



Resource rents, universal basic income, and poverty among Alaska's Indigenous peoples

Matthew Berman

Institute of Social and Economic Research, University of Alaska Anchorage, 3211, Providence Drive, Anchorage, AK 99508, United States



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ABSTRACT

The Alaska Permanent Fund Dividend (PFD) program provides universal basic income (UBI) to all residents from investment earnings of a state sovereign wealth fund created from oil rents. This paper evaluates the effect of the PFD to mitigate poverty among the state's rural Indigenous (Alaska Native) peoples: a population with historically high poverty rates living in a region with limited economic opportunities. Errors in recording PFD income in data used to calculate official poverty statistics cause them to misrepresent poverty in Alaska and understate the effect of the PFD. Estimating poverty rates with and without PFD income therefore requires reconstruction of family incomes from household-level data. Estimated poverty rates from reconstructed income show that the PFD has had a substantial, although diminishing mitigating effect on poverty for rural Indigenous families. The PFD has had a larger effect on poverty among children and elders than for the rural Alaska Native population as a whole. Alaska Native seniors, who receive additional sources of UBI derived primarily from resource rents besides the PFD, have seen a decline in poverty rates, while poverty rates for children have increased. Evidence has not appeared for commonly hypothesized potential adverse social and economic consequences of UBI.

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1. Introduction

Universal basic income (UBI) – a cash grant awarded periodically without conditions – is an old idea (Van Parijs, 2004) that has attracted new interest in recent years. A number of experiments are currently underway in Europe, North America, and elsewhere (Matthews, 2017; Freedman, 2016; Segal, 2016; Kela, no date). Most UBI initiatives arise in the specific context of poverty alleviation: i.e., as a conversion of conditional transfers to unconditional cash payments (Garcia, Moore, & Moore, 2012). Because recipients are limited to identified low-income beneficiaries, it is difficult to evaluate the ability of UBI to reduce the incidence of poverty. Segal (2011) estimated that converting resource rents to universal cash transfers could reduce extreme poverty globally by one-fourth to two-thirds, depending on assumptions used. Despite the potential for reducing poverty and income inequality, attempts to distribute even a portion of resource rents in the form of UBI are rare.¹

¹ E-mail address: matthew.berman@uaa.alaska.edu

¹ Oil-rich countries typically distribute some resource rents in the form of subsidies to fuel and other consumer products rather than as universal cash transfers. An exception, although arguably short-lived, took place recently in Iran (Salehi-Isfahani, 2016). The Iranian program started in 2011 as a relatively large cash transfer (29 percent of median family income) to soften the impact of reducing costly energy subsidies, but subsequent inflation quickly eroded its real effect.

The Alaska Permanent Fund Dividend (PFD) program represents a unique case, in which a significant portion of resource rents has been distributed as an unconditional cash payment to all residents annually for several decades. We evaluate the effect of the Alaska PFD program on poverty alleviation, focusing on the state's rural Indigenous people, an economically disadvantaged minority population with historically high poverty rates. We begin with a brief description of the Alaska Permanent Fund and the history of the PFD, providing the social and political context. Next, we discuss the problems with the data sources for evaluating poverty in Alaska, and detail methods for constructing historical household-level income and poverty data with and without the PFD. Then we present estimates of poverty rates for the rural Indigenous population over the past 25 years excluding and including PFD income, and compare these reconstructed estimates to poverty statistics based on official data. The results include estimates over time for the overall population, as well as for children and seniors. A discussion section considers the cost of the PFD program, effects on labor force participation, and other issues raised in the UBI literature. The conclusion notes the limits of the study and the outlook for the PFD program.

2. Background

2.1. Alaska state resource rents and the Permanent Fund dividend program

When Alaska gained status as a state in 1959, it was permitted to acquire 104 million acres (43 million hectares) of unreserved U. S. public lands (Public Law 85–508, 72 Stat. 339) as well as near-shore submerged lands granted to other coastal states.² Fortuitous land selections and subsequent petroleum discoveries on state-owned lands provided the relatively small Alaska population an opportunity to realize resource rents matched by few jurisdictions worldwide. Citizens voted in 1976 to amend the state constitution to create the Alaska Permanent Fund as a state sovereign wealth fund, to save a portion of nonrenewable oil revenues for future public needs (Alaska Constitution, Article IX, Section 15). The constitutional amendment allocated at least one-fourth of royalties and other payments the state realized in its role as resource owner to the Permanent Fund. In addition, the Alaska Legislature may, and has appropriated additional revenues to the fund during years when the state accumulated a large budgetary surplus because of temporarily high oil prices.

In 1980, the Alaska Legislature enacted the PFD program to distribute a portion of the Permanent Fund earnings to residents. In addition to satisfying populist demands for sharing the rewards of publicly owned wealth, the PFD program generated political support for conservative management of the fund, increasing the likelihood that the principal would be protected and grow over time. Annual contributions from oil revenues, combined with reinvested earnings enabled the Permanent Fund balance to grow to nearly \$60 billion by July 1, 2017, or approximately \$80,000 per resident. Since 1982, a portion of earnings from the Fund's investments has been distributed in equal annual PFD payments unconditionally to all Alaskans who meet residency requirements.³ Residents send a simple application form with information to verify residency by mail or internet during the first three months of year. Awareness of the enrollment deadline is greatly enhanced by media advertising from non-profit groups alerting potential donors to the option to donate a portion of their dividend to a designated charitable organization.

One-half the Permanent Fund earnings are reinvested to protect the principal from the effects of inflation, with the other half available for dividends. The formula for determining the size of the annual PFD ties the annual amount to the average of fund earnings over the previous five years. Although the five-year average smooths the PFD somewhat, volatility in the securities markets and associated Permanent Fund earnings has caused the dividend to vary substantially over time. Fig. 1 shows the annual PFD amount since the program's inception in 1982, along with the percentage of per-capita personal income that it represented each year. The figure shows percentages under two definitions of income: the U.S. Census Bureau definition and the Bureau of Economic Analysis (BEA) definition. The Census Bureau definition represents self-reported cash income, available for a more limited time series, for rural Alaska Native people and for the state population as a whole. BEA income includes in-kind household receipts such as employer-provided health care and pension contributions

and imputed rent from owner-occupied dwellings, and is available every year, but only for the state population as a whole.

As the Permanent Fund and its associated earnings grew over time, the number of Alaska residents and their incomes increased as well. Recent PFD payments, although generally larger than those in earlier years, have lagged inflation, and therefore represent a smaller percentage of per-capita personal income than during much of the 1990s.

2.2. Alaska Native people and land claims

According to the 2010 U.S. Census, 138,312 American Indian and Alaska Native (AIAN) people, the official term for the North American Indigenous population, resided in the state of Alaska, constituting about one-sixth of the state population. About half this total, including 80 percent of the 33,441 reporting a mixed AIAN and other identity, lived in urbanized areas and are mostly integrated into the modern economy characteristic of high-income nations. About 60,000, however, remain in isolated small communities in rural areas of the Alaska that are not connected by road to larger population centers. Economic opportunities in this region are limited. Most of the available jobs are in public administration or in scattered resource extraction enclaves staffed with shift workers (Goldsmith, 2007). Few AIAN residents possess the skills for these jobs, and many continue to practice mixed cash and subsistence fishing and hunting livelihoods (Wolfe & Walker, 1987).

