

Online Appendix for “Young Adult Obesity and Household Income: Effects of  
Unconditional Cash Transfers”

By Randall Akee, Emilia Simeonova, William Copeland, Adrian Angold and E. Jane  
Costello

Appendix I. Alternative Hypotheses, Controls and Placebo Tests

“Previous research in both developed and developing countries has shown that exogenous changes to household income controlled by an adult female can have beneficial effects on spending for children and household consumption goods (Duflo, 2003; Duflo and Udry, 2003; Duncan 1990 and 1994; Lundberg et al, 1997).<sup>1</sup> Appendix Table A3 presents results implying that differences in the gender of the transfer recipient were not significant for this intervention. It is important to note, however, that the extra income recipients were not randomly assigned across parents’ genders and there may be systematic differences between families where the mother or the father is Native American (and the other parent is not).

In Appendix Table A4, we present additional difference-in-difference regression results. In columns 1 and 2 we report a specification controlling for birth weight for obesity and BMI at age 21, respectively. This is the best proxy for initial capital that we have in the data. Birth weight is coded in 3 categories: 1 if birth weight is less than 2500 grams; 2 if birth weight is greater than or equal to 2500 grams but less than 4500 grams; 3 if birth weight is greater than or equal to 4500 grams. We include an interaction with

---

<sup>1</sup> See Lundberg and Pollak (1996) for a discussion of this literature or Behrman (1997). Additionally, in a previous paper (Akee et al, 2010) we report that household structure appears to be unaffected by the casino income payments; we find no evidence for increased divorce or marriage rates over time.

initial birth weight and number of American Indian parents and the age cohort. These interaction variables are not statistically significant. We find that the main interaction coefficients with initial household income do not change.

The next two columns include an interaction variable for whether the child is a high school graduate by age 21. The concern is that casino transfers helped maintain the American Indian children in school for longer, and own education affects BMI independently from income (e.g. see Baum and Ruhm, 2009), the cohort differences at age 19 may be driven by own education, rather than heterogeneous effects by initial household income. We find that this interaction variable is statistically significant for the middle age cohort and for the obesity outcome. However, based on previous research, we believe that the high school graduation variable is endogenous and influenced by the casino transfers. In the previous research (Akee, et al, 2010), we find that casino transfers are likely to increase educational attainment of subjects and in particular high school completion. Our main results of interest are still statistically significant in both specifications for obesity and BMI at age 21. The results are very similar to the baseline specification reported in Table 2. Finally, the last two columns of Appendix Table A4 include county fixed-effects. The inclusion of the fixed-effects do not diminish our main results.

We also use global positioning system data (GPS) to compute a distance measure which serves as proxy for other non-cash transfer related effects of the casino operations on households in Appendix Table A5. We do not expect to find much here; the Eastern Cherokee reservation is relatively small at a little over 100 square miles. Additionally, there are other relatively large economic hubs of activity in the vicinity -- Asheville, NC

is less than an hour away and Knoxville, TN is just about two hours away. The average household is 32 miles (median is 36 miles) away from the casino, with a minimum distance of 5 miles and a maximum distance of 75 miles. We find that inclusion of this distance measure and an interaction variable with treatment households is not statistically significant; while the sample size diminishes somewhat due to missing information for some households, this does not change our main observed findings.

Native American children may differ from their white counterparts differently in different cohorts for reasons unrelated to the extra income transfers. To test for systematic differences we use the available information on health from the pre-casino period. Appendix Table A8 shows the results from models estimating the effects of extra income on birth weight, children's weight, height, and BMI at age 13 (prior to the casino opening). There are no significant differences between the three cohorts and across income categories when we examine the effects of casino payments on pre-intervention health outcomes.

Appendix Table A8: Falsification tests: BMI, Weight, Height and Birthweight at Age 13 Pre-Treatment Regressions

VARIABLES	(1) BMI at Age 13	(2) Height at Age 13	(3) Weight at Age 13	(4) Birthweight
Age Cohort 1 x Number of AI Parents x Average HH Income	-0.170 (0.204)	0.00428 (0.510)	-0.331 (0.598)	0.0638 (0.0849)
Age Cohort 2 x Number of AI Parents x Average HH Income	-0.00721 (0.181)	0.568 (0.421)	0.406 (0.531)	0.0560 (0.0680)
Age Cohort 1 x Number of American Indian Parents	1.273 (1.577)	-1.252 (3.355)	1.038 (4.601)	-0.353 (0.468)
Age Cohort 2 x Number of American Indian Parents	0.445 (1.498)	-2.410 (3.180)	-1.320 (4.441)	-0.0797 (0.456)
Age Cohort 1 x Average HH Income	0.298 (0.190)	0.0274 (0.497)	0.702 (0.577)	0.0263 (0.0419)
Age Cohort 2 x Average HH Income	0.0269 (0.162)	-0.277 (0.390)	-0.164 (0.455)	0.0498 (0.0558)
AI Parents and Average HH Income	-0.0122 (0.133)	-0.395 (0.366)	-0.289 (0.412)	-0.0972* (0.0521)
Average HH Income	-0.215 (0.139)	0.270 (0.357)	-0.294 (0.324)	-0.00233 (0.0322)
Age Cohort 1 (13 yo)	-2.706* (1.598)	-5.237 (3.708)	-9.201** (4.582)	-0.231 (0.302)
Age Cohort 2 (15 yo)	-0.346 (1.484)	-2.187 (3.442)	-1.390 (4.207)	-0.616 (0.440)
Number of AI Parents	-0.506 (1.165)	-2.271 (3.313)	-2.252 (3.794)	0.814* (0.467)
Constant	23.70*** (1.630)	157.1*** (2.937)	58.80*** (5.083)	7.097*** (0.329)
Observations	959	959	959	1,057
R-squared	0.067	0.075	0.062	0.029

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Includes: all of the control variables from the main difference in difference regression in Table 2 as well as all relevant interaction variables. Household income is a categorical variable where each bin is \$5,000 in size. The lowest category, for instance, goes from 0 to \$5,000. The second bin goes from \$5,001 to \$10,000, etc. Robust standard errors in parentheses.