)	0.00 (0.00)	0.01 (0.01)	-0.00 (0.01)	0.01 (0.01)
Tuition	-0.01 (0.00)	-0.01 (0.01)	-0.01 (0.01)	-0.00 (0.00)	0.01* (0.00)	0.02 (0.03)	0.01 (0.01)	0.02 (0.01)
Promise Program	32.03*** (7.85)	-29.87** (10.74)	-27.12*** (6.18)	-29.43*** (8.08)	12.33 (7.25)	5.96 (90.87)	-12.14 (19.44)	22.83 (23.52)
Total Class	0.20*** (0.01)	0.34*** (0.03)	0.34*** (0.03)	0.27*** (0.03)	0.14*** (0.02)	0.36*** (0.08)	0.28*** (0.04)	0.25*** (0.04)
2014	-1.78 (3.79)	-3.49 (13.85)	-3.30 (7.73)	3.40 (2.74)	-3.62 (3.49)	-86.82 (103.79)	-13.49 (15.12)	-1.71 (14.60)
2015	-15.68* (6.76)	-4.72 (26.42)	-9.18 (15.17)	-1.81 (4.65)	-3.60 (6.65)	-170.06 (174.71)	-20.71 (28.72)	2.82 (28.49)
2016	-14.81 (8.21)	17.74 (38.97)	2.15 (21.49)	-0.01 (6.49)	-5.87 (8.90)	-237.14 (245.85)	-18.97 (37.17)	-3.21 (38.76)
2017	-16.02 (10.60)	26.42 (53.47)	10.99 (29.31)	-0.51 (8.60)	-5.22 (11.76)	-319.29 (331.61)	-18.05 (45.65)	13.23 (47.92)
2018	-21.56 (13.92)	14.86 (64.18)	1.89 (36.42)	0.39 (10.75)	-6.14 (14.50)	-401.20 (404.72)	-21.12 (53.49)	8.61 (53.38)
Constant	-164.71 (97.39)	587.73 (356.05)	139.00 (189.34)	-132.44 (68.49)	-68.03 (87.28)	-178.83 (1181.20)	145.05 (474.20)	-288.08 (341.41)
Joint Hypothesis Test F Statistic	2.51	0.67	0.55	2.08	0.93	1.30	0.33	1.65
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 23.

Leads results for White enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2013	-13.05 (10.78)	-17.09 (29.56)	-12.74 (16.70)	-1.82 (8.40)	-15.31 (28.06)	12.39 (60.79)	45.81 (41.32)	41.24 (40.01)
NC*2014	-6.49 (9.92)	-22.16 (16.62)	-8.59 (13.80)	3.27 (8.54)	-13.38 (20.27)	-8.72 (39.54)	18.06 (29.35)	-3.66 (27.03)
NC*2015	-1.48 (6.01)	-7.06 (7.34)	2.52 (6.46)	6.44 (5.29)	-23.44 (22.71)	-13.32 (25.77)	-16.00 (24.88)	-18.38 (24.22)
Treatment	4.68 (7.37)	7.57 (10.48)	15.72 (8.55)	4.86 (7.49)	-31.07 (27.61)	-42.48 (33.78)	-53.93 (30.87)	-49.43 (29.16)
% Senate Republicans	-34.76 (25.14)	837.84*** (230.39)	-58.40 (57.72)	2.03 (19.81)	-15.30 (40.60)	-910.44* (453.99)	104.48 (72.64)	106.40 (90.37)
% House Republicans	65.54* (27.01)	260.75** (80.44)	102.96* (40.59)	4.81 (22.55)	176.40** (48.99)	281.67 (156.58)	107.76 (74.96)	298.96* (109.91)
Republican Governor	-10.20* (5.05)	18.45* (7.38)	-12.31* (5.18)	-2.65 (4.32)	3.74 (6.64)	0.75 (28.93)	-15.53 (11.40)	-0.53 (13.57)
Higher Ed \$ Per Capita	-0.06 (0.21)	-1.61 (0.94)	-1.59* (0.71)	0.07 (0.15)	0.02 (0.31)	-0.44 (1.92)	2.06 (1.43)	0.46 (0.85)
Higher Ed \$ per \$1,000 of Income	5.68 (9.86)	64.42 (48.55)	51.54* (26.01)	2.67 (7.15)	-15.68 (15.37)	-38.86 (83.64)	-73.96 (54.21)	-22.58 (35.43)
% with Bachelor's degree	-68.78 (75.94)	-52.16 (174.42)	94.93 (131.33)	33.52 (59.81)	251.69 (132.54)	-87.72 (394.55)	489.52 (274.33)	630.03* (279.01)
Unemployment rate	-1.98 (4.31)	-2.77 (11.35)	-6.28 (5.41)	-3.68 (3.03)	15.02* (6.05)	12.30 (23.52)	-16.00 (10.59)	-10.50 (9.82)

Table 23 (continued).

Income-to-poverty ratio	229.35** (82.62)	-88.16 (242.70)	-204.99 (140.23)	-45.01 (55.36)	168.55 (125.22)	-85.42 (467.83)	-140.38 (204.44)	-134.93 (309.96)
Median Income	-0.00** (0.00)	0.01 (0.00)	0.00 (0.00)	-0.00* (0.00)	-0.00 (0.00)	-0.02* (0.01)	-0.02** (0.01)	-0.01* (0.01)
Tuition	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	-0.00 (0.00)	-0.01 (0.01)	0.00 (0.01)	0.01 (0.01)	-0.02 (0.01)
Promise Program	15.49 (9.59)	3.87 (11.25)	10.21 (7.00)	15.04 (9.58)	-16.58 (13.21)	81.42 (64.92)	21.58 (22.70)	-1.02 (27.55)
Total Class	0.49*** (0.03)	0.54*** (0.04)	0.53*** (0.03)	0.54*** (0.03)	0.42*** (0.03)	0.37*** (0.06)	0.41*** (0.05)	0.53*** (0.05)
2014	-5.43 (4.70)	10.65 (15.49)	3.15 (8.84)	-5.37 (3.12)	14.55* (6.15)	34.94 (32.94)	-28.27 (14.88)	9.18 (13.47)
2015	-5.56 (7.58)	1.78 (31.00)	8.29 (17.37)	-5.44 (4.98)	11.08 (10.84)	61.13 (61.56)	-54.42 (27.84)	-11.91 (25.33)
2016	-8.41 (9.70)	-22.18 (45.72)	4.75 (23.99)	-5.54 (6.60)	12.36 (13.95)	126.86 (84.40)	-64.08 (34.61)	-12.41 (32.87)
2017	-9.98 (13.07)	-30.92 (62.86)	-4.78 (32.57)	-10.96 (8.78)	15.67 (18.58)	189.30 (120.24)	-86.07 (45.59)	-14.92 (46.18)
2018	-6.09 (16.89)	-12.12 (76.09)	3.49 (40.41)	-11.74 (11.02)	14.94 (23.25)	217.50 (147.47)	-97.53 (56.63)	-8.46 (52.35)
Constant	244.60* (114.94)	-1083.44** (392.42)	31.71 (191.36)	120.65 (68.85)	319.18* (152.39)	2175.50* (841.28)	886.07** (277.50)	633.14* (299.72)
Joint Hypothesis Test F Statistic	0.51	0.80	0.50	0.71	0.46	0.31	1.43	2.36
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 24.

Leads results for Pell enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2013	-10.88 (13.64)	-68.80* (32.64)	13.07 (21.68)	6.09 (10.31)	-14.01 (22.11)	-30.81 (66.47)	11.11 (35.78)	-68.43* (33.90)
NC*2014	-10.02 (10.96)	-22.56 (19.45)	-3.08 (17.46)	6.75 (8.86)	-10.61 (17.83)	-24.86 (36.00)	11.80 (26.88)	-27.62 (22.62)
NC*2015	-0.37 (4.43)	2.14 (9.91)	7.89 (7.79)	7.60 (4.10)	-9.75 (16.96)	7.15 (20.38)	-2.48 (19.84)	-8.82 (15.97)
Treatment	-8.69 (6.94)	14.52 (10.46)	0.58 (9.80)	-6.33 (6.12)	24.22 (17.46)	78.29*** (21.60)	22.94 (20.59)	54.26** (18.41)
% Senate Republicans	-2.13 (29.79)	996.38* (418.38)	27.60 (88.57)	-11.30 (19.84)	46.30 (47.80)	-186.84 (401.09)	-6.24 (64.28)	-84.27 (117.65)
% House Republicans	24.41 (26.25)	177.00* (80.48)	40.86 (46.56)	-0.38 (21.52)	-129.23** (45.25)	-211.61 (146.15)	-177.24* (72.85)	-272.50** (90.83)
Republican Governor	1.99 (4.63)	-20.91 (10.73)	-13.13* (6.24)	-1.27 (3.56)	-7.20 (6.35)	17.64 (17.95)	-16.83 (10.61)	16.48 (10.95)
Higher Ed \$ Per Capita	0.14 (0.20)	-3.47** (1.13)	-1.90* (0.84)	-0.22 (0.14)	-0.15 (0.31)	-4.08* (2.03)	0.25 (1.34)	-1.27 (0.78)
Higher Ed \$ per \$1,000 of Income	-3.33 (10.67)	230.88*** (53.63)	46.98 (31.37)	10.26 (6.77)	0.69 (14.77)	126.51 (97.74)	-35.22 (51.35)	55.22 (34.49)
% with Bachelor's degree	-249.81* (103.60)	539.47* (241.67)	328.53* (152.39)	-102.83 (65.84)	27.70 (91.23)	-398.85 (326.51)	-43.82 (232.37)	-461.57* (203.01)

Table 24 (continued).

Unemployment rate	2.75 (3.91)	-72.00*** (13.91)	-20.21** (7.75)	2.92 (2.98)	-0.86 (3.98)	6.70 (26.93)	21.28* (9.99)	12.75 (7.51)
Income-to-poverty ratio	-127.08 (99.56)	-917.19*** (247.64)	-393.87* (189.06)	-125.43 (74.67)	28.45 (147.05)	-176.25 (510.94)	-374.93 (221.34)	113.65 (325.83)
Median Income	0.00 (0.00)	0.02** (0.01)	0.01 (0.00)	0.00 (0.00)	0.00 (0.00)	0.01 (0.01)	0.00 (0.01)	0.00 (0.00)
Tuition	-0.01 (0.00)	-0.00 (0.01)	0.00 (0.01)	-0.00 (0.00)	0.01** (0.00)	-0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Promise Program	2.13 (10.22)	-19.58 (14.22)	-0.49 (8.77)	-0.83 (9.56)	38.48** (11.69)	-20.95 (49.80)	-5.62 (20.81)	35.61 (19.38)
Total Class	0.22*** (0.06)	0.25*** (0.05)	0.32*** (0.05)	0.13*** (0.03)	0.33*** (0.02)	0.39*** (0.06)	0.37*** (0.03)	0.34*** (0.03)
2014	-5.58 (4.65)	-74.05*** (18.83)	-24.96* (11.02)	-4.23 (3.16)	-11.73* (5.55)	48.95 (39.40)	-4.73 (13.45)	14.30 (9.51)
2015	-29.53*** (8.18)	-133.32*** (35.98)	-57.99* (25.30)	-17.53*** (5.27)	-23.60* (9.72)	66.93 (75.33)	-10.68 (24.70)	24.93 (19.91)
2016	-36.58*** (9.84)	-229.76*** (55.34)	-76.37* (34.76)	-17.34* (7.27)	-37.30** (12.32)	103.83 (97.65)	-17.03 (31.23)	21.61 (26.41)
2017	-25.61 (13.15)	-306.04*** (75.63)	-94.12* (47.64)	-9.42 (9.58)	-16.87 (16.75)	170.05 (133.19)	9.80 (43.00)	65.90 (38.11)
2018	-28.19 (16.81)	-300.50*** (85.36)	-93.62 (56.10)	-12.2 (11.93)	-28.49 (21.51)	171.51 (161.85)	-1.05 (52.20)	60.15 (44.35)
Constant	191.96 (144.41)	-1638.87** (537.86)	89.82 (261.07)	157.51 (80.49)	-12.39 (126.02)	244.92 (885.06)	57.88 (321.45)	-52.47 (316.58)
Joint Hypothesis								
Test F Statistic	0.32	1.76	0.69	1.26	0.18	0.41	0.15	1.52
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Appendix F

Table 25.