Persistent economic and social disadvantage for rural AIAN people is manifest across a broad range of economic and social indicators. Barely half of working-age adults were employed in 2015, per capita income was only 52 percent of the national average (American Community Survey data, PUMA 400 region), with the cost of living much higher (Fried, 2017). Many predominantly Alaska Native rural school districts show performance on standardized tests in the bottom 20 percent of schools nationally, and associated low high school graduation rates (Alaska Department of Education, no date). Mortality rates for Alaska Natives statewide are 40 percent higher than the state and national averages, driven by injury death rates 3–4 times the national average (Day, Provost, & Lanier, 2009). Suicide rates for rural Alaska Native young males are particularly high (Berman, 2014).

The United States had acquired Russia nearly 100 years earlier without negotiating treaties with the Indigenous population, leading to land claims conflicts with the state. The discovery of oil in 1968 on state-selected lands near Prudhoe Bay spurred the U.S. government to resolve these claims in December 1971 through the Alaska Native Claims Settlement Act (ANCSA) (43 U.S. Code, section 1601 et seq.). ANCSA awarded mineral rights to 44 million acres (18 million hectares) of Alaska to 12 regional for-profit corporations owned by Indigenous residents of record at the time of enactment. Congress attempted to mitigate inequity in regional resource endowments by adding a clause (section 7(i)) in ANCSA that required each corporation to share 70 percent of resource revenues with the other regional corporations; yet large wealth disparities remain. Table 1 shows dividends paid annually by each of the 12 ANCSA regional corporations between 2005 and 2015 to a typical shareholder owning 100 shares of stock.

Ownership of regional corporation shares was originally limited to beneficiaries enrolled at the end of 1971. The original shares may only be passed on to others by gift or inheritance. However, shareholders of several regional corporations have voted over the years to create additional shares for descendants, with varying rules for voting rights and payment of dividends. Regional corporations also distribute additional special dividends of varying amounts to elders. These complications, combined with the lack of public information on residence of shareholders, make it impossible to

² The Submerged Lands Act of 1953 (43 U.S. Code § 1301–1356b) awarded all coastal U.S. states title including mineral rights to subsea lands offshore to three nautical miles (5.6 km).

³ Generally, eligibility for the PFD requires one calendar year or more of legal residence, and no more than 180 days absence from the state during the previous calendar year (see <https://pfd.alaska.gov/Eligibility/Requirements>). Individuals convicted of serious crimes who are sentenced or incarcerated during the year are also ineligible for that year's dividend.

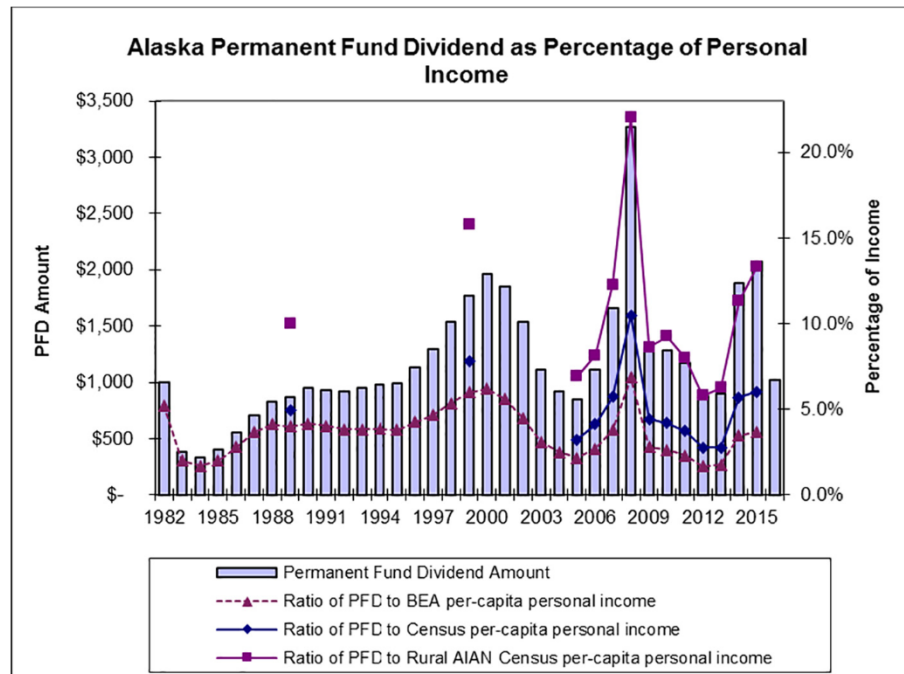


Fig. 1. Alaska Permanent Fund Dividend as Percentage of Personal Income. Source: Permanent Fund Dividend amount from the Alaska Permanent Fund Dividend Division. Per-capita income data from U.S. Census Bureau, American Community Survey and 1990 and 2000 Censuses, and U.S. Bureau of Economic Analysis, Personal Income by State.

Table 1

Annual Dividends per 100 Shares Paid by Alaska Native Regional Corporations, 2005 = 2015.

Year	Ahtna	Aleut	ASRC	BSNC	BBNC	Calista	Chugach	CIRI	Doyon	Koniag	NANA	Sealaska
2005	\$ 0	\$ 450	\$2861	\$ 0	\$ 800	\$ 0	\$4,150	\$3,100	\$ 311	\$ 370	\$ 381	\$ 433
2006	0	500	4,741	0	860	0	4,640	3,100	275	118	700	602
2007	279	0	5,855	0	960	0	5,251	3,393	322	300	1,500	761
2008	279	560	6,110	100	1,100	178	5,030	3,539	356	600	2,475	432
2009	279	600	5,712	100	1,200	211	4,072	3,524	368	873	1,200	215
2010	400	2100	6,426	150	1,280	262	4,192	3,542	421	1,000	1,400	356
2011	202	2000	5,084	235	1,380	313	4,000	3,498	388	1,050	1,470	224
2012	353	500	5,038	235	2,200	342	4,000	3,537	415	1,065	772	221
2013	530	600	11,000	250	2,500	369	4,000	3,499	423	300	772	225
2014	442	700	5,750	300	2,700	519	4,000	3,506	495	300	0	136
2015	443	400	6000	325	3000	581	4000	3651	518	300	600	260

Source: Annual reports filed by Alaska Native Regional Corporations with the Alaska Division of Banking and Securities.

quantify specifically the effect of ANCSA resource dividends on Indigenous poverty rates. We do address it qualitatively, however.

3. Methods

Assessing the effect of the PFD on poverty involves three steps. First, we decide on an empirical measure to represent the social construct of poverty. Second, we address data sources that include information on income distribution by region by race or ethnicity. Third, we discuss how to distinguish PFD income from other income in the household data that are available.

3.1. Poverty definition

One may measure poverty with a relative or an absolute indicator. The [OECD \(2017\)](#) uses a relative measure, based on one-half of median household income. This definition makes poverty synonymous with household income disparity. The OECD definition is also inadequate for evaluating effects of UBI for vulnerable populations, because it does not account for household composition: specifically, household size or the presence of children. The United States,

on the other hand, uses an absolute measure. The official definition of poverty used by the U.S. Census Bureau dates from the Johnson Administration's "War on Poverty" initiative in the mid 1960s. Poverty status is determined for a family living together in one household, based on the ratio of family money income to a threshold level. The threshold varies according to household size, number of children in the household, and age of the household head. Different poverty thresholds exist for 48 different family configurations ([U.S. Census Bureau, no date](#)).⁴ Poverty thresholds are adjusted every year for inflation in proportion to changes in the national Consumer Price Index.

