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The Immediate and Intergenerational Effects of Unconditional Cash Transfers: Evidence from American Indian Tribal Casinos

Maggie R. Jones[‡], Emilia Simeonova[*], Randall Akee[†], Carla Medalia[**]

[‡]UC Berkeley
[*]Johns Hopkins University and NBER
[†]Harvard University and NBER
[**]U.S. Census Bureau

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Abstract

Unconditional cash transfers that are not temporary, part of experimental studies, or predicated on family socio-economic standing (SES) are exceedingly rare. This study documents the impact of unconditional cash transfers on two generations of American Indians using a panel of linked census and tax data over more than three decades. We focus on tribal members who resided away from tribal reservations when gaming operations became legal on tribal lands. This allows us to isolate the effects of cash transfers net of any potential local economic changes that could be induced by the gaming operations on reservations. We estimate that the transfers are, on average, about a third of initial household income, and are perceived as a permanent transfer – though the exact amounts vary annually. We demonstrate the effects of transfer receipt on household SES and on long-term labor market and education outcomes for children from these households in adulthood. Children whose families received the transfers while they were minors have higher wages and incomes in their mid-20s. We find strong evidence that these effects are likely due to substantial gains in educational attainment associated with the transfers. We test whether an alternative treatment affects households that live off tribal reservation lands and who self-identify with tribal nations operating casinos, but do not provide casino-related cash transfers. We find no effects of this type of treatment on adults or children's outcomes.

Keywords: Income inequality, earnings inequality, race, ethnicity, casinos, mobility, American Indian
JEL classification: J15, J24, 48, I38

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1 Introduction

The importance of household economic standing for children's wellbeing cannot be overstated. There is growing evidence of a causal link between family background and children's health, education, and labor market outcomes during childhood and beyond (Akee et al., 2018, 2013, 2010; Almond et al., 2018; Currie, 2009; Currie and Almond, 2011). Many different interventions could affect a household's economic situation. Improved local labor market conditions, selective mobility into better neighborhoods (moving to opportunity), or exogenous changes in family income could all lead to improved family financial standing. However, the mechanisms at play in these different types of settings could lead to substantially different impacts on children's wellbeing (Page, 2024).

We study two related, but separate, social experiments. First, we investigate the effects of tribal casino operations on the labor market outcomes of tribal members who reside off of tribal reservation lands prior to the establishment of casino operations. We then consider the related but separate treatment of casino-generated cash disbursements, which accrue to tribal members regardless of the geographic location of their residence. The cash transfers are generated by profits from casino operations. In a subset of tribes, these profits are distributed to tribal citizens as unearned income. The transfers are provided to members by tribal governments, making these payments the closest setup to a government-disbursed, unearned income transfer that we are aware of. Also, to our knowledge, our research is the first analysis of the effect of casino operations and related cash transfers on the outcomes of tribal members who live away from reservation lands.

We first establish the impact of the two social experiments on the adult generation's labor market participation, wages and salaries, and total income. Then we turn to the children's generation and examine their outcomes when they are themselves adults – approximately one to two decades later depending on the children's initial ages. In our setting, we consider only household children who are minors and have been claimed as dependents on a tax return by an individual from the adult sample. We study the labor market behavior, marriage outcomes, and educational attainment of this second generation.

Our findings clearly indicate that casino operations without cash transfers do not significantly impact the labor market outcomes of either the parents' or children's generations. There are also no significant effects of casino operations alone on children's educational attainment. However, when tribes provide unconditional unearned income in the form of casino-generated cash transfers, both adults and their children benefit. We first document that, on average, annual reported household incomes increase for those who are eligible for casino cash transfers. Although no official accounting exists of the amounts disbursed by tribes, the average annual increase we document (between $5,000 and $7,000) is consistent with anecdotal evidence and with estimates from prior work (Akee et al., 2018). Concurrent with the positive shocks to income, earnings from wages and salaries decrease for the first generation, and we find a small reduction in tax-unit-level employment, as measured by the presence of any wage and salary income or self-employment income. Adults do not appear to leave the labor force altogether, but rather reduce the amount of time they devote to earning income. Adults spend less time working, but their overall financial standing improves as measured by total income. According to models of family investments in children, both of these mechanisms may lead to improved outcomes for children. Parents have more time to spend outside the labor market and invest in children, and at the same time the household has more financial resources to devote to investment in children's human capital.

We find effects on the second generation that are consistent with these predictions. We categorize the children as having been affected by the unconditional transfers if the transfers started before they reached the age of 18. Children raised in households eligible for cash transfers are more likely to complete high school and attain some college education compared with older cohorts from the same tribal group who did not receive cash transfers in childhood (due to the fact that the tribal casino operations and cash transfer programs had not yet started). The impact on educational attainment is substantial, but consistent with findings in the prior literature (Akee et al., 2010; Bastian and Michelmore, 2018). Young adults whose families received cash transfers earn higher wages in their mid-20s, which is concordant with their higher educational achievement. Crucially, even though children continue to receive cash transfers in young adulthood, we do not observe a contraction in labor supply and, in fact, estimate higher wages and salaries compared with children from the same tribe who did not receive cash transfers as children or young adults. This contradicts the hypothesis that guaranteed income transfers induce dependence and entitlement in the younger generation, which leads to under-investment in human capital.

When we test for intergenerational impacts of casino operations that did *not* include cash transfers, we find no significant effects on the second generation. These results lend credence to our inference that the cash transfers affected children's outcomes at least partially through their impact on treated parents. The positive association of household cash transfer receipt and children's long-term human capital accumulation is due to the income intervention, rather than some other unobserved mechanism through which tribal casinos affect tribal members living away from reservation lands.

2 Background and Related Literature

This study is related to several strands of the literature. First, we contribute to the growing body of research on unconditional cash transfers and their impact on labor market and family outcomes. We believe that this study is the first to demonstrate how sizable, unconditional cash transfers that are perceived as permanent affect household wellbeing in the long run, and children's outcomes in particular. The findings in this study are also relevant to the literature examining the intergenerational transmission of socio-economic status, and the large body of work on the connection between family financial resources and children's outcomes. We contribute to the growing body of social research on the impact of tribal casinos on various measures of inequality, and on the economic standing of American Indians and other households affected by their operations.

