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The Financial Services Environment and Schools' Savings Rates in the San Francisco Kindergarten to College Program

Children's savings accounts (CSAs) have emerged as a promising intervention to improve educational outcomes, curtail rising student loan debt, and promote equality of opportunity. Numerous localized CSA programs have emerged in the last decade, and many are embedded within school systems. This study leverages novel data to investigate participation in one of the oldest and most well-known CSA programs in the country: the San Francisco Kindergarten to College (K2C) Program in the San Francisco Unified School District. Spatial analysis of 21,617 accounts at 74 elementary schools reveals statistically significant differences in the rates of elementary schools' K2C account participation based on the concentrations of banks, credit unions, and alternative financial service providers—net controls for neighborhood demographics. Unless explicitly addressed, substantial variations in the financial service environment across neighborhoods could undermine participation in school-based CSA programs for the very children these programs intend to support.

Children's savings accounts[1] (CSAs) have emerged as a potential solution to the problems of increasing income and wealth inequality (Piketty 2014), rising student loan debt (Baum et al. 2017; Dynarski 2015), and doubts about the effectiveness of education for promoting equality of opportunity (Addo 2018; Addo, Houle, and Simon 2016; Houle and Warner 2017; McMillan Cottom 2017; Webber 2016). CSAs are interest-earning and incentivized bank accounts that are automatically opened for all children at birth or shortly thereafter for the purposes of saving for and investing in

1. Children's Savings Accounts are also discussed as Child Development Accounts (CDAs), College Savings Accounts (CSAs), and Baby Bonds. There are many similarities between CSAs or CDAs and Baby Bonds, though the policy proposals are not exactly interchangeable. CSAs are discussed in greater detail by Elliott and Lewis (2015a, 2015b). CDAs are described by Sherraden and coworkers (Huang et al. 2017; Sherraden 1991). Baby Bonds are discussed in greater detail in a proposal by Hamilton and Darity (2010).

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The Journal of Consumer Affairs, Winter 2019: 1797–1824
DOI: 10.1111/joca.12264

the future (Elliott, Destin, and Friedline 2011; Sherraden 1991). Originally conceived as a way to facilitate wealth building among poor children and families (Sherraden 1991), conceptualizations of CSAs have since expanded to include the facilitation of educational achievement (Elliott and Beverly 2011a, 2011b; Elliott, Destin, and Friedline 2011), inclusion in the financial system (Friedline, Elliott, and Nam 2013; Friedline, Johnson, and Hughes 2014; Friedline and Rauktis 2014), and healthy physical and mental development (Friedline 2015; Huang et al. 2014a, 2017; Huang, Sheradden, and Purnell 2014b).

Ample research documents CSAs' potential to generate widespread positive impacts, finding that CSAs or suitable proxies are associated with children's educational achievements including improved math scores and increased likelihood of college enrollment (Azzolini et al. 2018; Elliott and Beverly 2011a, 2011b; Elliott, Destin, and Friedline 2011), and reduced student loan debt (Elliott and Lewis 2015a, 2015b; Elliott and Nam 2013). CSAs or their proxies are also associated with accumulating wealth (Elliott, Lewis, and Johnson 2014; Friedline, Johnson, and Hughes 2014; Loya, Garber, and Santos 2017). Importantly, the children who reap the greatest benefits from CSAs are those at greatest risk for institutional marginalization: children of color and lower-income White children (Azzolini et al. 2018; Beverly et al. 2015; Friedline, Elliott, and Nam 2013; Hamilton and Darity 2017; Sherraden et al. 2018). For instance, race and income inequalities in CSA account opening and saving are reduced or nearly disappear when CSAs are opened automatically (Beverly et al. 2015). These findings are noteworthy given mutually reinforcing trends of wealth inequality and rising student loan debt that can amplify and sustain race- and class-based marginalization across the life course.

At the same time, CSA programs are embedded within and contextualized by neighborhoods and communities where variations in resources and opportunities may mediate potential benefits. Children's savings account programs currently depend on local partnerships with financial services like banks and credit unions to open and maintain children's accounts (Markoff and Derbigny 2017). Moreover, financial service environments are not created equally. The densities or concentrations of brick-and-mortar banks, credit unions, and alternative financial service providers vary substantially across neighborhoods and communities (Baradaran 2015, 2017; Caskey 1994; Celerier and Matray 2016; Dunham et al. 2018; Dunham and Foster 2015; Fowler, Cover, and Kleit 2014; Friedline and Despard 2017; Graves 2003), affecting access to and use of financial services even in a technologically advancing economy that is presumably less geographically constrained (Davis 2009; Friedline 2018; Friedline and Despard 2017;

Northwood and Rhine 2018). Taken together, and similar to public health literature linking fast food restaurants' proximity to schools and adolescent obesity (Austin et al. 2005; Currie et al. 2010; Davis and Carpenter 2009), the local financial services environment may be associated with children's participation in CSA programs and shape these programs' effectiveness. However, no known investigation examines whether participation in CSA programs is associated with the local financial services environment, which can be important both for developing necessary CSA partnerships (Markoff and Derbigny 2017) and for facilitating children's saving (Friedline, Despard, and West 2017a, 2019).

