How Much do Borrowers Value Student Debt Relief? Evidence from the Teacher Loan Forgiveness Program*

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Abstract

We explore how much borrowers value student debt relief, in the setting of the Federal Teacher Loan Forgiveness (TLF) program, and further document whether information and eligibility for this program affect teacher employment decisions. The program cancels between $5,000 and $17,500 in debt for teachers who remain employed in a high-need school for 5 consecutive years. Using both quasi-experimental evidence and a randomized control trial we find that neither eligibility nor a targeted information intervention result in changes in teacher employment decisions. This is despite the presence of sizeable student loan balances in our sample. Additional evidence from contingent valuation surveys suggests that teachers do in general value possible debt relief. We conclude, incorporating qualitative evidence from focus groups, that program complexity and administrative barriers may prevent take-up, which involve knowledge of qualifying schools, tracking of employment records, employer sign-off, and coordination with third-party loan servicers.

Keywords: Student loans, debt forgiveness, teacher employment, randomized trial
JEL: D14, G51, I22

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1 Introduction

There is currently more than $1.7 trillion in student loans held by households in the U.S., leading many to advocate for federal student loan forgiveness (Friedman, 2022), raising concerns regarding racial equity and debt accumulation (Addo et al., 2016), and sparking debates regarding the progressivity of such policies (Perry et al., 2021; Looney, 2022). One possible consequence of rising student debt burdens is debt overhang; Borrowers may be constrained in their ability to relocate geographically, pursue better employment arrangements, or start a family (Sieg and Wang, 2018; Di Maggio et al., 2019; Luo and Mongey, 2019a). Most recently, the Biden Administration announced a loan forgiveness program, canceling between $10,000 and $20,000 per borrower, subject to income restrictions, and additional adjustments to repayment rules.

While the exact details of the recently announced student debt forgiveness program have yet to be released, there already exist more targeted forms of debt forgiveness. For example, the Federal Teacher Loan Forgiveness (TLF) program, which offsets between $5,000 and $17,500 in student debt for teachers working in high-need districts for at least 5 consecutive years. However, as of 2018, only 66 percent percent of teachers who had graduated with a BA in 2008 were aware of the federal loan assistance program, and fewer than 20 percent had participated. (U.S. Department of Education. Institute of Education Sciences, National Center for Educational Statistics, 2018). The potentially limited take-up of this program is of particular interest against the backdrop of a long-standing challenge of recruiting and retaining teachers, especially in school districts of high-need (Rich, 2015; Hackman and Morath, 2018), and, more recently, amidst a general teacher shortage that has been exacerbated during the COVID-19 pandemic.(Singer, 2021)

The pattern of outcomes that emerge in this setting raises a number of questions. Does debt forgiveness affect major decisions made by borrowers, both in general and relative to equivalent monetary incentives? Is student debt relief in the form of the TLF program an effective recruitment and retention tool? And if so, then why do seemingly eligible teachers

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forgo the benefit? Is it a matter of awareness, or are there other barriers?

To shed light on these questions, we use a combination of quasi-experimental and experimental evidence on the TLF program, in combination with survey data and qualitative evidence. First, using the rules of the program, which create a discontinuous jump in school-level eligibility, we compare outcomes for similar teachers who do and do not qualify for the program. Next, we implement and evaluate a large scale randomized controlled trial (RCT) aimed at increasing awareness of and facilitating enrollment in the Federal TLF program among public school teachers in the state of Michigan. We sent mailings—electronic and paper—to teachers at a random subset of eligible schools in 2015, informing them of the TLF program and their current or potential eligibility. In 2017, we repeated a similar intervention, with additional phone-based application assistance in addition to paper and electronic communication. In both waves, we tracked subsequent outcomes using follow-up surveys and administrative data on teacher employment patterns. Third, included in these surveys were a series of questions designed to elicit teachers' value of the loan forgiveness program. Finally, following our initial RCT intervention, we also held focus group sessions with teachers to further shed light on their take-up decisions.

We first confirm, as expected given TLF eligibility rules, that there is a significant and discontinuous increase in school-level eligibility for TLF when more than 30 percent of students qualify for free or reduced-price lunch (FRPL). We then exploit variation around this discontinuity in eligibility and examine teacher turnover rates depending on whether their school is eligible or not for loan forgiveness during their first year of employment. We find no difference in teacher retention around the threshold, during the subsequent five years of employment. Other attributes of the school and teachers are smooth through the discontinuity, supporting our causal conclusion that loan forgiveness eligibility alone is not sufficient to alter teacher employment patterns. Importantly, we fail to reject the null hypothesis of no sorting around the eligibility threshold, which is itself an indication that teachers either do not value or are not aware of the program.

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Next, we examine the outcomes of the large-scale RCT designed to increase awareness of TLF eligibility and assess competing explanations for the apparent lack of impact of eligibility on employment choices. We find, after two waves of implementation, that the intervention increased teacher awareness of the program, with treatment teachers 7 percentage points more likely to say they have a basic understanding or are very familiar with the rules of the TLF program (from a base of 70 percent). However, this increase in awareness fails to translate into any differences in teacher retention between treatment and control schools, across all years of eligibility.

In our final empirical analysis, we attempt to more directly measure teachers' valuations of the TLF program. We administered a contingent valuation exercise, asking teachers to choose from side-by-side comparisons of hypothetical schools, with varying attributes drawn from a pool of actual schools, including TLF eligibility and salary. Using a discrete choice logit model, we find that teachers' valuations of attributes are of the predicted sign, such as requiring more compensation for larger class sizes or working in schools with lower levels of math or reading proficiency. Regarding school-level TLF eligibility status, there is modest difference between TLF-eligible and non-eligible schools when TLF status is not made explicit in the comparison (and therefore must be inferred based on share of FRPL students). The value ranges between \$500 and \$1,000. However, when a TLF school is explicitly noted, teachers' value of that status increases by a little more than \$3,000, with somewhat larger values for those teachers eligible for larger forgiveness amounts and for those who report having loans and receive language framing the bonus in terms of debt forgiveness.

Taken together, our results suggest a non-trivial value of debt relief. Indeed, in our focus group conversations with teachers, many described challenges in making their monthly student loan payments, and some expressed desperation at the prospect of paying their debts in full. There was a strong desire for options to have some portion of their debts forgiven. This value may not translate into take-up of the TLF program due to informational frictions and a variety of administrative barriers. Clear guidelines on how to navigate the enrollment

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process are difficult to find, and teachers must work with both their school administrators and their student loan servicer in order to complete the process.

2 Contribution to the Literature

Our paper extends multiple literatures on the effects of student debt and debt forgiveness on student career paths, employment choices, and household financial decisions. First, we explore whether debt forgiveness affects early career decisions. Greater student loan burdens have been found to drive students toward higher-paying private sector jobs (Rothstein and Rouse, 2011; Luo and Mongey, 2019b). Other work has shown that an exogenous reduction in debt balances results in greater geographic and employment mobility (Di Maggio et al., 2019). Greater levels of student debt are associated with lower marriage rates and/or fewer career prospects, especially for women, for both MBA students (Gicheva, 2016) and law students (Sieg and Wang, 2018). In general, it is important to distinguish between shocks to debt levels at the point of origination—where increased access to credit can improve degree attainment and earnings (Black et al., 2020) and college persistence (Card and Solis, 2022), though returns are heterogeneous (Lochner et al., 2021)—and shocks to the balance owed after debt has already been accrued. Although anticipation of the TLF program could affect earlier decisions regarding how much debt to take on, our study largely focuses on the take-up and effects of the TLF program after a loan has been originated.

Second, there are a few studies that examine the idea that student debt forgiveness might serve as a policy lever to incentivize employment in public service-oriented positions. Pathman et al. (2004) show suggestive evidence that physicians who participate in state-level loan repayment programs are more likely to practice in communities with higher socioeconomic need, as compared to non-participants. In the case of teachers—and closest to our study—Russell (2020) compares schools just above and below the 30% threshold for TLF eligibility in Michigan, New York, North- and South Carolina, and finds no effect on teacher retention.

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Relative to that study, we are able to analyze microdata for Michigan teachers and estimate effects specifically among new teachers, which arguably allows for more statistical power. We similarly find null effects of eligibility. In contrast, Feng and Sass (2018) find that a state-level loan forgiveness program in Florida reduced attrition by 8.9 percent for middle school math or science teachers, and by 10.4 percent for their high school counterparts. In this latter case, there were differences in program design, as compared to the federal TLF program, including incremental loan forgiveness for each year of eligible teaching, up to a maximum amount of $10,000, which is more similar in spirit to the federal Perkins Loan Cancellation program for teachers.