A large and growing literature studies various randomized experiments designed by researchers to evaluate individuals' changes in behavior due to "guaranteed" unearned income. A related strand of research has analyzed experiments arising out of policy changes that result in positive household income shocks. Perhaps unsurprisingly in light of the wide variation in interventions, populations, and duration of transfers analyzed, the conclusions from different studies vary, ranging from little to no effects (e.g., Bartik et al. (2024)) to positive. A series of related studies analyses the impact of randomized monthly cash transfers on individual labor market, health, and parenting practices, and children's short-term outcomes (Miller et al., 2024; Vivalt et al., 2024). These cash transfers were sent to a randomly selected 5,000 individuals in three states for 3 years during the COVID pandemic and its immediate aftermath. The recipients were aware that the transfers were experimental and would

end, and thus must have perceived these transfers as temporary. The researchers diligently followed participants over time and document small effects on labor market outcomes, little to no effects on the health of the index recipient, and no effects on their children's health or education outcomes. In a similar randomized setup, Goodman-Bacon and Palmer (2024) provided unconditional cash transfers of $500 per month for two years to indigent Minneapolis residents and found improved mental health, food and housing security, and self-reported wellbeing while the transfers were being disbursed. However, similar to Bartik et al. (2024), they found no labor market effects.

While our work is related to this recent literature, it differs along important dimensions. First, the social experiments we study affect a large portion of a population that has been historically economically and socially disadvantaged. We study American Indians (AI) who reside in urban and rural setting across the country, but not on federally recognized reservation lands. All tribes, regardless of whether they opened a casino, are represented in this study, as long as there is a self-reported tribal affiliation reported in the 2000 Census. This is in contrast to prior work based on one tribe from North Carolina (Akee et al., 2018, 2020, 2024, 2013, 2010).

Second, the number of tribal casino closures is quite small. Since the start of Indian Gaming Regulatory Act in 1988, we estimate that about 10 tribally operated casinos have closed over this time period which is a little less than 3 percent of all tribal casinos. There are some instances where tribal casinos will temporarily close for renovations or due to natural disasters; but bankruptcy and complete closure is rare. Thus, both the potential availability of economic opportunity related to casino operations, and the unconditional cash transfers, were perceived as permanent changes in the economic conditions of households. These are not one-time lump-sum transfers. Although their exact size is not a priori known, eligibility for unearned income generated from tribal casino operations constitutes a positive shock to permanent family income. This differs from other recent experiments, in which families received unconditional cash transfers for restricted periods of time (Bartik et al., 2024; Vivalt et al., 2024). It also differs from interventions such as the widows' pension (Aizer et al., 2016), which was withdrawn upon re-marriage, and from the EITC, which is conditional on income and positive earnings.[1]

The second large literature that this work relates to centers on the connection between family circumstance and children's outcomes. A recent comprehensive review by Page (2024) summarizes the existing research on income interventions and children's outcomes and concludes that the impact of additional income for children from vulnerable backgrounds is positive. Further, these positive effects do not appear to be meaningfully affected by the developmental stage at which the positive shocks happen. These conclusions hold as long as the transfers are considered permanent in nature.

Among existing studies, the closest to ours is Aizer et al. (2016), with some notable differences. First, all tribal members are eligible to receive cash transfers, regardless of their pre-transfer income or household composition. Second, the size of the transfers is larger in our setup: We estimate that potential dollars on average represent more than 25 percent of annual pre-transfer total income. The mothers' pension studied in Aizer et al. (2016) also lasted about three years, while casino cash transfers theoretically exist in perpetuity. The expectation that these transfers would be permanent additions

[1]Evidence strongly suggests that citizens of tribal nations have the political will to keep per capita payments in place once they are established, even at times when casino operations are under threat. Crepelle et al. (2024) finds that, during the Covid-19 pandemic, casinos associated with a per capita remained open 17 to 24 percent longer than those without.

to household income create different incentives on labor force participation and the allocation of family resources.

Another related branch of the literature relies on lottery winnings to identify the impact of additional unearned income. Cesarini et al. (2017) use Swedish registry data linked to parents' labor market and health outcomes, and children's schooling and health outcomes, to investigate whether unexpected exogenous money receipts affect child health and development. There is no significant evidence that parental lottery winnings affect children's schooling outcomes or cognitive and non-cognitive skills (as measured for males in the Swedish Army draft exams). Lottery wins can be distributed over time to resemble regular unearned income transfers. There are several important differences between lottery wins and casino-generated cash transfers, however. Winning the lottery is a rare event, and the resulting income is likely perceived as a one-time income shock, even if the proceeds are spread out over a longer time period. More importantly, the Swedish institutional and social environment is very different from the U.S. Differences in children's adequate access to schooling and health care are minimized due to the universal health insurance, free public schooling, organized and regulated free daycare, and free university education. Last but not least, we focus on young adulthood, completed terminal education, and labor market performance in the second-generation's mid-20s, which is beyond the development period examined by the Swedish lottery studies. Bureau of Labor Statistics (2022) study lottery winners in the US, comparing college attendance across children of winners of large prizes and children whose parents won smaller sums, won in the last year of high school and the year after graduation. Although the lottery wins are a one-time event, their analysis shows positive effects on college attendance.

As a final point of comparison: The Earned Income Tax Credit is the largest federal government program that disburses income transfers to working families. In terms of its national scale, and the value of transfers to households, the EITC is similar to the tribal policy we investigate here. At the same time, there are two important differences. The EITC requires positive earnings, and it is calculated as a function of household earnings in addition to other factors such as the number of children. Thus, receipt of the EITC is predicated on working outside the home for formal pay. The expansive literature evaluating the various effects of EITC on children's health and educational attainment finds mostly positive impacts (Bastian and Michelmore, 2018; Dahl and Lochner, 2012; Hoynes et al., 2015).

