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Thank you for submitting your proposal. A printable summary is below. Your confirmation number is 11790. A confirmation email will be sent to you within 24 hours.

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## SUMMARY

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Campus type	
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IR Roles	
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Gender	
Grant Type	

I am applying for a:

Research Grant

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### Project Description

**Project title:**

Estimating the effect of Losing the Federal Loan Subsidy on Debt accumulation for Law and Professional Students in the United States: Evidence From a Natural Experiment

**Statement of the research problem and national importance (limit 750 words):**

- What is the research problem this proposal intends to address?
- How does this topic relate to the research priorities areas of access, affordability, and value of legal or graduate/professional education?
- Why is this topic of national importance?
- Why is it timely to conduct this research at this time?

Today's college-goers are the most indebted students in the country's history (Baum, 2015). In fact, they are significantly more indebted than those who preceded them just a decade ago, as borrowing increased 51% in inflation-adjusted dollars from 2001-02 to 2012-13 (College Board, 2014). Although many researchers emphasize that college is still a worthwhile investment for the average student (Avery & Turner, 2012; Baum, 2015; Toutkoushian, Shafiq & Trivette, 2013), others are concerned about the potential deleterious effects associated with borrowing. Recent studies have suggested that borrowing may decrease a student's likelihood of owning a home (Shand, 2007), starting a family (Dwyer, Hodson & McCloud, 2013), or pursuing a lower-paying public service profession (Field, 2009; Rothstein & Rouse, 2011). It is worth noting that, even though federal aid comprises 67% of all graduate student aid (College Board Advocacy and Policy Center, 2012), the majority of the studies examining loan debt are focused on undergraduate education. Consequently, the role of the federal loan program on the affordability of graduate and professional degrees is an important topic that deserves more attention. Accordingly, this study aims to assess the impact of federal policy on law and professional students borrowing behaviors.

This study is timely and relevant for the following reasons. The first is that there is almost no evidence about determinants of debt levels for graduate or professional students (Belasco, Trivette & Webber, 2014). Related to this point, the role of federal policy in shaping graduate students' debt accumulation remains an understudied topic. While there are a number of individual (Houle, 2014; Perna, 2000), institutional (Monks, 2014; Thomas, 2003), and state-level determinants (Chen & Wiederspan, 2014; Monks, 2014) associated with undergraduate debt accumulation, few researchers (King, 1999; Perna, 2001; Redd, 1999) have examined the role of federal policy in shaping student debt, much less law and professional students' debt.

#### Study purpose and rationale

This study addresses this important gap in the literature by analyzing a recent policy change, the Budget Control Act of 2011, that eliminated the federal student loan interest subsidy. Specifically, this change directly targeted the graduate and professional students who participated in the Stafford Loan program beginning July 1st, 2012. The loss of subsidized loan eligibility meant that professional and law students' interest accrues on all Stafford loans while still in school, which we hypothesize will drastically increase their overall debt accumulation. This change represents an ideal natural experiment setting to assess the magnitude of this federal policy change on the levels of indebtedness of professional and law students. Specifically, this change allows for the natural identification of participants affected by the policy before and after its implementation, along with the identification of participants who were not affected by this change across time periods. The proposed study takes advantage of this scenario and measures the impact of this change through a difference-in-differences (henceforth "DD") approach. The identification strategy uses undergraduate independent students from the four-year sector as a control group for those law and professional students affected by the policy change. While a few comparison groups are plausible (e.g., didn't experience a change in federal loan policy during our timeframe), independent undergraduate students are the optimal control group, as they are 1) financially independent; 2) have access to more Stafford loan dollars than their dependent peers and 3) are more likely to be older and have families. Because costs and borrowing patterns differ substantially by sector, with two-year students overwhelmingly coming from low-income backgrounds, only four-year students will be part of the control group. The main outcome of interest is the overall measure of debt accumulation in the Stafford loan program. In addition, the estimation procedure will analyze variations in other forms of self-help aid that students may substitute away to (e.g., private loans, PLUS loans, and full- or part-time jobs). While it is expected that professional and law students continued borrowing at the same levels and thus incurred more debt through the accumulation of interest as the result of the policy change (Androit, 2012), there is no empirical evidence to corroborate this claim; consequently, the magnitude, and even the directionality, of this assumed change in debt accumulation/burden remains an open question. Finally, considering that prior research (Dowd, 2008; Heller, 2008; Hillman, 2015) suggests that students' borrowing behaviors differ significantly across socioeconomic status, race, and sector, this study will test for heterogeneity of the treatment effect by estimating models conditional on socioeconomic status, race, institutional sector and discipline (please see the Appendix section for the proposed study's logic model).