Third, our findings suggest substantial take-up frictions in the Teacher Loan Forgiveness Program. Prior work has shown behavioral framing and default effects to significantly affect educational financing decisions, both at the point of debt origination (Marx and Turner, 2019; Kramer et al., 2021) and at the stage of enrollment in income-driven repayment (IDR) plans (Abraham et al., 2020; Cox et al., 2020). Aside from behavioral considerations, general take-up frictions may include administrative barriers (see, e.g. Currie, 2006; Bhargava and Manoli, 2015; Finkelstein and Notowidigdo, 2019). In the context of the TLF program, there are frictions both at the school level and with the loan servicer that must be overcome in order to obtain the benefits. While we do not completely automate enrollment in this study, we do provide participants with individually tailored information regarding eligibility, as well as detailed instructions for applying. While we find effects on general awareness of the program, the lack of behavioral effects suggests that significant barriers may yet remain, including the cost of coordination with the loan servicer. Mueller and Yannelis (2022) show that when enrollment in an IDR plan is facilitated directly by a student loan servicer, via pre-populated applications, enrollment increased by 34 percentage points, or more than double the counterfactual.

Finally, we provide new estimates of how teachers value different features of their job and how loan forgiveness may or may not factor into their decision-making. Using a technique

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that is increasingly common to assess employment choices (Eriksson and Kristensen, 2014; Mas and Pallais, 2017; Maestas et al., 2018; Wiswall and Zafar, 2018; Johnston, 2021), we use contingent valuation exercises to back out the value of debt forgiveness relative to comparable one-time cash bonuses and other school features. These results tie into a broader literature that looks at the general factors affecting teacher employment decisions, including a number of studies that find positive effects on recruitment and retention of teachers from one-time salary bonuses on the order of $20,000 (Steele et al., 2010; Glazerman et al., 2013), annual bonuses of roughly $1,800 (Clotfelter et al., 2010), or a 10 percent wage premium (Falch, 2011). We find, in general, that teachers with debt value loan forgiveness at roughly 90 cents on the dollar relative to a cash bonus, while those who currently have debt value it dollar-for-dollar. Ultimately, however, we show that the TLF program does not appear to induce behavioral responses in teachers' employment decisions.

3 Institutional Background

There are several different forgiveness, cancellation, and discharge plans available for federal student loans, including Perkins Loan Cancellation options, Public Service Loan Forgiveness (PSLF), and Teacher Loan Forgiveness (TLF). We choose to focus on the TLF program because its clear target population, straightforward forgiveness amounts, and shorter time horizons for forgiveness make it an ideal test case.

As part of the Higher Education Amendments (HEA) of 1998, the federal government introduced a loan forgiveness program intended to encourage individuals to work as teachers in high-needs schools. Like similar programs for doctors and employees of public service organizations, the Federal Teacher Loan Forgiveness (TLF) programs are available for Federal Perkins Loans, Direct Loans, and Stafford Loans. The base amount of forgiveness is $5,000, with the Taxpayer-Teacher Protection Act TTPA of 2004 increasing loan forgiveness to up to $17,500 for special education teachers, or for secondary school math or science teachers.

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The Teacher Loan Forgiveness Improvement Act of 2022 proposes to increase the amounts for TLF to $15,000 and $30,000, respectively (U.S. Senate. 117th Congress, 2022).

To qualify for TLF, a teacher must be deemed "highliy qualified," which entails having a bachelor's degree and having received full state certification as a teacher. Teachers must teach for five consecutive years in a qualifying school or schools, that is, one serving low-income students. Each year, a list of eligible schools is published in the Teacher Cancellation Low Income (TCLI) Directory.[1] Each state is responsible for populating this list, though low-income status for a school is typically defined as having more than 30 percent of students from low-income families. In our setting, the state of Michigan uses whether a student receives Free or Reduced-Price Lunch (FRPL) to satisfy this criteria. In addition, all schools operated by the Bureau of Indian Education qualify as schools serving low-income students. If a teacher begins at a qualifying school that is later removed from the TCLI directory, the subsequent years still count toward eligibility.

The receipt of the benefit depends on a number of inputs under the control of the teacher, such as employment in a qualifying school and an understanding of eligibility requirements. Once a teacher decides to apply for loan forgiveness, they must fill out a Teacher Loan Forgiveness Application, which includes a certification section to be filled out by the chief administrative officer at the qualifying school. The chief administrator, usually a principal, assistant principal, or district superintendent, must verify that the above qualifications are met for each of the five consecutive years of service.

The application must then be sent to the loan holder or loan servicer, and in the event that there are multiple lenders, an application must be sent to each. The name and address of one's loan guarantor can be obtained from the National Student Loan Data System. Once the servicer receives the application, it must be approved. If approved, a payment for the amount of the forgiveness is sent to the applicant. If not approved, the applicant is notified by the servicer, with an explanation of denial.

[1] https://studentaid.gov/tcli

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While forgiveness programs hold out the potential to alleviate financial stress of indebted graduates, the Consumer Financial Protection Bureau (CFPB) believes they are significantly underutilized.[2] At present, there are approximately 20 state-level loan forgiveness programs for teachers, and an estimated 33 million borrowers eligible for public service forgiveness programs overall, with more eligible jobs being created. In 2020, only 32,700 teachers received loan forgiveness, amounting to $320 million.[3] There are both informational and behavioral barriers to student debt relief program enrollment. Information on forgiveness programs is available online, but not often made salient for qualifying borrowers who do not specifically seek it out. Moreover, the behavioral economics literature demonstrates that knowledge often does not translate to action, especially in the face of complex processes (Hilgert et al., 2003).

The above barriers are compounded by the fact that the entity tasked with collecting debt payments from borrowers, the loan servicers, are also integral to applying for this loan forgiveness. The CFPB has received substantial anecdotal feedback that many borrowers practice avoidance due to the overwhelming nature of large debt burdens, and even go so far as to not open student debt-related mail, which could impede access to programs like TLF.[4]

Although the TLF program is a federal-level entity, it necessarily involves coordination with state-level educational systems. For example, in our case of the state of Michigan, the Michigan Department of Education determines which schools qualify for TLF on an annual basis. In addition, they have an interest in this program insofar as it might aid with the recruitment and retention of qualified teachers in low-income districts. In fact, at the time that our experiment was fielded, state departments of education were required by the U.S. Department of Education to submit equity plans, outlining strategies for ensuring that all students have access to quality instruction. In their 2016 plan, the Michigan Department of

[2]See, e.g. Elliott, Phillip. "Student Loan Forgiveness Program Available To Millions Who Aren't Utilizing It, CFPB Says." Huffington Post. (2013). http://www.huffingtonpost.com/2013/08/28/student-loan-forgivenesscfpb_n_3833832.html

[3]https://www2.ed.gov/about/overview/budget/budget22/justifications/r-sloverview.pdf.

[4]Chopra, Rohit, CFPB Ombudsman, presentation in "Top 5 Tips for Tackling Your Student Debt" webinar. March 25, 2014.

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Education included their support of this study of the TLF program as an example of their efforts to attract and retain teachers in high-need schools.

4 Study Design

4.1 Regression Discontinuity Design

The TLF requirement that schools have at least 30 percent of students on free or reduced-price lunch (FRPL) naturally lends itself to a research design exploiting the discontinuity in school eligibility. To implement our regression discontinuity approach, we first group teachers into bins based on the share of students receiving free or reduced-price lunch in their first year teaching at the school, p_0.

If we believe there to be a direct influence of the Teacher Loan Forgiveness program on where teachers sort, then we might expect to observe substantial differences in the types of teachers choosing schools on either side of the threshold. Teachers who value debt forgiveness and anticipate staying in a high-need school for at least five years might select into precisely those eligible schools. If, on the other hand, there are no differences in the ex ante characteristics of the teachers or schools, then the potential of debt forgiveness may not impact teachers' initial school employment decisions. We thus first examine patterns of sorting around the 30 percent FRPL threshold.

We then track teachers' likelihood of remaining at the same school or any TLF-eligible school in their second, third, fourth, or fifth years. Comparing teachers on either side of the threshold, we can establish whether TLF eligibility has a causal effect on teacher retention. We estimate regression discontinuity specifications of the form:

$$Y_{it} = \alpha + \beta I[p_0 \geq 30] + \gamma_1 f(p_0|p_0 < 30) + \gamma_2 f(p_0|p_0 \geq 30) + \epsilon \tag{1}$$

where $I[p_0 \geq 30]$ is an indicator for whether the share of students receiving FRPL is

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greater than 30, and $f(.)$ is a function of this share, allowed to vary on either side of the threshold.

4.2 Informational RCT Design

While the RD design allows us to study how a broad set of teachers currently respond to the policy, the approach may be low powered if teachers are not aware of the study. We therefore also leverage an experimental design that features four components: (1) An informational mailing regarding the TLF program sent in the spring of 2015; (2) a survey mailed in the winter of 2016; (3) an informational mailing and phone call-based application assistance regarding the TLF program sent in the spring of 2017; and (4) a survey mailed in the spring of 2018.

The 2015 and 2017 mailings used slightly different designs. Both mailed to about 50 percent of the sample based on a stratified school-level randomization. However, due to difficulties in receiving required data (names) from the Michigan Department of Education, the 2017 mailing was delayed by almost one month, compared to the 2015 mailing. All recipients received a cover memo and physical mailer, as well as an email. The 2017 call recipients received a cash incentive and a follow-up mailing to schedule if they had not been reached in July 2017.

