THE HETEROGENEOUS EFFECTS OF UNIVERSAL CASH-TRANSFERS ON
BREASTFEEDING INITIATION AND CONTINUATION

Mariana Amorim (Corresponding author*) a, c
Anna Zamora-Kapoor a, b
Erica Hobby c
Katherine Perham-Hester d
Sarah K. Cowan c, e

a. Department of Sociology, Washington State University, USA.
b. Elson S. Floyd College of Medicine, Washington State University, USA.
c. Cash Transfer Lab, New York University, USA.
d. Alaska Department of Health and Social Services, Alaska, USA.
e. Department of Sociology, New York University, USA.

*Corresponding author:
Mariana Amorim, Assistant Professor
Department of Sociology
207 Wilson Short Hall
Washington State University
Pullman, 99164
t. 509-335-6769
e-mail: mariana.amorim@wsu.edu

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Abstract. “Breast is best” is a widely accepted expectation for parenting in western countries. Prior research on barriers to breastfeeding have focused on the role of hospital initiatives or individual mothers’ characteristics, knowledge, and choices. This study uses data from Alaska’s Pregnancy Risk Assessment Monitoring System and the Alaska Permanent Fund Dividend, to investigate whether income support shapes mothers’ breastfeeding behaviors. We find that universal cash transfers promote breastfeeding initiation and short-term continuation (3 months). These effects differ across mothers’ socioeconomic and demographic characteristics (i.e., education, economic status, race, marital status, urban/rural residence). We contend that universal income interventions may provide mothers with resources and opportunities to breastfeed.

Key words: Income support; Breastfeeding; Disparities; Alaska
1. INTRODUCTION

While breastfeeding’s effects on the health of mothers and children is contested (e.g., Colen and Ramey 2014; Raissian and Su 2018), the notion that “breast is best” is a widely accepted expectation for ideal parenting in western cultures (Artis 2009; Wolf 2011) and is endorsed by leading medical associations (American Academy of Pediatrics 2012; World Health Organization 2020). Thus, most mothers intend to breastfeed (Perrine et al. 2012), and being unable to breastfeed has important consequences for their psychological well-being (Hvatum and Glavin 2017; Murphy 2000).

Today, most US mothers initiate breastfeeding, but only one in four continue to breastfeed exclusively for the six months recommended by the American Academy of Pediatrics (Centers for Disease Control and Prevention n.d.; Perrine et al. 2012). Racial and socioeconomic disparities in breastfeeding (Cisewski and McCann 2018) have raised concerns about inequalities in children’s health and motivated policies that promote exclusive breastfeeding among at-risk populations (US Department of Health and Human Services n.d.). Prior research on barriers to breastfeeding focuses on individual mothers’ physical challenges (Chang et al. 2020), health literacy (Thomson et al. 2017), lifestyle choices (Logan et al. 2016), or conditions upon return to work (Dagher et al. 2016). Other studies report on the role of healthcare systems in providing access to lactation consultants and reducing health disparities in breastfeeding (Merewood et al. 2019). Less research, however, addresses whether distal interventions, like income support, may influence mothers’ decisions to breastfeed (Hamad and Rehkopf 2015).

Household income is an important source of stratification in breastfeeding initiation and continuation (Boone et al. 2019), but it is difficult to disentangle the unique effects of income on breastfeeding given that low levels of income are associated with several factors that limit
breastfeeding, such as malnutrition and smoking. Our study contributes to the literatures on breastfeeding, social determinants of health, and cash-transfer research by investigating the heterogeneous role of cash transfers on breastfeeding using the case of the Alaska Permanent Fund Dividend (hereafter Alaska Dividend). The Alaska Dividend is the only universal and unconditional cash-transfer program in the US, benefiting all families that reside in Alaska for at least one calendar year. Using data from Alaska’s Pregnancy Risk Assessment Monitoring System (PRAMS), we exploit variation in the generosity of the Dividend’s payouts and in children’s birth date to estimate disparities in breastfeeding initiation and continuation. We contend that this type of intervention may complement existing efforts to promote breastfeeding by providing mothers with support, resources, and opportunity to start and continue to breastfeed.

2. BACKGROUND

2.1. The Benefits of Breastfeeding Initiation and Continuation

Observational studies suggest that breastfeeding strengthens infants’ immune systems (Victora et al. 2016), reduces the risk of post-neonatal mortality (Chen and Rogan 2004), and prevents sudden infant death syndrome (Thompson et al. 2017), infections (Victora et al. 2016), asthma (El-Heneidy et al. 2018), and childhood obesity (Isong et al. 2018). Observational studies also document physical health benefits for mothers who breastfeed, including decreased postpartum bleeding (Kennedy, Labbok, and Van Look 1996) and decreased risk of breast cancer (Jernström et al. 2004). Although most evidence on the benefits of breastfeeding for children’s and mothers’ health is based on observational studies, a large experimental study (Kramer et al. 2001) indicates that breastfeeding may indeed offer some health benefits to children (i.e., improves digestion in the first year and reduces the incidence of rashes and ear infections) and
mothers (i.e., lowers the risk of breast cancer).