#### Review the literature and establish a theoretical grounding for the research (limit 1000 words):

- What has prior research found about this problem?
- What is the theoretical/conceptual grounding for this research?

To date, little to no literature exists on the borrowing behavior of law and professional students. That said, there is a vast literature on undergraduate student borrowing from which to draw upon. This literature includes three contexts or levels that may influence graduate student borrowing: 1) individual and family characteristics; 2) institutional characteristics and policies; and 3) federal policy. At the individual or family level, researchers have investigated borrowing behaviors by demographics and characteristics such as race/ethnicity, family income, academic preparation, and college major. A number of studies that examine debt burden (e.g. monthly debt-to-income ratio) have found that borrowing and career outcomes vary significantly by race and income (Chen & Wiederspan, 2014; Price, 2004; Thomas, 2003). Collectively, these studies found that lower income students and ethnic minorities are more likely to have larger debt burdens, though Price (2004) attributes this difference to lower earnings, rather than higher indebtedness overall. Notably, however, these studies only include undergraduate students who finished college, which have raised some concerns about their generalizability to college goers regardless of degree attainment. To date only one study has focused on graduate debt broadly (Belasco, et. al., 2014). Belasco, et. al., analyzed student (e.g., race and gender) and family-related (e.g., marital status, children) characteristics that may help explain graduate debt. The authors found that being married or having children increased a student's probability of borrowing as well as the total amount borrowed. Additionally, the authors examined debt accumulation by degree program. Among the most remarkable results is that law students consistently accrued more debt than students enrolled in a masters' of science.

Other studies suggest institutional characteristics are equally important in shaping student borrowing behavior. For example, students attending private, nonprofit four-year institutions frequently carry greater debt loads than those attending public institutions (Chen & Wiederspan, 2014; Houle, 2014; Price, 2004; Thomas, 2003). Chen and Wiederspan (2014) also suggested the influential role of location, as students attending urban schools—which potentially offer more work opportunities for students while enrolled in school—had lower amounts of debt and higher probabilities of zero-debt burden than students attending more suburban or rural institutions. With regards to measures of institutional wealth and student body composition, institutional endowment levels have been found to be negatively related to average student debt (Macy & Terry, 2007), and colleges and universities enrolling more Pell Grant recipients had higher amounts of average student debt (Monks, 2014). Both of these findings buttress prior research suggesting that wealthier institutions may be better able to subsidize student costs (Winston, 1999).

Finally, several researchers have studied the effects of federal policy changes upon student indebtedness. The 1992 Higher Education Act reauthorization introduced several significant changes that permitted greater availability of student aid for middle- and upper-income borrowers, leading to an increase in the number of high-income borrowers and a 53% increase in federal loan debt over just three years (Redd, 1994, 1999). The 1992 changes were also found to increase the tendency of students to borrow at the federal limit. Drawing on data from the National Postsecondary Student Aid Survey, Perna (2001) found that the increased use of federal loan funds occurred primarily among dependent undergraduate students from middle-income families. Similarly, Hart and Mustafa (2008) note that students from lower-middle-income and upper-middle-income families were more likely to increase borrowing following an increase in the availability of additional Perkins Loan funds, though low-income students were more likely to increase the amount of Perkins loans borrowed without increasing overall borrowing (e.g., substituting away from higher risk loans). These findings align with King (1999), who suggested that students often borrow for convenience, using loans to augment other sources of funding.