The goal of our current study is to investigate variation between school-based participation in a CSA program by measuring the potential influences of neighborhood factors—including the local financial services environment. To do so, we leverage novel data from one of the oldest and most well-known CSA programs in the country: the San Francisco Kindergarten to College (K2C) Program.[2] The K2C Program is offered by the city of San Francisco in partnership with the San Francisco Unified School District (SFUSD), and automatically establishes an individual CSA for every kindergartener starting in SFUSD public schools. We hypothesize that the demographic profiles of neighborhoods, including the makeup of brick-and-mortar financial services, are associated with the percentage of students within schools that actively contribute to K2C savings plans. Specifically, we analyze whether the densities of banks, credit unions, and alternative financial service providers within 400 m and 800 m of SFUSD elementary schools are associated with the percent of students within schools that actively participate in K2C by making contributions to their CSAs.

Our findings lend support to the contention that having banks and credit unions within the local financial service environment may help school-based CSA programs to engage children and families. We find statistically and substantively significant differences in elementary schools' CSA program participation based on the densities or concentrations of banks, credit unions, and alternative financial service providers, net controls for neighborhood demographics. As the percentage of the population that is Black increase, the savings rate decreases. The inverse is true for Latinx[3] and Asian population, with savings rates increasing as percentages

2. Please visit the K2C website for more information: http://sfgov.org/ofe/k2c.

3. While this study uses the term Latinx to inclusively acknowledge peoples of Latin American origin who do not ascribe to gender binaries, the authors recognize that the term Latinx emerged in the United States context and can represent a form of linguistic imperialism. The authors also recognize

of the population that are Asian and Latinx increase. These results are concerning when considered alongside concurrent trends of residential, school, and financial segregation. Banks and credit unions tend to avoid Black communities (Celerier and Matray 2016; Dunham and Foster 2015; Fowler, Cover, and Kleit 2014; Graves 2003), which also have disproportionately higher percentages of poor residents (Lichter, Parisi, and Taquino 2008, 2012; Massey, Rothwell, and Domina 2009), and racial and economic residential segregation play strong roles in contemporary school segregation (Frankenberg 2013; Iceland and Wilkes 2006; Reardon et al. 2009). Therefore, unless explicitly addressed, substantial variations in the financial service environments across neighborhoods could undermine participation in school-based CSA programs for the very children these programs intend to support.

THE LOCAL FINANCIAL SERVICES ENVIRONMENT

A wide literature documents variation in the local financial services environment across neighborhoods and communities (Barr et al. 2012; Celerier and Matray 2016; Dunham et al. 2018; Fowler, Cover, and Kleit 2014; Toussaint-Comeau and Newberger 2017). Manifestations of these variations include the densities and proximities of banks, credit unions, and alternative financial service providers (Dunham 2018; Dunham and Foster 2015; Goodstein and Rhine 2017; Jorgensen and Akee 2017), which are often spatially patterned after neighborhoods' and communities' racial and economic makeup. Neighborhoods of color tend to have lower average densities of bank and credit union branches than their White counterparts, net of socioeconomic controls (Dahl and Franke 2017; Ergungor 2010; Goodstein and Rhine 2017; Graves 2003; Hegerty 2016; Jorgensen and Akee 2017; Morgan, Pinkovskiy, and Yang 2016; Tranfaglia 2018; Smith, Smith, and Wackes 2008; Richardson et al. 2017). For instance, census block groups in the 1990s with higher percentages of Black residents had significantly fewer bank branches than the county average in Cook County, Illinois, which includes the city of Chicago (Graves 2003).

Bank branches are also located disproportionately farther away from neighborhoods of color, potentially increasing the costs for residents to access and use financial services in terms of transportation and time. Whereas the average individual travels a median distance of only 2 miles

the Latine movement that originated within trans and nonbinary communities of Latin America as described by Reichard (2017).

to the bank branch where they opened their checking account (Amel, Kennickell, and Moore 2008; Goodstein and Rhine 2017), residents of Native tribal communities travel a median distance of 8 miles to the nearest bank branch (Jorgensen and Akee 2017). This distance is four times farther than the national median and nearly consistent with the 10-mile benchmark used to define a "banking desert"[4] (Morgan, Pinkovskiy, and Yang 2016), a term introduced in the late 1990s referring to areas abandoned by banks and credit unions (Dahl and Franke 2017; Hegerty 2016). Data on high-speed Internet access suggest these neighborhoods may simultaneously be digitally disadvantaged, with limited access to and use of online and mobile banking that could otherwise facilitate transactions (Friedline 2018).

Bank branch closures over recent decades due to financial system deregulations and increased financial technology may exacerbate these geographic inequalities, particularly as closures are predicted to continue (JLL 2017). The number of bank and credit union branches per capita in neighborhoods of color and lower-income White neighborhoods declined between 1975 and 1995, while their numbers increased in White and higher-income neighborhoods during the same time period (Avery et al. 1997). Post-Great Recession, the number of bank branches declined nationwide (Richardson et al. 2017). Between 2008 and 2016, over 6% of the nation's brick-and-mortar branches closed, with 82% in urban zip codes and 18% in rural areas (Richardson et al. 2017). Some metropolitan statistical areas lost 15–25% of branches, including Baltimore, Chicago, Philadelphia, Las Vegas, and Detroit. Moreover, forecasts predict that the number of bank and credit union branches will continue to decline amidst bank failures, consolidations, and efforts to increase efficiency and reduce costs via technological advancements such as automated teller machines (Debter 2016; JLL 2017; Morgan, Pinkovskiy, and Yang 2016). The rise in popularity of online banking and mobile payments in the contemporary era is a contributing factor to brick-and-mortar bank branch closures (Servon and Kaestner 2008), as well as profitability and consolidation through mergers and acquisitions (Tranfaglia 2018).