The official poverty rate was 13.5 percent in 2015 for the United States population as a whole, 19.7 percent for children under 18, and 8.8 percent for seniors 65 years and older ([Proctor, Semega,](#)

⁴ The Census Bureau defines the family for determining poverty status as the set of related individuals (through blood or marriage) living together in one household. The official definition of poverty in the United States was developed by the Social Security Administration to represent a proportion of the family income required to purchase a survey-based economy food plan. There have been only minor changes in the definition since 1969, other than to update the thresholds each year based on the percentage change in the Consumer Price Index. For more information, see [Fisher \(1992\)](#).

& Kollar, 2016). Despite the complex attempt to adjust for different family configurations, the U.S. Census poverty definition has a number of limitations. There has been no attempt to redefine the index to reflect changes in consumption patterns in the 50 years since the original thresholds were defined. Although the cost of living in rural Alaska communities is typically much higher than in other U.S. states or even urban Alaska communities (Robinson & Fried, 2005), the same poverty thresholds are applied to all areas of the United States. On the other hand, in-kind income is not considered in the poverty calculation, and many rural Alaskans use subsistence harvests of country foods for a significant proportion of their diet (Wolfe & Fischer, 2003). In addition, unmarried partners and children living in the household who are unrelated to the household head are not considered as family members in poverty calculations.

Any absolute poverty measure is somewhat arbitrary. In this study, we use the U.S. Census Bureau definition as the primary metric for evaluating the effects of the Alaska PFD on poverty because it is so widely used in the United States. However, we do also consider the effect on poverty rates of the Census Bureau's exclusion of unmarried partners from the definition of family.

3.2. Data sources

Household-level data sources for the Alaska population are extremely limited. The U.S. Census Bureau reports national poverty statistics using data from the Annual Social and Economic Supplement (ASEC) to the Current Population Survey (CPS). However, the Alaska sample for the CPS includes only about 1,000 households per year, with insufficient geographic detail to identify rural households. Census data, collected since 2005 with the American Community Survey (ACS), provide the only systematic source of household data for a large representative sample of Alaskans. The ACS collects information on race, family relationships, place of residence, income by source, and poverty status from about 8,000 Alaska households annually. In 2000 and previous decadal census years, the information now collected with the ACS was collected in conjunction with the population census for a much larger sample of households. The Census Bureau provides Public Use Microdata Samples (PUMS) containing individual and household data from the ACS as well as from the previous Census Long Form Surveys.

We obtained Alaska Long-Form Survey PUMS data sets from the Census Bureau for 1990 and 2000, and ACS annual PUMS data sets for 2005 through 2015. The Census PUMS data represent a five percent sample of the population: 14,000 Alaska households in 2000 and 10,300 households in 1990. The ACS PUMS data sets represent much smaller sample sizes, ranging from 2,200 to 2,700 households per year. However, the combined ACS samples over a five-year period are similar in size to the Census Long Form data sets. We also examined Alaska CPS ASEC data sets (Flood, King, Ruggles, & Warren, 2015) for the last seven years (2010 through 2016), available from the University of Minnesota Population Center IPUMS data portal (<https://cps.ipums.org/>). The CPS ASEC sample is too small to estimate poverty rates for the rural Alaska Native population, as mentioned above, but we used it to test how overall state poverty rates and the effects of the PFD compared to those derived from the ACS.

The PUMS data sets report place of residence by Public Use Microdata Areas (PUMAs): a regional geography designed to ensure anonymity of respondents. Census PUMAs must have at least 100,000 residents as of the previous decennial census. The ACS currently has five PUMAs in Alaska, one of which represents the rural roadless region (PUMA 400), or the "Subsistence PUMA" (Fig. 2). The boundaries of the Subsistence PUMA changed slightly from the 1990 and 2000 definition as a result of the 2010 Census.

The CPS ASEC has even more limited geography, reporting only whether or not the residence is within the Anchorage Metropolitan Statistical Area. In addition to the PUMS data sets, we obtained the annual applicable poverty thresholds from the Census Bureau, and annual statistics on the number of PFD applications, dividends received, and the dividend amount from the Alaska Permanent Fund Dividend Division.

3.3. Reporting of Alaska Permanent Fund dividend income in Census Bureau data

The decennial Census Long-Form Surveys, the ACS, and the CPS ASEC all calculate income as the sum of self-reported income in a number of categories over the previous 12 months. The PFD is not mentioned specifically in the questionnaire, and because most interviews are completed before the PFD is paid out in October, many respondents apparently forgot to report the previous-year's PFD. PFD income could theoretically be included in either one of the two categories of unearned income: interest, rent and dividends, or "other income". Since the annual PFD amount is known, one may easily discern from the data that most respondents who did report PFD receipts reported it as "other income." The problem is that only about one-half of Alaska households responding to the ACS or to the earlier Census Long Form Surveys reported receiving any "other income," and thirty percent reported no one in the household receiving any of either type of unearned income. Data from the Alaska CPS ASEC show even lower reported rates of household unearned income. In contrast, Alaska Permanent Fund Dividend Division data show that more than 90 percent of the Alaska population typically receives PFD payments each year.

An additional problem is that neither the ACS nor CPS ASEC report income of children under 15 years of age, despite the fact that the PFD is paid to children one year old and older. If parents were including income of children in their own income, then the household total unearned income should be positively correlated with the number of children in the household as well as the number of adults. We tested this hypothesis by estimating linear regressions for the amount of household other income and interest, rent, and dividend income as a function of the number of adults (age 15 and older in this case), the number of children under 15 in the household, and the age of the respondent for households reporting positive unearned income, for each year of the ACS and for the Census Long-Form Surveys in 1990 and 2000. The coefficients for number of adults in the "other income" equation was \$300–\$400 greater than the annual PFD in each year, and significantly different from zero ($p < .005$), while the coefficients for children were effectively zero and insignificant in all years. Coefficients for the number of children were also always near zero or negative and statistically insignificant in the equations for interest, rent, and dividend income. Similar equations estimated with the CPS ASEC data likewise showed no evidence of reporting of children's unearned income in income of adults. The evidence therefore suggests that Census household income data miss PFD income of children under age 15.

Non-reporting of income of children under 15 also presumably affects national income and poverty measures calculated from the Census Bureau data. However, the downward bias is almost certainly more acute in Alaska than in other states. In addition to the PFD, which nearly all Alaska children receive, some Alaska Native corporations have been paying dividends to children.⁵

⁵ Four regional corporations – Arctic Slope (ASRC), NANA, Doyon, and Sealaska – have enrolled descendants. A fifth regional corporation, Calista, has voted to enroll descendants starting in 2017. In most cases, descendant children of these corporations receive some benefits at birth, and more benefits at age 18. A fifth regional corporation, Calista, has voted to enroll descendants starting in 2017.