2.1 Institutional Background

Many AI tribes engaged in low-stakes gaming on tribal lands as part of their cultural heritage. In the 1980s, some tribes posited that tribal sovereignty allowed high stakes gaming operations on their land as well, which resulted in several high profile legal cases.[2] By the end of the decade, Congress saw the need to legislate the issue. The Indian Gaming Regulatory Act (IGRA) of 1988 aimed to standardize and normalize the processes required to establish and operate tribal casino businesses on American Indian reservations. Prior to the passage of IGRA in 1988, American Indian gaming existed on reservations as small-scale bingo and card games operated by tribes mainly in California and Florida (Meister et al., 2009).

[2]One of the disputes ended up in the U.S Supreme Court in 1987 with *California vs. Cabazon and Morongo Bands of Mission Indians* (Spilde and Taylor, 2013). The Supreme Court ruled that if states allow any type of gaming within state borders, then the state has no legal jurisdiction to regulate gaming on tribal lands.

In order to initiate Class III (high stakes) gaming operations, a compact must be signed between the tribe and the state and may contain various provisions regarding revenue-sharing between the tribe and local (county and/or state) authorities. The law requires that the, "Indian tribe will have the sole proprietary interest and responsibility for the conduct of any gaming activity," but that revenues must be used for specific purposes: to fund tribal government operations or programs; to provide for the general welfare of the Indian tribe and its members; to promote tribal economic development; to donate to charitable organizations; or to help fund operations of local government agencies. IGRA permits cash transfers, provided semi- or annually to tribal members, as long as tribal legislation permits them. Unconditional cash transfers are exempt from local taxes, but the amounts must be reported as part of adjusted gross income and are subject to federal income tax during our study period.

2.2 Literature on Tribal Casinos

Prior research into the impact of casino operations and associated cash transfers has focused on AI individuals who live on or near reservations, sometimes resorting to comparisons of county-level results due to data limitations. Cross-sectional research comparing reservations has found that casinos and cash transfers increase household income and decrease employment (Evans and Topoleski, 2002; Reagan and Gitter, 2007; Thompson, 2019; Wheeler, 2023); decrease child poverty (Anderson, 2013); and increase years of education among children whose parents were exposed to casino openings (Thompson, 2019). There is some research indicating that casino operations may be equality-enhancing across tribal nations and may induce spillover economic benefits (such as lower unemployment) in geographic areas beyond the confines of the reservation Aguilar et al. (2024); Spilde and Taylor (2013); Taylor and Chase (2012).

A set of longitudinal studies focused on on-reservation tribal members has established inter- and intragenerational benefits to casino operations and cash transfers, including positive effects for adults and during adolescence and later in life for treated children (Akee et al., 2018, 2024, 2013; Simeonova et al., 2021). Benefits to children include higher educational attainment; improvements in personality traits, depression, and anxiety; and better economic outcomes. Larger benefits appear to accrue to households who begin in poorer circumstances. Overall, the impact of casino operations on reservations has been positive, in spite of suggestive evidence of higher alcohol consumption and accidents (Cotti and Walker, 2010) (although other studies have found the opposite (Reece, 2010; Wolfe et al., 2012)) and higher BMI in treated children (Akee et al., 2013).

A major threat to validity for any study of casino operations on reservations is the issue of selection: for example, Evans and Topoleski (2002) finds that employment is 26 percent higher on tribal areas after a casino is established, but much of this is driven by in-migration (12 percent) of adults of working age; later research found that in-migration occurs among AI working-age adults who originally lived off reservation (Simeonova et al., 2024). Crucially, Simeonova et al. (2021) and related papers (Simeonova et al., 2024) have used 1989 tax filings linked with AI identification in pooled Census data to identify AI who lived on reservation lands before the passage of IGRA. This identification is essential to removing the confounding influence of selection from the analysis.

Following the same strategy for this paper, we provide what we believe to be the first causal evidence of casino operations and related cash transfers for tribal members who lived *off* of reservation lands and resided elsewhere in the United States when IGRA was passed, as well as the impacts of casinos and cash transfers on their children. We use self-reported tribal identity from the decennial

Censuses (2000, 2010) and every American Community Survey from 2005 to 2017 to link the American Indian tax filers in 1989 to specific tribal nations, even if they are not residing on those tribal reservation lands.

3 Data Description

The individual-level panel data in this study come from two main sources: U.S. Census Bureau demographic data and IRS data from Forms 1040, W-2, and 1099. We study two generations: The first comprises adults, ages 18 to 45, who filed their 1040 from a census tract or zip code outside of a designated reservation area in 1989. The selection in 1989 is important, as IGRA was passed the year prior, and the casinos we study were established after that year. We trace the same individuals in all subsequent years in the panel data, regardless of whether they continued residing off the reservation or moved to it at a later date.

Our data construction proceeds in several steps. In combined demographic data from the decennial Census 2000 and Census 2010, supplemented with combined ACS data from 2005-2017, we identify all individuals who self-identified as American Indian or Alaska Native (AIAN) as one of their first four racial groups and self-identified as members of a specific AI tribe.[3] Before the 2000 Census individuals were not allowed to provide more than one answer to the racial identification question, and were not asked about tribal identification, which severely restricts the ability to track AIAN persons, especially those who reside away from tribal lands. American Indians are the most racially mixed group in the U.S., and many AIAN identify with more than one racial group. Those who report AIAN as a racial category, but do not report a tribal affiliation, are dropped from the sample. Similarly, we identify children's tribes based on the tribal identity of the parent, preferring mother's affiliation over the father's affiliation as matrilineal descent more often determines tribal identity.

Our second step is to separately identify the AIs who were working age and filed a 1040 in 1989 from a reservation location, by linking either their filing tract or zip code to official lists of reservation lands in Census geographic data. The remaining observations, and the focus of this analysis, are AI 1040 filers of working age who lived anywhere else in the U.S. in 1989. In the 1990 decennial census, there were about 2 million individuals who identified as AIAN in the U.S., with 0.5 million of them living on reservations. It is important to note that the limitation of identifying people's race and tribal affiliation using the 2000 U.S. Census restricts our sample to adults in 1989 who were still alive in 2000. We also capture Census demographic data, such as gender, to these adults.

Our second generation comprises the children of any of the adults from the first generation. We link children to 1989 adults by using dependent claiming on 1040s. A child's invariant parent is the earliest claimer of a child, and we first see dependent claiming in tax year 1994. We link children to their demographic information in the same manner as their parents. We then link the children, as adults, to their 1040 filing and W-2 information (beginning in 2005). Because the decennial Census does not report educational attainment, we link the children to the ACS and, for a random subset, obtain their education status. The children in the sample were born between 1978 and 1996.