The proliferation of alternative financial service providers into neighborhoods and communities—a trend occurring parallel to bank branch decline—is controversial. Alternative financial services broadly include payday lenders, check cashing outlets, auto title lenders, tax refund lenders, rent-to-own stores, and pawnshops. This industry has grown

4. A banking desert refers to a geographic area or community that does not have any bank or credit union branches, and research has measured banking deserts as census tracts that lack any of these financial services within a 10-mile radius from their centers (Morgan, Pinkovskiy, and Yang 2016).

rapidly since the 1980s (Karger 2005; Prager 2014), concurrently with rising levels of private debt and declining wages for households of color and lower-income White households (Barba and Pivetti 2009; Montgomerie 2009; Servon 2017; Warren and Tyagi 2003; Williams 2004). The number of alternative financial service providers increased nearly fivefold between 1986 and 1994 alone (Caskey 1994). The industry has grown at a steady annual rate of 15% (Apgar and Herbert 2006) and is estimated to earn around $300 billion annually (FDIC 2009).

Critics of alternative financial service providers raise questions about the high prices of their products compared to those from banks and credit unions while disproportionately targeting neighborhoods of color (Burkey and Simkins 2004; Caskey 1994, 2012; Dunham and Foster 2015; Faber 2017; Gallmeyer and Robert 2009; Graves and Peterson 2005). For example, based on longitudinal analysis of check cashers in New York City, check cashers capitalized on the foreclosure crisis during the Great Recession and their dramatic increase between 2006 and 2011 was associated with census tracts that had higher percentages of people of color (Faber 2017). At the national level, a one standard deviation increase in the county's Black population corresponded with a 20% increase in the number of payday lenders per capita in 2009 (Fowler, Cover, and Kleit 2014).

Given the aforementioned trends of the proliferation of alternative financial service providers and the decline of bank and credit union branches in neighborhoods of color and lower-income White neighborhoods, concerns exist that people of different races and socioeconomic status use, or are forcibly steered toward, different types of financial services (Baradaran 2015, 2017; Barth, Hilliard, and Jahera 2015; Cover, Fuhrman, and Kleit 2011). The bifurcated availability of bank and credit union branches vs. alternative financial service providers is considered a contributing factor in the emergence of a dual financial service delivery system with implications for how neighborhoods and their residents access and use the financial services within the local environment (Belsky and Calder 2005; Berry 2005; Squires and O'Connor 1998).

Variations in the local financial services environment matter because of the relationships between neighborhoods' brick-and-mortar financial services and their residents' participation in economic life, such as paying bills (Friedline, Despard, and West 2017a), receiving health care (Eisenberg-Guyot et al. 2018; Melzer 2011), and accessing credit (Bertrand and Morse 2011; Bhutta 2014; Bhutta, Skiba, and Tobacman 2015; Friedline et al. 2017b). For instance, having banks within closer proximity to or more highly concentrated in neighborhoods is associated with being more likely to use these financial services, have access

to credit, and experience increased opportunities for entrepreneurship (Brown, Cookson, and Heimer 2016; Friedline et al. 2017b; Kerr and Nanda 2009). The lack of bank access negatively impacts local small business lending, which leads to a reduction in employment growth rates, and these effects are particularly found to affect those living in lower-income neighborhoods (Nguyen 2014). Likewise, residents use payday lenders with greater frequency when these lenders are located in close proximity to their neighborhoods (Bhutta 2014; Friedline and Kepple 2017). Indeed, greater access to payday lenders is associated with delaying medical treatment and struggling to pay bills—relationships that become more pronounced as payday lenders concentrate within neighborhoods (Melzer 2011). Additional studies find that the presence of alternative financial service providers in neighborhoods is associated with negative outcomes such as crime (Kubrin and Hipp 2016; Lee, Gainey, and Triplett 2014) and poor health (Hundley et al. 2017).

THEORETICAL MECHANISMS

The theoretical mechanisms that explain relationships between the financial services environment and outcomes are both practical and social. Closer proximity and increased access are practical, parsimonious explanations of financial behaviors. In alignment with public health literature studying fast food restaurants' proximity to schools (Austin et al. 2005; Currie et al. 2010; Davis and Carpenter 2009), people may use financial services or make deposits into CSA accounts given the convenient presence of banks, credit unions, or payday lenders (Bhutta 2014; Friedline and Kepple 2017). A bank located within walking distance to a school, for instance, could be associated with an increased frequency of CSA account deposits. Students in school-based CSA programs like K2C often take field trips to neighboring banks to learn about saving and make deposits into their accounts,[5] or have bank representatives make visits to their school for these same purposes. The proximity of a payday lender to a school could be associated with decreased frequency of account deposits. The comparatively higher costs and fees for using payday lenders could mean less money left over to deposit into a CSA account.

A social explanation suggests that the local financial services environment can create an emergent effect through mechanisms like collective efficacy, whereby exposure to financial services shapes beliefs about using

5. For more information on K2C bank field trips, please visit: https://sfgov.org/ofe/book-bank-field-trip.

these services (Friedline and Kepple 2017). From this perspective, the collective messaging or signaling sent by the composition of financial services in a given environment may shape and reinforce a person's beliefs about making deposits into a CSA account. School-based CSA programs that take field trips to nearby banks send messages to students and their families about making deposits into their accounts, in addition to the practicality of such trips for facilitating deposits. School-based CSA programs also send informational flyers and other materials home with students that may shape and reinforce collective beliefs about their accounts (Lewis et al. 2017). Wabash County, Indiana's school-based CSA program incorporates account enrollment and deposits into evening parent–teacher conferences (Lewis et al. 2017).