Due to the widely publicized potential advantages of breastfeeding to children’s health (World Health Organization 2020), healthcare professionals’ encouragement of breastfeeding practices (Dykes 2005), and a belief that breastfeeding is accessible to all mothers (Knaak 2005; Larsen and Kronborg 2013), breastfeeding has become a form of time-intensive investment in children (Hays 1996; Wolf 2011) and a key staple of “good mothering” (Flacking, Ewald, and Starrin 2007; Lee 2007). Socioeconomically advantaged mothers are the most likely to breastfeed and to partake in intensive mothering behaviors (Avishai 2007; Kukla 2006), but prior work finds that fulfilling this western cultural expectation is a widespread goal (Huang, Atlas, and Parvez 2012; Hvatum and Glavin 2017; Murphy 2000; Perrine et al. 2012).

Today, US mothers are often committed to breastfeed, consider it an essential experience of successful motherhood, and frame it as an important venue to invest in their children’s health (Dykes 2005; Lee 2007). As a result, several studies document how inability to breastfeed fosters feelings of shame, guilt, worry, and a sense of failure (Hvatum and Glavin 2017; Lakshman et al. 2009; Lee 2007; Murphy 2000), harming mothers’ psychological well-being (Haga et al. 2012). Debates around the benefits of breastfeeding for children’s health notwithstanding (Colen and Ramey 2014; Raissian and Su 2018), this growing body of work suggests that successful breastfeeding benefits the psychological well-being of mothers (Hvatum and Glavin 2017; Lakshman et al. 2009; Lee 2007; Murphy 2000).

2.2. The Role of Cash Transfers in Promoting Breastfeeding

Our study investigates whether universal cash transfers support breastfeeding initiation and continuation. A key mechanism through which income support can shape breastfeeding is by reducing stress. Financial hardships are consistently linked to experiences of stress and
depression (Brown and Moran 1997; Kahn et al. 2000), which in turn are linked to early breastfeeding cessation (Dennis 2006; Pippins et al. 2006). Recent studies indicate that experiencing financial problems during pregnancy is associated with lower likelihood of breastfeeding at four months (Buck et al. 2018; Dozier, Nelson, and Brownell 2012; Li et al. 2008), and one study reported that cash transfers reduce stress and improve mental health among working mothers (Evans and Garthwaite 2014). Second, income support may promote breastfeeding by allowing mothers to take longer leaves from work (Berger et al. 2008; Bibler et al. 2019), which in turn may promote self-efficacy, bonding, and social support (Meedya, Fahy, and Kable 2010). Finally, it is also possible that cash influxes reduce not only the stress experienced by mothers, but also the stress of those around her (see Heath, Hidrobo, and Roy 2019; Wolf, Aber, and Morris 2013), improving overall relationship quality and social support within families, which represents yet another key determinant of successful breastfeeding (Mitra et al. 2004).

To date, few studies investigated the effects of cash transfers on breastfeeding. Hamad and Rehkopf (2015) found that increases in payouts from the Earned Income Tax Credit are associated with increases in breastfeeding initiation. Relatedly, Haider, Jacknowitz, and Schoeni (2003) found that hindering access to cash assistance through stringent work requirements decreases breastfeeding initiation and duration. Finally, a study on conditional cash transfers in India found that breastfeeding initiation was slightly higher among beneficiaries compared to non-beneficiaries (Sen et al. 2020). This scarce literature investigates the effects of means-tested and conditional cash assistance among specific subgroups of low-income mothers. No study to date has examined the potential contribution of universal cash transfers on the breastfeeding
outcomes of the general population. Our study addresses this gap with data from the Alaska Dividend.

Universal cash transfers and universal basic income have recently come to the center of policy debates in the US and the world, but their implications for maternal and child health are not well understood. In the US, experiences of breastfeeding are highly stratified by race, education, and income, with breastfeeding mothers more likely to be Non-Hispanic White and to have higher levels of education and income compared to non-breastfeeding mothers (Cisewski and McCann 2018; Jones et al. 2015; Louis-Jacques et al. 2017). Universal cash transfers could mitigate existing socioeconomic and racial inequalities in breastfeeding behaviors if they disproportionately provide financial security, allow for longer leaves, and improve social support for socioeconomically disadvantaged mothers compared to their advantaged counterparts. On the other hand, universal cash transfers may increase breastfeeding inequalities if mothers from socioeconomically advantaged backgrounds, who face stronger normative expectations about breastfeeding (Carter and Anthony 2015; Kirksey 2021), take the most advantage of a cash influx to engage in breastfeeding behaviors.

