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The Blind Side of College Athletics: Examining California's Student Athlete Bill of Rights and Athletic Expenditures

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Abstract
Many college athletes suffer career-ending injuries that leave them with expensive medical bills and lost scholarship opportunities. California's 2012 student athlete bill of rights mandated that the state's universities continue to care for college athletes by providing access to medical care and equivalent scholarships even if they were injured and could no longer participate in athletics. We analyzed publicly available data from the college athletics financial information database using multiple quasi-experimental approaches, including difference-in-differences with propensity score weights and synthetic control methods. We found evidence that Cal-Berkeley and UCLA increased medical expenditures but not student aid. Our findings were robust across both types of analyses. We discuss implications and offer directions for future research related to policy implementation.

Keywords Synthetic control methods · Educational policy · Quasi-experimental analysis · Secondary data analysis

In 2019, U.S. colleges and universities spent $18.8 billion on intercollegiate athletics (National Collegiate Athletic Association [NCAA], 2020). As the steward of a multibillion-dollar industry, the NCAA states that it "was founded to keep college athletes safe" and that the organization strives to "protect them physically and mentally, on the field and off" (NCAA, n.d.a). Despite the NCAA's efforts, between 2009 and 2015, the NCAA reported approximately 13,000 sports injuries (Kay et al., 2017). Among those athletes who are injured, about one in seven suffer a career-ending injury (Paule-Koba & Rohrs-Cordes, 2019).

The NCAA requires colleges and universities to ensure that all college athletes[1] have medical insurance coverage, thus college athletes are supposed to be self-insured, insured

[1] Following, Jayakumar and Comeaux (2016), we use "college athlete," except when directly citing sources or legislation that use the term "student athlete."

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by their parents or guardians, or by their college or university (NCAA, n.d.b). However, 30% of NCAA Division I schools do not provide any health insurance for their athletes (NCAA, 2016). Beyond relying on parents and universities, the NCAA has a catastrophic injury insurance program, but the program does not benefit college athletes unless they meet a $90,000 deductible—even then, the NCAA narrowly defines what is considered a "covered accident" to exclude many athletes and injuries (Kline, 2018). Though some athletes are doubly insured, they, like many Americans, may struggle to pay their deductibles to receive healthcare (Kirzinger et al., 2019). Even at Football Bowl Subdivision (FBS) schools, the schools that offer the most financial aid to college athletes, approximately 86% of college athletes live below the federal poverty line (Huma & Staurowsky, 2011). Apart from other equity issues affecting college athletes (the racialized nature of athletics, lack of compensation, limited rights over name, image, and likeness), more research is needed that examines the provision of healthcare to college athletes.

The purpose of this paper is to consider how to improve care for college athletes. Specifically, we examine the influence of California's 2012 Student Athlete Bill of Rights on institutional expenditures for college athlete financial aid and healthcare. First, we use a traditional difference-in-differences method to estimate the ways expenses changed at Cal-Berkeley and UCLA compared to other institutions in the Pacific-12 Conference [Pac-12] and Power-5 Conferences [Power-5], including the ACC, Big 10, Big 12, Pac-12, and SEC. Then, we complement our difference-in-differences analysis by using synthetic control methods (SCM) to conduct quantitative case studies of the two public FBS schools in California that were subject to the policy (University of California at Berkeley [Cal-Berkeley] and University of California at Los Angeles [UCLA]). The two types of quasi-experimental analyses allow us to estimate the effect of California's policy on athletic expenditures and demonstrate that our findings are robust.

In the next section, we provide policy context for the current study. After that, we provide a brief review of intercollegiate athletics literature. We then explain that we adopt a principal-agent framework to examine the ways that Cal-Berkeley and UCLA responded to California policymakers. In the final sections of the paper, we discuss the method of analysis, detail our results, and discuss the implications of our findings.

Policy Context

During California's 2011–2012 legislative session, then-State Senator Alex Padilla introduced Senate Bill 1525, referred to as the "Student Athlete Bill of Rights." The bill took effect in the 2013–2014 academic year and applied to 4-year universities that received at least $10 million in revenue for selling media rights to intercollegiate athletic events. Based on the media revenue requirement, the bill applied to a small number of universities in the state, including two public universities: Cal-Berkeley and UCLA.

According to the California Legislative Counsel's Digest (2012), the bill required that universities care for injured college athletes in two ways. First, the policy required universities to "be responsible for paying the premiums of each of its college athletes whose household has an income and asset level that does not exceed the level for Cal Grant A recipients, as specified, for insurance covering claims resulting from their participation in the athletic program." In that year, Cal Grant A recipients' average parental income was $42,036 for a family of four (California Student Aid Commission, 2013). Universities were instructed to fulfill the latter requirement by either directly offering medical treatment or

providing insurance coverage that would cover the costs of medical treatment and associated deductibles.

Second, the policy required that universities "provide an equivalent scholarship... if an athletic program... does not renew the athletic scholarship of a student athlete who suffers an incapacitating injury or illness resulting from his or her participation in the athletic program, and the institution's medical staff determines that the student athlete is medically ineligible to participate in intercollegiate athletics" (California Office of Legislative Counsel, 2012). The state focused on student aid for injured college athletes because of the need to close the gap in graduation rates between college athletes and non-athletes. However, California only required that universities offer equivalent scholarships for up to 1 year (less if the college athlete did not need a full year to graduate). The state also gave universities the *option* to offer "equivalent scholarships" to injured athletes if their athletic programs had "a graduation success rate that is above 60 percent, disaggregated by team." In other words, teams with low graduation rates among college athletes were required to offer additional aid to college athletes. If teams had high graduation rates across their athletic programs, then they could choose not to offer equivalent scholarships.

The legislature not only mandated that universities take better care of athletes, but it also stipulated how universities should re-direct revenues to cover additional spending for increases in student aid or medical expenditures. California mandated that as universities fulfill the new requirements, they needed to "rely exclusively on revenue derived from media rights for intercollegiate athletics to defray any costs accrued under these provisions." The state further stipulated that universities should "not use funds... that are dedicated for the benefit of the general student body" to pay for athletic medical or student aid expenses (California Office of Legislative Counsel, 2012).

With this background, we ask the following research questions: *After the legislature adopted the California Student Athlete Bill of Rights, did universities increase athletic medical expenses? Did universities increase athletic student aid expenses?*

Literature Review

We begin this section by considering the economics of university athletics. We discuss athletic expenses and revenues to consider why, absent government policy, universities do not have an incentive to spend money to care for injured athletes. Then we discuss how athletes go beyond NCAA limits on practice that lead to exhaustion and injury. Finally, we consider the racialized responses to athletic injuries. At the end of the section we conclude that it is necessary to study policies like the California Student Athlete Bill of Rights that require universities to care for college athletes who they would otherwise neglect based on economics and stereotypes.

Athletic Department Expenditures

Athletic departments have tended to increase overall spending in an "arms race" to increase prestige relative to conference rivals (Hoffer et al., 2015). Fort (2010) showed that athletic revenues and expenses almost always match: "the correlation at the average reports of revenues and expenses is 0.996" (p. 12). Building on Fort's (2010) work, Hoffer et al. (2015) used a spatial econometric approach and panel data to confirm that athletic expenditures follow the revenue theory of costs. That is, athletic departments spend what they receive

because they are part of non-profit organizations and cannot distribute excess income to shareholders.