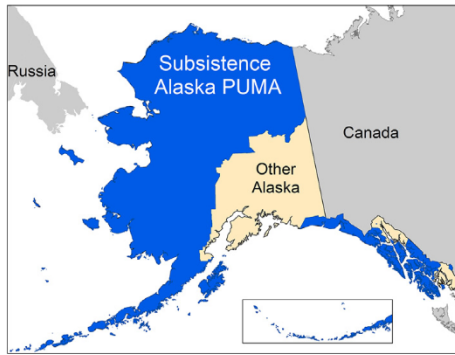


Fig. 2. Rural Alaska Region (Subsistence Alaska PUMA). Source: U.S. Census Bureau, 2010 Subsistence PUMA Reference Map (http://www2.census.gov/geo/maps/dc10map/PUMA_RefMap/st02_ak/puma0200400/DC10PUMA0200400_001.pdf.)

3.4. Analysis steps

The information reported in the ACS PUMS is insufficient to be able to determine missing ANCSA dividend income for children. However, with minor exceptions, it is possible to determine whether individuals, including children, were eligible to receive the PFD.⁶ Data are not available on dividend applications and receipts by race. However, 2015 state data showed that the number of applicants exceeded 98 percent of the total population in rural Alaska census areas with high Alaska Native populations (ADLWD, 2017). Statewide, 98 percent of 2015 PFD applicants received dividends (Permanent Fund Dividend Division (PFDD), 2016). We therefore determined that information on residency and mobility in the PUMS data were sufficient to estimate presumed PFD receipts, along with income and associated poverty rates with and without the dividend income. The procedure involved four steps.

The ACS PUMS and the 1990 and 2000 Census Long-Form Survey data include a variable for the ratio of income to the poverty threshold for each individual living in a household, or in non-institutional group quarters such as remote work camps and boarding homes. As a first step, we attempted to replicate the Census Bureau's ratio of family income to the poverty threshold, to ensure that we could correctly calculate each individual's poverty status based on the reported incomes of household members, age, and relationships to the respondent. We were able to replicate the reported ratio of family income to the applicable Census Bureau poverty threshold for each person within a small round-off error.⁷

The second step was to determine the amount of PFD income reported for each individual, and then remove that income to estimate income without the PFD. To determine if PFD income had been reported, we checked whether either "other income" or interest, rent, and dividends was less than the current or previous year's PFD amount, whichever was smaller, rounded down to the nearest \$100. If neither category of unearned income achieved this threshold, we assumed that PFD income was not reported, and made no adjustment to estimate income without the PFD. If either "other income" or interest, rent, and dividends was equal to or greater than the PFD amount, and the previous year's place of residence

was in Alaska, we assumed that PFD income was included in reported income, and removed it to estimate income without the PFD.⁸

The third step in the analysis was to estimate individual income including the PFD, by adding the current year's PFD to the calculated income without PFD income for all individuals whose response to the previous place of residence would have qualified them to receive the PFD. The calculated income with the PFD therefore differed from reported income for nearly all individuals, because we included the amount of the current year's PFD, which few respondents had yet received, rather than the previous year's amount, which some had reported. We determined that the current year's PFD more accurately reflected the effect of the PFD on poverty status, since the timing of the residence question corresponded closely to the timing of the eligibility period for the current rather than the previous year's PFD. Nearly all eligible respondents would have received the current year's PFD in October of the survey year.

For the final step, we estimated family income with and without the PFD by adding the respective income amounts for related individuals as per the Census Bureau definition of family. We compared the estimated family income with and without PFD income to the applicable poverty threshold for that family configuration for the survey year. As an additional analysis, we also compared estimated family income with and without PFD income to the poverty threshold for a more inclusive definition of the family that included unmarried partners. To determine the poverty threshold applicable to this "social family" definition, we included the unmarried partner and his or her children living in the household as family members, regardless of whether the children were reported to be related to the respondent.⁹

4. Results

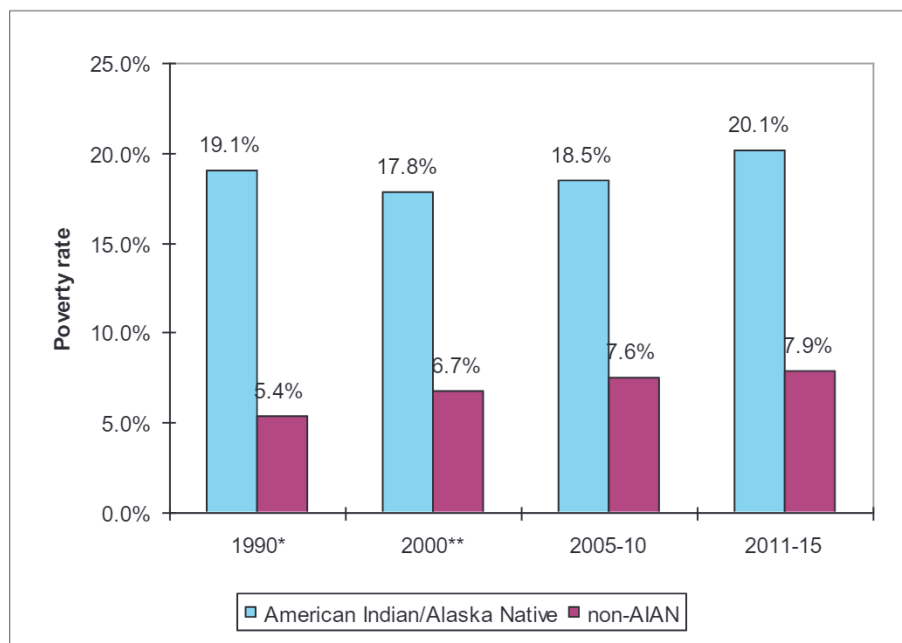
Official poverty rates for all Alaska Natives, based on income as recorded by the Census Bureau, are about 2.5 times the poverty rate for non-Native Alaskans, and twice the rate for the Alaska population as a whole, (Fig. 3). The Native-non-Native disparity has persisted as poverty rates drifted upwards after 2000. Reported poverty rates for Indigenous Alaskans living in rural areas are even higher: 25 percent in 2011–2015, up from 20.5 percent in 2000. The estimates shown in Table 2 indicate that Alaska Native poverty rates in rural Alaska would be especially high without the PFD. On average over the past eleven years, income without the PFD would have put over 28 percent of rural Alaska Native people below the poverty threshold, a slight increase from 27 percent in 1990 and

⁸ To determine the amount of PFD income to remove, we first checked whether reported "other income" was between the amount of the previous year's PFD rounded down and the amount rounded up to the nearest \$100. If so, we removed the amount of "other income" reported. If the first test failed, we performed the same test using interest, rent, and dividends. If that test failed, too, we repeated the procedure using the current year's PFD amount. If that test also failed, but the amount of either "other income" or interest, rent, and dividends was nevertheless greater than the PFD threshold, we assumed that the individual had received unearned income in addition to the PFD. In that case, we estimated income without the PFD by removing the amount of the previous year's PFD from reported income.

⁹ In 2008, the Census Bureau divided the own child relationship type in the ACS questionnaire into three subtypes: biological son or daughter, adopted son or daughter, and stepson or stepdaughter. Children in all three categories were considered "related" for the official definition of family for poverty calculations. Although it is not possible to determine how individual respondents reacted to this change, it appears that after the stepchild option became available, some respondents living with unmarried partners who had previously reported the partner's children as "unrelated" now reported the same children as stepchildren. To the extent this occurred, the addition of the stepchild category might have caused official poverty rates to show a slight increase after 2007. Our calculated "social family" poverty rate would not be affected by the change in reporting, however.

⁶ It is possible, for example, that an Alaska resident who reported living in Alaska one year ago might have been absent from the state for more than 180 days during the previous year for a reason other than allowable absences, such as military service or attending college.