Placebo results for overall enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2015	-30.75 (31.42)	339.36*** (96.54)	-58.72 (48.66)	-64.42* (31.95)	21.13 (35.89)	-189.58 (161.72)	-4.97 (59.80)	17.71 (43.48)
% Senate Republicans	-57.03 (108.94)	6006.48*** (1363.75)	6.22 (291.99)	40.87 (63.06)	-2.60 (109.70)	-1476.10 (1408.50)	-21.04 (359.59)	-22.79 (193.50)
% House Republicans	244.64 (152.62)	-1138.34 (1362.03)	364.44 (215.19)	44.89 (96.70)	-323.15 (220.63)	3091.57 (2423.92)	-170.85 (378.23)	-68.61 (325.05)
Republican Governor	0.42 (16.58)	263.91** (82.50)	-26.24 (29.22)	-9.28 (19.86)	5.11 (18.81)	-242.81 (180.57)	-36.85 (35.51)	-29.11 (33.47)
Higher Ed \$ Per Capita	1.52* (0.75)	-35.50** (10.91)	-2.77 (3.06)	-0.11 (0.67)	1.92* (0.88)	26.74 (17.40)	7.19 (3.93)	4.87* (2.16)
Higher Ed \$ per \$1,000 of Income	-76.09 (38.84)	1421.25*** (404.68)	83.07 (120.75)	19.73 (41.55)	-30.87 (41.69)	-1021.87 (626.56)	-250.82 (136.86)	-143.24 (82.19)
% with Bachelor's degree	827.07** (320.25)	-3559.20*** (818.78)	674.55 (474.66)	-379.09 (246.05)	391.05 (382.34)	1961.81 (1665.58)	-43.76 (916.80)	-1160.70 (954.45)
Unemployment rate	32.17 (16.44)	-266.15** (91.52)	-20.53 (26.31)	-2.63 (17.58)	12.16 (10.17)	160.17 (123.13)	13.72 (40.22)	14.90 (27.75)
Income-to- poverty ratio	141.02 (373.46)	-649.91 (907.18)	-594.62 (441.35)	40.80 (307.41)	-669.80 (370.64)	370.56 (986.28)	173.40 (507.99)	-1459.15 (917.17)

Table 25 (continued).

Median	0.01	0.14***	0.00	-0.01	-0.00	-0.13	-0.03	-0.01
Income	(0.01)	(0.04)	(0.01)	(0.01)	(0.01)	(0.07)	(0.02)	(0.01)
Tuition	0.00	-0.01	-0.03	-0.01	0.02	0.01	0.06	0.06*
	(0.02)	(0.04)	(0.04)	(0.02)	(0.01)	(0.03)	(0.03)	(0.03)
Promise	-5.68	-1.94	82.87*	35.20	-17.98	0.00	377.02***	-277.90
Program	(66.43)	(38.87)	(39.57)	(36.84)	(108.45)	(0.00)	(34.36)	(153.63)
2014	-41.48**	21.01	-56.91	-26.98	15.50	-85.80	-58.18	2.23
	(15.20)	(58.62)	(39.73)	(15.41)	(16.96)	(128.49)	(39.31)	(32.69)
2015	-87.73**	-248.66**	-75.61	-24.39	32.29	91.55	-52.36	-10.44
	(28.86)	(93.20)	(71.73)	(22.53)	(32.60)	(191.61)	(77.10)	(65.40)
2016	-88.05*	-532.65***	-101.66	-17.57	39.45	353.98	-31.60	4.38
	(39.52)	(135.84)	(95.09)	(27.73)	(42.76)	(266.89)	(99.95)	(91.96)
Constant	806.9	-6546.21**	1078.22	1044.24	1460.45***	5538.60**	2587.40**	2394.22***
	(470.35)	(1988.77)	(898.64)	(561.53)	(410.41)	(1633.27)	(862.78)	(674.05)
N	3280	536	924	2520	2460	288	688	1576

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 26.

Placebo results for in-state enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2014	28.83 (20.92)	37.01 (19.25)	65.68 (74.47)	-6.29 (7.74)	72.84*** (21.43)	49.80 (52.59)	123.74*** (30.20)	86.44*** (22.00)
% Senate Republicans	122.93 (89.29)	569.91** (206.59)	710.82 (612.33)	12.83 (33.90)	82.31 (60.11)	-1086.59* (530.97)	211.29 (157.72)	115.31 (67.62)
% House Republicans	-168.92 (117.92)	-1039.33* (452.72)	-472.76 (559.14)	14.68 (41.35)	-76.98 (69.96)	1549.34 (1093.83)	-506.81* (244.71)	-198.76* (85.00)
Republican Governor	-1.14 (5.37)	-9.69 (9.76)	42.82 (33.56)	-3.84 (4.35)	-6.26 (11.50)	-9.02 (25.96)	-65.03* (27.11)	-11.00 (13.78)
Higher Ed \$ Per Capita	0.67 (0.57)	-3.45** (1.26)	7.16 (7.27)	-0.16 (0.23)	0.15 (0.42)	7.97* (3.52)	-3.94 (2.18)	0.53 (0.45)
Higher Ed \$ per \$1,000 of Income	-35.33 (27.30)	89.46* (37.72)	-208.26 (230.91)	4.23 (12.74)	6.96 (21.20)	-274.87* (120.37)	53.28 (66.24)	-23.18 (21.62)
% with Bachelor's degree	383.94 (240.85)	-439.51* (185.15)	499.00 (412.18)	254.16* (125.58)	501.87** (179.84)	1378.10 (724.92)	-389.85 (792.04)	628.92** (203.68)
Unemployment rate	16.14 (9.23)	-18.52 (9.73)	32.61 (23.80)	1.03 (1.91)	9.75 (5.06)	64.24* (30.66)	-13.96 (24.34)	16.22** (5.35)
Income-to- poverty ratio	217.04 (243.13)	-695.95* (305.39)	2794.29 (2236.9)	65.87 (145.95)	-177.12 (184.67)	1733.65 (960.39)	-368.16 (447.72)	-417.04 (223.07)
Median Income	-0.00 (0.00)	0.00 (0.00)	-0.01 (0.02)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.01)	0.01 (0.01)	-0.00 (0.00)

Table 26 (continued).

Tuition	-0.00 (0.01)	0.01 (0.01)	0.03 (0.07)	-0.01 (0.01)	-0.00 (0.01)	-0.00 (0.01)	0.00 (0.01)	-0.01 (0.01)
Promise Program	-5.70 (14.32)	-1.36 (8.49)	26.72 (38.11)	1.52 (8.10)	33.60 (56.17)	0.00 (0.01)	70.86 (43.44)	22.02 (55.41)
Total Class	0.96*** (0.04)	0.96*** (0.02)	0.88*** (0.05)	0.91*** (0.02)	0.75*** (0.03)	0.80*** (0.05)	0.71*** (0.07)	0.80*** (0.03)
2014	15.26 (7.99)	0.00 (0.01)	-47.73 (68.56)	12.58 (7.23)	-6.47 (11.95)	0.00 (0.00)	-29.82 (31.59)	-6.25 (13.61)
2016	22.22 (21.45)	0.00 (0.00)	-64.09 (112.96)	24.65 (15.26)	-24.5 (25.42)	0.00 (0.00)	-35.23 (51.43)	-16.45 (29.19)
Constant	-143.65 (263.09)	965.29* (486.06)	-1061.57 (697.07)	105.24 (104.01)	-164.13 (189.00)	-1778.87 (1305.16)	1116.72 (845.39)	-33.37 (215.37)
N	2460	402	693	2271	1845	216	516	1845

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 27.

Placebo results for out-of-state enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2014	0.42 (5.55)	-5.79 (20.74)	14.02 (9.73)	-3.92 (5.28)	-57.76** (18.03)	-54.91 (41.66)	116.81*** (28.81)	-48.09** (15.60)
% Senate Republicans	-57.71 (34.91)	-215.08 (234.32)	-50.74 (37.20)	-34.62 (22.01)	31.53 (52.79)	1351.73** (467.79)	-113.05 (159.54)	3.57 (47.76)
% House Republicans	109.17* (52.66)	263.12 (543.07)	-74.97 (70.48)	58.61 (36.70)	4.12 (67.21)	-2164.89* (1068.31)	332.91 (254.66)	88.92 (72.27)
Republican Governor	-1.06 (2.79)	3.20 (10.20)	-14.16 (7.62)	-0.19 (1.87)	-4.03 (7.86)	5.20 (22.42)	44.80 (28.08)	4.46 (5.21)
Higher Ed \$ Per Capita	-0.11 (0.11)	0.91 (1.29)	0.01 (0.48)	-0.00 (0.09)	-0.37 (0.33)	-11.22** (3.59)	3.10 (2.18)	-0.70 (0.36)
Higher Ed \$ per \$1,000 of Income	9.44 (7.13)	-9.26 (44.74)	-16.34 (13.96)	2.49 (4.95)	4.35 (19.11)	316.62* (127.13)	-46.99 (62.30)	31.43 (17.69)
% with Bachelor's degree	-32.76 (88.14)	-37.28 (285.87)	-472.66 (242.60)	20.52 (51.20)	-271.23 (176.08)	-1698.79** (623.92)	558.32 (834.67)	-289.14* (143.96)
Unemployment rate	-4.94** (1.53)	2.21 (11.96)	-10.63 (5.52)	-1.96* (0.91)	-9.40* (4.63)	-79.38* (33.83)	-0.60 (25.90)	-10.68** (3.85)
Income-to- poverty ratio Median Income	-80.63 (85.47)	61.47 (299.70)	-491.01 (266.04)	21.10 (41.36)	160.91 (180.95)	-2168.44* (1002.69)	456.01 (478.19)	330.29* (150.62)
	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.01)	-0.01 (0.01)	0.00 (0.00)

Table 27 (continued).

