Observational Open Science:
An Application to the Literature on Irrelevant Events and Voting Behavior

Matthew H. Graham[*]   Gregory A. Huber[*]   Neil Malhotra[†]

Cecilia Hyunjung Mo[‡]

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This document amends registration 20180626AA[1] to describe steps we took to reconcile data discrepancies between original and replication datasets. We did not originally pre-register this step but believe that the opportunity to compare independently-assembled datasets is a valuable component of the observational open science approach we are seeking to model. We filed this addendum to describe our procedure, report all consequent data changes, and constrain ourselves from making further data changes.

Identifying data discrepancies

To check our data quality, we merged our newly-assembled datasets with replication files from HM (short for Healy & Malhotra, 2010) and HMM (short for Healy, Malhotra, & Mo, 2010). We identified data discrepancies by making scatter plots of the two studies' non-demographic variables, then hand-checking observations that did not lie on or close to the 45-degree line. We also obtained and scrutinized HM's original data cleaning script. As a consequence of this investigation, we changed our underlying data in two cases:

[*]Yale University Department of Political Science, New Haven, CT 06511
[†]Stanford Graduate School of Business, Stanford, CA 94305
[‡]UC Berkeley Department of Political Science, Berkeley, CA 94720

[1] Available at http://egap.org/registration/4715.

- HM used all tornadoes in the 366 days[2] before the election. Due to a coding error, we initially used all tornadoes that occurred in the same calendar year as the election, including those that occurred after the election. We corrected this error.

- HM transformed tornado damage according to the formula $\ln\left(\frac{\text{damage}/1000}{\text{population}} + 1\right)$ rather than the reported formula, $\ln\left(\frac{\text{damage}}{\text{population}} + 1\right)$. For the replication exercise, we will use the original paper's actual formula. Because we discovered a reporting error, we will also describe the extent to which the original results do or do not depend on the transformation of the damage variable. This will include a full set of results based on the originally-reported formula.

In other cases we were comfortable with the discrepancies:

- Both studies had county-years in which the incumbent vote share variables did not match. Hand-checking our data revealed that our electoral variables were always true to our raw data, so we did not make changes to our electoral variables.

- We sometimes disagreed with HMM about the point spread of the games. We anticipated these discrepancies in our original preanalysis plan and did not make changes.

- Comparing our data to HM's, there were some cases in which one dataset reported tornado damage and the other did not. We believe these discrepancies are attributable to the fact that the original study used the SHELDUS database (which now charges a fee) and the new study used the free NOAA Storm Events Database (which is the source dataset for the pertinent variables in SHELDUS). We discovered no inconsistencies with our raw data and therefore made no changes on this basis. We also opted to proceed with using the NOAA Storm Events Database rather than the SHELDUS database as the NOAA Storm Events Database is the source dataset.

References

Healy, A., & Malhotra, N. (2010). Random Events, Economic Losses, and Retrospective Voting: Implications for Democratic Competence. *Quarterly Journal of Political Science*, *5*(May), 193–208. doi: 10.1561/100.00009057

Healy, A., Malhotra, N., & Mo, C. H. (2010). Irrelevant events affect voters' evaluations of government performance. *Proceedings of the National Academy of Sciences*, *107*(29), 12804–12809. doi: 10.1073/pnas.1007420107

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[2] Presidential elections almost always coincide with 366-day leap years.