⁷ Income and the poverty ratio in the PUMS are both rounded to protect anonymity of respondents. The PUMS reports a value of 501 when family income exceeds 500 percent of the poverty threshold.



* based on 1989 income

** based on 1999 income

Fig. 3. Percentage of Alaska Population with Income Below the Poverty Threshold: Income as Reported. Source: Estimated from US Census and American Community Survey PUMS data.

2000. Including PFD income, we estimate that rural Alaska Native poverty rates were 22 percent, up from 14 percent in 2000.¹⁰

Clearly, the PFD has substantially mitigated poverty rates among rural Alaska Natives. However, its ability to mitigate poverty for this vulnerable population has been declining in recent years. Fig. 4 illustrates how the ameliorating effect of the PFD has declined as poverty rates based on income excluding the PFD have increased. In 2000, the PFD lifted 12.4 percent of the rural Alaska Native population out of poverty, a 46 percent reduction in the population in poverty without the PFD. By 2011–2015, these figures had fallen to 6.1 percent of the population, or 22 percent of the population in poverty excluding PFD income.

Table 3 shows the effect of the PFD on rural Alaska Native poverty rates separately by household type. The results for households without children exhibit smaller corrections from misreporting of PFD income compared to the results for households with children, highlighting the effects of the omission of children's income in the official statistics. Poverty rates rose in single-person households while declining in multiple-adult households, mainly due to increased labor-force participation and earnings among married rural Alaska Native women. The figures illustrate both the high poverty rates among single-parent families excluding PFD income, and the diminishing ability of the PFD to mitigate these high rates in the more recent years.

The results by household type in Table 3 suggest that pattern of change has not been uniform across the rural Alaska Native population; in particular, trends for seniors and children have

diverged. Poverty rates for Alaska Native seniors have declined dramatically since 1990. Considering only non-PFD income, poverty rates for rural Alaska Natives age 65 or older would have fallen by nearly 50 percent over this period. Including PFD income, the decline was even larger, from 20.1 percent to 7.6 percent, or 59 percent (Fig. 5). If the PFD were eliminated, poverty rates for rural Alaska Natives age 65 and older would increase by 72 percent.

Rural Alaska Native children show the opposite trend (Fig. 6). Excluding PFD income, poverty rates for rural AIAN children were essentially unchanged between 1990 and 2000, but would have risen four percent since 2000, to nearly one-third of the population. Taking estimated PFD income properly into account, child poverty rates increased by 11.5 percent since 2000, an 86 percent rise. In 2000, the PFD was very effective in mitigating poverty among Alaska Native children, reducing poverty rates by more than half. It has been increasingly ineffective since then, however, enabling only a 25 percent reduction in 2011–2015.¹¹ Poverty trends shown in Table 2 for the working-age population are similar to those for children, but show a more muted rise since 2000. The PFD reduces poverty by less for working-age rural Alaska Natives than for children and seniors, because earnings represent a much larger share of income for this group, even among the poor.

Another way to gauge the effect of the PFD on rural Indigenous poverty is to measure its effect on the depth of poverty. The U.S. Census Bureau defines “deep poverty” as family income less than one-half the poverty threshold (Proctor et al., 2016). Using this definition, Table 2 shows that the PFD reduced deep poverty among rural Alaska Natives from 13.1 percent to 8.1 percent (38%) in the period 2011–2015. The PFD's effectiveness in mitigating deep

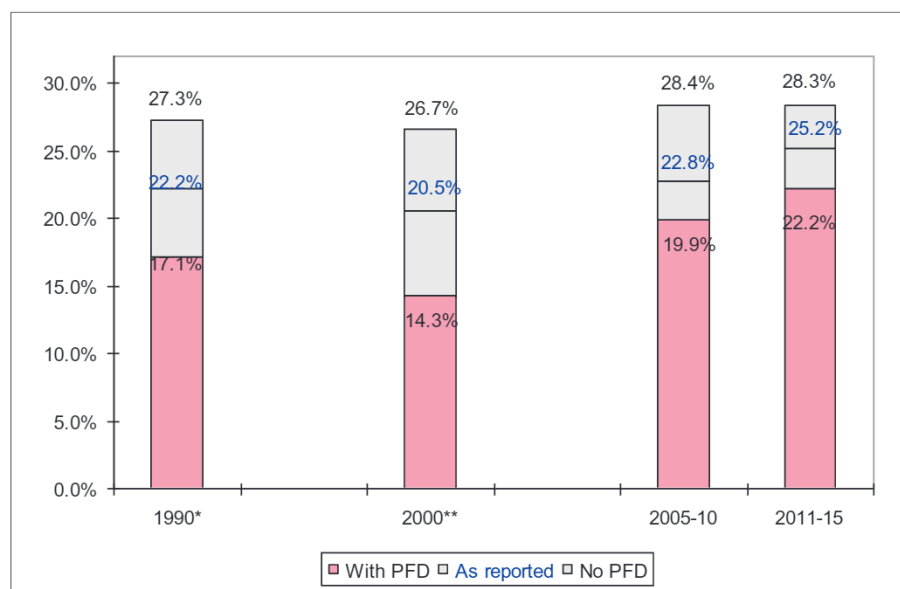
¹⁰ Sampling error confidence intervals for these poverty figures cannot be computed directly, but may be estimated from published 90% margins of error for the number of persons in poverty on which they are based (U.S. Census Bureau, 2002, 2016). Based on the published figures, the estimated 90 percent margin of errors for poverty rates with and without PFD income for all rural AIAN people are 0.8 percent in 1990 and 2000, 1.5 percent for 2005–2010, and 1.6 percent for 2011–2015. Estimated margins of error for child poverty rates are similar, with elder poverty rates somewhat smaller.

¹¹ One should note that the 24.8 percent average poverty rate that we estimated over the past five years is five percentage points lower than the rate based on income reported in Census Bureau data. So while child poverty rates have indeed been rising in Alaska, reported rates are overstated.

Table 2

Alaska Poverty Rates: Reported Rates and Estimated Rates With and Without Permanent Fund Dividend Income.

	1990 ^a	2000 ^b	2005–2010 ^c	2011–2015 ^c
<i>All Alaska residents</i>				
Income as reported	7.6%	8.9%	9.6%	10.3%
Excluding PFD income	8.7%	10.6%	11.0%	11.4%
Including all PFD income	6.7%	6.4%	8.6%	9.1%
<i>All Alaska AIAN residents</i>				
Income as reported	19.1%	17.8%	18.5%	20.1%
Excluding PFD income	23.2%	22.4%	22.3%	22.5%
Including all PFD income	14.1%	12.6%	16.3%	17.2%
<i>Rural AIAN residents</i>				
Income as reported	22.2%	20.5%	22.8%	25.2%
Excluding PFD income	27.3%	26.7%	28.4%	28.3%
Including all PFD income	20.4%	14.3%	19.9%	22.2%
<i>Rural AIAN children under age 18</i>				
Income as reported	23.9%	22.0%	25.7%	29.8%
Excluding PFD income	29.1%	28.9%	32.2%	32.9%
Including all PFD income	21.0%	13.3%	21.0%	24.8%
<i>Rural AIAN adults age 18–64</i>				
Income as reported	21.0%	20.2%	22.5%	24.0%
Excluding PFD income	26.0%	25.6%	27.3%	27.3%
Including all PFD income	18.7%	15.4%	20.4%	22.4%
<i>Rural AIAN elders age 65 and older</i>				
Income as reported	20.6%	13.3%	11.5%	9.7%
Excluding PFD income	26.1%	19.7%	16.8%	13.3%
Including all PFD income	20.1%	11.0%	9.6%	7.6%
<i>Deep poverty, Rural Alaska AIAN residents</i>				
Income as reported	9.3%	7.1%	8.4%	10.4%
Excluding PFD income	12.3%	11.7%	12.1%	13.4%
Including all PFD income	6.8%	3.5%	6.2%	8.1%

^a 1990 Census poverty rates based on 1989 income and poverty thresholds.^b 2000 Census poverty rates based on 1999 income and poverty thresholds.^c Estimated from the American Community Survey Public Use Microdata Samples.