From the literature reviewed, it is clear that the research on undergraduate debt is well-developed. Accordingly, this study will use this literature to inform the methodological decisions to model the effect of the policy change on borrowing behaviors and levels of indebtedness of law and professional students. The use of current research is particularly important, given that the control group(s) are undergraduate students who were borrowing from the same program, but who did not lose the federal subsidy.

#### Conceptual Framework

Consistent with prior research on student borrowing and loan debt, this study relies upon a human capital framework to better understand students' choices regarding educational attainment (Becker, 1962, 1975; Mincer, 1958). Human capital theory posits that students are rational agents and utility maximizers who weigh the direct and indirect costs of attendance against the long-term benefits and increased earnings that they expect to receive as a

result of their postsecondary education. Within this framework, the decision to borrow is a rational and warranted investment in one's human capital, as those who attend college and earn a degree are rewarded not only in the form of labor market payoffs, but also in additional quality of life outcomes (Avery & Turner, 2012). As part of the rational choice process, students may reconsider their opportunity costs and revise their borrowing decisions based on the federal government policy change. It is conceivable that as a result of such policy changes, students may borrow less due to interest accrual, borrow the same amount but end up owing more, or increase their number of work hours, rather than borrowing more unsubsidized dollars. Although any of these options seems feasible, in reality there is a dearth of knowledge about graduate student debt, in general, and about the effect of this policy change on borrowing behaviors of law and professional students affected, in particular, which conceptually and empirically justify the study of the proposed research questions (shown below). To close, while human capital and rational choice theories purport that students will make decisions about their education based on the information available to them, maximizing their utility, the magnitude of the effect may vary conditional on availability of resources (Calendar & Jackson, 2005; Perna, 2008). Accordingly, these uncertainties justify the evaluation of how policy changes, such as loss of subsidy, affect the borrowing decisions of different groups of students.

#### Describe the research method that will be used (limit 1000 words):

- What are the research questions to be addressed?
- What is the proposed research methodology?
- What is the statistical model to be used?

Most prior research on student debt relies upon naïve estimations often using Ordinary Least Squares or Logit models. Dowd (2008) suggests a need for methodological approaches that "disentangle these complex interactions and complex relationships" between student indebtedness and policy (p. 233). Accordingly, this study aims to fill that gap using a natural experiment setting and a quasi-experimental design to examine whether a specific change in federal aid policy affected law and professional student borrowing behaviors not only in the Stafford loan program but also in borrowing from private sources, the PLUS program, or the number of hours worked.

#### Research questions

1. Are law and professional students responding to these federal loan policy changes by borrowing less from the Stafford Loan program?
2. Has the level of indebtedness of the affected students increased given the policy change? If so, what is the magnitude of this increase?
3. Are these same policy changes causing students to change behaviors with regard to self-help aid, such as working more hours or borrowing more from other loan programs, or are they borrowing less across all programs?
4. How do the answers to the aforementioned questions differ by race, socioeconomic status, and institutional sector?

#### Methods

The study will utilize three iterations of the National Postsecondary Student Aid Survey (NPSAS): 2007-08, 2011-12 and 2015-16. The natural experiment setting and the repeated cross-sections structure of the data provided by NPSAS allow for the implementation of DD models. In the DD approach, at least two groups are observed across two time periods (T0, T1), with T0 as the pre-policy change and T1 as the post-policy change. These two groups are comprised of participants who either were affected or were not affected by the policy change, respectively. In this study, affected participants are law and professional students. As previously discussed, policy implementation took place on July 1st, 2012; consequently, all law and professional participants in the 2015-16 survey were exposed to the effects of this policy, and thus, represent our treatment group (Tr=1) in the implementation time (T1). Law and professional students who participated in the 2007-08 and 2011-12 surveys were not yet affected by this change, but still belong to the treatment or affected condition. Finally, as independent undergraduate students were not affected by this policy change, they constitute the control group (Tr=0) before and after the policy took place. Treatment and control status do not change across time, allowing for the estimation of the DD as a collection of conditional means of the outcome of interest. Since one can identify Tri at T1 and T0, the DD is estimated as follows:

