

Online Data Appendix for “Mothers as Insurance: Family Spillovers in WIC”

Here we summarize details of our data sources

I. National Health and Nutrition Examination Study (NHANES)

We use data from the NHANES III and the continuous NHANES. We use data on food security, diet based on food recall (for 1 or 2 days) converted to micro and macro nutrients and adequacy for individuals, and constructed health eating index data (a measure of how healthful the diet is per 1000 calories) from the interviews. We also use data from lab tests from the examinations, which provide some health and nutrition measures based on blood or urine tests.

Not all measures are available for every year or all groups. For example, the NHANES III does not include a measure of food insecurity for children and has a different measure than later NHANES for adults. Information used to compute the HEI is not available in all waves (we only have HEI from 2005 on). Consent is also obtained from adults and children over 12 for the interview and the examination part of the data collection, and from adults for children, and some interview questions are not answered by everyone. To take an example for 1999-2000, the sample screened and available for participation was 12,160 persons. The interview sample was 9965 persons and the examined sample was 9282 persons. (We note this is still a high response rate relative to many other surveys and all analyses use sample weights in order to account for non-response.) See <https://wwwn.cdc.gov/nchs/nhanes/ResponseRates.aspx> and <https://wwwn.cdc.gov/nchs/nhanes/analyticguidelines.aspx>.

We also note that not all tests are applied to persons of all ages. For example, the lab tests on blood measures are only done for the universe of persons 1 year old and older, while cotinine was only measured for those 3 years old and older. All of this contributes to the varying sample sizes.

II. WIC PC data and first stage calculation

All state and tribal agencies are required to send administrative data for the universe of WIC recipients to the CDC in April of even years, including information on date of last certification and demographic characteristics as well as measures of the food package prescribed and other details. We used these data to count how many children of each age in months participated using the difference between April of the year data is collected and the birth month and year (based on the requirement that April is the month the administrative data were sent to the CDC). This allows us to create the measure of the count of children of each age in the numerator of the rate calculations, the denominator comes from birth counts for that month from Vital Statistics. This gives us a first stage for all children. Our NHANES sample is restricted to children or others living with only 1 child aged 3 to 7 who has income under 200% of the poverty guideline (our proxy for eligibility which is tied to being under 185% of the poverty guideline but measured in ranges). So they are likely income eligible when it is before the end of the calendar month in which they turned 5, and not otherwise. We bring in data from the CPS ASEC to count how many children live in households with income under 200% of the poverty limit to match with the PC data to get an overall first stage that is relevant for applying to our NHANES estimates.

III. Survey of Income and Program Participation

We use data from the Survey of Income and Program Participation (SIPP) to examine participation in other means-tested income or in-kind assistance at the end of the month when children turn five. Very few of these programs are observable in the NHANES, and the SIPP provides a much larger sample. We analyze the SIPP data as a repeated-cross section in order to maximize comparability with the NHANES.¹ As with the NHANES data, our estimation sample includes households with monthly income less than 200 percent of the federal poverty guideline. We observe child age in months in the SIPP and restrict the sample to include households that contain one child who is between ages 37 and 84 months at the time of the interview, approximately the same ages as included in the NHANES data.² We use data from the 2001, 2004, and 2008 SIPP panels, covering the years 2000-2013 and providing substantial overlap with the NHANES data.

We also use the first three waves of SIPP 2014 panel to provide information on school enrollment by age, covering years 2013-2015. The SIPP was substantially redesigned in the 2014 panel, and these data are not directly comparable with earlier waves. New to the 2014 data is a question on whether each individual ages 3 and older was enrolled in school for each month of the year. We use each month of these data to determine whether children ages 37 to 84 months were enrolled in school (either preschool or elementary school) during a particular month. As with the other SIPP analyses, the sample is limited to households with monthly income less than 200 percent of the federal poverty guideline that contain one child who is between ages 37 and 84 months in a given month.

IV. WIC Program End and Disbursement Dates

Personal communication with WIC program personnel indicates that it would be administratively difficult to end benefits on the day a child turned 5 unless the day for benefit disbursement was the same as the birthday. Hence, children are likely to receive benefits for the month in which they turn five years old, but do not receive benefits after that month.

To determine the date of the month of WIC disbursements, we sent an email to each state's WIC office. The following questions were asked:

- Are WIC benefits disbursed on one date during the month (ex. All beneficiaries' benefits are disbursed on the first day of the month), or does disbursement occur throughout the month on a rolling basis?
- If all benefits are disbursed on one day, which day?
- If disbursement occurs throughout the month, what is the basis of when a recipient receives his/her benefits (birth date, SSN, last initial)?

¹ That is, we do not incorporate the longitudinal nature of the data; instead, we treat each interview as a separate observation. Due to a known higher prevalence of response errors in months other than the survey month (Kalton et al., 1990) we restrict the sample to survey months.

² The SIPP provides information on each individual's month of birth and the date of the survey month. We calculate children's age in months as (surveymonth – birthmonth).

- If a child beneficiary is aging out of eligibility (turning 5 years/60 months old), when do the last month's benefits expire? For instance, if I have my 5th birthday on 8/15/2018, can I use my August benefits until the end of the month or do they expire immediately on my birthday?

Most states and the District of Columbia provided the requested information, though one did not respond and one refused to provide information. Online Appendix Table 1 summarizes the responses. Thirty-four states have rolling disbursement (usually based on enrollment/certification) and fifteen use one date (first of the month). Of the 34 states with rolling disbursement, 11 have benefits that terminate at the end of the month. So 26 states in total (first of month states and terminate at the end of the month states) have benefits that terminate on the last day of the month. While in the other states benefits may not end precisely on the last day of the month a child turns five, this cutoff should be close to the actual cutoff in most cases.