While Hoffer et al. (2015) showed that universities tend to invest in coaching salaries to generate prestige, other scholars show that overall operating (game-day) expenses, not coaching salaries, predict overall athletic success as measured by Directors' Cup rankings (Sparvero & Warner, 2013). Additional studies found that increasing football operating expenses influences a football team's winning and ranking (Orszag & Israel, 2009) and that overall increases in operating expenses were positively correlated with on-field performance, but only among FBS schools (Jones, 2013). Beaudin (2018) estimated dynamic panel data models and concluded that investing in women's sports may be more cost effective than investing in men's sports for increasing athletic success in Director's Cup rankings.

In an athletic "arms race," athletic departments have an incentive to spend practically every dollar they receive to increase prestige or on-field performance (Hoffer et al., 2015; Jones, 2013; Orszag & Israel, 2009; Sparvero & Warner, 2013). Although it may be challenging to increase revenue, athletic departments may re-balance their expenditures to try to be more cost effective or to maximize rankings (Beaudin, 2018). However, prior literature suggests there is no economic incentive to increase spending on college athletes with career-ending injuries who can no longer contribute to building team prestige or success.

Financing Intercollegiate Athletics

Some studies often examine correlates of athletic revenues rather than expenditures (e.g., Howdeshell, 2020; Humphreys & Mondello, 2007). Scholars have examined the conditions under which universities with better performing sports teams tend to receive more donations (Humphreys & Mondello, 2007). When studies examined athletic expenses, they tend to compare athletic spending to academic spending (e.g., Desrochers, 2013; Rudolph, 2017). Studies have shown that many universities subsidize athletics using mandatory student fees or general revenues (e.g., Cheslock & Knight, 2015; Desrochers, 2013).

Few studies examine the effects of government policies on athletic department finances. One study (Brown, 2020) examined whether the federal Tax Cuts and Jobs Act in 2017 influenced donations. Development offices within athletic departments expected revenues to decline after the policy was adopted. Brown (2020) found that the numbers of donors and donations decreased after the policy went into effect. Brown's study suggests that government policy can influence intercollegiate finances; however, it focused on individual behaviors and athletic revenues rather than examining institutional changes to expenses.

College Athlete Experiences

College athletes are a unique subpopulation in higher education and encounter challenges stemming from their athletic commitments. According to the NCAA (2019a), college athletes are limited to a total 20 h per week, with a maximum of 4 h per day, on athletic-related activities. College athletes are expected to dedicate time to practice, competition, team meetings, study hall, and other academic demands (Comeaux & Harrison, 2011; Jayakumar & Comeaux, 2016). However, studies show that Division I college athletes spent closer to 40 h per week participating in sports, while major football players reported spending 45 h per week on athletics (Rankin et al., 2016; Wolverton, 2007). These extra hours

often result in physical exhaustion, rehabilitation, and injuries from their participation in college sports (Comeaux & Harrison, 2011; Eitzen, 2009).

Furthermore, it is important to understand how the overrepresentation of Black athletes in revenue-generating sports like football and basketball has caused racial stigmas compared to other college athletes (Van Rheenen, 2013). For instance, Black college athletes are negatively stereotyped as being both physically superior and intellectually inferior to their White counterparts (Edwards, 1984; Howe, 2020; Sailes, 2002). According to Comeaux (2010), some faculty perceive Black college athletes as "affirmative action beneficiaries," who were admitted solely for their athletic abilities. Additionally, Cooper (2016) explains how Black college athletes in Division I intuitions are often described as "dumb, lazy, and not serious students" (p. 269) by most of their non-athletic peers.

The organizational culture of intercollegiate athletics and the social constructions around college athletes' are particularly problematic based on college athletes' racial demographics. Scholars have characterized the NCAA as a White controlled organization that benefits from Black college athletes (Cooper et al., 2017; Edwards, 1984; Hawkins, 2013). For example, in 2019, there was a large racial disparity between players and coaches in men's football; 48% of players were Black, but 82% of coaches were White (NCAA, 2019b). Men's football accounts for the most college sports injuries each year and has the largest number of injuries that require surgery or emergency transport (Kerr et al., 2015). Black college athletes' overrepresentation in athletics and in sports where they may be at most risk of being injured contrasts with Black students' underrepresentation throughout campus. According to Harper (2016), black men are less than 3% of undergraduate students at Division I schools but comprise 55% of football teams in those campuses.

In summary, college athletes have unique experiences. They are expected to be academically successful to maintain athletic eligibility, even as they are stereotyped as not being smart enough to merit admission (but for their athletic prowess). They are asked to go above and beyond NCAA limits and push their bodies and minds to the point of exhaustion. When athletic demands result in injury, stereotypes about being "dumb" and "lazy" (Cooper, 2016) suggest that college athletes have little left to contribute to the university. Given the dynamics of race in college athletics and the propensity to set college athletes up for injury and devalue their academic capacity, studies have not typically examined how universities care for injured athletes.

Prevalence and Inequity of College Athlete Injuries

Jayakumar and Comeaux (2016) adopted a grounded theory approach to conduct a qualitative case study of organizational culture in an FBS university athletic department. They concluded that there is a "cultural disguise" (p. 507) or "cultural cover-up" (p. 508) so that athletic departments deny the "strain between being a student *and* [italics in original] athlete" (p. 508). The cultural cover-up "suggested that athletes have control over athletics and that the academics were going to be the easy part," which "created a logical frame for putting effort into athletics over academics, masking the reality of degree attainment being a much higher probability than" becoming a professional athlete (pp. 507–508).

When college athletes are hurt, they experience racialized responses to their injuries. A team of researchers used media content analysis to systematically examine media coverage of ESPN college football coverage for the 2016–2017 season, including regular season and

playoff games. They found that injuries for Black athletes are often taken less seriously than their white counterparts (Haslerig et al., 2020). Haslerig and colleagues found that

> overall, the footage revealed callousness toward Black players' pain and disregard for their future health, as evidenced by the constant replays of how they were injured, the camera lingering on Black players clearly in pain (or utterly immobile), the glossing over of serious concussive injuries, and assertions of their disposability. (p. 285)

The bias against Black college athletes' injuries mirrors broader racial biases that lead to ignoring, underdiagnosing, and refusing to treat Black Americans in clinical settings (Hall et al., 2015; McCoy, 2020). Findings from a series of experiments show biases in both perceptions of pain and recommended treatments (Mende-Siedlecki, et al., 2019). Additionally, media coverage documents portrayed Black players as physically durable and resistant to injury. Conversely, they highlighted White players' intellect and work ethic (Haslerig et al., 2020).

The NCAA and athletic departments espouse commitments to supporting college athletes' academic success (Jayakumar & Comeaux, 2016). Yet when college athletes obtain career-ending injuries, they are not guaranteed that their athletic scholarship will be renewed (Paule-Koba & Rohrs-Cordes, 2019; Sack, 2008)—despite the fact that researchers have found that athletic scholarships to be highly influential in helping college athletes graduate (Milton et al., 2012; Rubin & Rosser, 2014).

Summary

Our review of the literature demonstrates the importance of examining whether the California Student Athlete Bill of Rights may have created a government imperative, absent an economic incentive, for athletic departments to spend money helping injured athletes. In an athletic "arms race," expenditures match revenue and are justified on a rational basis as increasing athletic prestige or success—athletes with career-ending injuries cannot help achieve either outcome. Additionally, literature shows that it is important to ameliorate some of the risks inherent in intercollegiate athletics because they have implications for racial equity. College athletes are expected to go well beyond NCAA guidelines for devoting time to athletics, which leaves them susceptible to injury. When athletes are injured, their pain may be stereotyped and celebrated or ignored and untreated. After an injury, they have often lost the financial aid that facilitated college access and allowed them to maintain enrollment. The California Student Athlete Bill of Rights was meant to improve the ways universities treat college athletes, but we were unable to find empirical evidence that state legislation influences athletic expenditures. To address the gap in the literature, the following sections discuss the ways we analyze whether the policy influenced athletic spending on student aid and healthcare.

