Replication of a Research Claim from Cohen et al. (2015), from American Economic Review

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Claim Summary

The claim selected for replication from Cohen et al. (2015) is that all three subsidy levels lead to a large and significant increase in ACT (artemisinin combination therapies) access. This reflects the following statement from the paper's abstract: "We show that a very high subsidy (such as the one under consideration by the international community) dramatically increases access, but nearly one-half of subsidized pills go to patients with-out malaria." The authors study impacts on ACT access (as well as other measures of treatment-seeking behavior) by presenting results from regression equation (2). The dependent variable is "Took ACT". The focal independent variable is "Any ACT subsidy". Panel A of Table 2 presents a specification where all three ACT subsidies are pooled and compare outcomes to the control group. Column 1 of Table 2 reports results on overall ACT access.

Focal hypothesis H*: ACT [artemisinin combination therapies] subsidies induce take-up of ACT.

Replication Criteria

Criteria for a successful replication attempt for the SCORE project is a statistically significant effect (alpha = .05, two tailed) in the same pattern as the original study on the focal hypothesis test (H*).

Replication Result

Table R.1 contains the results of the Ordinary least squares (OLS) regression. Column (1) of Table R.1 shows that an ACT voucher subsidy increases the likelihood that an illness is treated with ACT by 52.6 percentage points. **The coefficient for an ACT_SUBSIDY is 0.526 with robust standard errors clustered at the household level of 0.044, significant at the 5% level (p = 0.000). Thus, this replication of the claim was successful according to the SCORE criteria.** The analytic sample included 493 households, which did meet the minimum threshold of 94 households defined by the power analysis.

Table R.1. Impact of ACT Subsidy on ACT Access.

	(1)
ACT Subsidy	**0.526** **(0.044)*** **
Observations	**493**

Robust standard errors clustered at the household level in parentheses. The regression is weighted using sample weights. The regression controls for the variables REFRIGERATOR, MOBILE, VIP_TOILET, COMPOSTING_TOILET, OTHER_TOILET, STONE_WALL, CEMENT_WALL, NUM_SHEEP, and a full set of strata dummies. The full regression output is available on the OSF site (filename: Cohen-et-al_Replication.pdf).

Significance levels: ***-significant at 1% level.

Methods & Materials

The following materials are publicly available on the OSF site:

- The **preregistration** file: Cohen_AmEcoRev_2015_2lb5_y496 (Tutor_Méndez-Chacón) Preregistration.pdf
- The **Stata code** to produce the replication dataset. Filename:
    - ReplicationData_Cohen_AmEcoRev_2015_2lb5.do
- The **raw data and the full study protocol for the randomized trial.** The data for this replication is from the study "Improving rational use of ACTs through diagnosis-dependent subsidies: evidence from a cluster-randomized controlled trial in western Kenya" by Wendy Prudhomme O'Meara, et.al (2018) in PLOS Medicine. The data could be accessed from the Dryad Digital Repository at the time of the replication, using this link: https://datadryad.org/stash/dataset/doi:10.5061/dryad.59p4111

From this link, the main dataset and a variable dictionary could be downloaded (no registration needed). Filenames:

  - Prudhomme_Data Publication.pdf
  - Prudhomme_Study Protocol.pdf
  - R01_Coupon_Aim_2_Analysis_Data_MAIN_OUTCOMES_v12_20180321.xlsx
  - README_for_R01_Coupon_Aim_2_Analysis_Data_MAIN_OUTCOMES_v12_20180321.xlsx

- The **replication dataset**. Filename:
  - ReplicationData_Cohen_AmEcoRev_2015_2lb5.dta
- The **data dictionary for the replication dataset**. Filename:
  - ReplicationDataDictionary_Cohen_AmEcoRev_2015_2lb5.xlsx
- The **code for replication.** Along with the replication dataset, this is the only file required to replicate the original study. To replicate, just change the working directory to where the data is in your computer and run this file using Stata (the code was written using Stata 15.1). Filename:
  - Cohen et al 2015 - Replication Analysis.do
- The **output** from the Stata analyses, available in two formats: smcl (Stata output) and a pdf file. Filenames:
  - Cohen-et-al_Replication.smcl
  - Cohen-et-al_Replication.pdf

Deviations from the Original Study

1. Although both studies conducted a randomized control trial in Kenya, the study districts and the study period are different. The data for the replication was collected six years after the data was collected in the original study.

2. A deviation of the replication data from the original study is that the intervention is a combination of a free diagnostic test and an ACT voucher conditional on testing positive. The focal analysis is the effect of any ACT subsidy on ACT take-up, regardless of whether the illness is malaria, and regardless of whether it was tested. The replication data cannot separate the effect of the ACT subsidy from the free and positive rapid diagnostic test (RDT).

3. Following Cohen et al (2015, pages 622-624), the control variables are selected based on characteristics that do not balance across the treatment and the control group. The idea is to avoid any confounding in the estimates due to a lack of balance across groups. Consequently, the control variables are different between the original and the replication study.

Deviations from the Preregistration

There were no deviations from the preregistration.

Citation

Cohen, Jessica, Pascaline Dupas, and Simone Schaner. (2015). Price Subsidies, Diagnostic Tests, and Targeting of Malaria Treatment: Evidence from a Randomized Controlled Trial. American Economic Review, 105 (2): 609-45. DOI: 10.1257/aer.20130267

Laktabai J, Lesser A, Platt A, et al. (2017) Innovative public–private partnership to target subsidised antimalarials: a study protocol for a cluster randomised controlled trial to evaluate a community intervention in Western Kenya. BMJ Open, 7: e013972. doi:10.1136/bmjopen-2016-013972

Prudhomme O'Meara, Wendy et al. (2019), Data from: Improving rational use of ACTs through diagnosis-dependent subsidies: evidence from a cluster-randomized controlled trial in western Kenya, Dryad, Dataset, https://doi.org/10.5061/dryad.59p4111