The 2016 and 2018 surveys elicited information on student loan debt, TLF program awareness, TLF application status, and measures of financial strain. However, the 2016 and 2018 surveys also had different designs. Specifically, the structure of incentives was changed: the 2016 survey used $5 incentives sent to 10,000 individuals, and only the 10,000 with incentives received paper mailers. This is in contrast to the 2018 survey, which sent physical mailings to all 25,784 subjects, of which 22,867 received a $2 bill as an incentive. In addition, a contingent valuation module, that is, a hypothetical choice experiment featuring 3 school comparisons, was added for the 2018 survey. This method was designed to elicit the dollar value of TLF eligibility and different hypothetical forms of distributing TLF funds (i.e., debt

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forgiveness vs. a one-time signing bonus).

To examine the effects of being assigned to the experimental treatment group, $T_i = 1$, we estimate specifications of the form:

$$Y_i = \alpha + \beta T_i + \gamma X_i + \epsilon \tag{2}$$

where the specification includes controls for stratification X_i and clusters standard errors at the school level.

4.3 Contingent Valuation Design

The 2018 survey of teachers featured a contingent valuation exercise based on hypothetical comparisons of employment options. Teachers were asked to consider jobs in two different schools with characteristics drawn from a representative pool of 30 TLF-eligible and 30 non-TLF-eligible schools in Michigan. As shown in the survey materials (see Appendix B), each comparison consisted of a school's total student enrollment, pupil-to-teacher ratio (PTR), percent of students receiving free or reduced-price lunch (FRPL), percent of students proficient in math and reading, and school urbanicity (i.e., urban, suburban, or rural). In addition, half of the surveys included text describing the school's eligibility status for the Teacher Loan Forgiveness program.

Teachers were asked to choose which school they would hypothetically prefer, assuming they would be paid the same salary at both schools. A pair of follow up-questions asked if the respondent would be willing to work at the school they did not initially choose if they were to receive an additional $5,000 or $10,000 in compensation, where compensation was either in the form of a one-time signing bonus or a reduction in student loan debt (the form of compensation varied across surveys as well).

This exercise required teachers to make a choice that trades off the various attributes of a school. This type of hypothetical approach to measuring employment preferences has

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been undertaken in a number of other settings, including Eriksson and Kristensen (2014); Mas and Pallais (2017); Maestas et al. (2018); Wiswall and Zafar (2018). Johnston (2021) concurrently examines preferences among teachers in an urban Texas school district, using a similar contingent valuation design, but focuses on broader choices made by teachers and not specifically on loan forgiveness opportunities.

In our baseline model, we estimate a logit specification where the teacher chooses between one school (k) or another (j) based on the difference in salary (if any), $\triangle salary_{kj}$ and the differences in the school attributes $\triangle X_{kj}$ described above:

$$Y_{ikj} = \alpha + \beta_0 \triangle salary_{kj} + \beta_1 \triangle X_{kj} + \epsilon_{kj} \tag{3}$$

As described below, the resulting β values can be rescaled by the β_0 to recover a willingness to pay. We are thus able to assess how much teachers value each dimension of the hypothetical employment opportunity, and compare the value across different types of respondents, based on whether or not they have debt or whether they qualify for a larger TLF amount.

4.4 Data

Our study uses four main sources of administrative data: (1) Staff assignment by school by year database ("teacher data") from the Michigan Department of Education; (2) School-by-year database with school characteristics ("school data") from the Michigan Department of Education; (3) School-by-year database with eligibility for TLF ("eligibility data") from the Michigan Department of the Treasury; (4) Database of school- and teacher-level treatment indicators from our 2015 and 2017 interventions ("intervention data"). In addition, we collect survey data from a subset of study participants in the years following each wave of the intervention, 2016 and 2018. As part of the study, we conducted two in-person focus groups with teachers in the Detroit area in 2016. Finally, we also interviewed loan servicers

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by phone regarding their practices and policies for assisting borrowers in completing the teacher loan forgiveness application.

5 Results

5.1 Quasi-Experimental, Regression Discontinuity Evidence on the Effect of TLF Eligibility

Our initial analysis uses the fact that a key determinant of whether employment at a school counts toward TLF eligibility is whether 30 percent or more of the students qualify for free or reduced-price lunch (FRPL). Figure 1 panel A collects teachers into bins based on the share of students receiving FRPL in the year prior to the teacher's first year of employment, which determines whether the school qualifies for TLF. For each bin, we plot the share of teachers in a TLF-eligible school. An approximate 40 percentage point jump in TLF eligibility occurs at the threshold of 30 percent of students receiving FRPL.

This "fuzzy," but large, discontinuity at 30 percent FRPL confirms that while the share of free or reduced price lunch students is not the only determinant of TLF eligibility, it is a critical determinant that operates through an observable and straightforward school attribute. In what follows, we therefore use this discontinuity to examine the composition of teachers around the threshold to examine sorting and the effect of eligibility of loan forgiveness on employment decisions.

We first find that the substantial increase in TLF eligibility in the threshold is not associated with any differences in the attributes of teachers who start their careers at schools on either side of the discontinuity. In Appendix Figure A.1, we show that there is no difference in age, gender, race, or the type of school (such as charter school or secondary school) around the eligibility threshold.[5] In the final panel of Appendix Figure A.1, we show

[5]Further, in Appendix Table A.1, we show that there are discontinuities in school-level average characteristics around the threshold, further supporting the interpretation that teachers are not making either initial or continuing employment decisions on the basis of TLF eligibility.

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that the density of schools' lagged share of free or reduced price lunch, is smooth through the 30 percent threshold, removing concerns regarding manipulation of the running variable (McCrary, 2008).

With the large difference in TLF eligibility at the threshold, we might expect that this differential treatment leads to differences in whether teachers stay in the schools that provide loan forgiveness. However, in Figure 1 panel B, we observe no difference in the share of teachers continuing into their second year at the same school. Since TLF receipt requires remaining at an eligible school for five consecutive years, teachers in eligible schools in theory have a higher incentive to remain at the same school, but this is not borne out in the second year, or in the third, fourth, or fifth years either (panels C, D, and E).[6]

Our first main finding, then, is that eligibility on its own is not sufficient to alter teacher employment patterns. One possibility is that magnitude of the debt forgiveness, between $5,000 and $17,500, is too small to alter teacher behavior, or that teachers do not value debt relief as much as a direct cash transfer. It may also be possible that teachers are not aware of their eligibility or the various steps required to obtain loan forgiveness. To explore these potential interpretations, we turn next to the results of our randomized experiment.

5.2 Experimental Results of a TLF Encouragement RCT

5.2.1 Effect on Information and Awareness

Our experimental analysis is designed to sift through competing explanations for the apparent lack of impact of TLF eligibility on teacher employment choices. In the Spring of 2015, and again in 2017, we chose a random subset of Michigan public schools to send paper and electronic mail to teachers notifying them of their school's eligibility and their individual progress toward five years of TLF-eligible employment. Using follow-up surveys (see Appendix B), we find that these mailings increased teacher awareness of the program. Figure 2

[6]Coefficient estimates associated with these figures are provided in Appendix Table A.2. In Appendix Table A.3, we further show that teachers are no more likely to stay in teaching positions in the state of Michigan above the FRPL threshold.

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groups teachers by their actual years of eligibility, using administrative employment records, and then plots their response to a question about their self-perceived number of eligible years. We note three patterns. First, there is a correlation between years of eligibility we calculate using administrative data and self-reported years, for both treatment and control teachers, and this correlation strengthens among teachers with more years of eligibility. Second, the correlation is stronger for treatment teachers. Third, treatment teachers are less likely to report that they "don't know." Overall, treatment teachers were five percentage points more likely to report the "correct" number of years, from a base of 39 percent and were 11 percentage points more likely to know their school is TLF-eligible, from a base of 62 percent (Table 2). Looking more closely at specific question, treatment teachers were seven percentage points more likely to say they have a basic understanding of or are very familiar with the TLF rules, from a base of 70 percent (Table 4). Finally, treatment group teachers were two percentage points more likely to report having applied for the TLF program, from a base of 39 percent (Table 5).

5.2.2 Effect on Teacher Retention and Mobility

Although we find positive impacts on teacher awareness, including a modest increase in program application, this fails to translate into any differences in teacher retention between treatment and control schools, across all years of eligibility. We summarize this finding in Table 6, which estimates the effect of our treatment on the probability of remaining at the same school over the subsequent five years. The results are consistently small and statistically indistinguishable from zero. Thus, the receipt of personalized information regarding the loan forgiveness program and one's eligibility did not meaningfully influence teachers' employment choices.

The results are generally unchanged if we focus on specific subgroups, including whether a teacher would become eligible for a $5,000 or $17,500 forgiveness level, whether the teacher has already attained 5 years of eligibility or not, and other demographic or geographic

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attributes.

We further show in Appendix Tables A.4 and A.5 that there is no difference in the likelihood of remaining in some TLF-eligible school, or as a teacher in the state of Michigan. We therefore conclude that the information intervention was able to influence teachers' awareness and understanding of the loan forgiveness program, but unable to affect teachers' employment choices.