2.3. Case Study: The Alaska Permanent Fund Dividend

Alaska’s Permanent Fund Dividend is an annual universal cash transfer for all Alaskan residents. Dividend payments are financed by the Alaska Permanent Fund, a sovereign wealth fund established in 1976. Each year, the state contributes at least 25 percent of Alaska’s mineral royalties into the Fund’s principal. The Alaska Dividend has unique features compared to most payments from government in the US: (i) supports all individuals who are a resident of Alaska in the qualifying year, as well as children born in the qualifying year; (ii) there are no age, income, employment, or family composition requirements; and (iii) it is distributed on an annual basis at
the beginning of October. Figure 1 presents the payments for each year included in this study (1996-2015) in 2015 dollars as well as the take-up rate for each year. We limited our time frame due to key data missing prior to 1996 (on rural residence) and to changes that occurred in the determination of payment sizes after 2015 (Erickson and Groh 2012).

[FIGURE 1]

To date, no study has shown the effects of the Alaska Dividend on breastfeeding outcomes. However, previous work supports the notion that the Dividend may facilitate breastfeeding. First, the Dividend reduces poverty in Alaska by providing unconditional assistance to needy Alaskans (Berman 2018). Second, there is suggestive evidence that the Dividend allows mothers to stay at home for longer periods with their children: Bibler and colleagues (2019) found that increases in the Alaska Dividend lead to a short-term reduction in work hours among women, and that these effects are concentrated among women who are younger, lower wage earners, and have young children at home. Finally, other studies found that the Alaska Dividend impacts children’s health outcomes that are also linked to breastfeeding, such as birthweight (Chung, Ha, and Kim 2016) and childhood obesity (Watson, Guettabi, and Reimer 2019).

3. DATA & METHODS

3.1. Data

We utilize 1996-2015 data from the Alaska’s Pregnancy Risk Assessment Monitoring System (PRAMS) to measure health behaviors and outcomes for mothers of newborns before, during, and after pregnancy. PRAMS surveys are collected by the Centers for Disease Control and Prevention (CDC) from a stratified sample of postpartum women who are interviewed between 2 and 9 months after they gave birth. Alaska PRAMS oversamples Alaska Native
mothers and those whose newborns were low birthweight. Mothers’ responses are linked to information obtained from children’s birth certificate. PRAMS does not ask about the gender of the respondent; in this manuscript, we alternate between feminine and gender-neutral descriptors.

3.2. Identification Strategy

We conceptualize the Dividend payments as repeated natural experiments. The repeated nature of the treatment suggests other states may be unsuitable counterfactuals for continually treated Alaskans (see also Cowan and Douds 2022). Thus, our sample is restricted to Alaskans. Because rural areas in Alaska are much more remote than rural areas in the rest of the US and are characterized by a mix of subsistence and small formal economies (Goldsmith 2012), we restrict our main sample to postpartum Alaskans who live in urban areas to improve generalizability of our results to Americans living outside of Alaska. We conduct and describe, however, supplemental analyses focusing only on rural Alaskans. Restricting our main sample to urban Alaskans also has the benefit of eliminating a potentially important confounder: public health investments, which could be correlated to Dividend amounts. Most urban residents in Alaska live in Anchorage, an area that, in contrast to the rest of the state, has not received any meaningful public health investments expanding mothers’ access to healthcare during the studied period (Borland et al. 2015).

We exploit the seasonal and lump-sum nature of the payouts to investigate changes in Alaskans’ breastfeeding behaviors that are aligned with the size and time of Dividend receipt. First, our models identify whether postpartum Alaskans are more likely to breastfeed when the timing of initiation or continuation is aligned with a monetary payout. This strategy assumes that the timing of payouts is independent from the timing of birth. Given the seasonality of work in Alaska (Goldsmith 2012), one could argue that the Dividend disbursement (i.e., October)
coincides with the beginning of winter, a time when many seasonally employed Alaskans are off work. Moreover, Alaskan families may have more savings and liquidity in early fall, immediately after summer earnings. If that is the case, spikes in breastfeeding initiation or continuation in the winter could be due to changes in work and savings patterns, and not the Dividend. Our models, however, also identify whether the probability of initiating and continuing to breastfeed increases as Dividend amounts increase—and work seasonality is less likely to vary alongside the Dividend’s size. Although the initial endowment for the Permanent Fund came from mineral royalties, this initial endowment (as well as its subsequent revenue) has been invested in an increasingly diversified set of financial and real assets, current evidence suggests the contribution of mineral extraction to the Fund’s growth is minimal (Erickson and Groh 2012).