Conceptual Framework

We adopt a principal-agent framework to inform research questions and interpret findings. A principal-agent framework is useful for examining "the activities of actors within hierarchical and contractual relationships" (Lane & Kivisto, 2008, p. 142). Principals depend on actors to carry out a task or fulfill an agreement in good faith, but principals do not directly

aid with implementation. In the context of California's Student Athlete Bill of Rights, the state required certain universities to guarantee aid to students who suffer career-ending injuries, to offer medical treatment or pay for college athletes to receive medical treatment, and to meet the first two obligations by using revenue from media contracts. Though principals give mandates, they have limited capacity and knowledge to oversee agents' work (e.g., Moe, 1984).

If Cal-Berkeley and UCLA increased spending on college athlete student aid and health care after the implementation of California's Student Athlete Bill of Rights, then it suggests that the universities (agents) were responsive to state policymakers (principals). To accurately test the framework, we adopt a quasi-experimental quantitative research design (discussed further below). Our methods allow us to test whether Cal-Berkeley and UCLA increased spending on legislative priorities at levels that exceeded spending changes at comparable universities over time. Our findings may help us understand how two public universities were responsive to public policies to regulate intercollegiate athletics.

Method

Data

Our study uses data from the College Athletics Financial Information (CAFI) database, aggregated by the Knight Commission on Intercollegiate Athletics. The data include athletic revenue and expenses for Division I public institutions in the U.S. from 2005 to 2018. Our sample comprises our institutions of interest, Cal-Berkeley and UCLA, and institutions in the Power-5 conferences, including the Pacific-12, Big-12, Big-10, ACC, and SEC. Following Howdeshell (2020), we did not aggregate the Power-5 and Group of 5 conferences that make up the FBS.

We chose to focus on the Power-5 Conferences because the California Student Bill of rights only affected institutions that averaged at least $10 million in media revenue. Schools in these five conferences typically have the required media revenue. We removed several institutions from the sample due to artificial shocks in their funding. We dropped Rutgers University, University of Louisville, University of Utah, and West Virginia University because they moved to a Power-5 conference during the time period. We removed Texas A&M University, University of Colorado, University of Maryland, University of Missouri, and the University of Nebraska because they changed Power-5 conferences, resulting in funding shocks. Finally, we removed the University of Illinois due to a coaching scandal in 2015 that resulted in increases in athletic medical expenses due to the nature of the allegations. The final sample included our institutions of interest (Cal-Berkeley and UCLA) and 39 other Power-5 institutions.

Variables

Based on our research questions, the first dependent variable was *Medical*, which measured "medical expenses and medical insurance premiums." The second dependent variable was *Athletic Student Aid*, which measured "Total expenses for athletic student aid, including tuition and fees, room and board, books, summer school, tuition discounts, and waivers, *including aid given to student-athletes who have exhausted their eligibility or who are inactive due to medical reasons*" [italics added]. Because we had a small number of treated

institutions (2), we estimated parsimonious difference-in-differences models without control variables. The lack of control variables was not a concern because prior literature and our conceptual framework did not identify clear institutional-level, time-varying characteristics that influenced athletic expenditures on college athlete financial aid or health.

In the SCM analysis, we used several CAFI variables to derive synthetic matches of Cal-Berkeley and UCLA. We selected total athletics expenses, student aid expenses, media revenue, total athletics revenue, and medical expenses variables. Rather than create synthetic controls for one point in time, we used measures of the matching variables for 2008, 2012, 2013, and 2014 (discussed below).

Analytic Strategy

We chose to take a dual approach for our analytical strategy, using both a difference-in-difference approach and a synthetic control approach. Both quasi-experimental methods are popular approaches to examine the impact of policy changes on one or more units, while the policy does not impact other units. Both processes involve creating a counterfactual, or what would have happened in the absence of the treated units' policy. In our context, this means we are estimating the difference between changes in athletics expenses at Cal-Berkeley and UCLA after the implementation of the Student Athlete Bill of Rights compared to what we expect would have happened to athletic expenses without the policy.

Difference-in-Differences

Difference-in-differences has become the most popular quantitative social science method in recent years (Cunningham, 2021) and has been used in the higher education literature to examine the impact of state policies such as in-state tuition for undocumented students (Flores, 2010), affirmative action bans (Garces, 2012), policies for matching university donations (Hu et al., 2020), and performance-based funding (e.g., Hillman & Corral, 2017; Umbricht et al., 2017). While difference-in-differences is limited in supporting causal claims, it is a good substitute when randomized experiments cannot be conducted. The difference-in-differences approach takes the difference in athletics expenses at Cal-Berkeley and UCLA before and after the intervention and compares it to the difference in one or more comparison groups. Specifically, we examined whether medical expenses were statistically significantly higher at Cal-Berkeley and UCLA after the Student Athlete Bill of Rights was implemented, compared to other Pac-12 institutions (Comparison group 1) and other Power-5 Conference institutions (Comparison group 2).

The difference-in-differences method requires several assumptions. The first assumption of the difference-in-differences method is that no other policies were passed around the same time as the Student Athlete Bill of Rights that could affect athletic medical expenses. We found no such statewide or systemwide policies. Secondly, and arguably the most critical, is the parallel trends assumption, which means that the treated and untreated units had similar pre-treatment trends in the outcome of interest. Of the 39 potential comparison schools, we removed 10 for violations of the parallel assumptions trend in the medical expense models. These institutions had different trends, particularly in the years leading up to the intervention in 2015 and are shown alongside Cal-Berkeley and UCLA in Fig. 1. Figure 2 shows the remaining institutions' pre-treatment trends. The institutions in Fig. 2 do not violate the pre-treatment trend assumption for medical expenses.