5.3 Revealed Value of TLF from Contingent Valuation Surveys

We have shown that simply becoming eligible for the TLF program does not result in differences in teacher retention, and, for that matter, neither does increasing awareness about school-level or individual-level eligibility, at least with range of information effects achieved within our intervention. In our final analysis, we attempt to more directly measure teachers' valuations of the TLF program. In our second year of surveys, we presented teachers with a contingent valuation question: teachers were asked to choose from a side-by-side comparison of two hypothetical schools. The key attributes—number of students, pupil-to-teacher ratio, percentage of students receiving free or reduced-price lunch, share of students proficient in math and reading, and urban/suburban/rural status—were randomly drawn from a pool of actual Michigan schools. One pool included TLF-eligible schools, and the other non-eligible schools.

In our hypothetical choice experiment, teachers were asked to choose in the case that the salaries at the two schools were equivalent, and then the salary at the less preferred school was raised, first by one-time $5,000 bonus, and then by $10,000 one. We use a discrete choice logit model to normalize the value of our key attributes to an equivalent salary differential. Importantly, we can include in our model an indicator for whether a school was drawn from the TLF-eligible pool. If teachers are sufficiently aware of the types of school that qualify, this may impact their choices. Furthermore, we randomly notify a subset of teachers whether a school indeed qualifies for TLF, making the prospect of loan forgiveness explicit.

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Table 7, column 1, presents the results of our discrete choice model. Teachers have a negative valuation for school size, as measured by enrollment, a positive valuation of the share of students proficient in math, and a slight preference for rural schools, relative to suburban ones. Teachers place a negative value on the pupil-to-teacher ratio, and on average require a $1,200 compensating pay raise to work in an urban school.

Turning to school TLF-status, there is a modest and statistically significant difference between TLF-eligible and non-eligible schools, when TLF status is not made explicit. Teachers value teaching in a TLF school by $500 relative to a non-TLF school, all else equal. However, when a TLF school is explicitly noted, teachers value that status at an additional $3,000, which is a bit more than half the value of debt forgiveness for non-STEM teachers.

The remaining columns of Table 7 examine the heterogeneity of valuation based on whether teachers are eligible for the larger STEM-based amount of $17,500 (column 2), whether the difference in compensation is framed as debt relief (column 3), and whether the teacher has debt and the compensation is framed as debt relief (column 4). In these specifications, we find that the coefficients are relatively stable, with small but not significantly different values of loan forgiveness. The value of a TLF school is twice as large, $1,000 vs. $500, for those teachers eligible for the larger forgiveness amount. In addition, the explicit mention of TLF eligibility is valued more for those who could receive $17,500, as well as those who have loans under the "debt forgiveness" framing.

The results from the contingent valuation analysis suggests that teachers do in fact value loan forgiveness, and that the heterogeneity goes in the expected direction, with those with more incentive to value TLF doing so. The hypothetical valuation exercise also allows us the opportunity to estimate the value of debt relief relative to compensation, with teachers valuing debt relief at 90 cents on the dollar, a very high valuation overall. For those with loans, and framed around debt forgiveness, the relative value is even higher at 97 cents on the dollar.

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6 Conclusion

Our results thus suggest that the lack of response to TLF eligibility and information about the program are not primarily due to a fundamental low value of the program for teachers. At the very least, the hypothetical exercise indicates a non-trivial value for the debt relief. Taken together with our earlier evidence, we find it plausible that while debt relief is of value to teachers—even enough so to potentially alter their decision about where to teach—in practice, the process of attaining eligibility, which involves collecting records across potentially multiple schools on one's work history, enrolling in the program, which involves an at-times confusing application, and working with a financial intermediary, one's loan servicer, is enough of an barrier to substantially impede program take-up.

Our conclusions are corroborated by our own experience in preparing informational materials for potential TLF participants. Our research team, highly motivated to encourage take-up of the program, struggled to find clear guidelines on how to navigate the enrollment process. Public information on the TLF-eligibility status of a school must be found online and confirmed separately for each school year. An administrator at one's school must confirm work history, but it is not always clear who is allowed to do this verification. Finally, a teacher must work through their loan servicer to submit an application, and each servicer may have a varying level of preparedness to facilitate this process. Our results suggest that if any future loan forgiveness program is implemented in the U.S., ease of application and eligibility determination may be key to achieving broad participation.

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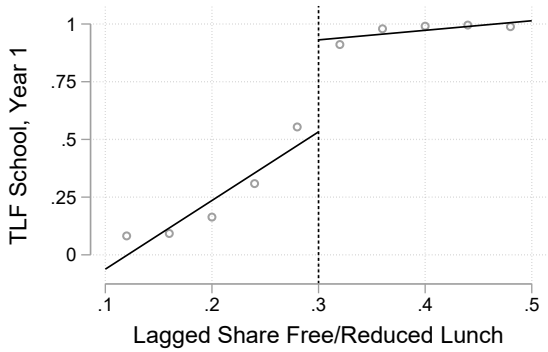
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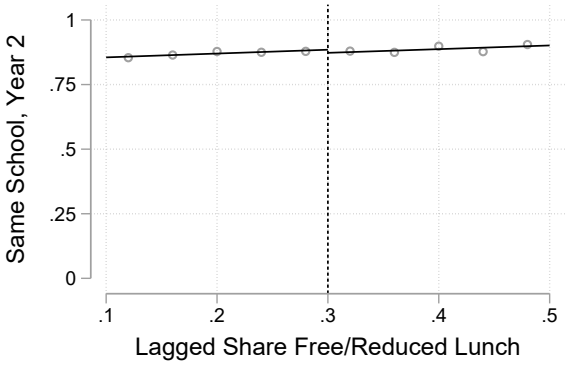
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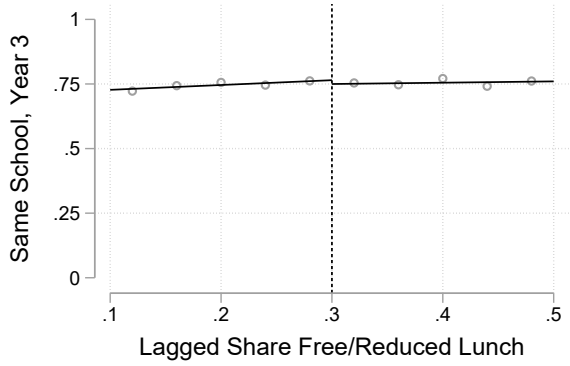
Figure 1: Regression Discontinuity Results – First Stage and School-Level Retention



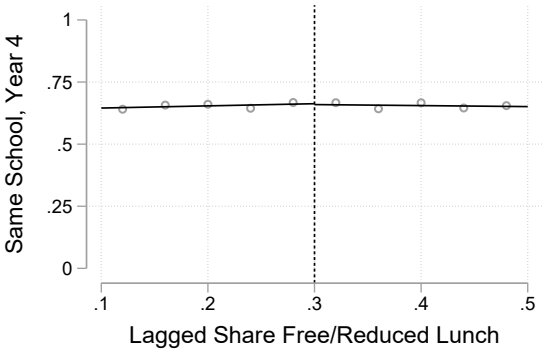
(a) TLF Eligibility by Free or Reduced-Price Lunch Share, Year 1



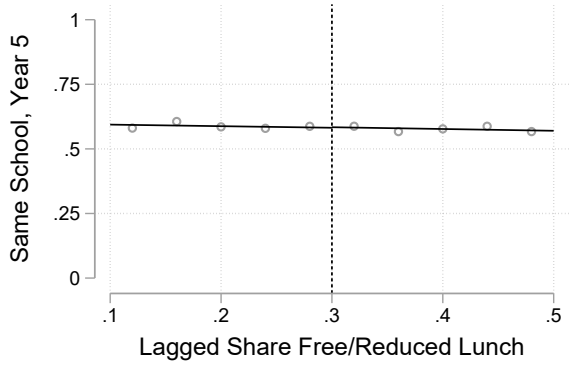
(b) Share in Same School, Year 2



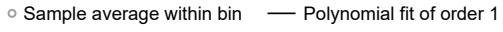
(c) Share in Same School, Year 3



(d) Teachers with 4 Years of Eligibility

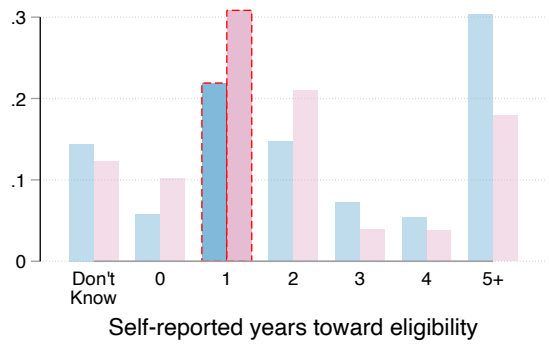


(e) Share in Same School, Year 5

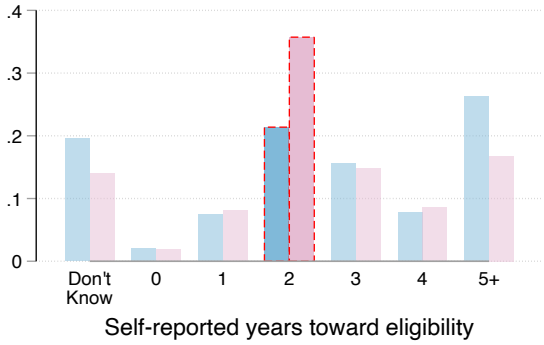


Notes: Figures show teachers group by the share of students receiving free or reduced price lunch in the year prior to their first year of teaching (x-axis). The first-stage, the TLF-status of the first-year school, and retention in the same school in years 2 through 5 are plotted on the y-axis.