Records are linked at the U.S. Census Bureau using a process whereby individuals in each data

[3]We use the term "AIAN" when speaking of the full U.S. population, including Alaska Native individuals, and "AI" to refer to individuals linked to filing address in the contiguous U.S.

set were given a unique, protected identification key, called a "PIK." When a Social Security Number (SSN) is available in a data set, the identifier is assigned based on SSN. For records without an SSN, personally identifiable information such as name, address, and date of birth is used in probabilistic matching to assign PIKs.[4] Personal information is then removed from each data set before they may be used for research purposes. Only those observations that received the unique person identifier are used in the analysis.[5]

We require for our adult sample that individuals filed taxes in 1989 and in an additional, later year. The adult sample is not restricted to parents—we look at effects for all adults who meet the sample requirements. We identify any children of these adults through dependent linkages, prioritizing a link to a mother. If either claiming parent reports a tribal affiliation, we assign the affiliation to the child, taking the mother's affiliation first. Because children may select into affiliation later in life (and possible in response to per capita payments), we do not include children's self-reports of tribal affiliation if no parent identified with the same tribe. Our identification of tribal membership is imperfect and may not overlap completely with official tribal rolls. However, this imperfect identification means our effects are likely underestimated.

In addition to the combined demographic and tax data, we have collected information on the opening of tribal casinos and the initiation of cash transfers from the enactment of IGRA to 2017. The basis for this information comprises a number of sources, including the Bureau of Indian Affairs (through a FOIA request), web-based aggregators on casino information, prior research, and newspaper archives. A description of this data and its sources appears in the Appendix. Our list of tribes and their casino operations can be linked through tribal identifiers to geographic files of reservation tracts and zip codes, thus leading to our isolation of tribal members who live outside these areas in 1989. Of the 346 or so federally recognized tribal groups in the lower 48 states, we retain about 300. First, the Navajo are a large group, with tribal lands that are geographically disparate and in extremely remote areas. Their history with the casino industry has been difficult to track, and their inclusion in the data leads to a major outlier effect. Standard practice for research into this topic has been to drop Navajo groups from the data, and we follow that here. In a few other cases, tribal groups may have opened and then closed a casino, or they had a governance structure with state or private entities that made their inclusion problematic.

The key variables for the adults in this analysis include: the year a casino opens; the year a cash transfer begins; and tax unit characteristics for individuals, including reported adjusted gross income, wage and salary income, any evidence of work (from positive wage and salary or a self-employment filing); and marital (filing) status. Unlike the adults in the analysis, for children we also have available W-2 information. For the child sample, we examine W-2 wages and individual income from combined

[4]For more information on the linking process, see Chetty et al. 2020; Wagner and Lane 2014.

[5]It is important to note that the record-linkage approach we use to link the data introduces some bias. Minorities and people with lower socioeconomic status are less likely to receive a record-linkage key compared to Whites and people who have higher levels of socioeconomic status (Bond 2014). The same issue is present in other research utilizing the linked Census/IRS individual data, including research on income inequality and immobility by race (e.g., Chetty et al. 2020). Because our study covers a panel of multiple years of tax filings (1989 through 2017) we anticipate that selection issues are somewhat less severe as compared to work using fewer years of tax data. If an individual filed taxes in any year during this period, we would capture that return. Still, we cannot completely rule out non-random missing tax information with respect to economic status and we acknowledge that this would result in downward bias of any estimates of inequality and immobility between race and ethnic groups in the present study.

W-2, 1040, and 1099 filings. We also link a sample of children to their ACS education information, taking education measures from the latest link to an ACS and examining only responses to the ACS that occur after the age at which education is measured (e.g., an observation must have been sampled after the age of 23 in the ACS to be counted as a high school graduate).

Our sample is by construction restricted to individuals who filed a tax return in 1989 and for at least one year after that. This restriction likely results in a positive selection into our sample on the basis of household income. To get a sense of how our sample compares to the national averages for AIAN individuals, we include key characteristics of AIAN adults from public data sources.

Table 1: Table of Means for Adults in 1989 by Reservation Type

Variable	Casino alone	Casino and Cash Transfer	Never Casino	1990 Census (IPUMS)
Age	33.4	32.3	32.4	30.63
	(10.2)	(10.2)	(10.2)	(7.8)
Married	0.6	0.5	0.5	0.47
	(0.5)	(0.5)	(0.5)	(0.5)
Household income	28,000	25,500	26,000	28,500
	(75,500)	(62,500)	(65,000)	(25,700)
Household earnings	25,000	23,000	22,500	11,000
	(26,500)	(22,500)	(23,000)	(14,000)
Employed	1.0	1.0	1.0	0.85
	(0.0)	(0.0)	(0.0)	(0.35)
Children	0.5	0.5	0.5	0.36
	(0.5)	(0.5)	(0.5)	(0.48)
Obs	265,000	13,000	11,000	

Note: The reservation type aligns with the tribal identification of the individual. By construction, these individuals do not reside on tribal reservation lands in 1989. Source: Form 1040, Numident, decennial Census 2000 and 2010, ACS 2005-2017. Census DRB authorization number CBDRB-FY24-CES010-002; CBDRB-FY26-CES005-001; Earnings are individual in the IPUMS data and measured per tax unit in our dataset. Household income is measured at the tax unit level in our data; the IPUMS data corresponds to total family income.

Table 1 summarizes the main variables of interest. The variable means are estimated for the year 1989 separately for the three different sub-samples. Standard deviations are reported in parentheses under the variable mean. The tax data are reported on the level of a taxable unit. This implies that total adjusted income, and wage and salary income are aggregated at the level of the tax unit. For families with two working adults, the gross and wage and salary incomes are the total amounts for the two adults. For single filers, the amounts represent reported totals by the individual.