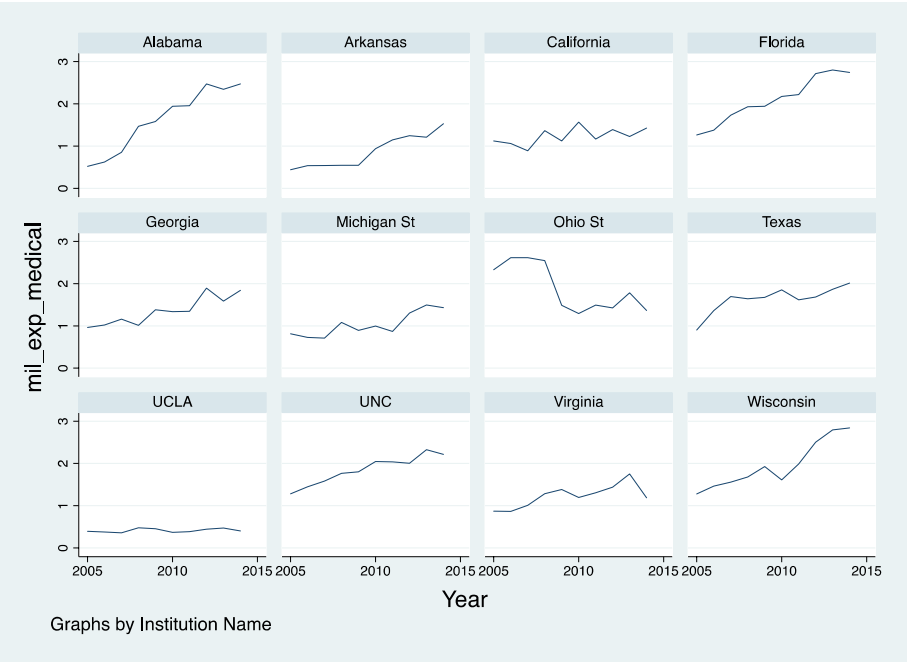

Fig. 1 Pre-treatment trends for removed institutions in medical expense models

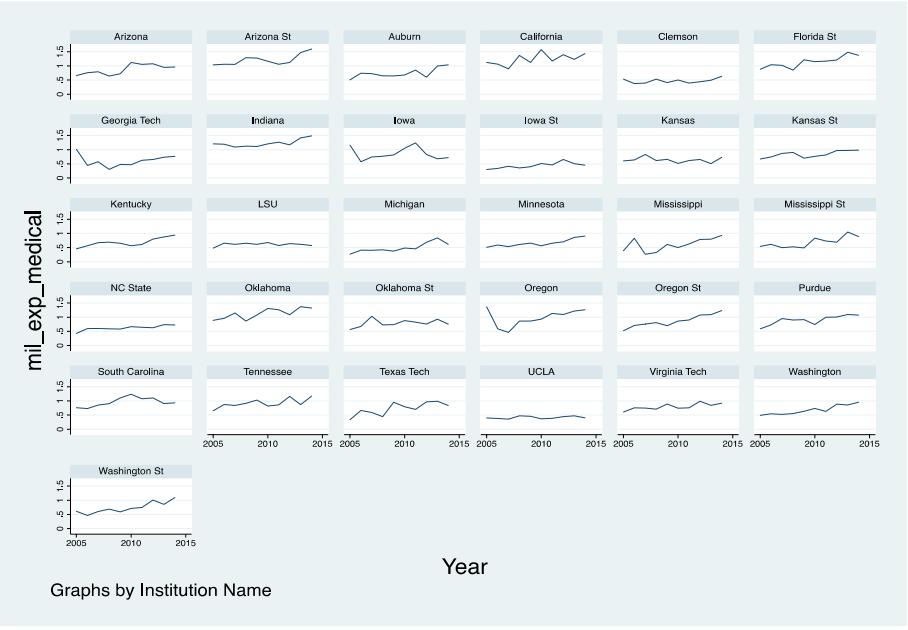

Fig. 2 Pre-treatment trends for institutions remaining in medical expense models

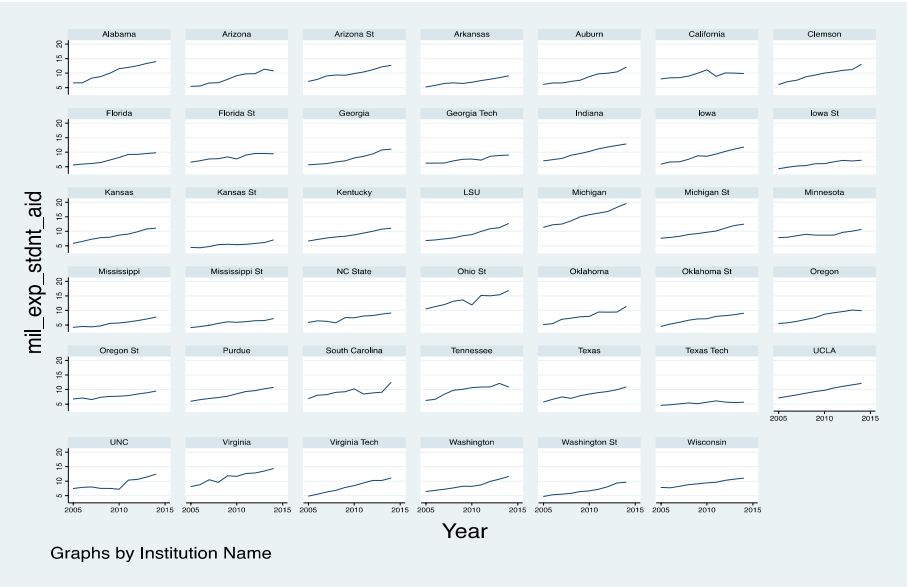

Fig. 3 Pre-treatment trends for institutions in student aid models

Figure 3 shows pre-treatment trends for all institutions in the student aid models. One of the difficulties with differences-in-differences for student aid is that Cal-Berkeley and UCLA do not have similar pre-treatment trends. We chose not to remove any institutions because they are either flat in student aid spending like UCLA or slowly rising like Cal-Berkeley. Given the differences in trends between UCLA and California in student aid spending, we supplement the difference-in-differences analysis with SCM.

After checking pre-treatment trends, we proceeded by estimating difference-in-differences models following the form:

$$y = \beta_0 + \beta_1 dB + \beta_2 X + \delta_0 d2 + \delta_1 d2xdB + u,$$

where y is athletic medical expenses (then athletic student aid), $d2$ is a dummy variable denoting years after the policy implementation, dB captures the difference between the treatment and control groups, and X is a vector of control variables. Medical expenses (and athletic student aid) are considered exogenous in the model, meaning that other variables in the model do not affect the treatment's presence. The coefficient of interest δ_1 is an interaction term that combines the dummy variables for the time period (i.e., pre-or post-implementation) and treatment. This interaction term is characterized by the following equation, which is the difference between pre- and post-treated units, minus the difference between pre- and post-untreated units:

$$\hat{\delta_1} = \left(\overline{y}_{B,2} - \overline{y}_{B,1}\right) - \left(\overline{y}_{A,2} - \overline{y}_{A,1}\right)$$

Control variables for model 1 included total athletic expenses. We did not include total revenue because it correlated highly with total athletic expenses, which would lead to high variable inflation factors (VIF) and cause an unstable model.

We also estimated a second model that disaggregated expenses to show how changes in medical expenses compare to changes in other expenses. In other words, if athletic expenses are a zero-sum game, an increase in medical expenses might mean there would be cuts elsewhere. Total athletics expenses were split into competition guarantees (funds paid to visiting teams' universities, including to offset travel and meal costs), recruiting, travel, facilities, coaching salaries, support and administration, student aid, and other expenses. Year and institutional fixed effects controlled for unobserved time-varying effects.

Adding Propensity Score Weights to the Difference-in-Differences Analysis With only two treated universities, we used a propensity score matching (PSM) approach to create a covariate balance between the treated and control universities (Trochim & Donnelly, 2006). We used logistic regression to calculate propensity scores based on year, total athletic expenditure, and outcome variables (*Medical* and *Athletic Student Aid*, respectively). When estimating the PSM weights, we used a single nearest neighbor matching approach to match treated and controlled universities (Rosenbaum & Rubin, 1985). We present results from our preferred model that included PSM weights below, though we note that the pattern of results was similar when we estimated difference-in-differences models with unweighted data.

Synthetic Control Methods

We chose to run a parallel analysis using the synthetic control method (SCM). The SCM method was pioneered by Abadie and his associates in a series of studies over the last 20 years (Abadie & Gardeazabal, 2003; Abadie et al., 2010, 2015). SCM is a quantitative case study method commonly used when there are few treated units or adopters, and there is no natural comparison group. In higher education research, the technique has been used to study the effects of Responsibility Center Management on tuition revenues (Jaquette et al., 2018), affirmative action bans (Hinrichs, 2012; Liu, 2020), and performance-based funding (Ward & Ost, 2021).

As Cunningham (2021) explains, SCM has advantages over regression-based methods such as difference-in-differences and bridges the gap between qualitative research, which focuses on describing a single unit, and quantitative research. Rather than relying on a set of comparison institutions, SCM creates a synthetic institution by combining weighted data from several institutions. The method explicitly shows the weights used to create the synthetic institution, providing transparency to the model.