Individual members of the same family often adopt similar financial behaviors (Pinto, Parente, and Mansfield 2005; Shim et al. 2010). Therefore, it is reasonable to consider that a parent or student can adopt a school community's shared beliefs about their local financial services environment and that these beliefs can relate to their use of such services. Given research findings and theoretical explanations, the local financial services environment may shape participation in CSA programs. These influences may be practical based on convenience and/or theoretical based on the presence of financial services shaping beliefs about using these services (Friedline and Kepple 2017; Lewis et al. 2017; Sharkey and Faber 2014; Small and McDermott 2006).

RATIONALE FOR THE CURRENT STUDY: K2C CSAS AND THE FINANCIAL SERVICES ENVIRONMENT

The San Francisco K2C Program is a partnership of the San Francisco Mayor's Office, the Office of the Treasurer, the Department of Children, Youth, & Their Families, and the SFUSD that automatically establishes an individual college- or postsecondary education-focused savings account for every kindergartner upon starting in SFUSD public schools (Elliott et al. 2017a, 2017b). The program began with a limited number of SFUSD kindergarten students in the 2010–2011 school year and became available to all students entering kindergarten during the 2012–2013 school year. A K2C account with an initial contribution of $50 from the city and county of San Francisco is opened for each eligible student when they begin kindergarten and the account is then maintained throughout the student's K-12 years. The K2C account remains held by the partnering financial institution, Citibank, and K2C accounts are not transferrable to any

other financial institution. Children, families, and other individuals or organizations, such as grandparents or philanthropic nonprofit organizations, are able to contribute to individual accounts by going in person to bank branches, using direct payroll deposit, or sending their deposits by mail. Students are also able to earn incentives by participating in the program and completing certain requirements (City and County of San Francisco 2018).

San Francisco's K2C is an example of how CSAs could be implemented at national scale (Elliott et al. 2017a, 2017b), as they were originally proposed (Sherraden 1991). Though, while CSAs were proposed as a national policy to be enacted at the federal level, their developments have mostly occurred within local and regional contexts and each program has created its own unique infrastructure. For example, while San Francisco's K2C program, Boston's Invest in Success pilot program, and Maine's Harold Alfond Challenge have similarities and can share their learnings with each other, each must develop their CSA programs based on their local or regional opportunities, partnerships, and constraints. While even a national CSA program would be subject and tailored to local and regional influences and variations, current CSA programs are designed within and for these contexts. For example, K2C developed a partnership with Citibank, where the city and county of San Francisco holds the K2C accounts. Until a national policy is enacted, developing financial services partners with local and regional service areas remains critical to localized CSA programs' implementation. For these reasons, our study investigates the relationship between elementary schools' financial service environments and aggregated school-based participation in their K2C CSAs.

DATA AND METHODS

San Francisco: Background and Context

The San Francisco K2C Program is situated within a city and region with a racially, linguistically, culturally, and socioeconomically diverse population. The contiguous city and county of San Francisco has grown steadily since the 1980s (Schwarzer 2001), and the city's population of 850,282 residents makes it one of California's largest cities (U.S. Census Bureau 2018a). Of these residents, 48.1% identify as White, 33.9% identify as Asian (1.9% Asian Indian), 5.4% as Black or African American, 0.4% as Native Hawaiian and Other Pacific Islander, 7% as some other race, and 4.9% as two or more races. In total, 15.3% of the population identifies as Latinx or Hispanic (U.S. Census Bureau 2018b). A sizable percentage of San Francisco residents are also foreign-born (34.91%) and are non-US citizens (13.41%) (U.S. Census Bureau 2018c). Median

household income is $87,701 USD (U.S. Census Bureau 2018d), and 12.5% of individuals are living below the poverty level (U.S. Census Bureau 2018e). Regarding educational attainment, most San Francisco residents have at least a high school degree. Of the population age 25 or greater, 87.4% are high school graduates and 54.8% have obtained a bachelor's degree or higher (U.S. Census Bureau 2018f).

SFUSD is California's seventh-largest school district (74 schools that include 72 schools grades K–5 or K–8 and two additional district charter schools). A majority of students (56%) received free or reduced-price lunches during the 2015–2016 school year, which is slightly higher than the 52% of students on average who are eligible for free or reduced-price lunches (National Center for Education Statistics 2017a). One in four students (27%) were English language learners. The district has a high percentage of students of color (10% African American, 30% Latinx, 14% White, 41% Asian/Pacific Islander, 4% multiracial, and less than 1% Native American). Comparatively, half of all public school students are White (National Center for Education Statistics 2017b). The SFUSD high school graduation rate (87%) is slightly higher than the national average (California Department of Education 2016). SFUSD provides an ideal setting for this research because the district is committed to increasing college enrollment rates by helping kindergarten students and their families develop early pathways to college and other postsecondary educational opportunities.

Dependent Variable: Schools' K2C Account Savings Rate

The dependent variable measured the percentage of students within elementary schools that contributed anything over the $50 initial amount contributed by the city of San Francisco after the account was established, regardless of whether the account was in its first year or sixth year. Individual-level data for all schools were used to calculate how many students within each school had saved over the initial contribution amount. To arrive at a percentage, we divided this number by the total number of students enrolled in the school. Thus, the dependent variable measured the extent to which elementary schools had students that participated in or engaged with their K2C account by making deposits or contributions.