Our sample covers individuals who were between the ages of 19 and 45 in 1989. As the means table demonstrates, AIAN tribal members who experienced a casino opening by 2020 and lived off tribal reservations in 1989 were about 33 years old in 1989. Those whose tribes initiated a cash transfer were about a year younger, and less likely to be married. Adults who eventually were eligible for tribal cash transfers reported lower wages and total income, by about 8 to 10 percent. However, due to our measure being tax-unit income, this difference is at least partially explained by the lower marriage rate in these sub-groups. Despite the difference in family status, all groups were equally likely to be parents by 1989. AI tribal members whose tribes opened a casino but did not disburse cash transfers during our observation period were slightly older, more likely to be married, and more likely to report higher wages and incomes. This difference in SES is again likely driven by the difference in marital status. For married individuals, both of these outcomes are likely to be higher due to generally higher incomes of married persons and by the inclusion of a spouse's wages and income.

To get a sense of how this sample compares to the representative Native American in the U.S. at the time, we compare our sample to the 1990 U.S. Census. The average age in our sample is about 3 years older than in the 1990 AIAN population. Average earnings are about $11,000, which reflects both the slightly younger age in IPUMS and the use of tax unit wages and salaries in our average. Higher earnings and incomes in this sample are consistent with a higher average age, and higher rates of employment. We select individuals based on their residence in 1989, which is reported in tax filings.

Table 2: Table of Means for Children in 1989 by Casino Treatment Type at Age 23

	Not Treated	Casino only	Casino and transfer	ACS public data
Variable				
Age of Casino	N/A	13.17	8.36	
Opening		(3.57)	(4.79)	
Age of	N/A		11.61	
Cash Transfer			(4.53)	
Male	0.51	0.51	0.51	
Wage at 23	16,000	17,500	16,500	
	(13,000)	(14,500)	(13,500)	
Income at 23	6,700	15,000	17,500	
	(13,000)	(15,500)	(23,500)	
Works for pay	0.36	0.81	0.73	
	(0.48)	(0.39)	(0.45)	
Married at 23	0.18	0.14	0.14	
	(0.38)	(0.35)	(0.34)	
Years of schooling				

Note: There are 24,000 observations for the Not Treated group (except for the variable Wage at age 23 where there are only 8,500 observations). There are 110,000 observations for the Treated to Casino only group (except for the variable Wage at age 23 where there are only 89,500 observations). There are 9,100 observations for the Treated to Casino and Cash Transfer group (except for the variable Wage at age 23 where there are only 6,700 observations).Source: Form 1040, Numident, decennial 2000 and 2010, ACS 2005-2019. Census DRB authorization number CBDRB-FY24-CES010-002; CBDRB-FY26-CES005-001.

Individuals who did not file a tax return in 1989 and for at least one additional year until 2017 are not included in the sample. Approximately 15 percent of AIAN respondents in the 1990 census reported being unemployed. Marital status is similar in the sample and the 1990 Census AIAN population—about 47 percent of Native Americans reported being married in the Census compared to slightly over 50 percent in our sample. The higher proportion of married adults also contributes to higher combined household incomes in our sample relative to the 1990 median.

Table 2 summarizes the main variables of interest for the children's generation. The individuals included in this sample were claimed as dependents by any parents in the adult generation described in Table 1. We assign treatment status and timing to the children based on the status and timing of their parents. If at least one parent is from a tribe that opens a casino, we consider the child treated to (remote) casino operations. If either parent is eligible for a cash transfer, the child is considered treated to cash transfers.

The average age for children at casino opening is about 13, while the average age at first cash transfers is about 12. The difference in age between casino openings and cash transfers stems from the fact that many tribes start cash transfers a few years after a casino starts operating. In the table, we report mean wages, income, and employment at age 23 across the three groups. The differences in marital status across the three groups do not mechanically affect reported earnings, though it is still possible that married individuals are more (or less) likely to be working for pay and receive their own income. These means incorporate the average unadjusted mean impact of being treated to casinos or cash transfers during childhood for the treated groups. Because our data on wages start in 2005—about 6 years after the data on personal income—the number of observations for whom we have wage information is fewer. Young adults whose families were eligible for cash transfers have substantially higher incomes than the other two groups. Interestingly, there are substantially higher incomes and wages, as well as labor force participation at age 23 among individuals whose parents' tribes opened a casino even without an associated cash transfer. The large difference in total income among those who did not get casinos is driven by the difference in the likelihood of paid employment. Wages are calculated only for those that report positive wages and are thus employed for pay. Income is based on the total reported income on the 1040, which can be non-zero even if an individual does not report any earnings from wages and salaries.

Contrary to the adults sample, we have access to the children's individual wages and individual total reported income. We compared our sample to averages for AIAN individuals aged 23 from similar cohorts from IPUMS (to be filled in).

Among the non-treated group, 90 percent have graduated high school by age 23; 58 percent have at least some college education, and 18 percent have completed college. The average years of completed education in this group is 11, consistent with high school completion. These children were born around the year 1985. Comparable cohorts of American Indian children from the ACS report about 75 percent high school graduation, 32 percent have some college education, and 8 percent have completed college education by the age of 23.

4 Empirical Strategy

Our analysis focuses on the effect of unconditional cash transfers generated by AI casinos on earnings and incomes for AIs from two generations. The cash transfers cannot happen without gaming operations, but a large proportion of tribes operate casinos without disbursing cash transfers. Notably, the presence or absence of cash disbursements is not directly related to how financially successful the casino is. Usually, tribal governments decide on per capita transfers before the casino opens, and the intent to implement these transfers must be registered with the BIA through an official process. The vast majority of casinos open in the same year as the beginning of the cash transfers. In rare cases cash transfers start later than casino operations. This requires a legislative process on the tribal level, and completing required steps with federal and local authorities. Ultimately, the exact timing of cash transfers is never certain, though it is much easier to gauge when the original casino compact includes provisions for a cash transfer (they start at the same time). Clearly, the success of gaming operations cannot be known before the casino starts operations, and thus the presence or absence of cash transfers is unlikely to be influenced by the realized profits of the casino.

It is possible that casino operations somehow affect individuals living away from tribal lands, though previous research casts doubt on som potential mechanisms such as selective migration (Simeonova et al., 2024). To start with, we test for the impact of casino operations on adults aged 18–45 who resided away from reservation lands in 1989 and who file a tax return. As IGRA was passed in 1988, this baseline year assures minimal selection into residing on the reservation due to anticipated casino operations. We then follow these individuals and their children until 2019. We consider all persons residing off a tribal reservation in 1989 and reporting the tribal affiliation the casino and cash transfer is associated with. Clearly, this means that our estimates should be interpreted as intention to treat, and thus likely under-estimate the true effects of the treatment.