Our donor pool consisted of all Power-5 institutions ($N=39$) that did not change conferences or experience idiosyncratic shocks to medical expenses, as described above. After choosing the donor pool, a synthetic control is created by assigning a weight, w_j, to each unit in the donor pool. Based on Abadie et al. (2015), the synthetic control can be expressed as a $(J \times 1)$ vector of weights, $W = (w_{2,}, \ldots, w_{j+1})'$, with $0 \leq w_j \leq 1$ for $j=2, \ldots, J+1$ and $w_2 + \ldots + w_{j+1} = 1$. As Jaquette et al. (2018) note, another benefit of SCM is that untreated units dissimilar to the treated unit may receive a weight of 0, meaning they are not included in the synthetic control. This selection process aims to minimize the difference between pre-treatment predictors of the treated unit, x_1, and pre-treatment characteristics of the synthetic control, $X_0 W$:

$$\sum_{m=1}^{k} v_m \left(X_{1m} - X_{0m} W\right)^2$$

In this expression, v_m represents a weight that reflects the importance of n as a predictor of the outcome. V is a non-negative $k \times k$ matrix with elements v_m, that sum to 1 and influences the mean square error of the estimator. Following Jaquette et al. (2018), results were estimated using the "SYNTH" command using the default optimization routine for choosing *V,* which uses a constrained quadratic optimization routine using the interior point method to solve the optimization problem.

The next step is to select a set of predictor variables to determine the synthetic control unit, comprising of variables that predict the post-treatment outcome. It is important to note that due to the nature of the weight v_m, the impact of variables with insufficient predictive power is minimized because the weight will be low. Based on Abadie et al. (2010), the outcome or covariates' pre-treatment values can also be used as predictors to create a better pre-treatment match. However, Klößner et al. (2018) found that including all pre-treatment outcomes led to bias, meaning there is a tradeoff between having a close pre-treatment match and not having models dominated by the pre-treatment values. We chose to use total athletics expenses, student aid expenses, media revenue, total athletics revenue, and medical expenses in 2008, 2012, 2013, and 2014. Alternate specifications using different pre-treatment medical expense years were tested and had minimal impact on the results.

Inference of SCM relies on the visual inspection of graphs, placebo tests, and pseudo p values. This paper will show athletic medical expenses over time at UCLA and Cal-Berkeley compared to their synthetic counterparts. These across-unit placebo tests artificially change which unit is treated, and calculate pseudo p values using the ratio of root mean square prediction error (RMSPE) before and after treatment, allowing us to rank all institutions. It is important to note that this pseudo p test is not associated with a formal hypothesis test. Instead, it enables us to estimate the percentage of placebo analyses with larger effects than the estimate from the treated units (Cunningham, 2021; Jaquette et al., 2018).

Results

Our first approach to examining the Student Athlete Bill of Rights' effects was to use a difference-in-differences approach. The first specification used only total revenue and total expenses as covariates to estimate the effect of the Student Bill of Rights on athletic medical expenses. All revenue and expense values were natural log transformed to better account for potential large differences in funding across institutions. This is a common approach when considering skewed distributions like income or funding. Using the log-transformed variables also provides a straightforward interpretation of the coefficients in percentage terms rather than raw dollar amounts.

Estimates for the models using only total revenue and expenses are found in Table 1. To interpret these models, we focus on the treated by time variable coefficient, which describes how much higher athletic spending was in post-treatment years at Cal-Berkeley and UCLA compared to pre-treatment years and the pre- and post-treatment difference in other Pac-12 institutions. The coefficient of 0.531 can be interpreted as a 70% increase in medical spending after policy implementation, which is considered statistically significant. The treated variable in the Pac-12 model indicates that medical expenses were 135% lower at Cal-Berkeley and UCLA compared to their peers before treatment. The interpretation is slightly different for total expenses because both variables are log- transformed and indicate the percent difference in medical spending given a 1% increase in the predictor

Table 1 Estimated difference-in-differences coefficients with propensity score weights by comparison group

	Medical expenses				Student aid			
	Pac-12 only		All power-5		Pac-12 only		All power-5	
	Coeff.	Std. err.	Coeff.	Std. err.	Coeff.	Std. err.	Coeff.	Std. err.
Treated * time	0.531***	0.107	0.398***	0.093	−0.062	0.038	−0.110**	0.034
Treated	−0.854***	0.087	−0.757***	0.075	0.052*	0.030	0.094	0.026
Time	−0.114	0.249	0.438***	1.000	0.264**	0.092	0.537***	0.042
Total expenses	0.681**	0.230	0.267**	0.093	0.455***	0.084	0.264***	0.039
Year fixed effects	X		X		X		X	
Institution fixed effects	X		X		X		X	
Adj. R^2	0.799		0.776		0.932		0.962	
N	112		434		112		574	

All expenses are log-transformed

*p < 0.05, **p < 0.01, ***p < 0.001

variable. Thus, the 0.681 coefficient shows that a 1% increase in total expenses was related to a 0.681% increase in medical expenses across all institutions and years.

If we examine the Power-5 conference model, we see a slightly smaller but still significant coefficient of 0.398. This equates to a 49% increase in medical spending compared to all institutions in our comparison sample. The significant treated variable indicates that California and UCLA had pre-treatment medical expenses that were 113% lower than their Power-5 conference peers. There is significance for the time variable, which indicates a 55% increase in medical expenses at untreated institutions after the policy implementation. This indicates that medical expenses were rising among all institutions after 2015, but the significant interaction variable (treated * time) implies that Cal-Berkeley and UCLA had even higher increases in medical expenses than the average Power-5 institution. Finally, total expenses were significantly correlated to medical expenses at all institutions across all years, with a 1% increase in total expenses relating to a 0.267% increase in medical expenses.

For student aid on the right side of Table 1, we found no evidence that the Student Bill of Rights impacted student aid expenses at the treated schools compared to other Pac-12 institutions. However, we found that compared to all Power-5 institutions, student aid decreased by 11% after implementation. Compared to Power-5 conference institutions, California and UCLA had significantly higher student aid before treatment (9%), but this trend did not hold against Pac-12 conference institutions. Across all non-treated institutions, student aid was higher after treatment in the Pac-12 (30%) and Power-5 institutions (71%) compared to before treatment. Student aid was highly correlated to total expenses regardless of the comparison group. Each 1% increase in total expenses was associated with a 0.26% to 0.46% increase in student aid expenses.

Table 2 shows the estimated coefficients for models disaggregating total expenses. We once again see positive, significant interaction coefficients for medical expense models, indicating medical expenses were 61% higher after the policy change compared to other Pac-12 institutions and 51% higher compared to all Power-5 institutions. If we examine the

Table 2 Estimated difference-in-differences coefficients with propensity score weights, disaggregating expenses

	Medical expenses				Student aid			
	Pac-12 only		All power-5		Pac-12 only		All power-5	
	Coeff.	Std. err.	Coeff.	Std. err.	Coeff.	Std. err.	Coeff.	Std. err.
Treated * time	0.474***	0.111	0.409***	0.094	−0.076	0.042	−0.093**	0.036
Treated	−0.883***	0.112	−0.724***	0.081	0.033	0.050	0.076	0.033
Time	0.162	0.309	0.588***	0.14	0.176	0.106	0.508***	0.054
Other expenses	−0.008	0.093	−0.029	0.038	0.010	0.033	0.023	0.016
Competition guarantee	−0.003	0.083	0.094**	0.031	−0.013	0.027	0.000	0.012
Recruiting	−0.312	0.189	−0.022	0.074	−0.029	0.063	0.006	0.029
Travel	0.284	0.173	0.135	0.068	0.218***	0.057	0.042	0.027
Facilities	0.173**	0.063	0.070*	0.031	0.016	0.022	−0.006	0.012
Coaching	0.04	0.226	−0.008	0.1	0.323***	0.069	0.1697***	0.039
Support/administration	0.021	0.136	−0.028	0.073	−0.012	0.046	0.048	0.028
Student aid	0.072	0.323	−0.095	0.122	0.025	0.040	−0.005	0.020
Year fixed effects	X		X		X		X	
Institution fixed effects	X		X		X		X	
Adj. R^2	0.808		0.781		0.940		0.962	
N	112		434		112		574	

All expenses are log-transformed

*p < 0.05, **p < 0.01, ***p < 0.001

disaggregated expenses in the medical expense models, we find that a 1% increase in facilities expenses was related to 0.173% and 0.07% increases in medical expenses compared to other Pac-12 and Power-5 institutions, respectively. We also see a positive relationship between competition guarantees and medical expenses at all Power-5 institutions.