Tuition	0.01 (0.00)	-0.01 (0.01)	0.03 (0.02)	-0.00 (0.00)	-0.00 (0.00)	0.01 (0.01)	-0.00 (0.01)	-0.00 (0.01)
Promise Program	-3.22 (3.57)	0.07 (8.10)	6.55 (6.73)	-5.93 (5.83)	-46.36 (29.31)	0.00 (0.00)	-83.04 (45.28)	-47.77 (26.53)
Total Class	0.03* (0.02)	0.02* (0.01)	0.05*** (0.01)	0.02*** (0.01)	0.18*** (0.03)	0.17*** (0.05)	0.26*** (0.08)	0.10*** (0.02)
2014	-14.17* (5.55)	0.00 (0.00)	-20.14 (19.25)	0.34 (3.16)	12.00 (10.65)	0.00 (0.00)	9.74 (29.93)	-8.05 (8.05)
2016	-26.58* (11.93)	0.00 (0.00)	-39.12 (40.10)	1.26 (7.69)	37.00 (24.06)	0.00 (0.00)	17.62 (47.96)	-8.86 (18.80)
Constant	-98.39 (73.63)	-205.71 (554.70)	525.08* (225.40)	-4.62 (35.92)	311.31 (162.91)	2674.06* (1249.57)	-701.47 (877.04)	-121.61 (175.04)
N	2460	402	693	2412	1845	216	516	1206

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 28.

Placebo results for Latinx enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2015	-0.63 (5.86)	-7.16 (9.39)	0.26 (4.67)	-0.81 (2.89)	-37.05*** (8.35)	24.49 (19.58)	-1.55 (9.87)	-13.87 (7.16)
% Senate Republicans	-2.19 (18.67)	10.69 (116.23)	27.16 (60.20)	-2.26 (8.84)	-13.24 (22.58)	59.82 (105.74)	-73.28 (75.09)	-15.74 (26.04)
% House Republicans	-36.80 (29.90)	9.98 (173.71)	-36.98 (55.16)	-4.45 (12.67)	-54.37 (40.24)	-572.01** (198.08)	96.43 (74.46)	-66.99 (40.22)
Republican Governor	-1.21 (3.65)	-4.40 (13.81)	-2.14 (4.53)	-4.22 (2.23)	-1.53 (3.74)	24.47 (14.15)	4.71 (5.70)	-3.25 (2.65)
Higher Ed \$ Per Capita	0.18 (0.22)	0.71 (1.25)	0.03 (0.28)	0.05 (0.08)	0.30 (0.29)	-3.26 (1.79)	0.11 (0.56)	0.4 (0.30)
Higher Ed \$ per \$1,000 of Income	-5.05 (10.24)	-18.76 (44.41)	7.37 (9.68)	-3.58 (3.64)	-5.05 (12.30)	125.29* (62.68)	8.69 (22.04)	-12.62 (12.76)
% with Bachelor's degree	46.78 (71.39)	60.54 (82.06)	-17.78 (45.18)	-2.84 (32.41)	114.29 (91.15)	-281.02 (168.20)	-46.61 (133.79)	36.59 (110.32)
Unemployment rate	-1.81 (2.89)	1.33 (8.96)	-3.23 (1.73)	-0.56 (1.25)	-8.66*** (2.21)	-30.47 (16.27)	-2.29 (5.33)	-3.22 (2.01)
Income-to- poverty ratio	28.37 (73.18)	-9.11 (89.16)	-84.21 (123.19)	-37.26 (32.41)	-194.47* (88.75)	177.86 (182.71)	-55.67 (103.64)	160.72 (116.37)
Median Income	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.01 (0.01)	0.00 (0.00)	0.00 (0.00)

Table 28 (continued).

Tuition	0.00 (0.00)	0.01 (0.01)	0.00 (0.01)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.01)	0.00 (0.00)
Promise Program	9.71 (11.62)	-3.36 (3.90)	-4.05 (5.40)	1.42 (3.75)	5.79 (16.45)	0.00 (0.00)	30.16* (13.19)	7.63 (4.20)
Total Class	0.17*** (0.02)	0.06*** (0.01)	0.06*** (0.01)	0.06*** (0.01)	-7.26 (5.42)	11.99 (15.22)	6.03 (7.11)	1.42 (4.00)
2014	2.49 (4.38)	2.67 (8.86)	2.59 (3.68)	0.30 (1.49)	-9.41 (9.62)	2.96 (23.21)	5.34 (12.11)	17.76* (7.14)
2015	4.24 (7.25)	9.94 (12.09)	0.40 (6.72)	0.67 (3.04)	-6.72 (12.20)	-17.90 (34.30)	5.86 (15.95)	25.34* (9.94)
2016	12.27 (9.25)	21.00 (16.2)	1.00 (10.38)	4.84 (3.65)	0.21*** (0.02)	0.07*** (0.01)	0.14*** (0.03)	0.06*** (0.01)
Constant	-59.94 (89.09)	84.36 (137.67)	-107.83 (83.19)	-5.84 (38.55)	-167.15 (138.30)	-31.77 (178.07)	-205.11 (195.90)	160.28 (103.08)
N	3280	536	924	2520	2460	288	688	1576

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 29.

Placebo results for Black enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2015	-14.89 (8.01)	-34.36 (32.61)	-0.47 (12.14)	-7.62 (7.28)	21.35 (14.92)	57.65 (78.95)	-1.05 (23.44)	21.59 (26.03)
% Senate Republicans	-0.05 (21.74)	-810.43* (365.37)	187.76* (77.46)	6.91 (16.80)	14.52 (23.90)	882.31 (491.33)	-42.39 (105.93)	28.08 (81.76)
% House Republicans	66.25 (35.63)	-173.98 (476.11)	-88.71 (63.87)	46.68 (27.20)	-24.55 (40.92)	0.63 (1446.27)	-76.35 (128.38)	11.20 (252.11)
Republican Governor	3.55 (4.87)	-53.04 (32.03)	6.83 (7.41)	2.74 (5.00)	-1.00 (5.46)	36.47 (104.01)	-2.05 (12.33)	11.21 (16.06)
Higher Ed \$ Per Capita	0.25 (0.20)	3.54 (3.76)	1.02 (0.82)	-0.21 (0.14)	-0.13 (0.14)	-1.82 (11.86)	1.43 (1.82)	-0.45 (0.76)
Higher Ed \$ per \$1,000 of Income	-15.51 (10.20)	-120.67 (139.92)	-17.91 (29.47)	6.92 (8.08)	7.06 (8.21)	91.99 (394.67)	-59.27 (60.13)	23.42 (32.85)
% with Bachelor's degree	-47.52 (83.39)	204.40 (270.83)	-154.42 (132.50)	19.31 (62.63)	-56.91 (81.57)	-651.83 (819.92)	-447.94 (307.85)	-439.24 (354.61)
Unemployment rate	6.87 (5.41)	0.73 (28.58)	0.45 (6.19)	5.64 (3.75)	0.47 (2.12)	-30.11 (39.32)	6.73 (12.61)	-9.81 (10.46)
Income-to- poverty ratio Median Income	72.64 (83.60)	-97.13 (243.84)	117.74 (127.26)	35.15 (69.23)	-107.41 (88.92)	111.63 (885.53)	-322.61 (275.99)	-430.30 (418.24)
	0.00 (0.00)	-0.03 (0.02)	-0.01* (0.00)	0.00 (0.00)	0.00 (0.00)	0.02 (0.03)	-0.00 (0.01)	0.01 (0.01)

Table 29 (continued).

Tuition	-0.01 (0.00)	-0.01 (0.01)	-0.01 (0.01)	-0.00 (0.00)	0.01** (0.00)	0.01 (0.02)	0.01 (0.01)	0.02* (0.01)
Promise Program	-32.32** (10.18)	-24.72* (9.92)	-35.47*** (8.52)	-27.22*** (6.62)	2.35 (8.18)	0.00 (0.00)	23.79 (14.04)	26.47 (20.88)
Total Class	-1.68 (4.13)	-25.25 (18.85)	1.10 (9.15)	4.71 (3.62)	-7.16* (3.42)	-39.34 (143.75)	-24.48 (14.62)	-28.12 (15.07)
2014	-13.83* (6.74)	-10.58 (30.08)	-3.78 (16.86)	1.40 (5.97)	-12.49 (7.02)	-112.72 (205.24)	-34.90 (32.00)	-54.00 (32.15)
2015	-12.93 (8.43)	24.78 (52.83)	11.32 (22.95)	1.40 (7.84)	-19.06 (9.96)	-170.46 (257.46)	-34.58 (42.08)	-82.33 (44.77)
2016	0.20*** (0.02)	0.33*** (0.03)	0.33*** (0.02)	0.28*** (0.03)	0.13*** (0.01)	0.32*** (0.06)	0.25*** (0.03)	0.26*** (0.04)
Constant	-197.01 (162.51)	1724.85** (580.5)	177.96 (213.56)	-220.88* (111.99)	-181.56 (98.82)	-1794.24* (748.41)	185.08 (350.76)	-392.87 (318.23)
N	3280	536	924	2520	2460	288	688	1576

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 30.

Placebo results for White enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2015	9.91 (8.34)	70.26* (34.56)	3.45 (14.32)	1.76 (7.81)	11.91 (17.55)	-64.77 (70.21)	-17.80 (27.78)	1.75 (24.51)
% Senate Republicans	-22.77 (27.48)	960.09** (360.96)	-275.60** (102.25)	2.83 (20.54)	34.93 (44.28)	-1577.69** (541.32)	135.41 (155.39)	66.10 (80.71)
% House Republicans	29.34 (45.44)	-42.68 (508.26)	215.15** (74.32)	-14.86 (35.18)	97.44 (58.57)	1254.59 (886.13)	-33.88 (158.72)	239.17 (137.95)
Republican Governor	-4.79 (5.78)	75.90* (37.21)	-9.80 (8.22)	-4.87 (6.03)	10.87 (6.35)	-59.38 (73.21)	8.75 (15.04)	12.30 (13.33)
Higher Ed \$ Per Capita	0.05 (0.23)	-7.07 (4.02)	-1.51 (0.92)	0.15 (0.17)	-0.45 (0.34)	6.68 (7.06)	-0.05 (1.64)	-0.67 (0.93)
Higher Ed \$ per \$1,000 of Income	-0.86 (11.21)	256.14 (146.80)	37.32 (33.95)	-4.63 (9.15)	7.68 (15.98)	-273.42 (253.13)	2.24 (60.03)	32.37 (38.30)
% with Bachelor's degree	-204.61* (93.32)	-582.70* (289.98)	164.55 (151.02)	-34.63 (70.03)	-77.90 (146.38)	716.07 (730.86)	476.09 (357.89)	393.09 (359.97)
Unemployment rate	-0.34 (5.13)	-25.31 (27.40)	0.46 (7.08)	-3.46 (3.59)	10.58* (4.40)	42.86 (46.32)	-1.23 (15.62)	6.58 (11.70)
	-224.27*	-133.32	-322.73*	-38.81	208.19	-568.63	199.47	-25.10
Income-to- poverty ratio	(113.69)	(239.22)	(141.02)	(71.64)	(130.46)	(393.33)	(174.54)	(318.78)

Table 30 (continued).