* based on 1989 income

** based on 1999 income

Fig. 4. Rural Alaska Native Poverty Rates: Reported Rate and Estimated Rate Including and Excluding PFD Income. Source: Estimated from US Census and American Community Survey PUMS data.

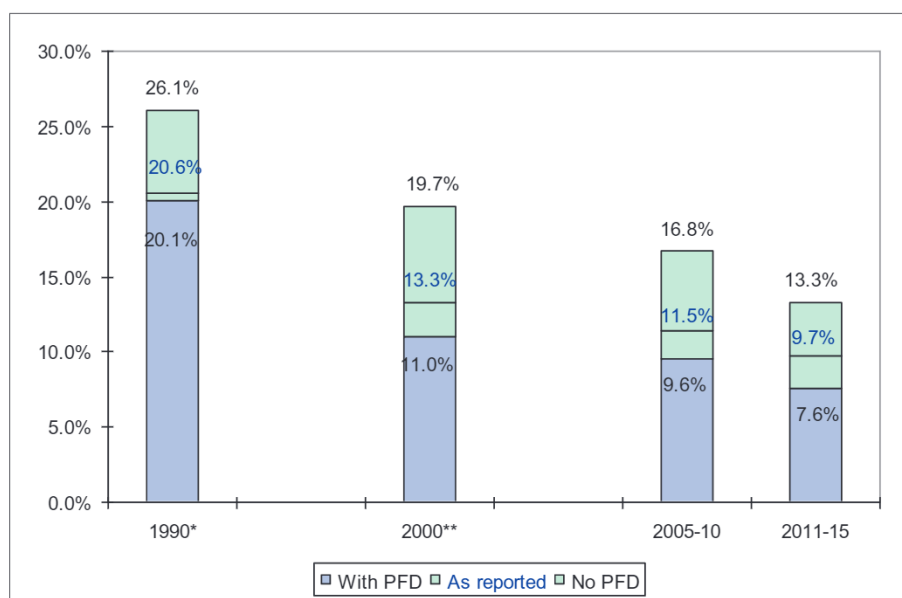
poverty has declined greatly since 2000, when only 3.5 percent of the rural Indigenous population remained in deep poverty, a 70 percent reduction from 11.7 percent without the PFD.

An important demographic trend in the United States – an increase in unmarried partner households with children – could have a significant effect on poverty rates over time. As mentioned

Table 3

Rural Alaska Native Poverty Rates by Household Type: Reported Rates and Estimated Rates With and Without Permanent Fund Dividend Income.

	1990 ^a	2000 ^b	2005–2010 ^c	2011–2015 ^c
<i>Single-person households</i>				
Income as reported	26.2%	29.5%	30.0%	29.8%
Excluding PFD income	28.2%	34.6%	34.7%	33.3%
Including all PFD income	25.7%	29.4%	29.7%	29.6%
<i>Households with multiple adults, no children</i>				
Income as reported	16.5%	14.3%	13.8%	11.9%
Excluding PFD income	20.7%	20.9%	17.5%	14.3%
Including all PFD income	16.5%	12.0%	13.1%	11.5%
<i>Households with one adult and children</i>				
Income as reported	30.4%	40.0%	29.5%	37.2%
Excluding PFD income	32.6%	43.8%	34.4%	38.2%
Including all PFD income	20.9%	23.3%	26.5%	31.3%
<i>Households with multiple adults and children</i>				
Income as reported	22.8%	20.1%	24.1%	27.2%
Excluding PFD income	28.6%	26.3%	30.3%	30.7%
Including all PFD income	18.1%	12.8%	20.3%	23.5%

^a 1990 Census poverty rates based on 1989 income and poverty thresholds.^b 2000 Census poverty rates based on 1999 income and poverty thresholds.^c Estimated from the American Community Survey Public Use Microdata Samples.

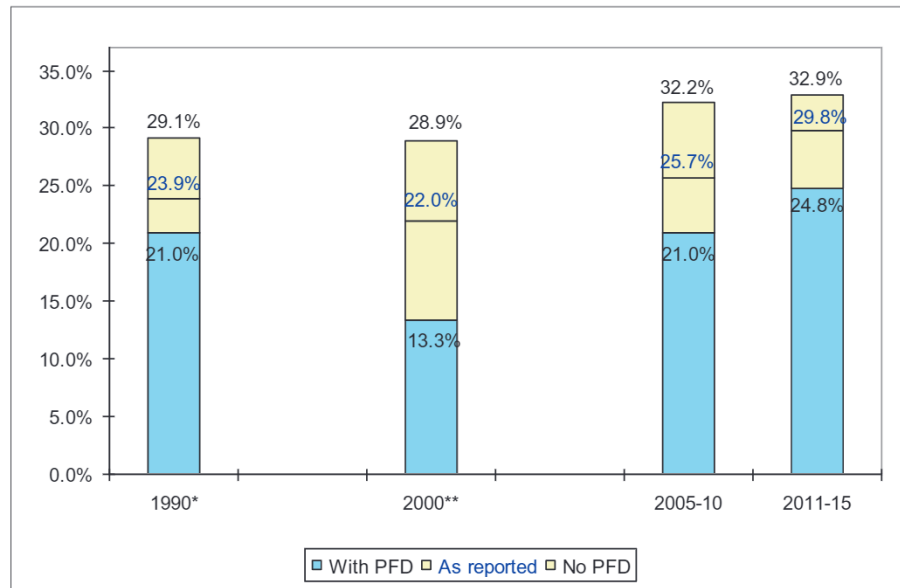
* based on 1989 income

** based on 1999 income

Fig. 5. Poverty Rates for Rural Alaska Native Seniors: Reported Rate, and Estimated Rate Including and Excluding PFD Income. Source: Estimated from US Census and American Community Survey PUMS data.

above, the official U.S. poverty definition excludes unmarried partners when calculating the poverty status of families. The official poverty definition dates from the 1960s and has not been revised since, beyond cost of living adjustments. At that time, unmarried partner households with children were so rare in the United States that the Census Bureau did not attempt to ascertain their numbers. However, the number of children living in unmarried partner households has been rising steadily over the last several decades. By 2010, U.S. Census data for Alaska show that 15 percent of all intimate partner households were unmarried partner households, the majority of which had children under 18 living with them. Among the Alaska Native population, the ratio of children living in married partner households to those living in unmarried partner households declined from more than six to one in 1990, to three to one in 2011–2015.