$$DD = [E(Y|Tr=1, T1) - E(Y|Tr=1, T0)] - [E(Y|Tr=0, T1) - E(Y|Tr=0, T0)], \quad (1)$$

where Y is the outcome of interest across time and treatment statuses. The regression-based form of the equation is

$$Y = \beta_0 + \beta_1 * Tr + \beta_2 * Ti + \beta_3 (Tri * Ti) + \beta_j * X_j + u_i, \quad (2)$$

where  $\beta_3$  is the coefficient that captures DD in equation (1). The coefficient of interest may be affected by other important predictors and control variables, as well as by unobserved state characteristics, all of which are accounted for in  $\beta_j$ . As mentioned, the dataset built to estimate the DD models presented here was taken from three repeated cross-sectional datasets. Because of this data structure, some authors (see Duflo, 2004) have argued that the time variable should be interacted with the remaining control variables included in the models. This process, however, would potentially result in less efficient models and the corresponding loss of degrees of freedom. The main models proposed in this study will be estimated with and without that interaction.

To answer the first two research questions, equation (2) will use Stafford borrowing as the outcome of interest. As an example of one potential scenario, if  $\beta_3$  results in a negative point estimate, then law and professional students responded to the loss of the interest subsidy by decreasing their borrowing from the Stafford loan program. In answering the third research question, the models will include PLUS, and private loans as the outcomes of interest. An additional model will include working hours as the outcome variable. It should be noted that the models for secondary loan sources and work hours are limited to only those who borrowed from the Stafford loan program, so that one could determine if Stafford borrowers (i.e., affected participants) were changing borrowing behaviors as a result of the policy change.

DD relies upon the assumption that the external shock resulting from the policy change is the main factor affecting the expected variation of the outcome of interest across affected participants. Thus, in the absence of this policy change, the outcomes of both treated and control participants should have remained unchanged. To corroborate this assumption, a series of placebo tests will be implemented (Bertrand, Duflo, and Mullainathan, 2004). In the placebo test framework, researchers drop all the observations that were observed after the real policy change took place and artificially set a new time for a fake policy implementation before such policy took effect. The treatment and control statuses of the students are maintained, while the coefficient of interest is created using the false time for policy implementation. In this study, the time observations corresponding to 2007-08, 2011-12 were measured before the policy change occurred. Accordingly, in the placebo test models will omit the time period 2015-16, instead setting 2007-08 as T0 and 2011-12 as T1. Treated and control groups will remain unchanged and the coefficient of interest ( $\beta_3$ ) should either be non-significant or have the opposite sign compared to the sign observed in the real DD model. If the results from the placebo test mirror the magnitude and direction of  $\beta_3$  found in the real DD, then the significance associated with the policy change was merely the result of previous trends in the data or unaccounted for factors and not the result of the policy change.

It is unlikely that the magnitude of  $\beta_3$  would be the same across different sub-groups of students. Accordingly, the analytic plan will measure effect heterogeneity by estimating models conditional on different levels of socioeconomic status, ethnicity, gender, institutional sector, selectivity level and discipline.

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## Project Description - Appendix

- [Appendix](#)

## Datasets

### List the datasets that will be used and explain why they best serve this research (limit 500 words)

The proposed study will utilize three iterations of the National Postsecondary Student Aid Survey (NPSAS): 2007-08, 2011-12 and 2015-16. NPSAS is administered by the National Center for Education Statistics approximately every four years and is made up of a nationally representative group of students across all postsecondary sectors. Because NPSAS is a multistage probability weighted sample with stratification by higher education sector, survey design effects were taken into account using the svy package in Stata 13. Thus, the robust estimation of standard errors takes into account the stratified and clustered sampling design (Dowd & Coury, 2006; Thomas & Heck, 2001).