The individual panel nature of the data allows us to estimate models accounting for individual-level, time-invariant heterogeneity through individual fixed effects. We consider the impact of casino operations and separate out the effect of unconditional cash transfers. The main estimating equation is:

$$\mathrm{Y}_{it} = \alpha_0 + \beta \times X_{it} + \gamma \times Casino_t + \lambda \times PerCapita_t + \theta_t + \mu_i + \epsilon_{it} \tag{1}$$

Casino indicates the existence of a casino in time t; *PerCapita* indicates the presence of a per capita unearned income transfer. The outcomes of interest are household wages and salary and adjusted gross income, employment (as proxied by the presence of non-zero wage and salary earnings or a flag indicating self-employment), and marital status. It is important to investigate whether cash transfers affect marital status on the adult generation for several reasons, First, our economic wellbeing measures are reported at the household level. Substantial changes in marital arrangements triggered by cash transfers or casino operations would mechanically impact our treatment estimates. Second, household dissolution would have independent effects on children's outcomes that are not related to household financial wellbeing (e.g. Rune, 2025).

We include a vector of variables in X_{it} that change at the individual level over time. We include the number of children in the home and the number of children away and the parent's marital status (in

the wage and salary, AGI, and employment models). We include a year-of-reported-earnings-specific fixed-effect θ_t to account for unobserved factors that affect everyone at the same time. We also include an individual level fixed-effect μ_i.

There are two variables of interest. First, $Casino_t$ and its estimated coefficient, γ, capture the effect of casino operations on affiliated tribal members for tribes that acquired a casino. It is estimated as the difference across time within the same tribe compared with tribes that had not opened a casino in the year t. This variable differs over time, t, and across individuals. We hypothesize little to no effect of casino operations on non-resident affiliated tribal members, although some impact may be due to tribal members returning to reservation lands (Simeonova et al., 2024). The second variable of interest is $PerCapita_t$ and its estimated coefficient, δ, which captures the effect of per capita cash transfers on affiliated tribal members residing off tribal lands.

The validity of the model estimates in (1) depends on the assumption of parallel trends in outcomes across tribes that started casino operations earlier and those that started later or never. To test the validity of this assumption, and to investigate the evolution of outcomes over time, we conduct event-study analyses of the effects of casino operations, reported in figures X-XX in the Appendix.

Next we examine social and economic outcomes for the AI children of households that resided off tribal lands in 1989. All children that can be traced to these households are included in the estimation. We consider children as "treated" to the casino if they were younger than 19 when the casino operations started. The effect of households' casino and cash transfer exposure is identified from comparisons between children of the same cohorts whose parents resided on a reservation that (eventually) opened a casino and those that did not, and across children of different cohorts whose parents were tribal members living off the reservation in 1989.

The main estimating equation is:

$$\mathrm{Y}_i = \alpha_0 + \beta \times X_i + \gamma \times Casino_i + \lambda \times PerCapita_i + \theta_t + \mu_r + \epsilon_i \tag{2}$$

where i indexes the individual. We consider children treated to cash transfers if their households started receiving them before the child turned 19. As we study labor market. marriage, and educational attainment at the time these children are in their mid 20s (aged 23-27 in preferred specifications), a child is either treated before they turn 19 or not. The identification in the children's sample is achieved by comparing cohorts of children whose parents belong to the same tribe. Birth cohorts that were younger than 18 at the time of casino openings or cash transfer commencement are considered treated. Those who were above the age of 26 at the time of casino opening, or whose parents belong to tribes that never initiated casino operations, are considered not treated. We discard birth cohorts within each tribe who started receiving the cash transfers (or casino operations) between the ages of 19 and 26 because they were treated directly as adults. Thus, the identification of the casino and cash transfer coefficients is derived by within-tribe and across birth cohorts comparisons our outcomes. We include a calendar-year specific fixed effect to account for common unobserved heterogeneity in outcomes over time. The vector X_i contains child characteristics such as gender and birth cohort. μ_r, a tribe fixed effect specific to the tribe of the parent who reported being a tribal member. When two parents report being tribal members, we assign the tribe of the mother as the index tribe, unless the tribe of the father

opens casino operations and the tribe of the mother does not. In those cases, we assign the tribe that opens casino operations as the index tribe. In very rare cases, both parents belong to tribes that open casinos. We attribute the tribe that is chronologically first in starting gaming operations as the index tribe. Standard errors are clustered on the index tribe level.

5 Results

5.1 Adults initially residing off reservations

The empirical analysis proceeds in two steps. First, we test whether casino operations affect adult household members' labor market outcomes and marital status. In particular, we are interested in employment, earnings, and family income. Marital dissolution could be affected by both casino openings—by potentially offering employment and introducing incentives to move to reservation lands—and by unconditional cash transfers. Depending on the recipient of the cash transfers and initial conditions, family dynamics could be affected by these transfers. In the second part of the analysis we focus on the children's generation.

Table 3 summarizes the coefficient estimates from eq (1), focused on AI adults who resided off tribal lands in 1989 and identified as tribal members in the Census demographic data. The casino treatment variable is equal to one for individuals who self-identified as tribal citizens of a tribe that opened a casino in the years after the casino opening. The casino and cash transfer variable is equal to one in the years after the cash transfer started. This dummy is equal to zero for those whose tribe opened a casino but did not disburse cash transfers. Both treatment dummies are zero for tribal members whose tribe did not open a casino, and for years in which future casinos were still not operational. The estimated coefficients are within-person changes in the outcome variable, net of calendar-year-specific unobserved differences.

In the top panel we present results from the full set of tribes, including those that initiated cash transfers after casinos had been operating for some time. In the bottom panel we discard individuals from these tribes and keep only those who started cash transfers at the same time as the casino opened.