The student aid models on the right side of Table 2 indicate that student aid expenses did not significantly change after treatment for Cal-Berkeley and UCLA compared to other Pac-12 institutions. Compared to all Power-5 institutions, they had student aid expenses 12% lower after the passing of the Student Bill of Rights but about 10% higher before treatment. We also see that student aid expenses rose at the same time as travel expenses at Pac-12 institutions and were positively correlated to coaching expenses regardless of the comparison group.

Overall, the difference-in-differences approach indicates that medical expenses rose significantly higher at Cal-Berkeley and UCLA after implementing the Student Athlete Bill of Rights. Unlike medical expenses, changes in student aid expenditures were not statistically significant. These findings were robust to two comparison groups.

Table 3 Weights for synthetic institutions for medical expense models

Cal-Berkeley		UCLA	
Institution	Weight	Institution	Weight
Washington St.	0.593	Clemson	0.475
Ohio St.	0.266	Iowa State	0.273
Florida	0.107	LSU	0.149
Alabama	0.022	Michigan	0.103
North Carolina	0.012		

Table 4 Weights for synthetic institutions for student aid expense models

Cal-Berkeley		UCLA	
Institution	Weight	Institution	Weight
Georgia Tech	0.545	Tennessee	0.300
Virginia	0.244	Arizona State	0.260
Michigan	0.159	Minnesota	0.251
Clemson	0.060	Texas Tech	0.189
Indiana	0.012		

Table 5 Predictors for treated units, synthetic controls, and donor pool in medical expense models (adoption year = 2015)

Variable	California	Synthetic control	Donor Pool	UCLA	Synthetic control	Donor pool
Total expenses	68.42	67.99	69.39	66.16	63.91	69.39
Student aid expenses	9.38	8.84	8.24	9.63	9.04	8.24
Media and conference revenue	13.42	15.91	17.25	14.71	17.06	17.25
Total revenue	67.92	70.94	74.06	66.16	66.90	74.06
Medical expenses (2008)	1.37	1.35	0.9	0.48	0.49	0.9
Medical expenses (2012)	1.39	1.35	1.13	0.45	0.55	1.13
Medical expenses (2013)	1.23	1.36	1.22	0.47	0.55	1.22
Medical expenses (2014)	1.43	1.39	1.22	0.40	0.57	1.22

All numbers are per $1 million

Findings from SCM Analysis

Our second analysis used SCM to conduct individual, quantitative case studies of the effects of the Student Athlete Bill of Rights at Cal-Berkeley and UCLA. We created a synthetic control institution comprising of a weighted average of Power-5 institutions that shared statistical similarities to Cal-Berkeley and UCLA. We used total expenditures, student aid expenditures, total revenue, media revenue, and medical expenses in 2008, 2012,

Table 6 Predictors for treated units, synthetic controls, and donor pool in student aid expense models (adoption year = 2015)

Variable	California	Synthetic control	Donor pool	UCLA	Synthetic control	Donor pool
Total expenses	68.42	73.63	71.85	66.16	65.35	71.85
Medical expenses	1.24	0.89	0.99	0.41	0.73	0.99
Media and conference revenue	13.42	16.89	18.21	14.71	15.32	18.21
Total revenue	67.92	74.65	76.76	66.16	68.41	76.76
Student aid expenses (2008)	9.00	8.63	7.69	8.77	8.76	7.69
Student aid expenses (2012)	10.05	9.68	9.77	11.13	11.05	9.77
Student aid expenses (2013)	10.00	10.36	10.33	11.59	11.63	10.33
Student aid expenses (2014)	9.86	10.32	10.99	12.14	12.17	10.99

All numbers are per $1 million

2013, and 2014 as variables to construct our synthetic control institutions. Tables 3 and 4 show the institutions used to create the synthetic versions of the treated institutions and the weights for each institution.

Tables 5 and 6 show a comparison of variables used to create the synthetic institutions by the institution, the synthetic version, and the donor pool. These tables show that the synthetic control is a better approximation on all variables compared to the overall donor pool, indicating that the synthetic control method is working as intended. Fits appear to be better for the medical expense models than the student aid models, which have some issues matching Cal-Berkeley on total expenses, total revenue, and medical expenses. This implies we should take caution when interpreting the Cal-Berkeley student aid models.

Figure 4 shows the SCM model results for both Cal-Berkeley and UCLA. The top two graphs show trends in medical expenses by year for our treated units and their synthetic counterparts. We see that the pre-treatment trend is a closer match for Cal-Berkeley than UCLA, but both have similar trends to their synthetic counterparts. For both Cal-Berkeley and UCLA, we see a clear spike in medical expenses directly after implementation in 2015. The lower left corner graph shows the ranking of Cal-Berkeley (5th) and UCLA (12th) among the 41 Power-5 institutions in the donor pool. That equates to pseudo p-values of 0.11 and 0.17, respectively. While they did not spend the most, they were among the largest increases in medical expenses after implementation. The lower right corner figure shows placebo tests that ran an SCM model for each institution in our donor pool iteratively. The resulting gray lines show how medical expenses changed at every institution and clearly shows the large increases at Cal-Berkeley and—to a lesser extent—UCLA that occurred directly after implementation.

Figure 5 shows the same SCM graphs for the student aid models. The top two graphs show that Cal-Berkeley had nearly identical student aid expenditures after the Student Athlete Bill of Rights was implemented compared to the synthetic Cal-Berkeley. There is some evidence that UCLA *lowered* its student aid spending after implementation compared to the synthetic UCLA. The lower left graph indicates that UCLA ranked 12th in post/pre