The primary advantage of NPSAS is it includes data from the Education Department's central database for federal loans: the National Student Loan Database System (NSLDS). Because all of the data on federal borrowing is taken directly from this administrative database, our dataset includes official, non-self-reported data on all federal borrowing at each of the time periods mentioned above. Moreover, each iteration of NPSAS includes detailed information on other types of financial aid, background characteristics reported by students, families, and their respective colleges, and institutional characteristics from the Integrated Postsecondary Education Data System (IPEDS), all of which allows for the inclusion of a rich set of covariates. In addition to the control variables from NPSAS, models will include data from two other sources: 1) fair market rent data from the U.S. Department of Housing and Urban Development (HUD) and 2) a measure of institutional selectivity in the form of Barron's Admissions Competitive Index. Annual fair market rent data from HUD will account for the geographical differences in costs-of-living. As suggested by Porter and Pontius (2012), models will include county-level estimates of rent data for two bedroom apartments at the 40th percentile of cost. While other differences in cost-of-living exist (e.g., food, transportation), they are highly correlated with the county-level estimates provided by HUD (Porter & Pontius, 2012). Controlling for Barron's selectivity data allows us to capture variation among different tiers of institutional selectivity, which, as Monks (2014) demonstrated, can have a significant impact on student borrowing.

Dependent variables of interest are the annual and cumulative amounts borrowed through the Stafford Loan program, monies borrowed through the Parent Loan to Undergraduate Students (PLUS) and GradPLUS programs, self-reported private loan totals, and the self-reported number of weekly hours worked. The independent variable of interest is dependent status with independent undergraduate students form the four-year sector serving as the control group. Control variables in our models will account for differences in student borrowing behaviors. As suggested by the aforementioned literature, these include dummy variables for gender, race, and first-generation college student status. Moreover, we control for college major, net price, family income, college grade point average, and where a student resided while enrolled. Finally, models will include state fixed-effects and a control for institutional selectivity in all estimation strategies.

### Statement of use of restricted datasets (limit 250 words):

Applicants should provide a statement indicating whether the proposed research will require use of restricted datasets. If restricted datasets will be used, the plan for acquiring the appropriate license should be described.

If restricted datasets will not be used, leave this text box blank and click *Save and Continue*.

The PI serves as coordinator for NCES data in his department. Current and valid permission and access to NPSAS datasets is hold by the PI and the graduate student to take part in the project.

## Timeline and Deliverables

### Timeline:

Provide a timeline of key project activities.

Months 1-3 after award received

- Receive final human subjects approval at researcher's home institution
- Do thorough review of existing NPSAS data
- Extract needed data from NPSAS, IPEDS U.S. Department of Housing and Urban Development, and Barron's Admissions Competitive Index.
- Review data variables, analytic plan

Months 4-8

- Continue exploration of data file. Look for missing data and outliers.
- Establish data transformations that might be needed (for missing data)
- Continue analyses for the study
- Complete mid-year report
- Obtain permission for release of data reports from NCES as needed

Months 9-12

- Finalize analyses for the study
- Write report
- Submit final report to NCES officials for approval to publicly share findings
- Complete final report, present final report at the 2016 Access Group Legal Education Research symposium
- Submit one or more manuscripts for publication in peer-reviewed journal(s)

### Deliverables:

List deliverables such as research reports, books, and presentations that will be developed from this research initiative.

Following approval from NCES for release of NPSAS results, the first written report will be the final report submitted to grant officials. At least one peer-reviewed manuscript will be prepared, more than one if possible given the scope of the research questions proposed. A scholarly paper will be presented at the 2016 Access Group Legal Education Research symposium and perhaps other educational conferences such as the Association for the Study of Higher Education (ASHE).