3.3. Sample

The 1996-2015 PRAMS data contain information on 17,816 postpartum women who were urban Alaska residents. Urban was defined as a resident of Anchorage, Fairbanks, Juneau, Ketchikan, or the Matanuska-Susitna Borough. Sitka residence was included for birth years 1996-2011. We exclude 6.1% of observations (N=1,095) that did not provide information on breastfeeding initiation or continuation until the infant was four weeks old, 280 observations for whom we could not generate a household size, and 6% of mothers who did not report their race. Our final sample is composed of 15,455 postpartum mothers. We use chained equations (N=10) to impute information for 1,345 mothers who had missing information on other key covariates, none of which were missing for over 3% of our sample.

3.4. Measures
3.4.1. Breastfeeding initiation and continuation. We rely on one measure of breastfeeding initiation: whether respondents ever breastfed. We consider all mothers who report any length of time breastfeeding as initiators. We use two measures of breastfeeding continuation: (i) whether respondents breastfed for four or more weeks after birth; and (ii) whether respondents breastfed for three or more months after birth. Because respondents complete the PRAMS survey between two and nine months after the infant’s birth, the models investigating the third measure (breastfeeding at three or more months) are restricted to respondents with infants 90 days or older at the time of the questionnaire (N=11,613).

3.4.2. Family Dividend Payout. The annual individual payout amount, which is the same for every Alaskan resident, is publicly available and was adjusted to 2015 dollars using the Bureau of Labor Statistics’ Consumer Price Index West Region Data Tables. The payout received by each Alaskan family was imputed by multiplying the individual payout by household size. To determine household size, we added the respondent to their spouse (marital status information is collected from the child’s birth certificate) and to the number of previous live births reported. The number of previous live births is measured in a categorical variable linked from the birth certificate: 1, 2, 3-5, and 6+. For respondents who reported 3-5, we assigned the average of 4. For those who reported 6+ previous births, we assigned the household 6 children. We assign the October payout to the six months preceding and following the payout, allowing for both anticipatory and spillover effects. For example, the payout from October 2010 (t) is assigned to respondents with births between the months of April 2010 (t-6) and March 2011 (t+6); births in March 2010 are assigned the payout from the prior year, October 2009.

3.4.3. Moderators. We measure socioeconomic status through maternal educational attainment and Medicaid receipt. Maternal educational attainment is categorized as high school
degree or less (12 years of education or less), some college (13 to 15 years of education), or
college degree or more (16 years or more of education). Second, as a proxy for family income,
we use a binary variable that indicates whether respondents paid for prenatal healthcare using
Medicaid (self-reported) because PRAMS did not collect measures of income consistently across
years, and its income data a high proportion of missing values (Shulman 2018). Respondents are
also classified according to their marital status (married, not married). Finally, mothers are
classified according to three distinct racial identities: White, American Indian/Alaska Native
(AI/AN), and “Other race.” PRAMS oversamples AI/AN mothers, which allows us to investigate
this group separately. Because the proportion of Asian, Black, and Native Hawaiian and Pacific
Islander mothers in our sample is very small, we cluster these groups in the “Other race”
category. Information on Hispanic ethnicity is missing for a large portion of the sample and thus
not included in the main analysis.

3.4.4. Controls. Multivariate analyses control for the three moderators described above
and for the following socio-demographic characteristics: age (≤19, 20-24, 25-29, 30-34,35+),
parity (1, 2, 3, ≥4), obesity status, and whether respondent received prenatal care in the first
trimester of pregnancy, received assistance through the Special Supplemental Nutrition Program
for Women, Infants, and Children (WIC), smoked during third trimester, drank alcohol during
the last three months of pregnancy, and whether respondent experienced intimate partner
violence before or during pregnancy. Moreover, models control for annual US trends in
breastfeeding initiation (collected from the National Immunization Survey and the Ross
Mothers’ Survey).

TABLE 1
Table 1 reports the characteristics of our sample. About 92% of mothers ever breastfed, 81% breastfed at four weeks, and 64% breastfed at three months. About 74% identify as White, 13% identify as AI/AN, and 13% identify as another race. Over 70% were married, 24% had a college degree, and about 40% were having their first birth. Nearly 44% of mothers in our sample received WIC during pregnancy and 35% used Medicaid during pregnancy. Eighty percent of mothers received prenatal care during the first trimester of their pregnancies, 22% were obese, and 13% smoked during the last three months of their pregnancies. The average total family Dividend was about $5,185 (in 2015 dollars).