Including unmarried partners as family members in the definition of poverty could either raise or lower poverty rates, depending on the income of the unmarried partners, and whether they also have children living in the household who the survey respondent reports as related to the householder. In the case of the rural Alaska Native population, including unmarried partners in the family significantly reduces calculated poverty rates. Table 4 reveals that revising the definition of the family to include unmarried partners and their children eliminates the upward trend since 2000 in rural Alaska poverty rates excluding PFD income, and cuts in half the increase in the rate for rural AIAN children. When PFD income is included, rural Alaska Native poverty rates with the revised family definition still rise substantially. However, poverty rates for children and for the rural AIAN population as a whole are both more than four percentage points lower when unmarried partners are



* based on 1989 income

** based on 1999 income

Fig. 6. Poverty Rates for Rural Alaska Native Children: Reported Rate, and Estimated Rate Including and Excluding PFD Income. Source: Estimated from US Census and American Community Survey PUMS data.

Table 4

Estimated Rural Alaska Native Poverty Rates With and Without Permanent Fund Dividend Income, Unmarried Partners Included as Family Members.

	1990 ^a	2000 ^b	2005–2010 ^c	2011–2015 ^c
<i>All Rural AIAN residents</i>				
Excluding PFD income	25.4%	24.9%	26.7%	24.4%
Including all PFD income	18.0%	12.2%	18.4%	17.8%
<i>Rural AIAN children under age 18</i>				
Excluding PFD income	26.8%	26.9%	28.4%	28.8%
Including all PFD income	18.6%	11.2%	18.8%	20.6%

^a 1990 Census poverty rates based on 1989 income.

^b 2000 Census poverty rates based on 1999 income.

^c Estimated from the American Community Survey Public Use Microdata Sample.

counted as family members. The PFD reduces the percentage of rural Alaska Natives in poverty by 27 percent, and the percentage of AIAN children by 28 percent. Revising the poverty definition to include unmarried partners as family members would substantially reduce poverty rates for non-Native Alaskans, too, but the effect is stronger for Alaska Native families, who have a higher proportion of children living in unmarried partner households.

5. Discussion

We found that poverty rates in Alaska based on reported income are biased upward, due to systematic underreporting of PFD income among adults, and non-reporting of income to children under age 15. The degree that underreporting of PFD income in census data biases poverty rates depends on the distribution of family income as well as the size of the PFD. In 2000, the PFD reduced the number of rural Alaska Native people living in poverty by 46 percent. Although the PFD represented a somewhat larger share of per-capita income in 2000, more people were living close to the poverty threshold then as well, so a relatively small incre-

ment in income had a big effect on poverty rates. Since 2000, the effectiveness of the PFD in reducing poverty rates has declined both because the PFD has declined as a percentage of personal income, and because incomes without the PFD have fallen farther below the poverty threshold for more families. A major contributing factor to the latter trend is the increase in unmarried partner households, especially those with children. The official U.S. poverty definition does not count unmarried partners as family members. If unmarried partners were considered as family members for poverty calculations, a PFD amount slightly higher than that in recent years – to the real amount distributed in 2000 – would still cut poverty rates by nearly one-half.

We found that poverty rates for Alaska Native seniors have overwhelmingly declined over the past 25 years. The PFD played a significant part in that decline. Dividends and additional payments by ANCSA corporations to elder shareholders represent another form of UBI available to many Alaska Native seniors that contributed to the observed poverty reduction. Supplemental payments to elders vary among the corporations and over the years, and come in the form of special stock, special dividends, and

payments from elders benefit trust funds.¹² Information in the ACS is insufficient to determine which seniors are shareholders of which ANCSA corporations, making a quantitative estimate of the effect of ANCSA payments infeasible.

The uneven performance of ANCSA regional corporations and associated dividend disparities shown in Table 1 bears similarities to the experience of AIAN people living on reservations in other U.S. states. Two main sources of basic income available to AIAN reservation residents are dividends from earnings of tribal casino operations, and lease revenues from minerals, agriculture, or real estate development of tribal or other lands held in trust by the federal government. The U.S. Department of the Interior, which manages mineral lease revenues, paid \$560.4 million to tribes and allottees in 2016 (USDI, no date). Most likely went to a few tribes with active oil leases, but the amount individual tribes received is confidential. Historical mismanagement of trust accounts by the federal government has led to a series of legal settlements involving some large cash payments, but nothing comparable to UBI.¹³

Reservation gambling casinos involve much larger sums: gross receipts exceeded \$30 billion in 2016, with 84 casinos grossing more than \$100 million each (NIGC, no date). Profitable casinos may distribute cash dividends to tribal members if they have a federally approved distribution plan, although only tribes with smaller membership generally do so. Unlike the PFD, most tribes do not distribute casino earnings directly to children, but rather hold them in trust until age 18 (Taggart & Conner, 2011; Cornell et al., 2008). Overall, the evidence shows that gaming has had broadly positive effects on tribes (Akee, Spilde, & Taylor, 2015). However, effects of basic income from distributions from successful casino operations are confounded by much larger effects of the employment opportunities casinos generate. For example, Evans and Topoleski (2002) found that employment increased by 26 percent in reservations 4 years after casinos opened there. Large disparities in casino earnings, often due simply to a favorable location near population centers, are analogous to the disparities noted for ANCSA regional corporation dividends: some tribes have undoubtedly realized large benefits, but many have seen little impact on poverty reduction. Even considering the recent rise in poverty rates, the PFD has reduced Alaska Native poverty considerably below the average for AIAN reservation residents reported by Akee et al. (2015), especially for children.

UBI skeptics have raised a number of concerns about unintended consequences. These include reduction in labor force participation, increased purchase “temptation goods” such as alcohol and drugs, family dissolution, and the sheer cost of financing the

payments. Earlier claims that the U.S. negative income tax experiments in the 1960s had caused an increase in the divorce rate were refuted by Cain and Wissoker (1990). Forget (2011) likewise found no increase in family dissolution rates or increase in fertility in a 1974–1979 Canadian field experiment.

Much of the academic literature critically evaluating UBI programs focuses on potential effects on labor supply. While inconclusive, this literature finds relatively weak evidence for adverse labor supply effects. For example, Skoufias and di Maro (2006) found that the Mexico *Oportunidades* program had no significant impact on labor supply. Widerquist (2005) reviewed the literature on early UBI experiments in the U.S. and Canada, concluding that the evidence showed that concerns about depressing effects on labor supply have been exaggerated. Observed reduction in work hours was greatest for youth and for married women. For the latter group, reduction in work outside the home was likely offset by increased household production. For youth, higher school attendance and staying in school longer yield potentially large future returns on the investment in human capital. A DFID (2011) report found that the benefits in terms of higher earnings due to use of a portion of the increased income for investment in higher learning exceeded the cost of a Canadian UBI experiment. Other studies have found positive effects of UBI programs on school attendance and performance in poorer countries, including India (Standing, 2013), South Africa (Case, Hosegood, & Lund, 2003; Samson et al., 2004), and Malawi (Miller, Tsoka, & Reichert, 2006).