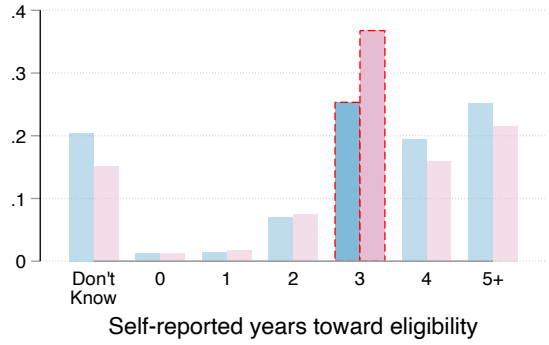
Figure 2: Self-Reported Years of Eligibility versus Administrative Records



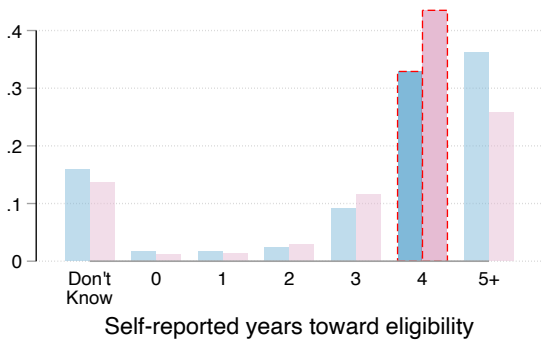
(a) Teachers with 1 Year of Eligibility



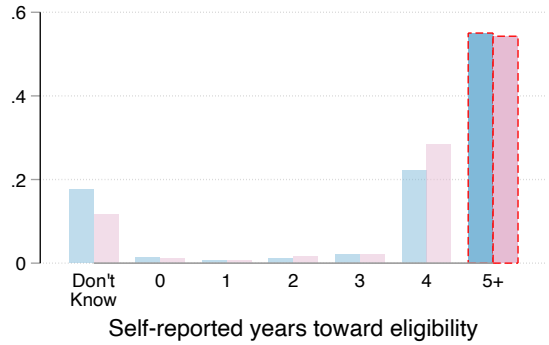
(b) Teachers with 2 Years of Eligibility



(c) Teachers with 3 Years of Eligibility



(d) Teachers with 4 Years of Eligibility





(e) Teachers with at Least 5 Years of Eligibility

Notes: Figures show the share who self-reported a given number of years of eligibility (x-axis), separately for treatment and control group members. Each panel features a sample grouped together based on the number of years toward eligibility derived from administrative records and which were sent to treatment group members. Data are for the 2016 and 2018 surveys, pooled.

Table 1: Baseline Covariate Balance - 2015 & 2017, Pooled

	(1)	(2)	(3)	(4)
	Control	Treatment	p-value	N
Enrollment	575	554	0.64	44,309
Percent Free/Reduced Lunch	0.62	0.62	0.88	44,282
Percent Black	0.29	0.27	0.36	44,256
Percent Hispanic/Latino	0.09	0.09	0.96	44,256
Percent Asian	0.02	0.02	0.03	44,256
Magnet School	0.14	0.12	0.51	44,226
Charter School	0.25	0.24	0.86	44,362
Middle/High School	0.33	0.33	0.79	44,362
Special Needs School	0.05	0.04	0.45	44,362
Secondary School	0.42	0.39	0.18	44,362
Female Teacher	0.78	0.78	0.24	44,358
White Teacher	0.90	0.90	0.87	44,362
Black Teacher	0.07	0.07	0.55	44,362
Other	0.03	0.03	0.49	44,362
Age	35.1	35.0	0.44	44,358
Cumulative TLF Years: 5K	4.35	4.39	0.76	44,362
Cumulative TLF Years: 17.5K	0.93	0.93	0.91	44,362
Joint Test			0.27	44,173
N	23,050	21,312		44,362

Notes: Balance for experimental intervention, 2015 and 2017 samples, pooled.

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Table 2: Survey Repsonses by Treatment Status

	(1)	(2)	(3)	(4)
Panel A: General Outcomes	Control	Treatment	p-value	N
Has federal student loans	0.75	0.77	0.05	10,654
between \$1 & \$10K	0.05	0.04	0.40	7,972
between \$10K & \$20K	0.11	0.13	0.00	7,972
between \$20K & \$30K	0.19	0.18	0.97	7,972
between \$30K & \$50K	0.29	0.29	0.91	7,972
more than \$50K	0.37	0.35	0.07	7,972
Has private student loans	0.27	0.27	0.75	10,111
Total monthly loan payment	644	773	0.27	7,651
Has ever been delinquent	0.34	0.34	0.86	8,095
Has difficulty paying bills	0.79	0.79	0.61	10,339
Panel B: Information Outcomes				
Recalls receiving a treatment letter/email	0.14	0.53	0.00	10,411
Knows School is TLF-Eligible	0.62	0.73	0.00	10,384
Knows Correct Years Toward TLF Eligibility	0.39	0.44	0.00	10,355
N	5,747	4,966		10,713

Notes: Survey responses 2016 and 2018 follow-up surveys, pooled.

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Table 3: Self-Reported TLF Status vs Administrative Records

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Administrative Years of Eligibility									
Self-Reported	Control					Treatment				
Eligibility (Years)	One	Two	Three	Four	Five+	One	Two	Three	Four	Five+
Zero	0.06	0.02	0.01	0.02	0.01	0.10	0.02	0.01	0.01	0.01
One	**0.22**	0.07	0.01	0.02	0.01	**0.31**	0.08	0.02	0.01	0.01
Two	0.15	**0.21**	0.07	0.02	0.01	0.21	**0.36**	0.08	0.03	0.02
Three	0.07	0.16	**0.25**	0.09	0.02	0.04	0.15	**0.37**	0.12	0.02
Four	0.05	0.08	0.19	**0.33**	0.22	0.04	0.09	0.16	**0.44**	0.28
Five+	0.30	0.26	0.25	0.36	**0.55**	0.18	0.17	0.22	0.26	**0.54**
Don't Know	0.14	0.20	0.20	0.16	0.18	0.12	0.14	0.15	0.14	0.12
N	589	552	774	541	574	480	585	612	485	494

Notes: Respondents' self-reported eligibility status, measured by number of years, as compared to the number of years found in administrative records and sent to treatment gruop members in the prior year, 2016 and 2018 follow-up surveys, pooled.

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Table 4: Survey - "Are You Familiar with the Federal TLF Program?"

	(1)	(2)	(3)
	Control	Treatment	Difference
No, I have no knowledge of such programs.	0.06	0.03	-0.02
Yes, I have heard of loan forgiveness programs. However, I do not know anything about them.	0.25	0.21	-0.04
Yes, understand the basic rules, but I do not know the specific details of this program.	0.32	0.38	0.06
Yes, I am very familiar with the rules and details of the program.	0.37	0.38	0.01
N	5,577	4,831	10,408
Chi-squared test p-value			0.00

Notes: Survey answers, 2016 and 2018 follow-up surveys, pooled.

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Table 5: Survey - "Have You Applied for and/or Received Loan Forgiveness through TLF?"

	(1)	(2)	(3)
	Control	Treatment	Difference
I have applied for and received loan forgiveness.	0.24	0.23	-0.01
I have applied, but have not received loan forgiveness.	0.15	0.16	0.01
No, I have not applied for loan forgiveness.	0.61	0.61	-0.01
N	5,555	4,817	10,372
Chi-squared test p-value			0.06

Notes: Survey answers, 2016 and 2018 follow-up surveys, pooled.

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Table 6: RCT Results: School-level Retention

	(1)	(2)	(3)	(4)	(5)	(6)
	2015, 2017		2015		2017	
Same School:						
Year 2	0.004	0.003	-0.000	-0.003	0.008	0.010
	[-0.008, 0.015]	[-0.007, 0.013]	[-0.016, 0.016]	[-0.017, 0.011]	[-0.010, 0.025]	[-0.006, 0.025]
Control Mean:	0.797	0.797	0.806	0.806	0.787	0.787
Year 3	0.006	0.005	0.004	-0.000	0.008	0.011
	[-0.009, 0.020]	[-0.007, 0.017]	[-0.016, 0.024]	[-0.017, 0.017]	[-0.013, 0.029]	[-0.006, 0.028]
Control Mean:	0.648	0.648	0.652	0.652	0.644	0.644
Year 4	-	-	0.017	0.014	-	-
			[-0.004, 0.039]	[-0.004, 0.032]		
Control Mean:			0.533	0.533		
Year 5	-	-	0.006	0.003	-	-
			[-0.016, 0.027]	[-0.015, 0.021]		
Control Mean:			0.453	0.453		
Controls	No	Yes	No	Yes	No	Yes
N	44,362	44,173	23,397	23,263	20,965	20,910

Notes: Estimated treatment effects on probability of remaining in the same school in years 2, 3, 4, and 5.