	-0.00	0.03	0.00	-0.00	-0.00	-0.04	-0.01	-0.01
Median Income	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.03)	(0.01)	(0.01)
Tuition	0.00	0.01	-0.00	-0.00	-0.00	-0.00	-0.01	-0.03**
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
	27.39*	4.56	15.76	20.92**	-12.30	0.00	13.58	23.27
Promise Program	(11.98)	(7.65)	(9.21)	(6.47)	(32.57)	(0.00)	(29.40)	(18.33)
Total Class	-3.83	37.27	8.15	-3.98	13.28*	-21.17	4.45	28.98
	(5.04)	(20.10)	(10.58)	(3.80)	(6.26)	(48.42)	(14.95)	(16.24)
2014	-3.31	3.48	18.78	-2.09	8.50	18.34	5.00	22.64
	(8.19)	(29.10)	(20.53)	(6.31)	(11.67)	(66.43)	(30.66)	(32.91)
2015	-6.84	-51.11	13.52	-3.69	9.09	92.40	6.90	34.64
	(10.44)	(52.55)	(28.57)	(8.34)	(15.89)	(89.61)	(38.60)	(40.71)
2016	0.52***	0.54***	0.56***	0.56***	0.44***	0.41***	0.47***	0.57***
	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.05)	(0.06)	(0.04)
Constant	227.77	-1856.73**	19.61	197.36	266.43	2248.08**	438.13	160.33
	(167.54)	(606.17)	(257.32)	(117.87)	(199.46)	(831.18)	(361.07)	(315.54)
N	3280	536	924	2520	2460	288	688	1576

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 31.

Placebo results for Pell enrollment outcome

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
NC*2015	11.34 (10.96)	158.93*** (42.57)	8.19 (19.03)	-2.91 (10.41)	14.96 (16.56)	31.18 (46.80)	-6.63 (23.27)	12.99 (18.97)
% Senate Republicans	-18.81 (30.55)	2184.41*** (616.87)	113.65 (129.30)	8.05 (24.56)	38.54 (36.23)	242.55 (521.62)	-8.21 (127.15)	28.31 (79.23)
% House Republicans	19.76 (43.00)	-785.92 (566.48)	19.73 (84.09)	-12.68 (31.88)	-24.47 (68.37)	-39.24 (595.91)	-204.50 (153.70)	-105.52 (119.97)
Republican Governor	2.91 (4.86)	79.61* (38.36)	-21.10* (9.89)	0.47 (5.92)	-5.75 (6.29)	4.20 (48.08)	-30.23 (16.13)	-10.28 (9.76)
Higher Ed \$ Per Capita	0.20 (0.21)	-16.57** (5.14)	-2.05 (1.04)	-0.23 (0.16)	0.01 (0.29)	-2.88 (4.61)	0.28 (1.43)	0.62 (0.57)
Higher Ed \$ per \$1,000 of Income	-7.85 (10.77)	641.35** (195.96)	54.63 (39.32)	11.21 (9.38)	-6.60 (13.53)	81.37 (154.24)	-45.90 (49.02)	-26.30 (24.19)
% with Bachelor's degree	-130.62 (93.19)	-1172.53** (369.83)	383.27* (182.18)	78.13 (69.12)	231.94* (109.52)	-477.61 (453.76)	16.19 (246.79)	-97.04 (187.03)
Unemploymen t rate	3.72 (4.00)	-137.25** (40.85)	-21.99* (9.98)	4.45 (3.58)	4.29 (3.25)	15.84 (33.89)	18.51 (11.06)	9.75 (6.49)
Income-to- poverty ratio	-77.11 (127.29)	-416.97 (356.84)	-79.61 (228.94)	-52.39 (91.97)	-11.68 (118.16)	232.66 (413.21)	67.59 (186.46)	-88.38 (261.37)
Median Income	-0.00 (0.00)	0.06** (0.02)	0.00 (0.01)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.02)	-0.00 (0.01)	0.00 (0.00)

Table 31 (continued).

Tuition	-0.01*	0.00	-0.00	-0.01	0.01*	-0.02	0.01	0.01
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
Promise	10.10	-4.62	25.82	12.19	36.02*	0.00	85.35***	63.26***
Program	(13.90)	(15.27)	(13.43)	(9.56)	(17.83)	(0.00)	(24.00)	(12.96)
Total Class	0.29***	0.22***	0.32***	0.15***	0.32***	0.40***	0.38***	0.35***
	(0.04)	(0.06)	(0.06)	(0.03)	(0.02)	(0.06)	(0.04)	(0.03)
2014	-0.70	-11.18	-28.46*	0.30	-9.10	53.66	-10.25	-7.29
	(4.41)	(23.78)	(12.82)	(3.63)	(5.90)	(42.00)	(14.96)	(8.38)
2015	-18.36*	-135.35***	-48.02	-7.41	-24.45*	79.96	-3.89	-30.46
	(8.08)	(39.72)	(26.79)	(6.26)	(10.52)	(73.87)	(26.75)	(17.60)
2016	-23.78*	-271.54***	-58.42	-8.45	-39.29**	140.63	-0.80	-46.05*
	(10.69)	(66.21)	(36.88)	(8.76)	(14.05)	(99.25)	(36.58)	(22.91)
Constant	159.83	-2533.83**	254.80	140.33	-150.49	262.55	286.15	-214.93
	(142.71)	(794.09)	(384.73)	(139.42)	(151.93)	(795.85)	(382.30)	(307.99)
N	3280	536	924	2520	2460	288	688	1576

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Appendix G

Table 32.

Difference in difference results for impact of RDS on overall enrollment

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
Treatment	-14.57 (27.55)	-55.17 (36.40)	-33.39 (25.27)	-37.33 (25.01)	54.01 (48.21)	-8.11 (61.21)	-4.72 (57.63)	-38.70 (46.42)
% Senate Republicans	-90.97 (94.47)	3279.92*** (691.39)	56.85 (177.73)	-97.25 (56.67)	-83.24 (98.51)	-696.79 (1005.34)	40.18 (178.94)	154.35 (237.87)
% House Republicans	257.65* (105.79)	763.72** (235.55)	488.86*** (115.69)	259.37** (89.68)	-568.96** (172.25)	-23.27 (372.16)	-248.02 (224.14)	-375.85 (277.55)
Republican Governor	7.28 (12.68)	1.37 (25.82)	-16.52 (15.46)	-10.26 (12.07)	-25.09 (19.47)	1.99 (45.88)	-59.48** (22.14)	-88.57* (44.88)
Higher Ed \$ Per Capita	0.62 (0.66)	-4.04 (2.42)	-4.65* (1.88)	-1.30* (0.60)	2.14** (0.79)	0.91 (3.85)	6.50* (3.01)	4.50** (1.63)
Higher Ed \$ per \$1,000 of Income	-7.85 (34.79)	343.61*** (91.80)	191.23** (70.68)	83.25* (35.05)	-67.09 (38.72)	-123.61 (137.91)	-213.78* (107.57)	-126.90* (62.92)
% with Bachelor's degree	-718.65* (340.60)	543.41 (630.98)	713.44* (337.50)	-399.23 (298.52)	112.87 (342.12)	152.13 (739.89)	611.21 (655.81)	-513.96 (702.45)
Unemployment rate	19.76 (15.16)	-100.49** (35.84)	-35.78* (18.11)	-6.62 (12.86)	30.53* (12.96)	55.20 (60.85)	22.96 (25.88)	48.92 (25.91)
Income-to- poverty ratio	-177.39 (322.89)	-1985.31** (658.35)	-849.04* (411.03)	-154.73 (249.17)	-1221.26** (383.10)	556.05 (1043.04)	-318.76 (479.96)	-1830.68 (950.70)

Table 32 (continued).

Median Income	-0.01 (0.01)	0.02 (0.01)	0.01 (0.01)	-0.01 (0.00)	0.01* (0.01)	0.01 (0.03)	-0.01 (0.01)	-0.00 (0.01)
Tuition	-0.00 (0.01)	-0.05 (0.04)	-0.04 (0.03)	-0.00 (0.02)	0.01 (0.01)	-0.01 (0.03)	0.04 (0.03)	-0.03 (0.03)
Promise Program	3.69 (38.73)	-0.23 (40.18)	18.15 (24.00)	42.33 (34.83)	-3.18 (43.06)	34.34 (102.54)	-63.33 (113.49)	-48.44 (76.71)
2014	-23.76 (14.86)	-103.64* (39.78)	-37.69 (31.16)	-6.65 (19.04)	18.71 (17.03)	41.00 (92.88)	-51.52 (38.99)	49.47 (38.07)
2015	-52.65* (24.08)	-209.12** (67.98)	-75.36 (59.07)	-24.24 (20.81)	30.43 (30.16)	99.00 (178.94)	-53.22 (75.99)	67.19 (63.61)
2016	-32.72 (32.13)	-365.90*** (104.55)	-113.19 (82.70)	-18.02 (25.14)	19.83 (38.34)	174.61 (248.57)	-54.83 (94.34)	88.97 (88.98)
2017	-28.96 (42.47)	-452.70** (146.39)	-126.18 (112.57)	1.40 (34.69)	10.37 (51.46)	277.83 (347.00)	-74.62 (122.67)	84.38 (119.09)
2018	-11.22 (57.66)	-367.06* (168.16)	-61.42 (134.25)	49.04 (49.50)	10.79 (65.19)	305.08 (414.72)	-114.58 (147.53)	141.41 (126.11)
Constant	1373.43*** (302.13)	-2828.11* (1083.77)	463.34 (619.36)	854.09** (261.95)	1204.66*** (357.61)	2188.76 (1675.09)	1791.93** (678.44)	2224.68** (674.93)
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 33.

Lags model results for impact of RDS on overall enrollment

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
Treat*2017	-31.04 (40.33)	-51.31 (39.79)	-43.97 (36.14)	-49.36 (36.37)	17.73 (57.26)	-12.04 (65.93)	-48.34 (64.95)	-57.00 (51.20)
Treat*2018	-7.55 (26.00)	-76.13 (49.44)	-24.51 (24.47)	-24.33 (21.26)	73.35 (51.40)	7.69 (78.26)	28.31 (65.09)	-9.83 (64.92)
% Senate Republicans	-91.26 (94.46)	3474.94*** (798.66)	53.30 (176.43)	-98.89 (56.96)	-84.21 (98.53)	-814.79 (1094.66)	39.43 (178.65)	147.38 (241.02)
% House Republicans	256.23* (105.99)	842.41** (305.90)	480.76*** (115.22)	240.21** (83.78)	-570.08*** (172.30)	-69.07 (432.82)	-252.95 (223.65)	-426.41 (272.06)
Republican Governor	7.25 (12.68)	7.63 (29.00)	-15.37 (15.71)	-8.27 (11.54)	-25.08 (19.48)	-1.33 (47.62)	-57.23** (21.93)	-84.21 (45.89)
Higher Ed \$ Per Capita	0.61 (0.66)	-3.47 (2.56)	-4.81* (1.95)	-1.38* (0.61)	2.14** (0.78)	0.55 (4.02)	6.21* (3.03)	4.16** (1.59)
Higher Ed \$ per \$1,000 of Income	-7.76 (34.81)	324.21** (99.73)	195.62** (73.02)	85.13* (35.52)	-67.04 (38.70)	-111.69 (136.14)	-205.54 (107.50)	-118.00* (59.12)
% with Bachelor's degree	-718.49* (340.59)	469.88 (599.97)	711.88* (338.46)	-409.77 (304.64)	111.68 (342.08)	200.40 (727.55)	582.29 (653.75)	-526.88 (699.36)
Unemployment rate	19.79 (15.16)	-89.46* (39.57)	-36.17* (18.02)	-6.30 (12.87)	30.52* (12.96)	48.53 (60.75)	21.91 (25.86)	48.14 (25.95)
Income-to- poverty ratio	-170.34 (325.21)	-1940.03** (646.99)	-824.60 (425.03)	-118.57 (273.54)	-1212.17** (383.59)	535.58 (1044.66)	-272.26 (484.72)	-1737.14 (1001.49)

Table 33 (continued).