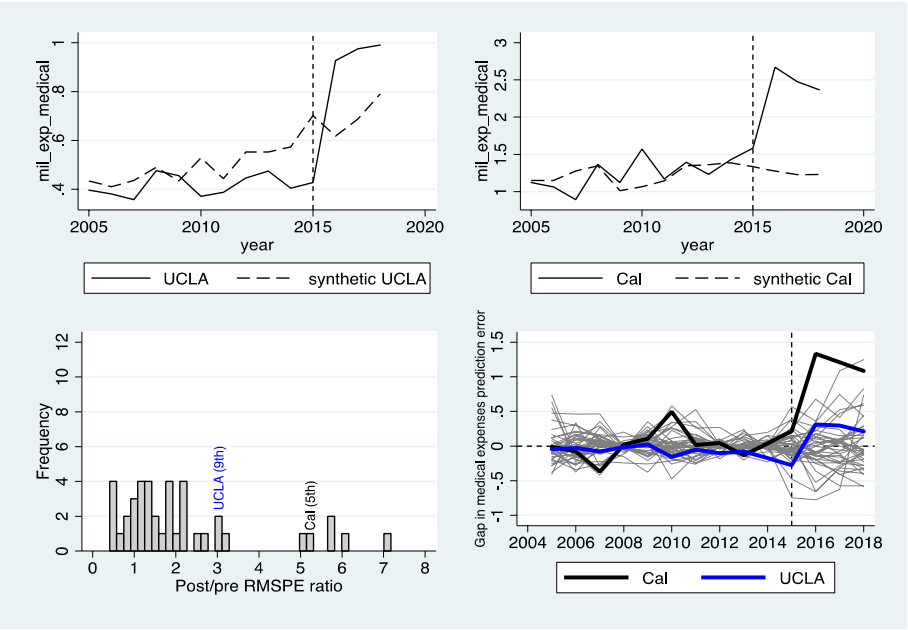

Fig. 4 SCM medical expense results for Cal-Berkeley and UCLA

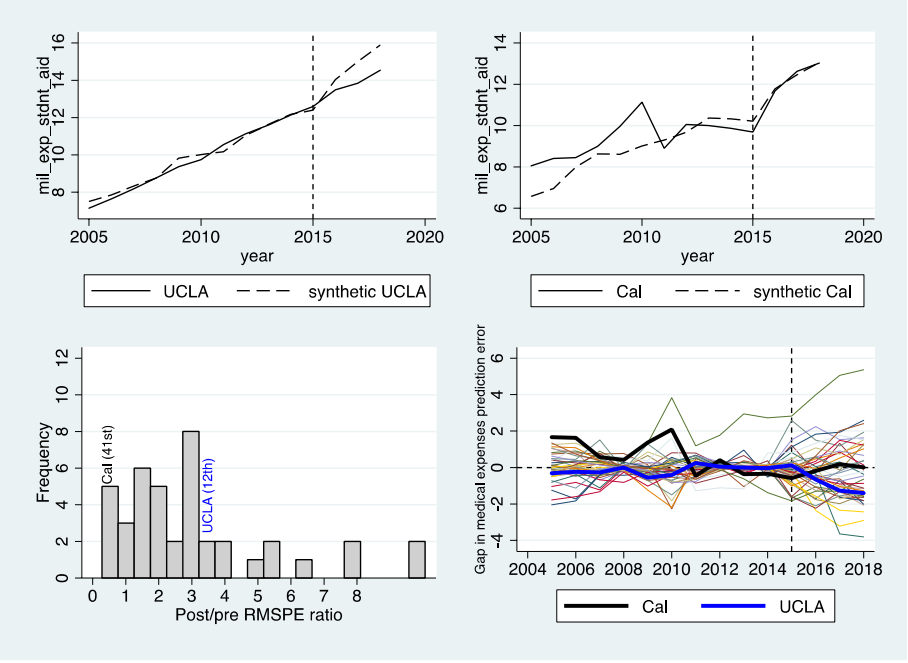

Fig. 5 SCM student aid results for Cal-Berkeley and UCLA

ratio of mean squared prediction error, while Cal-Berkeley ranked dead last. This equates to pseudo p-values of 0.26 and 0.89, respectively. The lower right graph of placebo tests reinforces the idea that there was no effect of the Student Athlete Bill of Rights on student aid expenses.

The SCM analysis complements our difference-in-differences analysis and supports the same conclusion: There is clear evidence that Cal-Berkeley and UCLA increased their medical expenses in response to the Student Athlete Bill of Rights compared to their synthetic counterparts, other institutions in the Pac-12, and the Power-5 conferences. We find no evidence that student aid expenditures changed in response to the policy implementation.

Additional Robustness Checks

We ran additional models testing the effect of the Student Athlete Bill of Rights on total athletics expenses. Both difference-in-difference and SCM analyses yielded the same result: there was not statistically significant effects on total athletic expenses. These insignificant results were expected because the two expenses targeted by the policy (medical expenses and student aid) were relatively small pieces of the overall athletics budget.

We also ran a robustness check to examine whether national healthcare policy could have confounded our results. In 2014, the Affordable Care Act was enacted, which included state-level Medicaid expansion. Only some states opted to expand Medicaid, while others did not. We re-estimated our difference-in-differences models after limiting the comparison group to states that expanded Medicaid by 2016. The pattern of results remained the same when limiting comparison groups to states Medicaid expansion states. In the new analyses, medical expenses significantly increased in California, while student aid significantly decreased. Similarly, SCM models for medical aid placed Cal-Berkeley second (pseudo p-value = 0.117) and UCLA third (pseudo p-value = 0.176) out of seventeen institutions. For student aid, UCLA ranked sixth (pseudo p-value = 0.353) and Cal-Berkeley ranked seventeenth out of seventeen institutions (pseudo p-value = 1.00). Results from these robustness checks are available upon request.

Limitations

There are several limitations to our study. As with any study that uses secondary data, we were limited in the number of variables we could use to examine alternate ways campuses responded to California's Student Athlete Bill of Rights. For instance, universities could have chosen between alternate prevention and treatment strategies. When required to care for injured athletes, athletic departments could have invested further in injury prevention, could have reduced activities that lead to injuries (e.g., strenuous practice), or could have reduced the number of athletes on teams to reduce the overall number of athletes who could potentially be injured. With secondary data, we were not able to examine whether numbers of injured athletes changed over time, whether the number of scholarships awarded to athletes changed over time, or whether athletic departments invested more in preventing injuries (e.g., by hiring more trainers and physical therapists). Future research may use public records requests to collect original data to address these limitations. For this study, our difference-in-differences analyses attempted to control for potential unobserved variance with institution and year fixed effects.

With the difference in difference approach, a primary concern was constructing comparison units so that in the absence of the Student Athlete Bill of Rights, the institutions subject to the policy and their comparison institutions had similar outcome trends. Another limitation is that we could not make broad statements about policies like the Student Athlete Bill of Rights because it only affected two public institutions in the state of California. Because we used secondary data, we could not examine whether the policy also influenced athletics expenditures at private universities in the Pac-12 conference (i.e., Stanford University and the University of Southern California). Despite these limitations, this study provided evidence from two types of quasi-experimental analyses that policymakers may influence universities to increase their investments in their student athletes.

Discussion

By sheer size and expense, intercollegiate athletics is one of the defining characteristics of U.S. higher education—as are attempts to reform athletics (Thelin, 1996). In this paper, we examined one state policy meant to improve intercollegiate athletics at universities that generate large amounts of revenue through media contracts. After California adopted the 2012 Student Athlete Bill of Rights, Cal-Berkeley and UCLA increased medical expenses for college athletes. Specifically, the difference-in-differences analysis indicates that, prior to the Student Athlete Bill of Rights, Cal-Berkeley and UCLA were spending far less on college athletes' medical care. After the policy was adopted, the two schools increased medical expenses by approximately 70% compared to other universities in their athletic conference after controlling for total athletic expenses (49% relative to universities in the Power-5 conferences). All public universities were increasing medical expenses during the study period, but the two universities affected by California's Student Athlete Bill of Rights outpaced their peers in increasing medical expenses. When we disaggregated total athletic expenses into categories, we found that medical expenses were 61% higher than other Pac-12 institutions and 51% higher than all Power-5 institutions. The SCM analysis confirmed that Cal-Berkeley and UCLA significantly increased medical expenses beginning in 2015. Cal-Berkeley jumped to having the 5th highest medical expenses among the 41 universities in the Power-5, and UCLA took 12th place in the same pool.