### Disseminate results:

Describe how you will disseminate the results of this research.

(Note: Costs of travel to meetings should be calculated on the budget page.)

After the final report has been approved from NCES officials, the researchers will share findings from this study at multiple venues. Findings will be shared at the 2016 Access Group Legal Education Research symposium and other educational meetings as appropriate, through professional conference presentations, one or more publications with refereed journals.

Publication will be sought in peer-reviewed journals such as Research in Higher Education, The Journal of Higher Education, and the Review of Higher Education.

Depending on the final results and interest, the researcher will also share findings with local/state legislative or other groups to provide information for policy and practice.

Once the project is approved by NCES, limited summarized results will be posted on the researchers' professional websites.

## IRB Statement

### Statement of Institutional Review Board approval or exemption (limit 250 words):

As part of the proposal, a statement outlining a plan for Institutional Review Board (IRB) approval is required. The statement should outline the applicant's timeline and plan for submitting the proposal to an IRB or explain why IRB approval is not necessary. Final IRB action is not necessary prior to submitting the application.

Application for full approval from the University of Georgia's IRB will be completed prior to start of the study. The PI for this study has submitted a number of IRB applications previously and is very familiar with the process. The application will be initiated (late January, 2016) and is expected to be fully approved within the next 2-6 weeks. This gives ample time prior to the start of the study.

## Biographical Sketch(es)

### Biographical sketch (limit 750 words):

Manuel S. González Canché is assistant professor in the Institute of Higher Education at The University of Georgia. He earned is Bachelor's degree in

Educational Research from the Autonomous University of Yucatan (2005), Master's degree in Educational Research from the Autonomous University of Aguascalientes (2007), and Ph.D. in Higher Education with cognates in Biostatistics and Economics from the University of Arizona (2012).

González Canché's training in statistical methods focused on analysis of high-dimensional data, survival models, and quasi-experimental design. His training in quasi-experimental design has allowed him to develop the required skillset to conduct the analyses proposed in this study.

His research quasi-experimental design area is based on the use of longitudinal data. He has extensively used the NELS:1988-2000 and the ELS:2002-2012 federally protected surveys. He successfully cleaned the raw loan data contained in those studies, which allowed him to publish the only paper using NELS loan data currently available (Gonzalez Canche, 2014a). He now has a second paper under review in which incorporated both NELS and ELS datasets to consider the evolution of loan debt over a 20-year period. González Canché was granted support by the Spencer Foundation to study whether there are any financial benefits of student loan repayment. This study provides an analytic framework employing two decades of data mostly based on NELS and ELS information along with state and institution level indicators.

Since 2012, González Canché has worked with the NCES's Surveys and has a paper under review using NPSAS data also evaluating another natural experiment that only affected freshmen and sophomore undergraduate students. He foresees no difficulties in successfully completing the proposed study.

In November of 2014, González Canché became a certified reviewer at What Works Clearinghouse IES/Mathematica Policy Research. The rigour in his statistical and methodological training are considered important in conducting high quality research, such as the one proposed in this application.

## Budget

- [Budget](#)

## Funding History

### Funding history (limit 250 words):

A statement of prior, current, and pending funding for the proposed research from all sources is required. The statement should also include a history of all prior funding from AIR to any of the PIs for any activity. Funding from other sources will not disqualify the application but may be considered in the funding decision.

