Pre-Analysis Plan: TOMS Shoes Impact Study

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Fieldwork Location and Dates of Fieldwork:
El Salvador, January 15, 2012 to February 21, 2013

We follow McKensie's (2012) checklist of articles for a pre-analysis plan suggested for randomized controlled trial studies.

1. Description of the sample to be used in the study:

Our sample consists of households who have children sponsored by World Vision International, who are scheduled to be recipients of TOMS shoe donations living in communities near four Area Development Programs in El Salvador. Randomization of the treatment, dispersal of TOMS shoes, was done at the community level and carried out after the baseline survey. Follow-up survey was undertaken 3 to 4 months after the baseline survey. Households surveyed are a random sample of households in each of these communities, all low-income households with children sponsored by World Vision International. The four ADP regions are chosen to achieve broad coverage of the country of El Salvador geographically. Unit of analysis is at the household level for part A of our market impact study, and at the level of the individual household member in part B of our market impact study. It is at the level of the child (age 6-12) in the life impact study.

2. K**ey data sources:**

Data for the study will come from baseline and follow-up household surveys carried out by field coordinator Brendan Janet and hired enumerators from April 2012 to February 2013. Four Area Development Program regions were surveyed, each containing 4 to 6 village communities. Baseline data were obtained before the experimental intervention, and then follow-up data were taken 3 to 4 months after the intervention. Household heads were interviewed to obtain the data. Data include time diaries of mothers, who record children's activities by hour of the previous day along with background information on every individual in the household. Data also include shoe purchases and the results of the coupon experiment in which we allocated coupons at randomly chosen discounts to treated and untreated communities to test if redemption is higher in communities that had not received shoe donations.

3. Hypotheses to be tested throughout the causal chain:
   i) H_0/H_a: No impact (positive impact) of receiving donated shoes on child school attendance.
   ii) H_0/H_a: No impact (positive impact) of receiving donated shoes on children's allocation of time toward activities that are facilitated by shoe-wearing. For example, our alternative hypotheses would suggest that children would allocate time away from activities such as TV watching and toward playing sports.

iii) H_0/H_a: No impact (positive impact) of receiving donated shoes on children's foot health.

iv) H_0/H_a: No impact (positive impact) of receiving donated shoes on children's self-esteem and psychology.

v) H_0/H_a: No impact (negative impact) of receiving donated shoes on children's sense that families should provide for their own needs rather than having others provide for them.

vi) H_0/H_a: No impact (negative impact) of donated shoes on purchases of shoes in local shoe market.

4. How variables will be constructed:

Variables for (i) will be taken from two sources: a) self-reports of missed school days over the last week; and (b) from official school attendance records of school over the previous month, or the last month of school if survey is done over the holiday break.

Variables for (ii) will be taken from mothers' time-diaries about children's activities the previous day. These are obtained from a matrix with activities as rows and hours during the day as columns, where total time during an activity can be summed up over the number of hours with an 'x' in a square. We allow for 2 activities at one time (e.g. play and chores) in which case time is divided in half during the hour over the two activities.

Variables for (iii) will be taken from inspections of children's feet.

Variables for (iv) will be taken from standard self-esteem questions used by child psychologists in our survey, which are given by a Likert scale.

Variables for (v) will be taken from the question on our survey that asks the degree to which children agree with the statement that families should provide for themselves or whether it is the obligation of others to help their family.

Variables for (vi) will be taken from coupon redemption data, from shoe vendors who participated in our experiment. Coupons were either redeemed or not redeemed, and this is our measure of market purchases for children's shoes for part (a) of the market impact study. For part (b) we will compare the difference between children (6-12) purchases during the 3 months between baseline and follow-up with purchases outside this age group, and then compare this difference between treated and untreated communities.

5. Specify the treatment effect equation to be estimated:

For (i) through (iii) we will estimate the following equation that uses difference-in-differences with ADP (region)-level fixed effects:

$$y_{ijt} = \alpha + \boldsymbol{X_{ij}}'\boldsymbol{\beta} + \theta T + \tau TF + \pi F + \mu_j + \varepsilon_{it}$$

where $\boldsymbol{X_{ij}}'\boldsymbol{\beta}$ are control variables that describe the child and her household characteristics, which will include age, gender, economic activity of parents, and indices of dwelling quality and asset ownership.