As of July 7, 2016 (the date when data were collected by K2C), there were 21,617 opened K2C accounts across SFUSD's elementary schools. K2C accounts ranged from being in their first to sixth year of ownership. When the K2C program began, elementary school participation was staggered with additional participating schools rolling in and accounts being opened for their students in subsequent academic year phases or

waves. Because students received their CSA when they began kindergarten, CSAs in their sixth year belonged to students who were in the first kindergarten cohort of schools that received a CSA in the 2010–2011 school year. CSAs in their fourth year belonged to students who were in the first kindergarten cohort in the 2012–2013 school year, and so on.

To analyze CSA program participation, account transaction records were collected from K2C and included all transactions made between the date the account was opened for the student and July 7, 2016. Most K2C accounts had been opened for at least 1 year prior to collecting their transaction data. Given that most contributions were made into K2C accounts during the first year after opening (Elliott et al. 2017b), the dependent variable captures contributions at the height of transaction activity despite variation in the length of time that accounts remained opened. All transactions are coded as either a contribution or an incentive. A contribution referred to any deposit in the student's CSA made by a family member or a guardian. An incentive referred to any additional funds added to the CSA by the K2C program to encourage college savings (e.g., matched funds for contributions up to $100 per year). In other words, a family member or guardian would need to make a contribution in order to receive the incentive of matched funds. The records also included the student's school when the account was opened and the year the student received their account. Thus, for the purposes of this analysis, we distinguished contributions from incentives and calculated the percentage of students within elementary schools that had made any contribution after initial account opening—regardless of the length of time that their accounts had been opened.

School Location Data

School location data were acquired from the SFUSD, including the latitude and longitude for 74 elementary schools within the district. Using ArcGIS, the elementary schools were geocoded, and a map of their locations was created (see Figure 1).

Financial Services Environment

Data representing the financial services environment were acquired from several sources. Bank and credit union branch location data were retrieved from the fourth quarters of the 2014 Federal Deposit Insurance Corporation summary of deposits and National Credit Union Administration call

FIGURE 1
Map of San Francisco County

reports, which are publicly available data providing latitude and longitude for all branches in the United States. Location data for alternative financial service providers were acquired from California state business listings. The data on alternative financial service providers are from 2017, and include check cashing and payday lending storefronts. These alternative financial service providers were chosen given that they offered

transaction-based services similar to those provided by banks and credit unions. It is notable that these storefronts were standalone establishments whose primary business designations were as check cashers and payday lenders. This means that the data underestimated the number of alternative financial service providers by not including businesses like grocery or liquor stores that might have offered transaction-based services. All bank, credit union, and alternative financial service provider locations were geocoded in ArcGIS. In total, 331 bank and credit union branch locations and 99 alternative financial service provider locations were identified within San Francisco. The locations of financial services just across the southern border of San Francisco, in San Mateo County, were also plotted; however, these locations were not included in the analysis, as they did not fall within the radius buffers established around schools. Figure 1 is a map of San Francisco that includes the locations of elementary schools with 800 m buffers displayed, bank and credit union branches, and alternative financial service providers.

Sociodemographic Data

Sociodemographic data were selected based on variables in prior studies that address the spatial dimensions of retail financial markets (Dunham and Foster 2015; Faber 2017; Fowler, Cover, and Kleit 2014; Friedline and Kepple 2017; Gallmeyer and Robert 2009) and collected from the American Community Survey 2016 ACS 5-year census tract estimates. Aggregated at the census tract-level, sociodemographic data included population density, median household income, percentage of the population that is Black, percentage Asian, percentage Latinx, percentage of the population with a bachelor's degree or higher, and the percentage of the population below poverty.

Sample

The sample included the universe of 21,617 K2C accounts at SFUSD's 74 elementary schools. Descriptive statistics for the sample and variables are displayed in Table 1. In the average elementary school, 18% of the student population had made a contribution into their K2C account. Though, this percentage varied widely from approximately 2%–82%. On average, schools had nine bank and credit union branches (range from 0 to 110) and nearly three alternative financial service providers (mean = 2.78, median = 1, range from 0 to 24) within their neighborhoods. Schools' neighborhood demographics varied substantially in terms of race and

TABLE 1
Descriptive Statistics Within School Study Areas

Variable	Mean	Median	Min	Max	SD
Percent savers	18.42	15.58	1.84	81.55	12.84
Bank and credit union branches in 800-m buffer	9.14	5.50	0.00	110.00	18.34
Alternative financial service providers in 800-m buffer	2.78	1.00	0.00	24.00	5.02
Population density people/km	11,040	10,054	535	30,098	5,337
Median household income	90,515	92,134	16,473	165,551	37,118
Percent Black	5.79	1.98	0.00	62.41	10.63
Percent Asian	33.83	30.37	6.16	91.14	20.78
Percent Latinx	15.84	10.32	1.21	48.85	13.23
Percent bachelor's degree or higher	52.59	56.75	8.00	87.30	21.56
Percent two parents married family household	39.38	40.45	8.90	65.90	12.64
Percent below poverty	12.14	9.50	1.80	36.10	8.10
Median age	40.18	39.30	24.30	64.80	5.80
Schools total ($N = 74$)					
Census tracts total ($N = 195$)					
Bank and credit union branch total ($N = 331$)					
Alternative financial service provider total ($N = 99$)					