3.5. Empirical Strategy

We measure changes in breastfeeding patterns using logistic models as described below:

$$Y_{it} = \alpha + \beta_1 T_{it} + \sum \beta_0 M_{i\theta} + \sum \delta_0 (T_{it} \times M_{i\theta}) + x_i \lambda_d + \varepsilon_{it}$$

(1)

where $Y_{it}$ is the log-likelihood that postpartum mother $i$ will engage in breastfeeding initiation or continuation in Dividend year $t$ (from April to March). $T_{it}$ denotes the estimated family Dividend received by postpartum mother $i$ in year $t$ in hundreds of dollars, and $M_{i\theta}$ represents a series of indicators for the month in which postpartum mother $i$ gave birth to focal newborn, with April omitted as the reference category. $x_i$ is the $1 \times k$ regressor vector (where $k$ is the number of controls described above), and $\lambda$ is the $k \times 1$ vector of parameters. $\varepsilon_{it}$ are changes in breastfeeding behavior not explained by variables included in the model. Additionally, we conducted analyses interacting $T_{it}$ and $M_{i\theta}$ to each moderator (i.e., educational attainment, Medicaid use, race identity, marital status).

Best practices for nonlinear models suggest interactive effects should be tested in the natural metric of the variable (as predicted probabilities), and that it is improper to analyze the coefficients of interaction terms on their own (see Mize 2019). In this paper, we use average
marginal effects to summarize effects on breastfeeding, which allows us to account for multiple linked coefficients (main and interaction terms, $\beta_0$ and $\delta_0$) and to express results as changes in predicted probabilities. Average marginal effects can be interpreted as the effect of changing payouts by $100 on the predicted probability of breastfeeding in each month. All analyses are weighted using the PRAMS survey weights and the \textit{svy} commands in Stata.

3.6. Robustness Checks

To understand the sensitivity of our results, we used a more conservative version of the model, controlling for both household-size fixed effects and year fixed effects (variables that jointly nearly explain variation in the Dividend’s size). Main results remain the same despite slightly larger standard errors. Second, alternative calculations of family Dividend using years 1991-2003, when PRAMS respondents reported the number of people in their households (n=6,469) and using the number of dependents on the prior years’ income (n=14,987), produce similar results. Third, analyses using alternative monthly assignments of the Dividend values (to all months in a calendar year and to the 12 months following receipts) corroborate main results. Fourth, we used a measure of \textit{individual} payouts rather than family payouts. Effects using this alternative specification become smaller and statistically insignificant. Fifth, we used two alternative measures of economic standing as moderators in our models: (i) WIC receipt during pregnancy (using full sample); and (ii) public assistance receipt (TANF, SNAP) in the year prior to birth (collected in 1996-2008 only; n=10,359). Discrepancies between these results and the main results are described in the Results section. Finally, we used a restricted sample (n=14,908) and an alternative measure of racial identities (that accounts for Hispanic origin) as moderators in our models. These results corroborate our main analyses.

4. RESULTS
4.1. Universal Cash Transfers and Breastfeeding Initiation and Continuation

Figure 2 reports the average marginal effects of receiving an additional $100 in October (month 0) on the predicted probabilities of (i) ever breastfeeding, (ii) breastfeeding at four weeks, and (iii) breastfeeding at three or more months for children born in $x$ months before ($-x$) or after ($+x$) disbursement. Receiving $100 increases the probability of ever breastfeeding by about 0.05 percentage points (pp) for mothers whose children are born in the month of payouts (1st panel). Although this increase seems small, the baseline probability of ever breastfeeding is high (91.5%, see Table 1), and that the average family in our sample receives $5,185. Thus, our results suggest an increase in the probability of ever breastfeeding of about 2.6 pp [$0.05 \times (5,185/100)$] for mothers receiving the average payouts and giving birth in the month of disbursement. On a baseline probability of 91.5%, this represents a nearly 3% increase in the probability of ever breastfeeding [$((91.5 + 2.6)/91.5) - 1$].

Receiving $100 increases the probability of breastfeeding at four weeks by about 0.09 pp for mothers whose children are born the month prior to the payouts (2nd panel). For the average mother, who received about $5,185 in October, we expect an increase in the probability of breastfeeding at four weeks of about 4.7 pp [$0.09 \times (5,185/100)$] when giving birth in the month before disbursement. This represents a nearly 6% increase in the probability of breastfeeding at four weeks on a baseline of 81% [$((81 + 4.7)/81) - 1$].