III. School Start and End Dates

We collected data on the first day and last day of school for school districts across the country between 1988 and 2014. We used two approaches:

1) Beginning with a list of the 100 largest school districts in the country, we checked district webpages and news articles for mentions of the first and last day of school. This yielded 36 start dates and 22 end dates in 1988. The completeness of the dataset increased over time to more than 90% of each after 2007.

2) We searched online for complete state lists of dates, and if we found one, we also checked for historical calendars using the Wayback Machine Internet Archive (<https://archive.org/web/>). Finally, we called or emailed each missing state's Department of Education and asked them to share any lists of start and end dates that they had on file. We collected files from 32 states, with more coverage in the most recent years. District observations for both start and end dates increased from 112 in 1997 to more than 5000 in 2014.

The combination of these efforts resulted in more than 40,000 district/year observations. These dates were merged to the NHANES by county. In cases where we collected more than one district/date in a county, we used the date for the largest district in the county if it made up greater than 50% of enrollment and the weighted mean if the largest district made up less than 50% of enrollment. Enrollment data comes from the National Center of Education Statistics. This procedure resulted in start dates for 33 counties and end dates for 22 counties in 1988 and increased to 1653 and 1567, respectively, by 2014.

In each year, the last day of school fell in either May or June and the first day of school fell in either August or September for at least 90% of counties. The median start date got earlier over time, trending from the end to the middle of August and the median end date also trended slightly earlier over time, changing from the beginning of June to the end of May.

Online Appendix Table 1: WIC Disbursement Timing

State	Disbursement one date or rolling	If one date, which date	If rolling, basis of disbursement date	When aging out, when do benefits terminate
Alabama	Rolling	NA	Certification Date	Full month
Alaska	Rolling	NA	Certification Date	Full month
Arizona	Rolling	NA	Certification Date	Full month
Arkansas	One date	1st	NA	Full month
California	Rolling	NA	Certification Date	Full month
Colorado	One date	1st	NA	Full month
Connecticut	Rolling	NA	Certification Date	Full month
DC	Rolling	NA	Certification Date	End of month
Delaware	Rolling	NA	Certification Date	End of month
Florida	Rolling	NA	Certification Date	Full month
Georgia	Rolling	NA	Certification Date	Full month
Hawaii	Rolling	NA	Certification Date	Full month
Idaho	One date	1st	NA	Full month
Illinois	Rolling	NA	Certification Date	Birthday
Indiana	Rolling	NA	Certification Date	Full month
Iowa	No Response	NA	NA	NA
Kansas	Rolling	NA	Certification Date	End of month
Kentucky	Rolling	NA	Certification Date	Full month
Louisiana	Rolling	NA	Certification Date	End of month
Maine	Rolling	NA	Certification Date	Birthday
Maryland	Rolling	NA	Certification Date	End of month
Massachusetts	Rolling	NA	Benefit day	End of month
Michigan	Rolling	NA	Benefit day	Full month
Minnesota	Rolling	NA	Certification Date	End of month
Mississippi	Rolling	NA	Certification Date	End of month
Missouri	Rolling	NA	Certification Date	End of month
Montana	One date	1st	NA	Full month
Nebraska	One date	1st	NA	Full month
Nevada	One date	1st	NA	Full month
New Hampshire	Rolling	NA	Certification Date	Full month
New Jersey	Rolling	NA	Certification Date	End of month
New Mexico	One date	1st	NA	Full month
New York	Rolling	NA	Certification Date	Full month
North Carolina	Rolling	NA	Certification Date	Full month
North Dakota	One date	1st	NA	Full month
Ohio	One date	1st	NA	Full month
Oklahoma	Rolling	NA	Certification Date	Birthday
Oregon	One date	1st	NA	Full month
Pennsylvania	One date	1st	NA	Full month
Rhode Island	Rolling	NA	Certification Date	Birthday

Online Appendix Table 1: WIC Disbursement Timing (Continued)

State	Disbursement one date or rolling	If one date, which date	If rolling, basis of disbursement date	When aging out, when do benefits terminate
South Carolina	One date	1st	NA	Full month
South Dakota	Rolling	NA	Certification Date	End of month
Tennessee	No Response	NA	NA	NA
Texas	One date	1st	NA	Full month
Utah	One date	1st	NA	Full month
Vermont	One date	1st	NA	Full month
Virginia	Rolling	NA	Certification Date	Full month
Washington	Rolling	NA	Certification Date	Full month
West Virginia	Rolling	NA	Certification Date	Full month
Wisconsin	Rolling	NA	Local agency	Full month
Wyoming	One date	1st	NA	Full month

Note: Questions asked to each WIC agency are as follows: 1. Are all WIC benefits disbursed on one date during the month (ex. all beneficiaries' benefits are disbursed on the first day of the month), or does disbursement occur throughout the month on a rolling basis? 2. If all benefits are disbursed on one day, which day? 3. If disbursement occurs throughout the month, what is the basis of when a recipient receives his/her benefits (birth date, SSN, last initial)? 4. If a child beneficiary is aging out of eligibility (turning 5 years/60 months old), when do the last month's benefits expire? For instance if I have my 5th birthday on 8/15/2018, can I use my August benefits until the end of the month or do they expire immediately on my birthday?