Median Income	-0.01 (0.01)	0.02 (0.01)	0.01 (0.01)	-0.01 (0.00)	0.01* (0.01)	0.01 (0.03)	-0.01 (0.01)	-0.00 (0.01)
Tuition	-0.00 (0.01)	-0.05 (0.04)	-0.04 (0.03)	-0.00 (0.02)	0.01 (0.01)	-0.01 (0.03)	0.04 (0.03)	-0.02 (0.03)
Promise Program	3.72 (38.73)	0.86 (40.34)	18.12 (24.00)	42.50 (34.77)	-4.11 (43.17)	30.48 (107.78)	-68.72 (113.31)	-50.06 (77.51)
2014	-23.83 (14.88)	-95.76* (39.07)	-36.90 (31.30)	-6.10 (18.80)	18.43 (17.05)	36.06 (93.00)	-51.21 (38.93)	49.40 (37.94)
2015	-52.73* (24.09)	-199.79** (66.85)	-73.93 (59.33)	-23.54 (20.62)	30.00 (30.20)	92.28 (179.56)	-53.80 (75.96)	66.81 (63.52)
2016	-32.97 (32.16)	-349.24*** (102.36)	-112.11 (82.78)	-18.32 (25.23)	19.14 (38.42)	162.79 (250.33)	-57.19 (94.51)	85.38 (89.01)
2017	-28.88 (42.47)	-430.68** (141.51)	-123.12 (112.88)	4.06 (34.38)	9.95 (51.51)	261.56 (348.33)	-74.98 (122.69)	85.63 (119.51)
2018	-12.48 (57.93)	-329.08 (168.26)	-61.97 (134.23)	41.44 (50.36)	8.81 (65.48)	278.97 (421.11)	-121.75 (148.32)	121.41 (127.76)
Constant	1367.43*** (302.40)	-3034.85* (1182.67)	454.20 (625.66)	823.58** (269.16)	1195.23*** (358.95)	2290.89 (1731.81)	1734.06* (685.43)	2141.84** (656.64)
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 34.

Difference in difference results for impact of RDS on in-state enrollment

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
Treatment	2.14 (12.23)	2.79 (15.45)	-47.54 (35.96)	-11.58 (12.37)	28.01 (24.01)	78.27 (47.72)	85.53* (40.94)	40.08 (23.67)
% Senate Republicans	64.16 (35.77)	132.32* (59.33)	151.88 (92.84)	6.86 (25.93)	52.32 (48.54)	-768.54*** (202.18)	47.40 (85.07)	62.28 (56.98)
% House Republicans	-64.10 (69.12)	103.68 (62.49)	-26.40 (113.69)	17.18 (29.02)	-111.57* (56.41)	-205.02 (307.15)	-155.85 (100.64)	-160.16* (66.92)
Republican Governor	3.05 (5.85)	5.31 (8.03)	10.15 (18.07)	-11.32 (7.61)	1.68 (8.11)	47.19 (26.64)	19.93 (14.14)	27.17** (10.09)
Higher Ed \$ Per Capita	0.57 (0.34)	-0.49 (0.52)	2.55 (2.83)	0.15 (0.22)	-0.01 (0.33)	0.04 (2.20)	-1.98 (1.57)	0.15 (0.38)
Higher Ed \$ per \$1,000 of Income	-31.46* (16.00)	-9.42 (16.98)	-80.55 (88.22)	-11.10 (11.15)	2.31 (16.67)	-46.47 (74.07)	51.14 (57.85)	-17.74 (18.83)
% with Bachelor's degree	-36.38 (303.42)	120.59 (124.57)	743.54 (451.30)	-171.01 (258.50)	164.63 (163.44)	-70.26 (544.41)	-165.03 (558.91)	346.11 (193.70)
Unemployment rate	7.01 (4.03)	6.92 (4.28)	9.12 (7.40)	-0.60 (3.96)	6.58 (4.32)	52.10 (28.94)	11.19 (12.21)	0.01 (5.16)
Income-to- poverty ratio	288.74 (276.30)	78.43 (150.55)	1284.79 (989.00)	325.85 (223.30)	81.53 (186.92)	200.28 (727.27)	186.46 (426.12)	-97.61 (220.09)

Table 34 (continued).

Median	0.00	0.01*	-0.01	0.00	-0.00	-0.02	0.01	-0.00
Income	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.02)	(0.01)	(0.00)
Tuition	-0.01	0.01	-0.00	-0.00	-0.00	-0.01	-0.00	0.01
	(0.01)	(0.01)	(0.03)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
Promise	-1.41	-3.50	-6.36	18.06	25.81	-103.31**	-31.82	-32.93
Program	(11.64)	(8.89)	(8.89)	(15.79)	(14.66)	(33.18)	(21.09)	(19.24)
Total								
Enrollment	0.79***	0.97***	0.94***	0.68***	0.77***	0.76***	0.76***	0.81***
	(0.14)	(0.02)	(0.04)	(0.16)	(0.03)	(0.06)	(0.05)	(0.02)
2014	-8.33	-21.53	-15.49	-10.62	-1.46	189.88**	14.21	-14.97
	(11.98)	(14.06)	(20.32)	(12.53)	(9.98)	(58.33)	(22.09)	(11.81)
2016	-23.12	-51.76	-19.15	-24.10	-5.88	378.69**	14.22	-18.45
	(19.94)	(30.68)	(47.37)	(22.78)	(20.71)	(118.02)	(44.96)	(24.34)
2018	-43.74	-76.67	-28.86	-44.57	2.82	507.46**	34.98	-24.02
	(36.43)	(45.18)	(67.58)	(38.43)	(30.47)	(174.11)	(57.43)	(36.67)
Constant	78.15	-619.48*	-409.56	156.85	47.96	1755.85	-72.62	248.96
	(241.42)	(254.05)	(258.39)	(135.65)	(141.18)	(1054.70)	(350.98)	(166.73)
N	3280	536	924	3028	2460	288	688	2460

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 35.

Difference in difference results for impact of RDS on out-of-state enrollment

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
Treatment	-7.09 (10.28)	-0.88 (12.74)	11.27 (16.96)	-11.02 (6.90)	-38.26 (23.24)	-111.41** (39.63)	-104.61* (40.35)	-20.30 (15.71)
% Senate Republicans	-52.97 (28.84)	-126.29* (48.57)	-68.06* (31.47)	-15.77 (20.00)	-37.19 (45.27)	806.77*** (181.42)	-61.69 (80.45)	-49.00 (36.77)
% House Republicans	86.61 (56.64)	-56.13 (51.64)	-37.24 (30.03)	34.76 (32.43)	95.49 (54.06)	378.20 (303.74)	179.85 (94.34)	118.64* (57.74)
Republican Governor	-3.34 (4.36)	-0.63 (7.09)	5.05 (5.58)	1.95 (4.38)	-4.84 (6.00)	-63.18* (26.66)	-25.80 (14.26)	-16.52* (7.17)
Higher Ed \$ Per Capita	-0.44 (0.28)	-0.02 (0.39)	0.20 (0.28)	-0.24 (0.22)	-0.04 (0.28)	-0.77 (2.15)	1.72 (1.51)	-0.08 (0.30)
Higher Ed \$ per \$1,000 of Income	25.02 (12.89)	13.98 (14.56)	-6.51 (9.14)	12.59 (9.94)	-3.22 (15.56)	16.53 (64.73)	-50.98 (55.55)	14.53 (17.41)
% with Bachelor's degree	280.00 (278.86)	-257.62 (132.52)	-376.54 (241.14)	393.82 (308.82)	67.53 (153.52)	322.65 (540.37)	529.20 (561.51)	-90.59 (141.04)
Unemployem t rate	-4.50 (3.07)	-3.73 (3.89)	-2.93 (1.92)	0.83 (3.27)	-5.34 (4.28)	-54.60 (29.69)	-13.76 (12.81)	0.17 (4.34)
Income-to- poverty ratio	-158.08 (176.95)	-167.36 (129.50)	-331.77 (228.80)	-103.82 (149.08)	-65.01 (194.12)	-183.51 (744.85)	-98.39 (421.19)	74.18 (182.79)

Table 35 (continued).

Median	-0.00	-0.01	0.00	-0.00	-0.00	0.03	-0.01	0.00
Income	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.01)	(0.00)
Tuition	0.01	-0.01	0.02	0.00	-0.00	0.01	-0.00	-0.01*
	(0.01)	(0.01)	(0.02)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
Promise	-3.39	4.15	8.42*	-15.63	-28.42*	120.28***	18.53	22.13
Program	(10.05)	(7.27)	(4.18)	(12.42)	(11.48)	(34.18)	(21.76)	(17.69)
Total								
Enrollment	0.19	0.02*	0.05***	0.20	0.19***	0.21***	0.22***	0.10***
	(0.13)	(0.01)	(0.01)	(0.14)	(0.02)	(0.05)	(0.05)	(0.02)
2014	5.59	17.47	-6.69	15.41	5.06	-230.50***	-20.05	4.11
	(12.07)	(11.10)	(10.02)	(11.73)	(8.76)	(57.61)	(20.48)	(9.48)
2016	14.61	39.72	-23.79	32.39	15.11	-455.84***	-18.21	10.31
	(20.39)	(24.77)	(26.96)	(23.26)	(18.63)	(118.08)	(44.1)	(19.03)
2018	34.92	63.09	-31.39	55.7	28.92	-612.56***	-29.5	31.06
	(36.74)	(38.6)	(36.49)	(39.66)	(27.24)	(172.61)	(51.09)	(30.64)
Constant	-185.41	452.05	146.3	-175.17	86.05	-2043.47	99.7	-79.74
	(220.53)	(233.84)	(105.94)	(164.5)	(138.16)	(1059.37)	(320.48)	(140.61)
N	3280	536	924	3216	2460	288	688	1608

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Appendix H

Table 36.

Difference in difference results for impact of RDS on Latinx enrollment

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
Treatment	-3.63 (5.82)	-3.32 (5.84)	-1.72 (4.82)	-0.53 (3.96)	-25.89* (12.48)	-4.08 (12.40)	13.96 (11.45)	3.83 (10.61)
% Senate Republicans	8.12 (19.02)	-107.39 (78.28)	-52.89 (55.07)	0.76 (8.93)	6.02 (25.61)	118.35 (115.95)	-105.58* (41.46)	-48.60 (29.11)
% House Republicans	-96.77*** (22.75)	-28.63 (48.54)	-23.06 (18.70)	-13.70 (12.38)	136.01*** (31.73)	-14.58 (56.82)	14.96 (36.45)	6.76 (36.36)
Republican Governor	-0.83 (3.25)	-5.62 (5.26)	3.59 (4.29)	-3.12 (2.89)	4.85 (4.47)	-6.11 (7.85)	16.31** (5.48)	-4.39 (5.98)
Higher Ed \$ Per Capita	-0.00 (0.17)	-0.11 (0.34)	-0.18 (0.29)	-0.04 (0.08)	0.09 (0.25)	0.79 (0.55)	-0.55 (0.51)	0.12 (0.26)
Higher Ed \$ per \$1,000 of Income	3.15 (8.11)	14.48 (12.36)	13.08 (10.86)	0.91 (3.97)	4.07 (11.52)	-15.34 (16.90)	29.60 (20.00)	-0.78 (11.04)
% with Bachelor's degree	38.34 (51.48)	98.47 (56.60)	38.88 (53.78)	54.52 (35.85)	-167.17* (74.67)	-94.81 (92.24)	-64.02 (125.21)	-5.46 (87.28)
Unemployment rate	-1.10 (2.86)	-8.46* (4.12)	0.29 (2.63)	-1.30 (1.17)	-8.49* (3.67)	-6.84 (7.61)	2.83 (4.18)	-6.23* (2.93)
Income-to- poverty ratio	35.79 (61.96)	-69.23 (79.25)	-12.27 (54.06)	-50.05 (31.40)	-251.28* (101.30)	21.37 (134.07)	73.23 (82.65)	165.77 (99.94)
Median Income	0.00* (0.00)	-0.00 (0.00)	0.00* (0.00)	0.00*** (0.00)	0.00* (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)

Table 36 (continued).