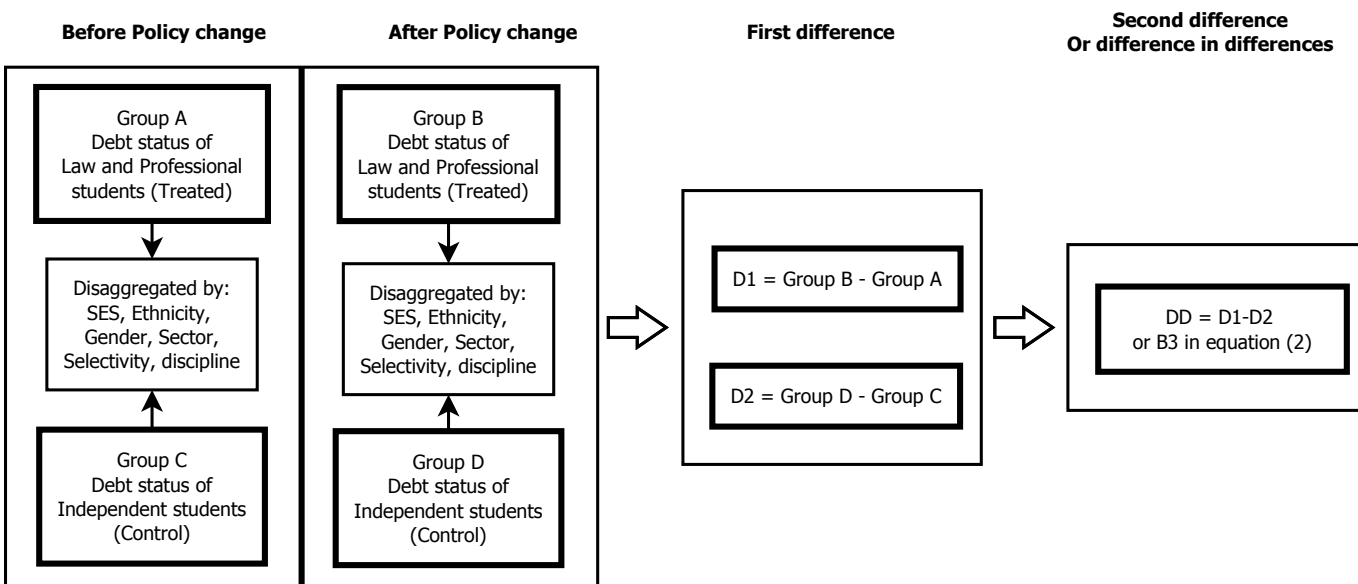
There is no other current and or pending funding for the proposed research.

## Dissertation Advisor Letter of Support

There are no files attached.



## Appendix



*Figure 1.* Logic Model or Analytic Framework. This figure reflects the analytic samples and the comparisons proposed to estimate the effect of the policy change. The first inferential step will consist in estimate models including treated and control participants. The next set of estimations will be disaggregated conditional on SES, ethnicity, gender, sector, selectivity, and discipline.

# Research Grant Proposal Budget Form



### Personnel - Time on Project

(Enter percentage as a decimal)

#### Principal Investigator

% (FTE) academic year  
 % (FTE) summer

#### Second Principal Investigator

% (FTE) academic year  
 % (FTE) summer

#### Third Principal Investigator

% (FTE) academic year  
 % (FTE) summer

#### Graduate Research Assistant

% (FTE) academic year  
 % (FTE) summer

### Personnel - Salary & Benefits

academic year \$   
 summer \$

academic year \$   
 summer \$

academic year \$   
 summer \$

academic year \$   
 summer \$

### Personnel - Salary/Stipend

(Time on Project x Salary and Benefits)

academic year \$   
 summer \$

academic year \$   
 summer \$

academic year \$   
 summer \$

academic year \$   
 summer \$

Total Salary and Wages (calculated from above fields)

\$

### Travel

2016 Access Group Legal Education Research symposium:

\$

Other research related travel:

\$

*(Note: Other planned travel should be listed in the "Timelines and Deliverables" section)*

### Other research expenses

*Please provide a breakdown of expenses below and add the total value in the box to the right.* Allowable expenses include: materials, such as software, books, supplies, etc.; consultant services, such as transcription, analysis, external researchers, etc.; and costs for publishing articles in journals. The purchase of computer hardware, overhead or indirect costs, and living expenses are not allowable. If you have questions about specific expenditures please contact AIR.

\$

TOTAL REQUESTED

\$