Receiving $100 increases the probability of breastfeeding at three months by about 0.09 pp for mothers whose children are born one or two months before the payouts (3rd panel). For the average mother, who received $5,185 in October, we expect an increase in the probability of breastfeeding at three months of about 4.7 pp [$0.09 \times (5,185/100)$] when giving birth in August.
This represents a 7.4% increase in the probability of breastfeeding at four weeks, on a baseline of 63.5% \( \frac{(63.5 + 4.7)/63.5-1}{(63.5 + 4.7)/63.5-1} \).

**Supplemental Analyses: Effects for Rural Alaskans.** Results using a sample restricted to rural Alaskans (n=8,037) suggest that increases in the Dividend have no effect on breastfeeding initiation or continuation (see Online Appendix A). Prior research on breastfeeding suggests mothers in rural settings are less likely to breastfeed than mothers in urban settings (Hamilton and Tarasenko 2019). The remoteness, practice of subsistence, and the prevalence of non-cash economies in rural Alaska may limit the effect of cash transfers on mechanisms that would otherwise promote breastfeeding.

**4.2. Disparities in Breastfeeding Patterns**

Table 2 shows that breastfeeding initiation and continuation vary by socioeconomic status and race. White mothers, mothers who are college educated, and mothers who did not receive Medicaid during pregnancy are more likely to start and continue to breastfeed than their non-White, less educated, and Medicaid recipient counterparts. Next, we investigate racial and socioeconomic variation in the effects of the Alaska Dividend on breastfeeding behaviors of Alaskans in urban areas. For ease of interpretation, we condense the months between November of \( t \) and July of \( t+1 \) into a single indicator (named “Other”). This allows us to focus on the months when we identified an effect in the main models (i.e., the month of disbursement and the two months before the disbursement). Conclusions remain unchanged if we disaggregate these months (results available upon request).

**4.2.1. Educational Attainment.** Figure 3 reports the marginal effects of receiving $100 on breastfeeding behaviors by mothers’ educational achievement. An additional $100 in payouts increases the probability of breastfeeding initiation among mothers with no college education.
whose children were born in the month of disbursement by 0.12 pp (1st panel). We also identify a 0.16 pp increase in the probability of breastfeeding at four weeks for every $100 received in October among mothers with some college education whose children were born one month before payouts. Overall, Figure 3 suggests that breastfeeding behaviors of the most educated mothers are the least affected by changes in payouts.

4.2.2. Economic Standing. Figure 4 documents the effects of receiving $100 on breastfeeding behaviors by mothers’ economic status, proxied by Medicaid status. An additional $100 in payouts increases the probability of breastfeeding continuation at four weeks among non-Medicaid beneficiaries by 0.13 pp when children were born in the month of disbursement (2nd panel). Increases in payouts of the order of $100 increase the probability of breastfeeding at three months among non-Medicaid beneficiaries whose children were born two months prior to disbursement (0.19 pp, 3rd panel). Models using alternative measures of economic standing (i.e., WIC receipt, public assistance) offer mixed support for these results. Models using a measure of public assistance also find that cash transfers increase breastfeeding continuation only among mothers who did not receive public aid before childbirth. Models using WIC receipt as a proxy for economic standing suggest that mothers who did and did not receive WIC increase their likelihood of breastfeeding continuation with increasing payouts.

4.2.3. Race. Figure 5 reports results by mothers’ race. Receiving an additional $100 increase the probability of initiating breastfeeding among White mothers whose children were born in the month of disbursement (by 0.08 pp, 1st panel). An additional $100 increases breastfeeding continuation at four weeks among mothers of “Other” race (by 0.26 pp, 2nd panel). Finally, an additional $100 also increases breastfeeding continuation at three months among White mothers whose children were born two months before the payouts (by 0.16 pp) and
mothers of “Other” race whose children were born one month before payouts (by 0.31 pp, 3rd panel). We find no effect of the Dividend on breastfeeding behaviors of AI/AN mothers. Findings are corroborated by results using a restricted sample that controls for Hispanic ethnicity (available upon request).

4.2.4. Marital Status. The third panel of Figure 6 suggests an increase in the probability of continuing to breastfeed at three months for married persons whose children were born two months before cash disbursement (i.e., an additional $100 leads to increases in the probability of breastfeeding continuation of about 0.14 pp). Perhaps surprisingly, mothers who are not married are likely to increase breastfeeding continuation when their children are born in other months (Figure 6, 1st panel). Additional analyses disaggregating months in the “Other” category (not shown) indicate that this increase is driven by disproportionate changes in the probability of breastfeeding among non-married mothers whose children are born in April. We hypothesize that this increase in breastfeeding during spring may be driven by tax credits/refunds among more disadvantaged single mothers (Hamad and Rehkopf 2015).