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Table 7: Contingent Valuation - Logit Regression Results

	(1)	(2)	(3)	(4)
School Attributes	Baseline	Eligible for $17.5K	Debt Framing	Debt Framing & has Loans
TLF School	$501	$1,025	$476	$254
	[96, 905]	[303, 1,748]	[93, 859]	[-187, 695]
TLF School	$3,017	$3,176	$2,851	$3,801
x Explicit	[2,612, 3,422]	[2,447, 3,904]	[2,465, 3,238]	[3,354, 4,247]
Enrollment	-$0.49	-$0.86	-$0.46	-$0.36
	[-0.90, -0.08]	[-1.58, -0.15]	[-0.85, -0.07]	[-0.81, 0.09]
Pupil/Teacher	-$241	-$224	-$229	-$225
Ratio	[-268, -214]	[-273, -175]	[-255, -203]	[-255, -196]
Free/Reduced	-$3.84	-$10.35	-$3.61	-$0.10
Lunch Share	[-10.26, 2.57]	[-21.87, 1.17]	[-9.68, 2.47]	[-7.10, 6.89]
Share Proficient	$91	$73	$86	$82
in Math/Reading	[85, 97]	[62, 83]	[81, 92]	[75, 88]
City	-$1,273	-$1,215	-$1,207	-$1,234
	[-1,501, -1,046]	[-1,632, -798]	[-1,424, -991]	[-1,479, -988]
Rural	$211	$396	$201	$59
	[19, 404]	[52, 739]	[19, 383]	[-150, 268]
Average Partial	0.18	0.18	0.18	0.18
Effect of $5K in Salary	[0.18, 0.18]	[0.18, 0.18]	[0.18, 0.18]	[0.18, 0.18]
Relative Value	-	-	0.90	0.97
of Debt Relief			[0.87, 0.92]	[0.94, 1.00]
Number of Respondents	5,561	1,854	5,561	4,132
Number of Choices	83,261	27,893	83,261	61,946

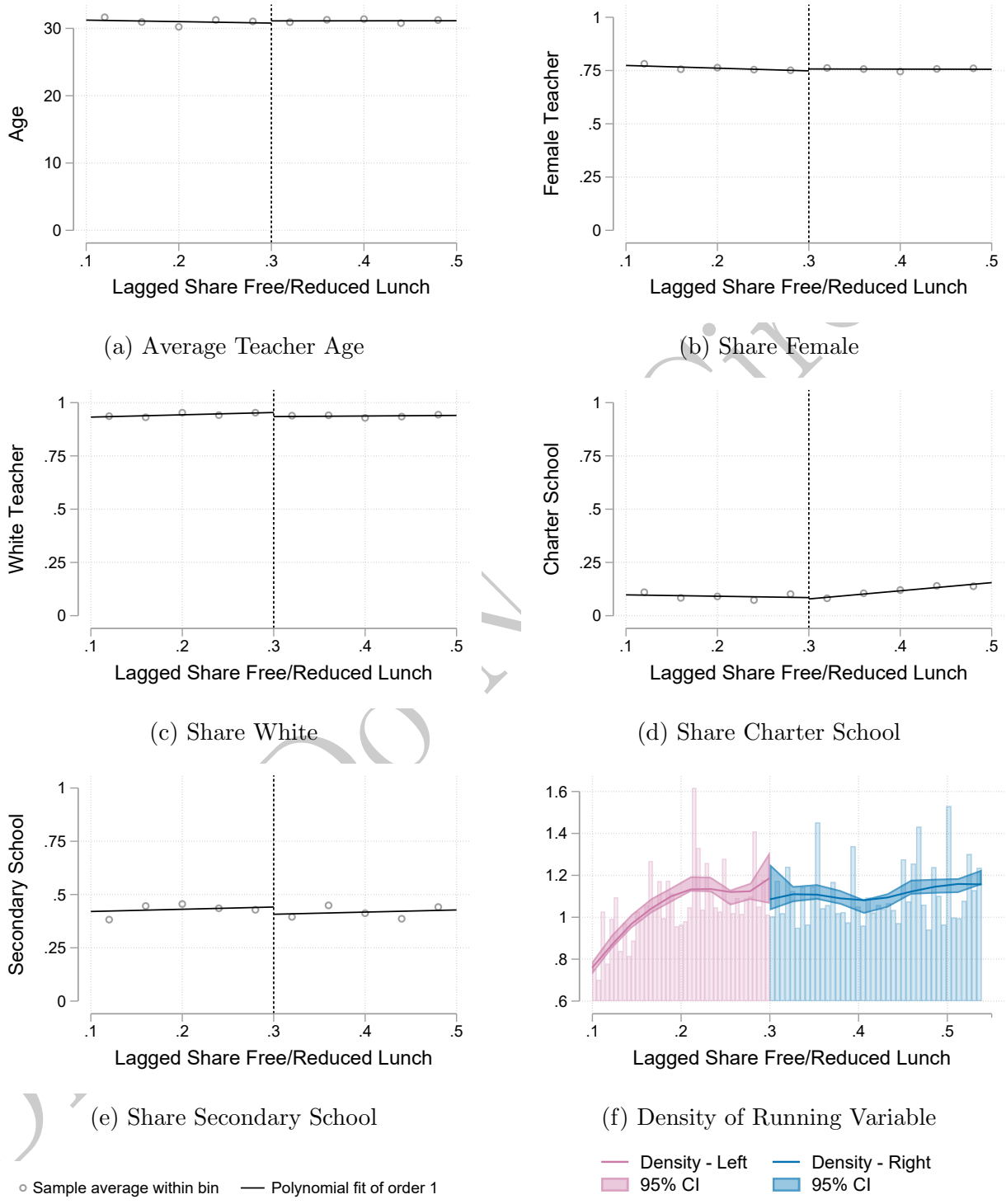
Notes: Results of contingent valuation analysis.

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Appendix A Additional Figures and Tables

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Figure A.1: Regression Discontinuity Results – Covariate Balance and Running Variable Manipulation Test



(a) Average Teacher Age

(b) Share Female

(c) Share White

(d) Share Charter School

(e) Share Secondary School

(f) Density of Running Variable

Notes: See notes for Figure 1. Running variable figure shows the density of the running variable, used to test for manipulation of the running variable at the threshold.

Table A.1: Baseline Covariate Balance - RD Analysis

	(1)	(2)	(3)	(4)
	Mean Below Cutoff	Discontinuity	p-value	N
Enrollment	704	-131	0.18	6,555
Percent Black	0.08	-0.02	0.54	6,109
Percent Hispanic/Latino	0.04	0.00	0.97	8,330
Percent Asian	0.03	-0.00	0.77	7,804
Magnet School	0.12	-0.01	0.84	6,376
Charter School	0.15	-0.09	0.16	4,731
Middle/High School	0.48	0.01	0.84	12,071
Special Needs School	0.03	-0.00	0.74	11,212
Secondary School	0.44	-0.04	0.56	7,307
Female Teacher	0.76	0.01	0.54	12,018
White Teacher	0.95	-0.02	0.38	10,983
Black Teacher	0.01	0.01	0.34	12,495
Hispanic/Latino Teacher	0.01	0.01	0.08	16,189
Asian Teacher	0.01	-0.00	0.66	10,892
Age	30.9	0.3	0.78	8,199

Notes: Covariate balance test for RD analysis.

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Table A.2: RD Results: School-level Retention

	(1)	(2)
Panel A:	First Stage Effect at 30% Free/Reduced Lunch	
TLF-Eligible School	0.396	0.259
	[0.378, 0.414]	[0.219, 0.300]
Mean below cutoff:	0.533	0.594
N	25,533	5,208
	(3)	(4)
Panel B:	Reduced Form Effect at 30% Free/Reduced Lunch	
Same School:		
Year 2	-0.013	-0.005
	[-0.030, 0.004]	[-0.030, 0.020]
Mean below cutoff:	0.885	0.883
N	22,601	11,031
Year 3	-0.015	-0.024
	[-0.039, 0.010]	[-0.066, 0.018]
Mean below cutoff:	0.765	0.780
N	19,098	7,002
Year 4	-0.004	-0.010
	[-0.032, 0.025]	[-0.059, 0.039]
Mean below cutoff:	0.663	0.694
N	16,142	6,376
Year 5	0.003	0.015
	[-0.030, 0.035]	[-0.034, 0.064]
Mean below cutoff:	0.582	0.588
N	13,814	6,873
Functional Form	Simple Linear	Local Linear
Bandwidth	[.1,.5]	Data driven

Notes: Estimated regression discontinuity effects on probability of remaining in the same school in years 2, 3, 4, and 5. Running variable is percent free/reduced lunch in year prior to first year of teaching.