Casinos that opened on tribal land do not significantly affect the labor market outcomes of tribal members who reside away from the tribal reservation. The estimated effects of casino treatment on wages and salaries are negligible in both panels. The associations with total income are also small and not statistically significant. We find no significant employment effects and no economically meaningful changes in the probability of being married. Casino operations on tribal lands do not affect the socioeconomic standing of adult tribal members who reside away from the reservation.

There is a strong and sizable impact of cash transfers on the same group of individuals. Their total income increases by $5 to $7 thousand compared with tribal members who did not get a casino or cash transfer, or approximately twenty to twenty-eight percent of their pretreatment income.

At the same time, wages and salary decrease by $2 to $3 thousand annually. The employment effects are stronger for individuals who report dependent children in 1989. The effects on wages and salaries are also stronger for parents. Together, these two results strongly imply a reduction in labor supply, consistent with a positive income shock arising from unearned cash transfers. Although earned income decreases, the effect on total income is large and positive. The labor supply adjustment is smaller than the size of the income transfer. The unearned cash transfers increase both leisure and total income

Table 3: Main Casino and Transfer Effects for American Indian Adults Residing Off of Reservations in 1989

	(1)	(2)	(3)	(4)
VARIABLES	AGI All	W&S All	Any Employ All	Married
Casino Treatment	596.9	70.65	-0.00132	-0.00132
	(520.9)	(228.8)	(0.00116)	(0.00116)
Casino Treatment	4,947*	-1,799***	-0.0229	-0.0229***
and Cash Transfer	(2,517)	(670.8)	(0.00565)	(0.00565)
Sample: Total Observations				
Observations	5,870,000	5,870,000	5,870,000	5,870,000
R Squared	0.005	0.021	0.116	0.116
Number of Individuals	280,000	280,000	280,000	280,000

	(5)	(6)	(7)	(8)
VARIABLES	AGI All	W&S All	Any Employ All	Married
Casino Treatment	442	-37.61	-0.00127	0.00289*
	(545.1)	(276.4)	(0.00146)	(0.00166)
Casino Treatment	6,953*	-2,842*	-0.0394***	0.000795
and Cash Transfer	(3,614)	(1,525)	(0.0145)	(0.00524)
Sample: Excluding Observations Where Casino and Cash Transfer Occur at Different Times				
Observations	5,630,000	5,630,000	4,800,000	4,800,000
R	0.005	0.02	0.116	0.031
Number of Individuals	270,000	270,000	2700,00	270,000

Note: All regressions include an individual-level fixed effect, year fixed effects, and a constant. Standard errors are clustered at the tribe level. Source: Form 1040, Numident, decennial Census 2000 and 2010, ACS 2005-2019. Census DRB authorization number CBDRB-FY24-CES010-002; CBDRB-FY26-CES005-001.

for adult tribal members residing off reservation lands. We find no significant effects on marital status. AI households treated to casino-generated cash transfers are financially better off, maintain family stability and also likely increase the time spent on leisure and household-related activities. Because the upper age of our sample is 45 in 1989, it is likely we are also picking up earlier retirement. We find no such effects for AI individuals whose tribes open casinos but do not provide cash transfers to tribal citizens.

Table 4: Main Casino and Transfer Effects for American Indian Children Initially Residing Off of Reservation Lands

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Wages	Wages	Works	Works	Income	Income	Married	Married
VARIABLES	Age 18-23	Age 24-27	Age 18-23	Age 24-27	Age 18-23	Age 24-27	Age 18-23	Age 24-27
Casino Treatment	423.1	457.5	0.0126	0.00814	325.3	1,352***	-0.0128*	0.00322
	(536.1)	(597.9)	(0.00775)	(0.00517)	(232.3)	(516.3)	(0.00670)	(0.00853)
Constant	154.5	13,520***	0.176***	0.00938***	591.2***	1,483***	0.119***	0.309***
	(576.2)	(338.2)	(0.00983)	(0.00167)	(77.43)	(209.0)	(0.00179)	(0.00495)
Sample: Treated to Casino Only								
Obs	556,000	335,000	868,000	443,000	579,000	443,000	579,000	443,000
R	0.17	0.048	0.393	0.269	0.171	0.1	0.035	0.029

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Wages	Wages	Works	Works	Income	Income	Married	Married
VARIABLES	Age 18-23	Age 23-27	Age 18-23	Age 24-27	Age 21-23	Age 24-27	Age 20-24	Age 24-27
Cash Transfer Treatment	2042	2,394*	0.0177	0.0126	2,650***	3,810***	0.0272	0.0105
	(2,649)	(1,374)	(0.0131)	(0.0174)	(857.3)	(1,130)	(0.0265)	(0.0324)
Constant	5.274	11,920***	0.156***	0.00921	656.8*	162	0.0949***	0.238***
	(1,344)	(969.7)	(0.00639)	(0.00895)	(371.2)	(593.2)	(0.0134)	(0.0181)
Sample: Treated to Casino and Cash Transfer								
Obs	68,000	52,000	126,000	69,500	84,000	70,000	84,000	70,000
R	0.163	0.056	0.484	0.223	0.201	0.104	0.038	0.038

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: All regressions include a tribe fixed effect. Standard errors are clustered at the reservation level. Source: Form 1040, Numident, decennial 2000 and 2010, ACS 2005-2019. Census DRB authorization number CBDRB-FY24-CES010-002; CBDRB-FY26-CES005-001.

5.2 Children's Outcomes

Table 4 presents the estimates from equation (2) on the sample of children born to parents living away from tribal reservations in 1989. We compare two types of treatment to the same control group of young adults whose parents indicated tribal membership and whose tribes did not open a casino. The coefficient estimates in the top and bottom panels are directly comparable to each other because they indicate the difference between the two types of treatment—casino only or casino and cash transfers—and the same control group.

These models rely on a tribe fixed effect to compare differences in outcomes between cohorts within the same tribes. Children who were treated to a casino (or casino plus cash transfer) before they turned 19 are compared, at the same outcome age, with children from the same tribe who were older than 19—and also not yet subject to an *adult* cash transfer—when the casino operation opened. These differences drive the comparison with the control group observations, who never experienced a casino or cash transfer.