Tuition	0.00 (0.00)	0.00 (0.01)	-0.01 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.01 (0.01)	0.00 (0.00)
Promise Program	16.56* (8.37)	-6.96 (4.47)	-5.13 (4.74)	-4.13 (4.30)	10.35 (11.65)	-15.61 (16.15)	5.14 (17.74)	-0.82 (10.97)
Total Enrollment	0.17*** (0.02)	0.06*** (0.01)	0.07** (0.02)	0.08*** (0.02)	0.22*** (0.02)	0.10*** (0.01)	0.16*** (0.04)	0.08*** (0.01)
2014	5.62 (4.12)	0.55 (6.64)	10.12 (7.94)	0.86 (2.12)	-4.91 (5.32)	-12.87 (12.05)	20.66* (8.96)	-2.53 (5.83)
2015	11.31 (7.25)	4.71 (12.48)	15.98 (14.93)	0.62 (3.20)	-5.64 (9.45)	-24.32 (20.51)	35.61* (17.02)	0.39 (9.23)
2016	19.83* (9.44)	7.57 (18.03)	19.14 (20.44)	3.05 (3.61)	-2.81 (11.82)	-38.08 (29.79)	43.92 (22.29)	-2.53 (12.21)
2017	20.58 (12.57)	8.36 (25.20)	24.46 (26.66)	2.15 (4.66)	1.55 (16.29)	-45.31 (40.35)	65.94* (29.73)	4.49 (16.03)
2018	21.32 (15.56)	15.75 (30.81)	31.93 (29.87)	3.08 (5.70)	-1.87 (20.37)	-46.21 (49.82)	72.19* (36.09)	4.86 (19.56)
Constant	-49.01 (72.69)	115.81 (106.67)	-138.71* (66.25)	-69.52* (33.51)	-142.36 (112.34)	-301.93 (169.88)	-178.04 (119.28)	-115.03 (92.22)
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 37.

Lags model results for impact of RDS on Latinx enrollment

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
Treat*2017	-2.19 (7.28)	-2.31 (5.98)	-0.01 (5.33)	-1.19 (5.51)	-27.79* (13.42)	-4.49 (12.09)	12.09 (11.71)	-1.20 (11.64)
Treat*2018	-4.24 (5.83)	-8.83 (8.53)	-3.16 (5.26)	0.18 (2.93)	-24.88 (13.00)	-2.43 (17.49)	15.37 (12.56)	11.75 (10.83)
% Senate Republicans	8.14 (19.01)	-55.95 (95.30)	-52.32 (54.96)	0.66 (8.96)	5.97 (25.62)	106.06 (151.15)	-105.61* (41.48)	-50.46 (29.40)
% House Republicans	-96.65*** (22.77)	-7.90 (62.84)	-21.77 (18.85)	-14.75 (11.32)	136.07*** (31.73)	-19.35 (75.36)	14.74 (36.54)	-7.23 (35.58)
Republican Governor	-0.83 (3.25)	-3.98 (6.17)	3.41 (4.29)	-3.01 (2.70)	4.85 (4.47)	-6.45 (8.18)	16.40** (5.48)	-3.23 (5.62)
Higher Ed \$ Per Capita	-0.00 (0.17)	0.04 (0.42)	-0.15 (0.30)	-0.05 (0.08)	0.09 (0.25)	0.75 (0.55)	-0.56 (0.51)	0.03 (0.24)
Higher Ed \$ per \$1,000 of Income	3.15 (8.11)	9.39 (15.26)	12.36 (11.03)	1.02 (3.89)	4.07 (11.52)	-14.10 (17.41)	29.95 (19.93)	1.63 (10.27)
% with Bachelor's degree	38.33 (51.49)	79.16 (58.54)	39.11 (53.74)	53.94 (35.80)	-167.23* (74.68)	-89.78 (96.45)	-65.24 (125.71)	-9.17 (86.83)
Unemployment rate	-1.11 (2.86)	-5.56 (5.29)	0.36 (2.65)	-1.28 (1.17)	-8.49* (3.67)	-7.53 (9.20)	2.79 (4.19)	-6.43* (2.90)
Income-to- poverty ratio	35.18 (62.02)	-57.42 (83.87)	-16.20 (54.14)	-48.07 (31.01)	-250.81* (101.38)	19.25 (133.84)	75.21 (82.54)	190.88 (103.85)

Table 37 (continued).

Median Income	0.00*	-0.00	0.00*	0.00***	0.00*	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Tuition	0.00	0.00	-0.01	0.00	0.00	0.00	-0.01	0.00
	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
Promise Program	16.55*	-6.67	-5.12	-4.12	10.31	-16.01	4.90	-1.28
	(8.37)	(4.55)	(4.75)	(4.31)	(11.67)	(15.95)	(17.77)	(11.07)
Total Enrollment	0.17***	0.06***	0.07**	0.08***	0.22***	0.10***	0.16***	0.08***
	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.04)	(0.01)
2014	5.63	2.62	10.00	0.89	-4.93	-13.39	20.67*	-2.53
	(4.12)	(6.39)	(7.93)	(2.08)	(5.32)	(12.95)	(8.97)	(5.80)
2015	11.32	7.15	15.75	0.66	-5.66	-25.02	35.58*	0.31
	(7.25)	(12.22)	(14.91)	(3.16)	(9.46)	(21.41)	(17.04)	(9.19)
2016	19.85*	11.94	18.97	3.03	-2.84	-39.31	43.82	-3.49
	(9.44)	(17.95)	(20.43)	(3.63)	(11.84)	(31.99)	(22.35)	(12.24)
2017	20.58	14.13	23.97	2.29	1.53	-47.00	65.92*	4.86
	(12.57)	(25.25)	(26.62)	(4.54)	(16.30)	(43.28)	(29.76)	(15.89)
2018	21.43	25.72	32.02	2.66	-1.97	-48.92	71.88*	-0.59
	(15.57)	(31.34)	(29.90)	(6.05)	(20.41)	(56.14)	(36.29)	(20.05)
Constant	-48.49	61.31	-137.25*	-71.19*	-142.84	-291.28	-180.44	-137.08
	(72.69)	(129.86)	(66.55)	(32.04)	(112.75)	(190.30)	(119.98)	(91.81)
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 38.

Difference in difference results for impact of RDS on Black enrollment

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
Treatment	-18.36*	-4.91	-11.54+	-9.55+	52.41*	65.96*	32.71	43.21*
	(7.70)	(7.76)	(6.41)	(5.66)	(26.39)	(27.83)	(26.45)	(18.04)
% Senate Republicans	6.68	-460.41*	63.04	-3.19	6.22	127.80	-59.89	-68.52
	(17.01)	(184.03)	(45.49)	(14.87)	(24.71)	(441.92)	(82.42)	(88.73)
% House Republicans	73.79**	-121.05*	3.38	62.81**	-39.36	-234.35	-99.13	-204.38
	(23.94)	(60.40)	(29.37)	(19.35)	(44.54)	(133.25)	(96.75)	(233.66)
Republican Governor	4.69	-2.69	10.54*	4.79	-4.37	-0.54	-0.37	13.70
	(3.96)	(6.64)	(4.28)	(3.34)	(4.68)	(32.90)	(7.33)	(11.21)
Higher Ed \$ Per Capita	0.21	1.33	1.34*	-0.05	-0.17	0.24	0.51	-0.29
	(0.16)	(0.75)	(0.53)	(0.15)	(0.13)	(2.78)	(1.46)	(0.76)
Higher Ed \$ per \$1,000 of Income	-14.18	-46.05	-39.57*	0.98	9.28	20.23	-26.38	7.19
	(8.24)	(28.69)	(17.84)	(7.44)	(7.12)	(70.26)	(46.61)	(28.91)
% with Bachelor's degree	-107.38*	-164.04	-169.37	-125.00*	-110.27	-193.35	-503.10*	-651.53*
	(54.15)	(161.71)	(115.98)	(54.71)	(73.05)	(277.43)	(250.12)	(290.05)
Unemployment rate	6.69	5.45	5.93	6.20*	0.06	-52.15	5.33	11.51
	(4.09)	(10.71)	(4.23)	(3.05)	(2.58)	(57.43)	(10.79)	(9.17)
Income-to- poverty ratio	45.89	84.10	198.05	80.87	-78.63	-454.13	-358.61	-464.48
	(66.24)	(226.12)	(112.18)	(60.74)	(94.79)	(671.63)	(235.60)	(373.86)
Median Income	0.00*	-0.01	-0.01	0.00	0.00	0.01	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)

Table 38 (continued).

Tuition	-0.00 (0.00)	-0.01 (0.01)	-0.01 (0.01)	0.00 (0.00)	0.01* (0.00)	0.02 (0.03)	0.01 (0.01)	0.01 (0.01)
Promise Program	-31.52*** (7.86)	-29.68** (10.65)	-27.11*** (6.13)	-29.27*** (8.00)	11.54 (7.21)	4.44 (91.79)	-11.65 (19.21)	16.21 (24.03)
Total Enrollment	0.20*** (0.01)	0.34*** (0.03)	0.34*** (0.03)	0.27*** (0.03)	0.14*** (0.02)	0.35*** (0.08)	0.28*** (0.04)	0.25*** (0.04)
2014	-1.44 (3.80)	-1.03 (13.78)	-1.16 (7.64)	4.62 (4.15)	-3.93 (3.52)	-80.89 (96.11)	-13.94 (14.93)	1.66 (18.42)
2015	-15.45* (6.64)	-5.68 (24.75)	-8.27 (14.61)	-1.82 (4.99)	-3.37 (6.63)	-145.51 (164.91)	-18.87 (28.18)	10.34 (28.84)
2016	-14.62 (8.14)	13.70 (37.71)	2.42 (21.01)	0.22 (6.54)	-5.64 (8.88)	-210.78 (235.82)	-17.11 (36.26)	2.72 (38.04)
2017	-14.86 (10.51)	24.70 (52.31)	12.64 (28.62)	2.58 (8.92)	-5.43 (11.76)	-285.46 (315.45)	-15.18 (43.92)	17.07 (47.65)
2018	-19.21 (13.88)	10.68 (62.42)	5.39 (35.70)	5.65 (11.29)	-6.84 (14.52)	-353.88 (374.30)	-17.83 (50.68)	6.91 (53.56)
Constant	-196.14* (94.79)	661.57* (289.80)	55.99 (165.81)	-183.67** (68.46)	-53.26 (86.71)	-418.06 (747.42)	138.49 (427.33)	5.42 (317.79)
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 39.