Conversely, the difference-in-differences and SCM analyses indicate that California's Student Athlete Bill of Rights did not influence college athlete financial aid expenses. In fact, the difference-in-differences model suggested that Cal-Berkeley's and UCLA's student aid expenses declined relative to universities within their athletic conference, as well as universities in the Power-5 conferences. The SCM analyses indicated that Cal-Berkeley's student aid spending was unchanged and that UCLA's student aid may have even declined.

California targeted a small number of public universities with its 2012 Student Athlete Bill of Rights. The policy applied to two of the 24 NCAA Division 1 public universities in the state, which was an even smaller percentage of the 57 public and private colleges and universities in any NCAA Division. Even so, the policy seems to have only achieved one of its goals. Cal-Berkeley and UCLA increased medical expenditures in athletic department budgets. Prior research has argued that students need continued funding to complete college following an injury (Milton et al., 2012; Paule-Koba & Rohrs-Cordes, 2019; Rubin & Rosser, 2014; Sack, 2008), but we did not find any evidence that athletic departments increased investment in student aid following the 2012 legislation. Given the option to not provide "equivalent scholarships" to college athletes, Cal-Berkeley and UCLA did

not increase student aid. Both treated institutions had college athlete graduation rates that exceeded the 60% threshold set by the California legislature (Harper, 2016).

This paper has implications for considering how principal-agent relationships play out in higher education policy. In this study, the agents were only responsive to the explicit mandate (medical spending). The policy indicated that the legislature thought injured college athletes should continue to receive financial aid to help them graduate, but the state also allowed Cal-Berkeley and UCLA to not grant equivalent scholarships if their college athlete graduation rates exceeded 60% (which they did). Future research may consider how the 60% threshold was set that exempted Cal-Berkeley and UCLA from providing aid to injured athletes. For example, Gándara (2020) used qualitative methods to show how different actors were able to influence state policy to benefit or avoid new burdens. Scholars may examine policies like the California Student Athlete Bill of Rights to further consider whether universities engage in regulatory capture (Levine & Forrence, 1990), especially regarding policies that would benefit students. Drawing on Mettler's (2014) notion of the policyscape, researchers should also examine ways that the Student Athlete Bill of Rights may have had lateral effects on other types of state policies related to health and safety or financial compensation for college athletes or had unintended consequences, such as on the NCAA's catastrophic injury insurance program.

The California legislature not only mandated that universities take better care of athletes, they also stipulated how universities should re-direct revenues to cover additional spending. California stipulated that as universities fulfill the new requirements, they needed to "rely exclusively on revenue derived from media rights for intercollegiate athletics to defray any costs accrued under these provisions" (California Office of Legislative Counsel, 2012). Using aggregate income and expenditure data from athletic departments, we were able to show that medical expenses increased but student aid did not. That said, it was not possible to know whether additional medical spending was paid for my media revenues (as opposed to some other income stream, like student fees).

Future research should continue to consider how principal-agent relationships are carried out by examining how athletic departments budget income from media contracts. However, a forensic accounting approach would require more detailed budget information than is currently publicly available. Additionally, future research may analyze institutional documents or interview former college athletes about whether "equivalent scholarships" were offered from outside athletic department budgets; if that were so, universities might be responding to legislative priorities but doing so in their own way.

Scholars who study educational policy and college athletics should also consider policymaking and principal-agent implementation issues in terms of NCAA policy. Throughout the paper, we refer to NCAA policies, such as the catastrophic injury insurance program and the limit on number of hours that college students should be expected to devote to athletics. As with California's Student Athlete Bill of Rights, scholars should investigate how NCAA policy is made, the ways that different groups make and influence policy, the ways that NCAA policy is implemented, and whether there is accountability in implementation. Although outside the scope of this study, it is important to understand how universities respond to changes in NCAA policy and how those responses affect university expenditures and ultimately impact students.

Finally, future research could turn to a qualitative approach to examine the impact of these policies on student athletes at Cal-Berkeley and UCLA, using interviews to find out what increased medical benefits have meant for injured student athletes. Scholars should also investigate how college athletes can inform universities about their needs and different challenges they have with paying short-term and long-term medical expenses. Navarro

(2015) offers an example of how the voices of college athletes can help universities understand ways that Division I athletes can sustain themselves academically and athletically. Additionally, to create a supportive campus environment, college athletes of color must be the center of conversations relating to NCAA Division I sports (Cooper, 2016). One way is by establishing counter-spaces to help start conversations about racialized academic and athletic experience that occur at Division I institutions. Solórzano and Yosso (2001) argued that counter-spaces can validate the experiences and frustrations of students of color to help improve the campus environment. However, counter-spaces often do not include conversations between college athletes of color and their athletic departments. It is important to include athletic departments in counter-spaces because they create support services for athletes (Huml, 2018). Building on our findings, student voices should be heard so that universities and athletic departments can consider how best to support college athletes wellbeing, especially as medical expenditures continue to increase.

Given the comparatively small impact on the budget to raise medical expenses, it may be worth it for other colleges to follow suit, or for Cal-Berkeley and UCLA to use these medical benefits as a recruiting tactic to attract student athletes that may benefit from the policy.

The purpose of this study was to examine whether two public universities, as agents of the state, were responsive to a mandate from state legislators (principals). However, prior literature indicates that injuries are not evenly distributed across student athletes. The racialized nature of college sports means that Black athletes are overrepresented in sports, like football, where athletes experience frequent injuries (Harper, 2016). Scholars have also shown that Black athletes' injuries are not taken seriously (Haslerig et al., 2020). Even medical professionals have been biased against Black patients (Hall et al., 2015; McCoy, 2020). If medical treatment or financial aid eligibility is contingent on a determination by "the institution's medical staff," then some students may benefit while others are ignored. Future research may examine which groups of students benefitted from California's Student Athlete Bill of Rights. Specifically, scholars may examine how the policy was implemented within athletic departments at individual universities. For instance, were increases in medical expenses caused by paying for better insurance or by directly providing healthcare to injured college athletes?

Methodologically, we paired a popular quasi-experimental approach for analyzing policy outcomes (difference-in-differences) with a less frequently used, but more nuanced approach for examining cases where individual universities experience treatment. The SCM analysis demonstrated that our difference-in-differences estimates were robust. Additionally, the SCM analysis helped us intuitively interpret our findings. In addition to discussing the difference-in-difference parameter estimates, we explained that California adopted the 2012 Student Athlete Bill of Rights, Cal-Berkeley's had the 5th highest medical expenses and UCLA had the 12th highest medical expenses among public comparison universities in the Power-5 athletic conferences.

Conclusion

The California Student Athlete Bill of Rights is a paradigmatic higher education policy. The legislature created an unfunded mandate while identifying two significant outcomes and proposing a means to reach those outcomes (i.e., use revenue from media rights to pay for medical care and student aid for injured student athletes). We found evidence that the

states two public universities that fell under the policy fulfilled one outcome, but we did not find evidence that it fulfilled the second. Because of the opaque nature of how athlete income and expenses are reported, it is difficult to untangle *how* universities allocate funds to carry out unfunded mandates.

In terms of college athletes' health, it was good to see that Cal-Berkeley and UCLA spent more on medical care. In terms of their academic success, it was concerning to see that the two athletic departments did not spend more on student aid compared to their peers. Public universities should be at least as invested—if not more invested—in affordability and academic success than in providing healthcare. Future work may consider whether these findings further reflect part of what Jayakumar and Comeaux (2016) refer to as the "cultural cover up" of college athletics. Although college athletes are said to be students first and athletes second, athletic department spending would seem to indicate otherwise.

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