The Alaska PFD differs from the UBI welfare experiments with respect to its potential effects on labor supply in that participation in the PFD program does not reduce incremental earnings from work at any income level. The PFD therefore has an income effect but no substitution effect.¹⁴ The closest analogy to the PFD is the universal cash transfer program that Iran implemented to mitigate the effects of reduced energy subsidies following the imposition of international sanctions in 2011. Salehi-Isfahani and Mostafavi-Dehzoeei (2017) found no evidence that this program reduced labor supply except for youth, many of whom likely gained additional education and training. On the other hand, they found that service sector workers increased work hours, speculating that some used the transfers to expand their businesses. A formal statistical investigation of the effect of the Alaska PFD on labor supply would be challenging, because there is no control group. The program has been in place for 35 years, and everyone is eligible to receive the PFD except newly arrived in-migrants, who obviously differ from longer-term residents. A simple test – comparing labor force participation in Alaska to that of other states – reveals that both the labor force participation rate and the employment rate (ratio of the employed to the population) are higher in Alaska than in the United States as a whole. Some of the observed difference may derive from a larger proportion of youth attending college outside Alaska and older persons leaving the state after retirement. However, Census data show that the Alaska labor force participation and the employment rates are higher than the national averages for both men and women in every age group, despite the scarcity of job opportunities in many rural areas of the state.

A World Bank report (Evans & Popova, 2014) reviewed evidence from multiple studies of another potential adverse effect of UBI – that the extra income would be used for temptation goods and not actually improve well-being – finding little evidence for that hypothesis. Most Alaskans receive their PFD in early to mid October, although the amount of the year’s PFD is known as much as six months in advance. Monthly state alcohol tax data for October show only a continuation of the seasonal decline as the summer

¹² Nine of the twelve ANCSA regional corporations publicly disclosed additional elder payments of some kind in the past year, as follows. Doyon: twice the dividend upon reaching age 65. (<https://www.doyon.com/our-shareholders/records-stocks-stock-classes/>); NANA: elders trust started in 2008 distributed a \$1,000 dividend in 2016 (<http://nana.com/regional/news-and-press/press-releases/nana-elders-settlement-trust-announces-2016-distribution/>); ASRC: Elders Benefit Trust pays out monthly checks of an unspecified amount to original ASRC shareholders 65 and older (<https://www.asrc.com/About/History/Pages/1990toPresent.aspx>); CIRI: CIRI Elders’ Settlement Trust: \$450 per year (<http://www.ciri.com/shareholders/benefits/dividends-and-distributions/distribution-schedule/>); Bering Straits Regional Corporation: \$750 (double dividend) for elders in 2017 (<http://beringstraits.com/bnsc-declares-special-elders-dividend-distribution-3/>); Ahtna: \$400 elder dividend in 2016 (<http://ahtna-inc.com/ahtna-declares-largest-shareholder-dividend-in-10-years/>); Bristol Bay Native Corporation: \$500 elder dividend in 2016 (<http://www.bbnc.net/bbnc-2016-tax-information/>); Aleut: \$550 Elder Benefit in 2017 (<http://www.aleut-corp.com/2017-dividend-schedule/>); Sealaska: Owners of elder stock received \$133 for the first quarter of 2017 (<https://www.sealaska.com/news/item/2017-03-31/sealaska-announces-2017-spring-distribution>).

¹³ The largest such lawsuit, the Cobell case, was settled in 2009 for \$3.4 billion. (*Class Action Settlement Agreement, December 7, 2009*. Elouise Pepion Cobell, et al., vs. Ken Salazar, Secretary of the Interior, et al. Case 1:96-cv-01,285-TFH Document 3660-2, Filed 12/10/10 in the United States District Court for the District of Columbia.)

¹⁴ Technically, there is the possibility of a reduction in the incremental income from work if an individual moves into a higher marginal income tax rate as a consequence of receiving the PFD.

tourist season winds down in the fall. A 2011 expenditure survey reported that only 23 percent of Alaska households said they would spend any of their PFD on new purchases; most would use it to pay bills or save it (Northern Economics, 2011). Hsieh (2003) similarly found no statistically significant differences between Alaska households and households in the other 49 states in quarterly durable or nondurable consumption patterns, but did find that debt balances decreased and savings balances increased more in the fourth quarter. This suggests that residents treat the PFD as permanent rather than windfall income.

Since the entire Alaska resident population receives the PFD, it is much more costly than programs with a need-based eligibility requirement. In 2015, the PFD constituted 3.7 percent of state personal income.¹⁵ However, although Alaska has no state income tax, progressive federal income taxes recapture a portion of the PFD payment from more well-off individuals. A recent study estimated that federal income taxes collect 16 percent of PFD receipts on average, rising to 31 percent for the richest 10 percent of households (Knapp, Berman, & Guettabi, 2016). The fact that everyone receives the benefit also allowed the PFD to easily overcome the political obstacles that have arisen elsewhere to funding UBI programs. Accounting for the cost simply in terms of the gross payout ignores any potential reduction in state welfare expenditures for the poor, or improvements in productivity and savings in health care costs arising from improved physical and mental health, as found by Forget (2011).

6. Conclusion

The Alaska Permanent Fund Dividend program represents a unique case of a sovereign wealth fund being used to provide universal basic income to the population. Although the entire resident population receives the PFD, its income maintenance properties strongly affect low-income households, especially families with children. After adjusting U.S. Census data for errors in reported income, we found that the Alaska PFD has been highly effective in reducing high poverty rates among the state's rural Indigenous people. The PFD has not eliminated poverty, however: it represents "partial" rather than "full" Universal Basic Income. Furthermore, its effectiveness has declined: from a 46 percent reduction in the number of Alaska Natives below the poverty income threshold in 2000 to 22 percent between 2011 and 2015.

The poverty-reducing effects of the PFD for rural Alaska Natives have been most pronounced for the elderly. Poverty rates for rural Alaska Native seniors have declined substantially since 1990 due in large part to other sources of resource-rent-derived UBI from Indigenous land claims. Nevertheless, the PFD reduced rural Alaska Native elder poverty rates in 2011–2015 by an additional 40 percent. Child poverty rates have been increasing in Alaska as well as in the United States as a whole. However, the PFD reduced rural Alaska Native child 2011–2015 poverty rates by one-quarter, and by nearly 30% if unmarried partners were counted as family members.

It is difficult to test whether the PFD has caused adverse social and economic effects, because the program has been in effect for 35 years and all residents are eligible to receive it. We found no evidence, however, that the program has had any significant long-term adverse effects on labor force participation or spending patterns. The Alaska PFD was not designed as a poverty-reduction measure, but rather as a populist program to share the state's resource wealth with citizens. Nevertheless, its equal per-capita (taxable) payments amounted to a progressive transfer that has significantly mitigated poverty, especially among Alaska's vulnerable rural Indigenous population. As current and future state budget

challenges lead to a reduction in PFD distributions to permit the Fund's earnings to be applied to support provision of public services, poverty rates in Alaska are almost certain to rise.¹⁶ If errors in income recording by the U.S. Census Bureau are not corrected, official statistics on poverty rates will understate the actual increase in poverty.

Conflict of interest declaration

The author received financial support for this research from the National Science Foundation, First Alaskans Institute, and the Alaska Children's Trust. Non of these organizations had any role in the study design; in the collection, analysis and interpretation of data; in the writing of the report; or in the decision to submit the article for publication. The author has no other relationships that might create an actual or perceived conflict of interest.

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¹⁵ Based on U.S. Bureau of Economic Analysis State Personal Income Estimates.

¹⁶ By far the largest state expenditure that directly benefits the poor consists of health care provided through the Medicaid program. Medicaid eligibility is determined by federal rules; consequently, most budget savings would have to be realized elsewhere, such as with cuts in state support for public education.

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