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Table A.3: RD Results: State of Michigan Retention

	(1)	(2)
Panel A:	First Stage Effect at 30% Free/Reduced Lunch	
TLF-Eligible School	0.396	0.259
	[0.378, 0.414]	[0.219, 0.300]
Mean below cutoff:	0.533	0.594
N	25,533	5,208
	(3)	(4)
Panel B:	Reduced Form Effect at 30% Free/Reduced Lunch	
Michigan School:		
Year 2	-0.010	-0.015
	[-0.022, 0.002]	[-0.034, 0.003]
Mean below cutoff:	0.948	0.950
N	23,313	11,042
Year 3	-0.011	-0.013
	[-0.028, 0.006]	[-0.036, 0.011]
Mean below cutoff:	0.908	0.902
N	19,862	12,160
Year 4	0.003	0.005
	[-0.017, 0.024]	[-0.024, 0.034]
Mean below cutoff:	0.872	0.869
N	16,840	9,736
Year 5	0.004	0.024
	[-0.019, 0.027]	[-0.010, 0.058]
Mean below cutoff:	0.854	0.837
N	14,399	8,045
Functional Form	Simple Linear	Local Linear
Bandwidth	[.1,.5]	Data driven

Notes: Estimated regression discontinuity effects on probability of remaining in a Michigan school in years 2, 3, 4, and 5. Running variable is percent free/reduced lunch in year prior to first year of teaching.

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Table A.4: RCT Results: TLF-Eligible School Retention

	(1)	(2)	(3)	(4)	(5)	(6)
	2015, 2017		2015		2017	
TLF School:						
Year 2	0.004	0.003	0.000	-0.002	0.007	0.009
	[-0.004, 0.011]	[-0.004, 0.010]	[-0.011, 0.012]	[-0.013, 0.008]	[-0.002, 0.017]	[-0.000, 0.018]
Control Mean:	0.896	0.896	0.892	0.892	0.901	0.901
Year 3	0.001	0.000	0.001	-0.003	0.001	0.003
	[-0.008, 0.010]	[-0.008, 0.008]	[-0.013, 0.014]	[-0.015, 0.009]	[-0.011, 0.013]	[-0.008, 0.014]
Control Mean:	0.826	0.826	0.818	0.818	0.835	0.835
Year 4	-	-	0.009	0.006	-	-
			[-0.006, 0.024]	[-0.007, 0.019]		
Control Mean:			0.761	0.761		
Year 5	-	-	0.007	0.004	-	-
			[-0.008, 0.022]	[-0.010, 0.018]		
Control Mean:			0.714	0.714		
Controls	No	Yes	No	Yes	No	Yes
N	44,362	44,173	23,397	23,263	20,965	20,910

Notes: Estimated treatment effects on probability of remaining in a TLF school in years 2, 3, 4, and 5.

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Table A.5: RCT Results: State of Michigan Retention

	(1)	(2)	(3)	(4)	(5)	(6)
	2015, 2017		2015		2017	
Michigan School:						
Year 2	0.001	-0.000	-0.002	-0.005	0.004	0.005
	[-0.005, 0.007]	[-0.006, 0.005]	[-0.010, 0.007]	[-0.013, 0.003]	[-0.003, 0.011]	[-0.002, 0.011]
Control Mean:	0.924	0.924	0.921	0.921	0.928	0.928
Year 3	-0.001	-0.002	-0.002	-0.006	0.001	0.001
	[-0.009, 0.007]	[-0.009, 0.005]	[-0.014, 0.009]	[-0.016, 0.005]	[-0.009, 0.011]	[-0.008, 0.011]
Control Mean:	0.867	0.867	0.860	0.860	0.874	0.874
Year 4	-	-	0.005	0.002	-	-
			[-0.007, 0.018]	[-0.009, 0.014]		
Control Mean:			0.812	0.812		
Year 5	-	-	0.002	-0.001	-	-
			[-0.012, 0.016]	[-0.014, 0.011]		
Control Mean:			0.773	0.773		
Controls	No	Yes	No	Yes	No	Yes
N	44,362	44,173	23,397	23,263	20,965	20,910

Notes: Estimated treatment effects on probability of remaining in a Michigan school in years 2, 3, 4, and 5.

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Table A.6: Baseline Covariate Balance - Survey Repsondents

	(1)	(2)	(3)	(4)
	Control	Treatment	p-value	N
Enrollment	554	540	0.81	10,447
Percent Free/Reduced Lunch	0.61	0.61	0.88	10,444
Percent Black	0.25	0.24	0.47	10,437
Percent Hispanic/Latino	0.09	0.09	0.79	10,437
Percent Asian	0.02	0.02	0.04	10,437
Magnet School	0.14	0.13	0.94	10,433
Charter School	0.21	0.21	0.63	10,457
Middle/High School	0.35	0.36	0.99	10,457
Special Needs School	0.06	0.05	0.34	10,457
Secondary School	0.43	0.40	0.14	10,457
Female Teacher	0.79	0.79	0.71	10,456
White Teacher	0.91	0.91	0.82	10,457
Black Teacher	0.06	0.06	0.29	10,457
Hispanic/Latino Teacher	0.02	0.02	0.18	10,457
Asian Teacher	0.01	0.01	0.23	10,457
Age	35.1	35.0	0.45	10,456
Cumulative TLF Years: 5K	4.38	4.41	0.41	10,457
Cumulative TLF Years: 17.5K	1.10	1.09	0.93	10,457
Joint Test			0.28	10,422
N	5,747	4,966		10,713

Notes: Balance in baseline characteristics, for survey respondents, 2016 and 2018 follow-up surveys, pooled.

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Table A.7: Survey - "Are You Familiar with the Federal TLF Program?", Select Subsamples

	(1)	(2)	(3)	(4)	(5)	(6)
	With Debt			Eligible for $17.5K TLF		
	Control	Treatment	Difference	Control	Treatment	Difference
No, I have no knowledge of such programs.	0.04	0.02	-0.02	0.04	0.03	-0.01
Yes, I have heard of loan forgiveness programs. However, I do not know anything about them.	0.23	0.19	-0.04	0.20	0.16	-0.04
Yes, understand the basic rules, but I do not know the specific details of this program.	0.35	0.40	0.05	0.30	0.35	0.05
Yes, I am very familiar with the rules and details of the program.	0.38	0.38	0.00	0.46	0.46	0.01
N	4,196	3,707	7,903	1,589	1,341	2,930
Chi-squared test p-value			0.00			0.00

Notes: Survey answers, 2016 and 2018 follow-up surveys, pooled.

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Table A.8: Survey - "Have You Applied for and/or Received Loan Forgiveness through TLF?", Select Subsamples

	(1)	(2)	(3)	(4)	(5)	(6)
	With Debt			Eligible for $17.5K TLF		
	Control	Treatment	Difference	Control	Treatment	Difference
I have applied for and received loan forgiveness.	0.21	0.21	-0.01	0.29	0.28	-0.01
I have applied, but have not received loan forgiveness.	0.19	0.20	0.01	0.18	0.18	-0.00
No, I have not applied for loan forgiveness.	0.60	0.59	-0.01	0.54	0.54	0.01
N	4,180	3,692	7,872	1,578	1,339	2,917
Chi-squared test p-value			0.22			0.94

Notes: Survey answers, 2016 and 2018 follow-up surveys, pooled.

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Table A.9: Self-Reported TLF Status vs Administrative Records: Select Subsamples

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Administrative Years of Eligibility									
Self-Reported	Control					Treatment				
Eligibility (Years)	One	Two	Three	Four	Five+	One	Two	Three	Four	Five+
Panel A: With Debt										
Zero	0.06	0.02	0.01	0.01	0.01	0.11	0.02	0.01	0.01	0.01
One	**0.24**	0.08	0.01	0.02	0.01	**0.34**	0.09	0.02	0.01	0.01
Two	0.16	**0.24**	0.08	0.03	0.01	0.22	**0.39**	0.08	0.03	0.02
Three	0.09	0.18	**0.28**	0.10	0.03	0.04	0.15	**0.40**	0.13	0.02
Four	0.05	0.09	0.21	**0.36**	0.25	0.04	0.08	0.18	**0.46**	0.31
Five+	0.29	0.23	0.23	0.33	**0.56**	0.17	0.16	0.19	0.26	**0.54**
Don't Know	0.10	0.15	0.17	0.15	0.13	0.08	0.11	0.13	0.09	0.08
N	468	448	634	452	440	399	489	523	415	385
Panel B: Eligible for $17.5K TLF										
Zero	0.06	0.03	0.01	0.00	0.01	0.11	0.02	0.01	0.01	0.01
One	**0.29**	0.11	0.02	0.02	0.01	**0.34**	0.10	0.02	0.02	0.01
Two	0.11	**0.23**	0.10	0.05	0.01	0.19	**0.32**	0.08	0.02	0.02
Three	0.09	0.11	**0.25**	0.07	0.02	0.02	0.17	**0.42**	0.13	0.02
Four	0.04	0.11	0.19	**0.37**	0.25	0.04	0.10	0.09	**0.48**	0.33
Five+	0.31	0.22	0.27	0.39	**0.57**	0.17	0.17	0.24	0.27	**0.50**
Don't Know	0.11	0.19	0.16	0.10	0.14	0.13	0.12	0.13	0.07	0.12
N	160	160	231	163	150	118	158	172	125	142

Notes: Respondents' self-reported eligibility status, measured by number of years, as compared to the number of years found in administrative records and sent to treatment gruop members in the prior year, 2016 and 2018 follow-up surveys, pooled.