Note: Schools' sociodemographic data were collected from the American Community Survey 2016 ACS 5-year census tract estimates. The numbers of bank and credit union branches and alternative financial service providers were calculated based on their presence within an 800-m radius of each school.

poverty level, given the spatial organization of racial and economic segregation (Massey, Rothwell, and Domina 2009; Reardon et al. 2009). For example, some elementary schools were located in census tracts that did not have any residents who were identified as Black (0%), whereas others were located in majority Black tracts (62%) (mean = 5.79%, median = 1.98%). The census tract percentages ranged from 6% to 91% for Asian (mean = 33.83%, median = 30.37%) and 1% to 49% for Latinx (mean = 15.84%, median = 10.32%) populations. Elementary schools were also situated within socioeconomically diverse neighborhoods, and household income ranged from $16,473 to $165,551 (mean = $90,515, median = $92,134). Given households' median income, approximately 12% of residents on average were living below the federal poverty line.

Additional descriptive statistics are provided for the dependent variable, K2C school savings rates, in Table 2. School savings rates increased along with the number of bank and credit union branches within the 800 m buffer as indicated by the percentages from the lowest to highest quartile, from an average of 17% to an average of 26%. Savings rates declined as the number of alternative financial services providers within the buffer increased, from an average of 22% to an average of 12%. Savings rates declined across quartiles as the percent Black and Latinx populations increased. Schools

TABLE 2
Descriptive Statistics of Kindergarten to College (K2C) School Savings Rates by Quartiles of Financial Services Environment and Sociodemographic Data

	K2C School Savings Rates			
	Quartile 1 Mean (Median)	Quartile 2 Mean (Median)	Quartile 3 Mean (Median)	Quartile 4 Mean (Median)
Bank and credit union branches in 800-m buffer	17.073 (14.290)	14.616 (15.335)	15.800 (13.750)	26.463 (19.100)
Alternative financial service providers in 800-m buffer	22.480 (17.940)	15.700 (14.810)	26.180 (17.220)	12.244 (12.360)
Population density people/km	19.086 (16.670)	15.570 (14.720)	15.539 (13.890)	24.088 (16.850)
Median household income	21.377 (15.000)	16.999 (15.630)	17.746 (16.850)	17.436 (13.725)
Percent Black	25.737 (18.510)	18.351 (16.670)	15.971 (14.500)	14.031 (11.895)
Percent Asian	12.259 (12.360)	18.160 (16.670)	17.915 (18.930)	25.323 (16.950)
Percent Latinx	27.001 (19.310)	16.464 (15.520)	15.546 (15.395)	14.975 (14.290)
Percent bachelor's degree or higher	20.268 (12.430)	17.966 (16.930)	19.312 (16.670)	16.243 (13.725)
Percent two parents married family household	13.932 (13.600)	23.086 (19.770)	19.403 (15.150)	17.458 (16.740)
Percent below poverty	18.149 (14.525)	17.698 (16.950)	14.706 (14.500)	23.046 (16.910)
Median age	13.554 (12.420)	17.761 (17.200)	17.535 (15.740)	25.155 (16.810)

Note: Schools' sociodemographic data were collected from the American Community Survey 2016 ACS 5-year census tract estimates. The numbers of bank and credit union branches and alternative financial service providers were calculated based on their presence within an 800-m radius of each school. Data represent the K2C school savings rate by quartiles. For example, for schools located in the lowest quartile of bank and credit union branches within the 800 m buffer, the average K2C savings rate was 17% (or, a median of 14%).

located in census tracts with the highest quartile of residents living in poverty had average participation in K2C that was just as high—if not higher—than schools located in census tracts with the lowest quartile of residents living in poverty. These patterns were observable in both mean and median descriptive statistics.

Ordinary Least Squares Regression Analysis of Geographic Units

Critical to the analysis of neighborhood-level predictors of financial behavior is the task of defining the geographic units to be utilized in the study. This task was completed based on a conceptualization of local markets, while also borrowing from the precedent of prior spatial analysis studies. Circular buffers with 400- and 800-m radii were created around each elementary school location using ArcGIS. These buffer sizes were chosen based on a precedence of previous research addressing health outcomes and school proximity to fast food restaurants (Austin et al. 2005; Currie et al. 2010; Davis and Carpenter 2009; Zenk and Powell 2008), and also practical considerations regarding San Francisco's dense urban geography. Sensitivity checks were conducted with 1,000- and 1,600-m radii.

Previous research has used the 400-m and 800-m measures of proximity as reasonable thresholds for close proximity (Pikora et al. 2002; Simon et al. 2008). One-half mile (804.67 m) buffers have also been used (Austin et al. 2005; Davis and Carpenter 2009; Zenk and Powell 2008), given that a person can walk this distance in 10 minutes on average. Other measures of distance previously used in studies that explicitly examine the effects of brick-and-mortar financial service locations were ruled out given their limited applicability for San Francisco—a dense urban area. Goodstein and Rhine (2017) use the number of bank and credit union branches and alternative financial service providers per capita (density) within 5 miles of household census tract centroid. Cohen-Cole (2011) uses the number of payday lenders within 3 miles of an individual residence (3 miles = 4,828 m). However, given that the total area of San Francisco is approximately 46.89 mile^2 (121.4 km^2) (U.S. Census Bureau 2018g), 3- or 5-mile buffers were not appropriate for the spatial scale of census tract-level analysis within a dense urban area. Thus, 400- and 800-m radii were chosen and reported in the text. Sensitivity checks with 1,000- and 1,600-m radii buffers are summarized in the table footnotes of Table 3, which represent geographies at much larger scale and far outside of schools' local financial services environments. Complete results for these sensitivity checks are available from the first author upon request.