In the top panel, we report the coefficients for casino treatment only. We restrict the sample of children whose parents—either the mother or the father—belong to tribes that opened a casino, but did not disburse cash transfers. We consider two age ranges: ages 18–23 and ages 23–27. The first period is one during which young adults are pursuing college education. We expect that individuals who do not pursue college education would have higher wages and a stronger propensity to work for pay during this period. The second period is right after, when their earnings trajectory is getting established. We are constrained by the data and cannot expand much above the age of 27 because of the loss of cohorts.

Casino operations on tribal lands do not significantly affect the wages, salaries, or employment probabilities of children of parents who are tribal members. We find higher individual incomes for treated individuals aged 23–27 ($1,352) that are statistically significant, and which do not appear to be driven by increased earned income.

In contrast, cash transfers associated with tribal casino operations have substantial positive impacts on both wages and incomes of young adults. Incomes at ages 23–27 increase by almost four thousand dollars. Incomes are substantially higher at younger ages as well, on average by $2,600 annually. The likelihood of being employed for pay is not significantly higher in the treated group, suggesting that the increase in wage and salary compensation comes from higher wages, rather than more hours worked. The positive effects on individual income are at least partially explained by increased earnings, and by the increased likelihood that the young adults are also citizens of tribes that provide cash transfers. The exogenous income transfers do not account for the full difference in incomes, as evidenced by the wage effects. In order to probe further the mechanisms behind the wage and income improvements in young adulthood, we turn to analyzing whether casino operations (without transfers) and casino-related cash transfers affect the educational attainments of the second generation.

Table 5: Main Casino and Transfer Effects on Educational Outcomes for American Indian Children Initially Residing Off of Reservation Lands

VARIABLES	(1) High School	(2) High School	(3) Some College	(4) Some College	(5) College	(6) College	(7) Years of Schooling	(8) Years of Schooling
Casino Treatment	0.00209		0.0013		0.0127		0.0371	
	(0.0391)		(0.0615)		(0.0417)		(0.325)	
Cash Transfer Treatment		0.212**		0.327**		0.199*		1.631
		(0.0920)		(0.135)		(0.116)		(1.041)
Constant	0.876***	0.892***	0.892***	0.548***	0.0258	0.0215	5.065***	5.173***
	(0.0276)	(0.0321)	(0.0321)	(0.0638)	(0.0396)	(0.0431)	(0.186)	(0.263)
Observations	6,500	4,000	6,500	4,000	6,500	4,000	6,500	4,000
R squared		0.034	0.053	0.042	0.072	0.053	0.074	0.198

Note: All regressions include an .... Standard errors are clustered at the reservation level. Source: Form 1040, Numident, decennial 2000 and 2010, ACS 2005-2019. Census DRB authorization number CBDRB-FY24-CES010-002; CBDRB-FY26-CES005-001.

Table 5 shows the estimates from models that analyze the effects of the two treatments on the probability that individuals from the children's generation would complete high school (only), get some college education, or attain a bachelor's degree. We require that all outcomes are measured using ACS data for observations who have reached the age of 23 in they year they link to the ACS. We also estimate the impacts on the total years of attained education in columns (7) and (8). Casinos operating on reservation lands have no impact on the educational attainment of the children of tribal members living off reservations. All coefficients across all educational outcomes are economically small and statistically insignificant.

In contrast, unconditional cash transfers have strong positive effects on all levels of education. The probability of high school completion increases by 21 percentage points, which is approximately twenty-five percent of the mean. Having some college education increases by about 30 percentage points, and degree attainment increases by almost 20 percentage points. Young adults whose families were eligible for unconditional cash transfers get about 1.6 extra years of education.

Again, we compare the two treatments for the same group of controls. The coefficients in odd and even columns directly compare treatment effects relative to the same untreated group of individuals. Both treatments involve casino operations that take place away from the household's residence. The difference in coefficients is attributable to the unearned cash transfers. These are large effects, both in the context of the average educational attainment by this demographic group, and AIAN children overall, and in the context of interventions intended to improve children's education.

However, considering the potential size of cash transfers, coupled with the fact that these are permanent rather than temporary shocks, suggests that these results are not implausible. Bastian and Michelmore (2018) find that an additional $1,000 dollars of family income via the EITC at ages 13-18 increases the probability that children complete high school by 1.3 percent and college by 4.2 percent. Taking our estimates from Table 2 at face value, the average treated household received around seven thousand dollars annually from the cash transfers. Back of the envelope calculations, and strong assumptions that the effects scale linearly, deliver similar total effects to those implied by Bastian and Michelmore (2018) findings. Additionally, Akee et al. (2010) find a 16 percentage point increase in the probability of finishing high school in response to an estimated $4,000 more per year in family income for a specific North Carolina tribe.

Examining these results further, we find that the increase in educational attainment is driven by the much lower average educational attainment for older cohorts in tribes that ultimately begin a casino-based per capita cash transfer versus those that never did. Figure XXX shows this.

6 Conclusions

We study the intergenerational effects of unconditional cash transfers to American Indians in the U.S. Using a novel panel dataset that tracks adults who identified as citizens of an American Indian tribe and resided off reservation lands in 1989 and their children, we offer the first empirical evidence of the impact that relatively large, permanent income shocks have had on the population of tribal members living away from tribal lands. Our results demonstrate that the cash transfers, rather than the casino operations, are responsible for large positive effects on household incomes. We find concurrent but smaller reductions in earnings from wages and salaries, and a small reduction in the probability of

employment for formal pay. This strongly suggests that in response to these exogenous cash transfers, adult household members decreased the amount of hours spent at work, rather than their participation in the labor force, although the upper age range of our adult sample may capture slightly earlier retirement in response to cash transfers. Still, overall annual incomes increased by thirty percent, on average, for the cash transfer recipient households versus AI households without a cash transfer.

Children raised in households that received these transfers were more likely than non-receivers to graduate from high school and attain college education, up to a bachelor's degree. We find no effects on children whose parents were members of tribes that opened casinos without cash transfer disbursements. Consistent with our findings on educational attainment, children who benefited from cash transfers received higher wages in their mid-20s. Their total income was also higher by about 15 percent. Permanent positive unearned income shocks improved the human capital and labor market outcomes of the household's children, consistent with the hypothesis that family income is positively causally correlated with children's human capital accumulation.

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7 Appendix Tables