5. DISCUSSION

The American Academy of Pediatrics recommends exclusive breastfeeding for the first six months of life (American Academy of Pediatrics 2012). “Breast is best” is a widely accepted expectation for mothers in western cultures (Artis 2009; Wolf 2011), but breastfeeding is still associated with women’s socioeconomic status, including their education, marital status, and income (Li et al. 2005). Breastfeeding has become another form of time-intensive investment taken up predominantly by White and middle-class mothers (Avishai 2007; Kukla 2006). To mitigate disparities in breastfeeding, several policies have been implemented at the hospital-level (Kuehn 2018; Patterson, Keuler, and Olson 2018). What remains unclear is the potential
contribution and heterogeneous consequences of social policies outside of hospitals, through universal cash transfers such as the Alaska Permanent Fund Dividend.

Findings from this study indicate that receiving universal cash payouts increase the probability of breastfeeding for Alaskan mothers in urban areas. Cash transfers increase the probability of initiating breastfeeding when they are received in the month of birth, and of continuing to breastfeed when they are received immediately after birth. Cash transfers seem to promote breastfeeding during the period in which they are received (e.g., continuation at 4 weeks for children born about 4 weeks before the transfer). Overall, our results corroborate previous studies of means-tested cash transfers focusing on lower-income populations (Haider et al. 2003; Hamad and Rehkopf 2015; Sen et al. 2020). We identify larger effects of cash influxes on breastfeeding continuation rather than initiation, suggesting that cash influxes lengthen breastfeeding duration among mothers who already planned to breastfeed.

We investigated heterogeneity in the effects of universal cash transfers along socioeconomic lines. First, we find that increases in cash transfers promote breastfeeding among mothers with less than a college degree and that increases in payouts support breastfeeding continuation among mothers who did not receive Medicaid during pregnancy. These results suggest that human and economic capital have different implications for breastfeeding. Whereas college-educated mothers may face stronger expectations to breastfeed (Carter and Anthony 2015; Kirksey 2021) and may already plan to breastfeed regardless of payouts, mothers with less education (net of socioeconomic resources) may alter their plans for breastfeeding initiation and continuation because of payouts. On the other hand, net of educational background, mothers with more economic resources may be able to take better advantage of the payouts (e.g., by increasing work leaves). It is also possible that the payouts, which are only paid once a year, are not enough
to reduce experiences of economic hardship among economically challenged families. Notably, we used three different proxies for mothers’ economic status: Medicaid use, WIC receipt, and public assistance receipt. All these coarse measures suggested that payouts increase breastfeeding among the most socioeconomically advantaged groups, but WIC receipt also suggested that payouts could increase breastfeeding continuation among economically advantaged and disadvantaged mothers. Compared to Medicaid and other public assistance programs, however, WIC income requirements are less stringent and may include higher-income mothers. In tandem, married mothers, who arguably have more social resources than non-married mothers, are the most likely to increase breastfeeding continuation in response to increasing payouts (also see Biebler et al. 2019).

Finally, we investigate racial disparities in the effects of cash transfers on breastfeeding. Our results using race as a moderator should be interpreted as reflecting the effects of structural racism on social determinants of health rather than the effects of biology or identity on breastfeeding (Kowalsky et al. 2020). Cash payouts increase breastfeeding among both White mothers and mothers of “Other” races, but not among AI/AN mothers. The effect of payouts on mothers of “Other” races is restricted to breastfeeding continuation, suggesting that payouts may not alter previously established plans for not breastfeeding (see Nommsen-Rivers et al. 2010), but still support longer breastfeeding periods among those who planned on breastfeeding. The lack of effects on AI/AN mothers could be due to structural reasons, cultural reasons, or even health-related reasons shaping breastfeeding that deem payouts less relevant to decision-making (Spieler 2010; Louis-Jacques et al. 2017). These findings call for additional research to identify other culturally-matched supports that can address structural barriers reducing AI/AN mothers’ ability or choice to breastfeed.
This paper has important limitations. First, PRAMS data do not measure employment status or income consistently, and there is no measure of mothers’ cohabitation status. This limitation led us to use coarse proxies for economic status and family size. Because cash-transfer policies are likely to differentially affect the breastfeeding behaviors of working and non-working mothers, our estimates are likely downward biased. Second, we impute the Dividend amount received by a family, without knowing if all families in our data qualified to receive a payout or received their payout in full (payouts may be garnished for different reasons). This may also have led to attenuation bias in our estimates. Third, our models capture how increases in benefit size shape breastfeeding, but they provide little insight into how creating new benefits may promote breastfeeding since we do not have data before the Permanent Fund Dividend’s implementation. Finally, it is possible that the Dividend affects women’s pregnancy plans, skewing births from mothers who plan to breastfeed to the last quarter of the year.