TABLE 3
Ordinary Least Squares Model Predicting Kindergarten to College School Savings Rates

Dependent Variable Percent Savers	400-m β (Standardized)	800-m β (Standardized)
Bank and credit union branches	.202†	.352*
Alternative financial service providers	−.103	−.088*
Percent Asian	.261*	.223†
Percent Black	−.402**	−.291*
Percent Latinx	−.184	.021
Percent below poverty	.244†	.279*
Adjusted R^2	.284	.338
F	5.815	7.210
School total N	74	74

Note: *Results for 1,000-m buffer*: Bank and credit union branches within the buffer were positively associated with schools' percent savers ($\beta = .439$, SE = 0.068, $p = .001$), while alternative financial service providers were unrelated to the dependent variable ($\beta = -.114$, SE = 0.241, $p = .352$). No other covariates in the model were significant at $p < .05$. *Results for 1,600-m buffer*: Bank and credit union branches within the buffer were unrelated to schools' percent savers ($\beta = -.068$, SE = 0.050, $p = .621$), while alternative financial service providers were positively associated with the dependent variable ($\beta = .479$, SE = 1.653, $p < .001$). The only other covariate associated with the dependent variable at $p < .05$ was the percent Black population ($\beta = -.255$, SE = 0.153, $p = .049$).
*$p < .05$.
**$p < .01$.
†$p < .1$.

In order to examine the predictive relationship of the census and neighborhood financial service index variables on school savings rates, linear ordinary least squares regression is utilized. The model may be represented as:

$$y = \alpha + \Sigma\beta kxk + e,$$

where y is the estimated rate of savings (what percentage of students in each school contributed to their K2C account), α is the intercept (constant), x represents each independent variable, k equals the number of independent variables included in the model, and e represents the random error term. As is typical practice in regression analysis, the results were checked for multicollinearity, outliers, influential observations, and regression assumptions. Based on these diagnostic checks including correlation matrices that revealed multicollinearity with some sociodemographic variables, only variables measuring the financial services environment, race, and poverty were included in the final regression analyses.

RESULTS

The OLS models predicting the percentage of students in each school that contributed to their K2C account were statistically significant, with adjusted R^2 values of .284 and .338, respectively, for 400- and 800-m radii,

indicating a good model fits. The results of the OLS regression analyses appear in Table 3.

The number of bank and credit union branches within an 800-m radius buffer around each school was positively associated ($p < .05$) with the percent of savers, with a trend-level association in the model using the 400-m buffer. In the model using the 800-m buffer, each additional bank or credit union branch in a school neighborhood was associated with a 35% increase in the proportion of students within the school that saved in their K2C account. An inverse relationship was found between alternative financial service providers and savings rates, which indicated that students were less likely to save in neighborhoods with a greater number of these high-cost providers. Each additional alternative financial service provider in a school neighborhood was associated with a 9% decrease in the proportion of students within the school that saved in their K2C account.

The percentage of the population within schools' 800-m buffer below federal poverty guidelines was also positively associated with savings rates. For each percent increase in poverty, there was a 28% increase in the proportion of students that saved in their K2C account. Percentage of the population that was Black was negatively related to the proportion of students that saved in their K2C account, indicating that a higher percentage of Black population was a statistically significant predictor of lower savings rates. The inverse was true for Asian and Latinx populations, with increasing Asian and Latinx populations predicting higher savings rates.

For the most part, results were consistent between the 400- and 800-m buffers. Both types of financial services in schools' local environments were significantly associated with the proportion of students within the school that saved in their K2C account. However, in the model using the 400-m buffer, the association for bank and credit union branches dropped to trend level ($p < .10$) and the association for alternative financial service providers dropped out of significance altogether. Covariates were mostly consistent in terms of the directions and significance of the associations. There were greater discrepancies in the models that used the 1,000- and 1,600-m buffers (see Table 3 footnotes). These larger buffers masked variations in schools' local financial services environments by aggregating across higher levels of geography and were therefore unreliable for understanding schools' relationships with nearby financial services.

DISCUSSION

CSAs have garnered widespread interest from policymakers and the general public (Latimore 2018; Magdelano 2017; Robles 2015), given

their potential to improve children's educational, financial, physical, and mental outcomes (e.g., Elliott and Lewis 2015a, 2015b; Hamilton and Darity 2017; Huang et al. 2014a; Huang, Sheradden, and Purnell 2014b). However, unevenly distributed impacts driven in part by variations in local contexts and financial services environment could undermine CSAs' potential. Despite the proliferation of online and mobile banking and the ability for these technologies to close geographic gaps to financial services (Friedline 2018), the locations of brick-and-mortar banks, credit unions, and alternative financial services providers remain associated with financial outcomes (Bhutta 2014; Brown, Cookson, and Heimer 2016; Friedline and Kepple 2017; Kerr and Nanda 2009; Melzer 2011). Similar relationships may be observable in school-based CSA programs, where variations in the local financial services environment could affect children's program participation. Though, CSA programs will need to evaluate how changing high-speed internet access affects participation rates, particularly in areas with high concentrations of payday lenders and check cashers. Given the concurrent trends of residential (Lichter, Parisi, and Taquino 2008, 2012; Massey, Rothwell, and Domina 2009), school (Frankenberg 2013; Reardon et al. 2009), and financial segregation (Celerier and Matray 2016; Fowler, Cover, and Kleit 2014), variations in the local financial services environment may undermine CSA programs' effectiveness for supporting children at risk of race- and class-based marginalization.