T is an indicator of whether the child lives in a treatment community, F denotes an observation in the follow-up period (as opposed to the baseline period), μ_j is an ADP (region)-level fixed effect (which contains 4-6 communities), and ε_{it} is the error term. Impact is captured by the coefficient on the interaction term, τ.

For the impact of children's time from the shoes, we will carry out SUR estimations on time allocated between sleeping, eating, washing and dressing, school, outside work, shopping, housework, collecting water, collecting wood, doing homework, playing, going to church, and watching television. Some of these categories may be combined. We will also examine the health outcomes in questions 15-17, particularly the six foot health impacts in question 17: Cuts, infections, irritations, missing toe nail, blisters, post-blister sore.

For (iv and v), we will use a propensity-score matching to measure differences in children's psychology from questions 32-46 on the survey, since we do not have baseline data. This will include

- o Self-esteem questions: Do you feel you are a person of value? Do you feel you are capable of completing things as well as others? Do you feel like there is not much to be proud of? Do you feel satisfied with yourself? Do you sometimes feel like you are not good at anything? Do you believe that each family should provide for their own necessities? Do you believe it's important for others to provide for the necessities of your family?
- o Future aspirations questions: Do you feel the future holds good things for you? Do you feel your adult life will be better than that of your parents?

We will create summary indices of these variables to test the hypotheses that the shoe donation program has an effect on families of variables within the area of psychology as well, specifically grouping questions 32-38, 39-40, 41-42-44-46. In addition, on these outcomes we will estimate the simple difference estimation:

$$y_{ij} = \alpha + X_{ij}'\beta + \theta T + \mu_j + \varepsilon_{it}$$

For (vi) part (A) that uses our coupon experiment, we will estimate

$$y_{hjt} = \alpha + X_{ij}'\beta + \theta T + \tau TF + \pi F + \mu_j + \varepsilon_{ht}$$

where y is coupon redemption for low-priced/high priced shoes and we index our observations by household, h, instead of i because observations on coupon redemption are at the household level. For part (B) that compares purchases across family members and treated/control communities, we will estimate the diff-in-diff equation:

$$y_{ij} = \alpha + X_{ij}'\beta + \theta T + \rho TC + \omega C + \mu_j + \varepsilon_i$$

where y_{ij} are shoe purchases during the 3-4 month period before follow-up, T represents being in a treated community and C represents being a member of the children's group (age 6-12) that is a target of the shoe donation. The impact of the donation we would measure then by the coefficient ρ.

6. Plan for how to deal with multiple outcomes and multiple hypothesis testing:

We have several instances in which we have a family of outcomes that can be tested individually and jointly. When testing individually, we will control the family-wise error rate using the Holm-Bonferroni Step-Down procedure. When testing jointly, we will use summary indices over all of the variables in our survey of the same family created in the manner of Casey et al. (2012) and Anderson (2008).

7. Procedures to be used for addressing survey attrition and missing data:

We expect low attrition in the survey, but there will be some attrition in the data due to about 2% of the households refusing to take the survey (because they had already received the shoe donation and had little material incentive to participate in the study further). We will drop these households from the analysis. We will do our best to correct for any missing data at the survey level through follow-up. If we have significant missing variables, we will replace these values with a zero and use a missing variable indicator or drop the control variable. Since we are using a difference-in-difference, we do not expect unchanging state variables (age, gender, etc.) to have strong significance in the estimation, since we are estimating changes over time based on the experimental intervention (shoe donation).

8. Outcomes with limited variation:

We will include some outcome variables with limited variation—for example, in our first ADP, we had very low redemption rates for our coupons, but we will include this ADP in the final data analysis along with the other ADPs in which we had higher redemption rates. We will drop any control variable for which more than 97% of observations carry the same value, including dummy variables.