Lags model results for impact of RDS on Black enrollment

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
Treat*2017	-23.97*	-10.70	-12.08	-11.85	78.82*	70.83*	63.41+	53.14*
	(11.03)	(8.22)	(7.71)	(7.95)	(37.30)	(30.72)	(32.83)	(22.74)
Treat*2018	-15.96*	26.69*	-11.09	-7.08	38.32+	46.43	9.46	27.61
	(6.88)	(11.57)	(6.92)	(4.48)	(22.36)	(32.43)	(25.29)	(20.27)
% Senate Republicans	6.58	-755.12***	62.86	-3.51	6.94	273.79	-59.38	-64.84
	(17.02)	(210.59)	(45.24)	(14.90)	(24.68)	(535.46)	(82.35)	(88.11)
% House Republicans	73.31**	-239.83**	2.97	59.17**	-38.48	-177.70	-95.51	-176.78
	(23.94)	(77.75)	(30.01)	(19.21)	(44.58)	(152.50)	(97.22)	(244.93)
Republican Governor	4.68	-12.13	10.60*	5.16	-4.38	3.56	-1.92	11.40
	(3.96)	(7.65)	(4.32)	(3.24)	(4.68)	(35.31)	(7.38)	(11.35)
Higher Ed \$ Per Capita	0.21	0.47	1.33*	-0.06	-0.17	0.69	0.71	-0.11
	(0.16)	(0.83)	(0.55)	(0.14)	(0.13)	(2.57)	(1.50)	(0.81)
Higher Ed \$ per \$1,000 of Income	-14.15	-16.92	-39.34*	1.35	9.24	5.51	-32.05	2.45
	(8.24)	(31.01)	(18.21)	(7.41)	(7.12)	(62.85)	(47.71)	(30.08)
% with Bachelor's degree	-107.33*	-53.41	-169.44	-127.03*	-109.42	-253.05	-483.13	-644.23*
	(54.14)	(156.20)	(115.98)	(54.92)	(73.03)	(263.80)	(248.23)	(290.33)
Unemployment rate	6.70	-11.15	5.91	6.26*	0.07	-43.91	6.05	11.90
	(4.09)	(12.05)	(4.23)	(3.07)	(2.58)	(62.89)	(10.73)	(9.14)
Income-to- poverty ratio	48.29	16.44	199.28	87.76	-85.13	-428.88	-391.14	-513.97
	(66.62)	(226.94)	(114.06)	(63.28)	(95.13)	(684.04)	(241.85)	(396.64)

Table 39 (continued).

Median								
Income	0.00*	-0.01	-0.01	0.00	-0.00	0.01	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
Tuition	-0.00	-0.01	-0.01	0.00	0.01*	0.02	0.01	0.01
	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.03)	(0.01)	(0.01)
Promise	-31.51***	-31.33**	-27.11***	-29.23***	12.21	9.22	-7.81	17.12
Program	(7.86)	(10.72)	(6.14)	(8.04)	(7.21)	(90.43)	(18.91)	(24.37)
Total								
Enrollment	0.20***	0.34***	0.34***	0.27***	0.14***	0.36***	0.28***	0.25***
	(0.01)	(0.03)	(0.03)	(0.03)	(0.02)	(0.08)	(0.04)	(0.04)
2014	-1.47	-12.87	-1.12	4.72	-3.73	-74.79	-14.13	1.67
	(3.80)	(14.01)	(7.65)	(4.12)	(3.51)	(100.19)	(14.96)	(18.47)
2015	-15.47*	-19.69	-8.20	-1.69	-3.05	-137.21	-18.43	10.50
	(6.64)	(24.83)	(14.62)	(4.98)	(6.62)	(170.66)	(28.10)	(28.80)
2016	-14.71	-11.30	2.47	0.16	-5.15	-196.18	-15.41	4.61
	(8.15)	(37.86)	(21.00)	(6.55)	(8.87)	(246.00)	(36.04)	(37.61)
2017	-14.83	-8.35	12.79	3.09	-5.13	-265.37	-14.88	16.34
	(10.51)	(52.23)	(28.57)	(8.86)	(11.76)	(329.00)	(43.82)	(47.80)
2018	-19.64	-46.44	5.36	4.21	-5.39	-321.62	-12.72	17.64
	(13.92)	(63.36)	(35.73)	(11.47)	(14.51)	(396.44)	(50.25)	(51.64)
Constant	-198.16*	973.86**	55.53	-189.43**	-46.51	-544.61	178.12	48.89
	(95.16)	(311.53)	(167.03)	(71.37)	(86.89)	(801.00)	(433.87)	(328.97)
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 40.

Difference in difference results for impact of RDS on White enrollment

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
Treatment	7.09 (7.69)	5.99 (10.22)	13.72+ (8.09)	3.60 (7.12)	-19.83 (27.93)	-38.92 (32.15)	-47.71 (31.09)	-43.26 (28.11)
% Senate Republicans	-32.93 (24.96)	796.13*** (196.02)	-73.61 (54.33)	5.32 (19.98)	-15.57 (40.59)	-865.09* (430.93)	136.09 (73.28)	116.07 (92.79)
% House Republicans	60.78* (25.97)	232.19** (70.03)	88.12* (35.64)	-4.08 (20.66)	176.14*** (48.49)	292.54 (152.28)	145.20 (74.15)	371.48** (118.53)
Republican Governor	-11.13* (4.81)	12.71 (7.02)	-13.56** (4.85)	-1.37 (4.60)	3.26 (6.63)	-2.61 (27.52)	-12.07 (10.77)	-2.59 (14.13)
Higher Ed \$ Per Capita	-0.02 (0.21)	-0.97 (0.81)	-1.30* (0.60)	0.09 (0.16)	0.03 (0.30)	-0.30 (1.40)	1.32 (1.12)	0.14 (0.70)
Higher Ed \$ per \$1,000 of Income	2.83 (9.83)	43.16 (30.35)	38.27 (20.05)	0.46 (7.76)	-16.52 (14.72)	-28.10 (53.90)	-39.25 (39.87)	6.59 (28.85)
% with Bachelor's degree	-50.58 (75.53)	79.33 (155.76)	129.85 (125.93)	41.22 (61.05)	256.36 (130.64)	-99.95 (339.42)	396.02 (266.05)	574.73* (285.70)
Unemployem t rate	-1.95 (4.30)	1.78 (10.56)	-5.04 (4.72)	-3.53 (3.06)	14.97* (6.03)	13.23 (22.78)	-17.52 (9.62)	-10.28 (9.44)
Income-to- poverty ratio	-247.46** (81.13)	-235.34 (234.66)	-271.21* (117.70)	-42.44 (59.41)	161.89 (124.92)	-88.05 (428.29)	-4.31 (172.20)	35.54 (271.36)

Table 40 (continued).

Median	-0.00**	0.01	0.00	-0.00*	-0.00	-0.02*	-0.01**	-0.01
Income	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)
Tuition	0.00	0.01	0.00	-0.00	-0.01	0.00	0.01	-0.02
	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
Promise	15.26	3.87	10.27	15.11	-16.84	81.83	22.62	4.98
Program	(9.62)	(11.19)	(6.96)	(9.53)	(13.13)	(64.36)	(22.93)	(27.88)
Total								
Enrollment	0.49***	0.54***	0.53***	0.54***	0.42***	0.36***	0.41***	0.53***
	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.06)	(0.05)	(0.05)
2014	-5.54	6.64	1.61	-3.28	14.35*	32.84	-25.64	-2.77
	(4.63)	(15.08)	(8.61)	(4.36)	(6.14)	(29.82)	(13.76)	(14.42)
2015	-5.61	3.32	8.58	-1.75	10.34	59.81	-54.12*	-26.06
	(7.40)	(28.44)	(16.47)	(5.07)	(10.80)	(57.43)	(26.68)	(26.83)
2016	-8.49	-16.62	5.14	-4.40	12.06	127.73	-63.21	-20.52
	(9.64)	(43.95)	(23.24)	(6.63)	(13.93)	(81.27)	(33.69)	(33.01)
2017	-10.50	-28.93	-4.96	-8.48	14.95	188.08	-81.99	-27.80
	(12.92)	(60.82)	(31.44)	(8.77)	(18.54)	(114.67)	(43.35)	(45.60)
2018	-7.14	-11.23	1.93	-9.05	13.90	218.60	-90.29	-20.39
	(16.68)	(72.84)	(39.08)	(11.23)	(23.19)	(138.37)	(53.16)	(52.69)
Constant	259.61*	-990.81**	112.20	147.62*	320.44*	2047.92**	683.04**	296.16
	(112.48)	(309.71)	(166.12)	(70.41)	(152.63)	(759.18)	(252.25)	(288.70)
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 41.

Lags model results for impact of RDS on White enrollment

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
Treat*2017	5.43 (9.97)	11.42 (10.38)	9.48 (9.39)	3.96 (9.24)	-39.94 (29.92)	-43.27 (33.62)	-62.60* (31.89)	-37.20 (31.86)
Treat*2018	7.79 (7.48)	-23.63 (15.64)	17.28* (8.54)	3.22 (6.11)	-9.09 (29.34)	-21.46 (41.88)	-36.44 (33.80)	-52.79+ (31.81)
% Senate Republicans	-32.96 (24.96)	1072.45*** (227.78)	-75.03 (54.16)	5.37 (19.96)	-16.11 (40.60)	-995.59* (496.56)	135.85 (73.26)	118.32 (93.85)
% House Republicans	60.64* (26.03)	343.55*** (87.13)	84.91* (35.89)	-3.52 (21.03)	175.47*** (48.48)	241.90 (177.29)	143.44 (74.04)	388.32*** (112.03)
Republican Governor	-11.14* (4.82)	21.56** (7.66)	-13.10** (4.83)	-1.42 (4.49)	3.26 (6.63)	-6.27 (29.60)	-11.31 (10.82)	-3.99 (13.84)
Higher Ed \$ Per Capita	-0.02 (0.21)	-0.16 (0.91)	-1.37* (0.61)	0.10 (0.15)	0.03 (0.30)	-0.70 (1.49)	1.22 (1.13)	0.25 (0.65)
Higher Ed \$ per \$1,000 of Income	2.84 (9.83)	15.85 (33.90)	40.05 (20.42)	0.40 (7.66)	-16.50 (14.71)	-14.94 (56.04)	-36.51 (40.11)	3.69 (27.19)
% with Bachelor's degree	-50.57 (75.54)	-24.39 (153.57)	129.29 (125.94)	41.54 (60.81)	255.71 (130.64)	-46.58 (340.52)	386.34 (266.58)	579.19* (284.88)
Unemployment rate	-1.95 (4.30)	17.34 (12.15)	-5.20 (4.73)	-3.53 (3.07)	14.96* (6.03)	5.87 (26.23)	-17.87 (9.64)	-10.05 (9.41)

Table 41 (continued).