This study fills a crucial gap in our understanding of CSA program participation through the analysis of neighborhood sociodemographic, financial services, school, and savings account data from the K2C program in San Francisco. A first key finding confirms that the financial services environment relates to the percentage of students in each school that contributes to their K2C account, net neighborhood sociodemographic controls. In other words, the numbers of banks, credit unions, and alternative financial service providers that surround elementary schools are associated with the percentage of students within those schools that contribute to their K2C account. This finding aligns with existing evidence that the locations of brick-and-mortar financial services are associated with financial outcomes (Brown, Cookson, and Heimer 2016; Friedline, Despard, and West 2017a, 2019; Kerr and Nanda 2009; Melzer 2011), and that the locations of fast-food restaurants in proximity to schools are associated with students' health outcomes (Austin et al. 2005; Davis and Carpenter 2009; Zenk and Powell 2008). This relationship may be explained by composition and proximity of the local financial services environment (Bhutta 2014; Brown, Cookson, and Heimer 2016; Melzer 2011), as well as social

mechanisms that develop shared beliefs about using these services (Friedline and Kepple 2017).

Moreover, financial services' relationships to schools' saving rates is inverse, based on their type. Whereas the number of bank and credit union branches surrounding the school is associated with an increasing number of students saving in their K2C account, the association for the number of alternative financial service providers is negative. Prior research also finds that banks and credit unions are positively associated and alternative financial service providers are negatively associated with a variety of outcomes (Bertrand and Morse 2011; Bhutta 2014; Friedline and Kepple 2017; Melzer 2011). While additional analyses are needed, and the significance of other factors should not be ruled out, the results suggest that the financial services environment has the potential to impact savings rates.

A third key finding is that schools' neighborhood demographics are consistently associated with their savings rate. As the percentage of Black population increases, the K2C savings rate decreases, whereas the opposite relationship occurs for the percentages of Asian and Latinx population. This could be explained by the fact that the Black population in San Francisco is small—only 6% on average. An increasing percentage of Black population in a school's neighborhood could also indicate higher marginalization within the city, such as segregation and anti-Black discrimination, which could depress the K2C savings rate. K2C savings rates increase along with the poverty rates of schools' neighborhoods, suggesting that schools in higher-poverty neighborhoods also have high rates of participation. Consistent with findings that poor children can benefit the most from CSAs (Beverly et al. 2015; Sherraden et al. 2018), it may be that students attending schools located in higher-poverty neighborhoods have fewer options to save for postsecondary education compared to their more affluent counterparts. Assuming that a school's attendance catchment zone includes the students that reside within its neighborhood, higher participation by households with relatively fewer financial resources to spare is unsurprising (Beverly et al. 2015; Elliott et al. 2017b; Sherraden et al. 2018). Therefore, these students' and their families' reliance on their K2C accounts may result in schools' higher savings rates.

Taken together, these findings provide initial insights into the potentially influential roles of the local financial service environment and neighborhood contextual factors for understanding participation in school-based CSA programs. As such, CSA programs—especially those based within schools—should consider how varying financial services environments and other contextual factors could mitigate or influence their students'

participation. A school that is located in a neighborhood with several payday lenders may need to find ways to counteract collective messaging sent by the presence of these higher-cost financial services that could undermine their students' saving. CSA programs may also consider collaborating with local governments to prevent certain financial services from opening new branches or locations within close proximity to schools. Local governments can make decisions about zoning and business licensures to alter schools' financial service environments. While research should continue to explore how financial services environments influence CSA programs and under what conditions, these are preliminary considerations for potentially improving programs' effectiveness.

The findings are not without limitations. One limitation of note is that school-level participation in and engagement with K2C accounts may not be reflective of students' individual-level financial services environments. In other words, because attendance is not completely dictated by individual school catchment zones, students living in one neighborhood may attend a school in a different catchment zone—where their school and residential neighborhood have distinct financial services environments. However, this limitation does not undermine the study's central findings given that schools' neighborhoods can have effects on individual students, independent of any effects from students' residential neighborhoods (Austin et al. 2005; Currie et al. 2010; Davis and Carpenter 2009; Zenk and Powell 2008). As with all regression-based analysis, omitted variables may also serve to explain the spatial variation in savings rates. Though, using OLS regression controlling for demographics, this study takes an important first step in investigating the spatial nature of CSA program participation.

CONCLUSION

The findings in this study fill an important gap in the existing literature on CSA programs by investigating an understudied factor: the financial services environment. While future research should advance these findings, this study is the first to investigate the financial services environment within CSA programs. Net control of other factors, the densities or concentrations of banks, credit unions, and alternative financial service providers are associated with substantively significant differences in elementary schools' CSA program participation. Leveraging novel data to expand on consumer finance research, the findings reveal how savings rates in SFUSD's K2C program are potentially influenced by the neighborhood makeup of brick-and-mortar financial services and sociodemographic variables. To the degree that variations in K2C savings rates are predicted by

these factors, this research is intended to better understand factors contributing to participation and engagement, with the ultimate goal of improving CSA programs.

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