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Table A.10: Balance in Hypothetical School Characteristics - Contingent Valuation Exercise

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Control	Treatment	p-value	Schools	First School	Second School	p-value	Schools
TLF School	0.50	0.50	1.00	26,724	0.50	0.50	0.89	36,162
TLF School x Eplicit	0.25	0.26	0.05	26,724	0.25	0.25	0.42	36,162
Enrollment	498	494	0.16	26,724	497	499	0.29	36,162
Pupil/Teacher Ratio	16.8	16.7	0.02	26,724	16.8	16.8	0.39	36,162
Free/Reduced Lunch Share	0.40	0.40	0.45	26,724	0.40	0.40	0.87	36,162
Share Proficient in Math/Reading	0.45	0.45	0.75	26,724	0.45	0.45	0.94	36,162
City	0.18	0.18	0.76	26,724	0.18	0.18	0.61	36,162
Rural	0.35	0.35	0.83	26,724	0.35	0.35	0.91	36,162
Joint Test			0.08	26,724			0.92	36,162
Schools	15,054	11,670		26,724	18,081	18,081		36,162

Notes: Balance in hypothetical school characteristics used for contingent valuation questions, 2018 survey.

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Appendix B 2018 Sample Survey

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«surveyid_18»

This survey is designed to gain a better understanding of teachers' level of student debt and what they know about student loan forgiveness options. The survey is part of a research partnership between the Michigan Department of Education and researchers at the University of Michigan and University of Chicago. All responses will be kept confidential and results of the survey will only be disseminated in aggregate form. There are 22 questions and the survey should take you less than 10 minutes. Please return the survey and the consent form in the enclosed, stamped envelope. Thank you!

1. Do you currently have any federal student loans? (These loans are often called Federal Perkins, Direct Stafford loans, either unsubsidized or subsidized, or PLUS loans.)

☐ Yes
☐ No → **Skip to Question 3**

2. Approximately how much have you borrowed through federal student loans?

$_____

If you don't know the exact amount or would prefer to specify a range [check only one]:
☐ $1 - $10,000
☐ $10,001 - $20,000
☐ $20,001 - $30,000
☐ $30,001 - $50,000
☐ $50,001 - $75,000
☐ Over $75,000

3. Do you have private student loans or other forms of borrowing from when you were in school? (These loans are nonfederal loans, made by a lender such as a bank, credit union, state agency or school.)

☐ Yes:
If yes, explain the type of loans (e.g. loan from a credit union or Wells Fargo). _____
If yes, estimate the amount of loans while in school:
_____
☐ No
☐ I don't know

IF YOU DO NOT HAVE ANY STUDENT LOANS OF ANY KIND, **SKIP TO QUESTION 7**

4. About how much is your monthly payment of federal and private student loans combined?

$_____

5. Have you ever been delinquent or behind on your federal or private student loans?

☐ Yes
☐ No

6. Do your student loan payments get in the way of making other financial-related life choices? [check all that apply]

☐ No, my student loan payments do not affect my life choices
☐ Yes, I have been unable to buy a car
☐ Yes, I have been unable to buy a house
☐ Yes, I have lived in a smaller house
☐ Yes, I have lived in a less desirable neighborhood
☐ Yes, other life choices (please specify: _____)

7. Are you familiar with the federal Teacher Loan Forgiveness program, which offers partial forgiveness of federal student loans after five years of teaching in a qualified (low-income) school? [check only one]

☐ No, I have no knowledge of such program
☐ Yes, I have heard of loan forgiveness programs. However, I do not know anything about them
☐ Yes, I understand the basic rules, but I do not know the specific details of this program
☐ Yes, I am very familiar with the rules and details of the program

PLEASE TURN OVER AND COMPLETE OTHER SIDE

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«surveyid_18»

8. Do you recall receiving a letter or email from the University of Michigan in May of last year with personalized information regarding Teacher Loan Forgiveness?
[check only one]

☐ Yes, I received a letter
☐ Yes, I received an email
☐ Yes, I received both a letter and an email
☐ No, I do not recall receiving a letter or an email from the University of Michigan in May of last year

9. Do you know if service at your current (or most recent) school counts towards Teacher Loan Forgiveness? [check only one]

☐ Yes, it counts
☐ No, it does not count
☐ I don't know

10. Have you applied for and/or received loan forgiveness through the federal Teacher Loan Forgiveness program? [check only one]

☐ I have applied and received loan forgiveness
☐ I have applied and been rejected for loan forgiveness
☐ I have applied but not yet received a response
☐ No, I have not applied for loan forgiveness

11. How many years of your teaching experience count towards Teacher Loan Forgiveness? [check only one]

☐ 0
☐ 1
☐ 2
☐ 3
☐ 4
☐ 5 or more
☐ I don't know

12. In a typical month, how difficult is it for you to cover your expenses and pay all your bills? [check only one]

☐ Very difficult
☐ Somewhat difficult
☐ Not at all difficult

13. Please indicate, on a scale from 1 to 5, how much the various factors influenced your choice of what school to work in this year (or most recently). 1 is not at all important, 5 is very important.

__ Personal connection (e.g., worked there previously)
__ Geographic location
__ Grades/subject offered to teach
__ Salary/benefits
__ School leadership
__ District policies (e.g., teacher evaluation)
__ Instructional support (e.g., Professional Development, Coaching, Peer Collaboration)
__ Counts toward Teacher Loan Forgiveness eligibility
__ Assigned by district

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PLEASE COMPLETE THE FOLLOWING PAGE

«surveyid_18»

For the next questions, pretend you are deciding on which school to work at:

14. Which school would you prefer to work at if you were paid the same salary at each school?

☐ School A
«s1_cv_enr» students enrolled
«s1_cv_ptr» pupil/teacher ratio
«s1_cv_frl» receive free or reduced-price lunch
«s1_cv_mstep» were proficient in math and reading
«s1_cv_urb»
«s1_cv_tlf»

☐ School B
«s2_cv_enr» students enrolled
«s2_cv_ptr» pupil/teacher ratio
«s2_cv_frl» receive free or reduced-price lunch
«s2_cv_mstep» were proficient in math and reading
«s2_cv_urb»
«s2_cv_tlf»

15. Think about the school you didn't choose. Would you choose that school if you received a one-time $5,000 «cvu_fill»?

☐ Yes → **Skip to Question 17**
☐ No

16. If you said no to question 15, would you choose that school if you received a one-time $10,000 «cvu_fill»?

☐ Yes
☐ No

---

17. Which school would you prefer to work at if you were paid the same salary at each school?

☐ School D
«s3_cv_enr» students enrolled
«s3_cv_ptr» pupil/teacher ratio
«s3_cv_frl» receive free or reduced-price lunch
«s3_cv_mstep» were proficient in math and reading
«s3_cv_urb»
«s3_cv_tlf»

☐ School E
«s4_cv_enr» students enrolled
«s4_cv_ptr» pupil/teacher ratio
«s4_cv_frl» receive free or reduced-price lunch
«s4_cv_mstep» were proficient in math and reading
«s4_cv_urb»
«s4_cv_tlf»

18. Think about the school you didn't choose. Would you choose that school if you received a one-time $5,000 «cvu_fill»?

☐ Yes → **Skip to Question 20**
☐ No

19. If you said no to question 18, would you choose that school if you received a one-time $10,000 «cvu_fill»?

☐ Yes
☐ No

---

20. Which school would you prefer to work at if you were paid the same salary at each school?

☐ School G
«s5_cv_enr» students enrolled
«s5_cv_ptr» pupil/teacher ratio
«s5_cv_frl» receive free or reduced-price lunch
«s5_cv_mstep» were proficient in math and reading
«s5_cv_urb»
«s5_cv_tlf»

☐ School H
«s6_cv_enr» students enrolled
«s6_cv_ptr» pupil/teacher ratio
«s6_cv_frl» receive free or reduced-price lunch
«s6_cv_mstep» were proficient in math and reading
«s6_cv_urb»
«s6_cv_tlf»

21. Think about the school you didn't choose. Would you choose that school if you received a one-time $5,000 «cvu_fill»?

☐ Yes
☐ No

22. If you said no to question 21, would you choose that school if you received a one-time $10,000 «cvu_fill»?

☐ Yes
☐ No

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