Despite these limitations, this study has important policy and theoretical implications for understanding the role of universal cash transfers in breastfeeding outcomes. Although “Breast is best” has been a ubiquitous campaign aimed at promoting children’s health, it has created some unintended consequences for the mental health of mothers, who feel pressured to breastfeed. Our study provides evidence that universal cash transfers, a distal intervention, can substantively improve breastfeeding initiation and continuation. This type of intervention has the potential to provide mothers with the opportunity to initiate and continue to breastfeed.

6. REFERENCES


Flacking, Renée, Uwe Ewald, and Bengt Starrin. 2007. “‘I Wanted to Do a Good Job’: Experiences of ‘becoming a Mother’ and Breastfeeding in Mothers of Very Preterm


Pippins, Jennifer R., Phyllis Brawarsky, Rebecca A. Jackson, Elena Fuentes-Afflick, and Jennifer S. Haas. 2006. “Association of Breastfeeding with Maternal Depressive


<table>
<thead>
<tr>
<th>Mother’s characteristics</th>
<th>Proportion/Mean(SD)</th>
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<tbody>
<tr>
<td>Ever breastfed</td>
<td>0.915</td>
</tr>
<tr>
<td>Breastfed at 4 weeks</td>
<td>0.810</td>
</tr>
<tr>
<td>Breastfed at 3 months*</td>
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</tr>
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</tr>
<tr>
<td>&lt;20</td>
<td>0.080</td>
</tr>
<tr>
<td>20 – 24</td>
<td>0.264</td>
</tr>
<tr>
<td>25 – 29</td>
<td>0.299</td>
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<tr>
<td>30 – 34</td>
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<tr>
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<td>0.127</td>
</tr>
<tr>
<td>Education</td>
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</tr>
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</tr>
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</tr>
<tr>
<td>Race</td>
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</tr>
<tr>
<td>AI/AN</td>
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</tr>
<tr>
<td>White</td>
<td>0.738</td>
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<tr>
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<tr>
<td>Married</td>
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<td>Parity</td>
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</tr>
<tr>
<td>2</td>
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<tr>
<td>3</td>
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<td>Smoked during last 3 months of pregnancy</td>
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<tr>
<td>Drank during last 3 months of pregnancy</td>
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<td>Family PFD</td>
<td>$51,851(344.5)</td>
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</table>

N= 15,455; *N= 11,613
Table 2. *Unadjusted probabilities of breastfeeding initiation and continuation, by mothers’ race and socioeconomic status for Postpartum Urban Alaskan Women (1996-2015) (Weighted)*

<table>
<thead>
<tr>
<th>Mother’s characteristics</th>
<th>Ever breastfed</th>
<th>Breastfed at 4 weeks</th>
<th>Breastfed at 3 months*</th>
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</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td></td>
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<td>0.877</td>
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<td>0.519</td>
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<td>0.853</td>
</tr>
<tr>
<td><strong>Prenatal Medicaid</strong></td>
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<td></td>
</tr>
<tr>
<td>Not beneficiary</td>
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<td>0.841</td>
<td>0.695</td>
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<td>0.755</td>
<td>0.549</td>
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<td><strong>Race</strong></td>
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<td></td>
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<tr>
<td>AI/AN</td>
<td>0.917</td>
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<td>0.602</td>
</tr>
<tr>
<td>White</td>
<td>0.926</td>
<td>0.832</td>
<td>0.676</td>
</tr>
<tr>
<td>Other</td>
<td>0.857</td>
<td>0.709</td>
<td>0.512</td>
</tr>
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</table>

N= 15,455; *N= 11,613
Note: The 2008 payment was supplemented by an additional resource rebate, bringing the payment that year to $3,741 (2015 Dollars).
Figure 2. Average Marginal Effects of the Dividend on Probabilities of Breastfeeding Initiation and Continuation by Month of Birth

Notes: Error bars represent 95% confidence intervals.
Figure 3. Average Marginal Effects of the Dividend on Probabilities of Breastfeeding Initiation and Continuation by Month of Birth and Mother’s Educational Attainment

Notes: Error bars represent 95% confidence intervals.
Figure 4. Average Marginal Effects of the Dividend on Probabilities of Breastfeeding Initiation and Continuation by Month of Birth and Mother’s Medicaid Use During Pregnancy

Notes: Error bars represent 95% confidence intervals.
Figure 5. Average Marginal Effects of the Dividend on Probabilities of Breastfeeding Initiation and Continuation by Month of Birth and Mother’s Race

Notes: Error bars represent 95% confidence intervals.
Figure 6. Average Marginal Effects of the Dividend on Probabilities of Breastfeeding Initiation and Continuation by Month of Birth and Mother’s Marital Status

Notes: Error bars represent 95% confidence intervals.