Income-to-poverty ratio	-246.75** (81.33)	-171.90 (238.36)	-261.48* (117.83)	-43.50 (60.01)	166.83 (125.26)	-110.62 (426.99)	11.47 (174.61)	5.33 (285.48)
Median Income	-0.00** (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00* (0.00)	-0.00 (0.00)	-0.02* (0.01)	-0.01** (0.00)	-0.01* (0.01)
Tuition	0.00 (0.01)	0.01 (0.01)	0.00 (0.01)	-0.00 (0.00)	-0.01 (0.01)	0.00 (0.01)	0.01 (0.01)	-0.02 (0.01)
Promise Program Total	15.26 (9.62)	5.41 (11.28)	10.26 (6.97)	15.10 (9.53)	-17.36 (13.14)	77.56 (66.54)	20.76 (22.84)	5.54 (28.23)
Enrollment	0.49*** (0.03)	0.54*** (0.04)	0.53*** (0.03)	0.54*** (0.03)	0.42*** (0.03)	0.36*** (0.06)	0.41*** (0.05)	0.53*** (0.05)
2014	-5.55 (4.63)	17.74 (14.64)	1.92 (8.63)	-3.30 (4.33)	14.19* (6.14)	27.38 (31.41)	-25.55 (13.75)	-2.77 (14.36)
2015	-5.62 (7.41)	16.45 (27.78)	9.15 (16.52)	-1.77 (5.07)	10.10 (10.80)	52.38 (59.18)	-54.33* (26.68)	-25.96 (26.78)
2016	-8.52 (9.65)	6.81 (42.91)	5.57 (23.26)	-4.39 (6.63)	11.68 (13.94)	114.68 (84.73)	-64.04 (33.74)	-19.37 (33.06)
2017	-10.49 (12.92)	2.06 (59.19)	-3.75 (31.46)	-8.56 (8.73)	14.72 (18.54)	170.12 (118.62)	-82.14 (43.36)	-28.25 (45.52)
2018	-7.27 (16.72)	42.33 (71.10)	1.71 (39.09)	-8.82 (11.34)	12.81 (23.26)	189.76 (146.16)	-92.77 (53.39)	-13.84 (52.75)
Constant	259.02* (112.47)	-1283.57*** (344.67)	108.57 (166.57)	148.51* (71.38)	315.30* (152.99)	2161.00** (807.17)	663.82** (254.61)	322.69 (282.42)
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Appendix I

Table 42.

Difference in difference results for impact of RDS on Pell enrollment

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
Treatment	-6.07 (7.87)	10.30 (10.56)	-0.11 (9.94)	-7.37 (5.98)	31.20 (19.56)	72.58** (21.48)	23.78 (21.70)	51.26** (18.02)
% Senate Republicans	-0.41 (29.51)	822.66* (392.14)	25.95 (82.63)	-11.54 (20.04)	46.13 (47.77)	-265.96 (338.31)	2.03 (63.21)	-105.94 (120.29)
% House Republicans	18.60 (25.52)	108.33 (79.73)	46.24 (40.56)	-1.26 (24.98)	-131.46** (44.28)	-252.89 (128.84)	-167.73* (68.25)	353.31*** (85.65)
Republican Governor	1.12 (4.45)	-21.84* (9.17)	-10.95 (5.69)	0.97 (3.25)	-7.56 (6.35)	13.99 (16.98)	-15.72 (9.76)	11.13 (10.26)
Higher Ed \$ Per Capita	0.18 (0.20)	-2.84** (0.98)	-1.92* (0.81)	-0.25 (0.16)	-0.13 (0.29)	-3.29* (1.64)	-0.02 (1.05)	-0.54 (0.63)
Higher Ed \$ per \$1,000 of Income	-6.00 (10.77)	163.87*** (38.77)	51.30 (27.81)	12.19 (8.64)	-0.64 (13.80)	87.45 (57.80)	-24.04 (37.48)	7.08 (25.21)
% with Bachelor's degree	-231.77* (104.01)	744.86*** (209.42)	354.43* (149.54)	-115.55 (69.87)	34.98 (91.63)	-216.78 (290.14)	-78.49 (234.12)	-331.78 (213.94)
Unemployment rate	2.87 (3.90)	-69.00*** (14.61)	-18.48* (7.21)	3.05 (3.15)	-0.84 (3.96)	12.07 (25.71)	20.07* (9.11)	14.96* (6.84)

Table 42 (continued).

Income-to-poverty ratio	-142.86 (98.63)	-1102.12*** (222.14)	-339.54* (160.76)	-91.26 (76.05)	20.03 (142.61)	-328.52 (421.88)	-342.22 (187.47)	-162.21 (273.09)
	0.00	0.02*	0.01	0.00	0.00	0.00	0.00	0.00
Median Income	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)
Tuition	-0.01 (0.00)	-0.00 (0.01)	0.00 (0.01)	-0.00 (0.00)	0.01** (0.00)	-0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Promise Program	1.95 (10.27)	-18.84 (14.21)	0.11 (8.79)	-0.62 (9.54)	38.13** (11.64)	-22.63 (49.30)	-5.49 (20.73)	28.01 (20.04)
Total Enrollment	0.22*** (0.06)	0.25*** (0.05)	0.32*** (0.05)	0.13*** (0.03)	0.33*** (0.02)	0.39*** (0.06)	0.37*** (0.03)	0.34*** (0.03)
2014	-5.96 (4.61)	-76.77*** (17.30)	-25.55* (11.02)	-2.22 (4.19)	-11.83* (5.53)	45.95 (36.84)	-3.22 (12.44)	17.13 (11.25)
2015	-29.36*** (8.11)	-137.61*** (34.99)	-52.27* (23.79)	-13.53* (5.55)	-23.81* (9.67)	72.70 (68.87)	-10.61 (23.43)	23.52 (19.48)
2016	-36.46*** (9.82)	-234.21*** (57.00)	-71.06* (33.70)	-15.92* (7.31)	-37.37** (12.31)	111.08 (91.60)	-17.28 (30.25)	21.80 (25.83)
2017	-25.85* (13.13)	-313.27*** (75.92)	-85.72 (45.93)	-5.51 (9.62)	-17.24 (16.67)	176.13 (125.46)	10.42 (40.75)	58.62 (36.88)
2018	-28.92 (16.80)	-320.72*** (85.65)	-83.61 (54.24)	-7.22 (12.09)	-29.13 (21.35)	175.58 (149.46)	0.67 (48.73)	44.56 (43.26)
Constant	205.95 (142.46)	-1149.60* (472.79)	49.55 (239.43)	164.52* (77.80)	-6.84 (124.55)	485.74 (692.81)	12.41 (298.30)	215.11 (308.70)
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.

Table 43.

Lags model results for impact of RDS on Pell enrollment

	Two-Year Colleges				Four-Year Colleges			
	All US	Geographically Contiguous	Southeast	Matched	All US	Geographically Contiguous	Southeast	Matched
Treat*2017	10.68 (11.40)	15.16 (11.26)	15.54 (12.16)	1.89 (8.60)	57.95* (23.06)	75.73** (23.37)	43.39+ (25.41)	63.18** (21.30)
Treat*2018	-13.21+ (8.15)	-16.20 (18.12)	-13.23 (11.29)	-17.34** (5.75)	16.92 (21.28)	59.98* (29.94)	8.94 (24.30)	32.52 (22.50)
% Senate Republicans	-0.11 (29.54)	1069.87* (428.01)	31.18 (82.70)	-10.26 (20.08)	46.85 (47.81)	-171.72 (396.61)	2.35 (63.33)	-101.52 (120.97)
% House Republicans	20.03 (25.58)	207.96 (109.63)	58.05 (41.99)	13.38 (25.83)	-130.57** (44.37)	-216.33 (153.97)	-165.41* (68.59)	320.17*** (84.53)
Republican Governor	1.15 (4.45)	-13.92 (9.90)	-12.64* (5.63)	-0.55 (3.14)	-7.56 (6.35)	16.64 (17.81)	-16.71 (9.77)	8.37 (10.33)
Higher Ed \$ Per Capita	0.19 (0.20)	-2.11* (1.00)	-1.67* (0.82)	-0.19 (0.16)	-0.13 (0.29)	-3.00 (1.66)	0.10 (1.06)	-0.33 (0.55)
Higher Ed \$ per \$1,000 of Income	-6.09 (10.77)	139.44*** (38.49)	44.75 (27.88)	10.72 (8.51)	-0.67 (13.80)	77.94 (56.74)	-27.65 (37.41)	1.40 (23.03)
% with Bachelor's degree	-231.90* (104.05)	652.06** (202.42)	356.51* (148.85)	-107.35 (69.99)	35.84 (91.63)	-255.31 (285.63)	-65.73 (232.71)	-323.00 (212.34)
Unemployment rate	2.84 (3.90)	-55.08*** (15.01)	-17.90* (7.18)	2.81 (3.16)	-0.83 (3.96)	17.38 (26.04)	20.53* (9.08)	15.43* (6.80)

Table 43 (continued).

Income-to-poverty ratio	-150.02 (98.93)	-1045.37*** (214.36)	-375.41* (163.21)	-118.99 (76.03)	13.44 (142.40)	-312.22 (427.23)	-363.00 (189.40)	-221.65 (279.88)
Median Income	-0.00 (0.00)	0.01* (0.01)	0.01 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.01)	0.00 (0.01)	0.00 (0.00)
Tuition	-0.01 (0.00)	-0.00 (0.01)	0.00 (0.01)	-0.00 (0.00)	0.01** (0.00)	-0.01 (0.01)	0.01 (0.01)	0.01 (0.01)
Promise Program Total	1.93 (10.27)	-17.46 (14.17)	0.14 (8.76)	-0.76 (9.51)	38.81*** (11.68)	-19.54 (50.44)	-3.04 (20.98)	29.10 (20.41)
Enrollment	0.22*** (0.06)	0.25*** (0.05)	0.32*** (0.05)	0.13*** (0.03)	0.33*** (0.02)	0.39*** (0.06)	0.38*** (0.03)	0.34*** (0.03)
2014	-5.89 (4.62)	-66.83*** (17.04)	-26.70* (11.10)	-2.65 (4.14)	-11.62* (5.53)	49.89 (36.71)	-3.34 (12.44)	17.14 (11.28)
2015	-29.28*** (8.12)	-125.86*** (34.20)	-54.37* (24.02)	-14.06* (5.54)	-23.49* (9.67)	78.06 (68.24)	-10.33 (23.42)	23.72 (19.52)
2016	-36.20*** (9.83)	-213.24*** (55.43)	-72.63* (33.87)	-15.69* (7.28)	-36.86** (12.32)	120.50 (90.69)	-16.20 (30.23)	24.07 (25.84)
2017	-25.93* (13.13)	-285.54*** (73.52)	-90.20 (46.38)	-7.55 (9.48)	-16.93 (16.68)	189.09 (122.94)	10.61 (40.70)	57.75 (37.03)
2018	-27.64 (16.88)	-272.80** (84.79)	-82.78 (54.17)	-1.40 (12.13)	-27.67 (21.42)	196.41 (147.81)	3.94 (48.81)	57.45 (43.33)
Constant	211.99 (141.96)	-1411.52** (512.29)	62.92 (239.46)	187.72* (77.35)	-0.01 (124.51)	404.08 (746.56)	37.72 (299.65)	267.31 (306.59)
N	4920	804	1386	3780	3690	432	1032	2364

Notes: +p<0.10 * p<0.05 ** p<0.01 *** p<0.001. Standard errors clustered at institution.