



## The American Panel Survey

# Examining Conditioning in Panel Surveys, Part I

February 29, 2016

Patrick D. Tucker and Steven S. Smith  
Washington University

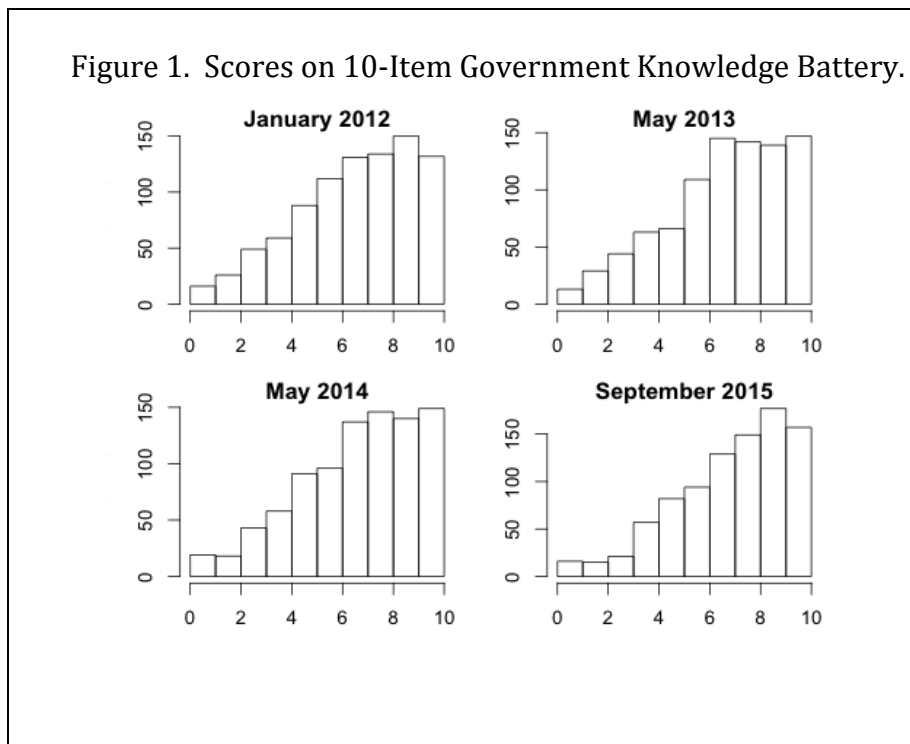
Panel surveys acquire measures on the same set of respondents in multiple waves. The panel design gives the social scientist a basis for understanding the factors that change individuals' behavior and attitudes. This is a powerful design that has proven important to learning about a wide range of human behavior. The approach helps to avoid incorrect inferences about cause and effect that can be drawn from more common cross-sectional data and allows the accumulation of more data about respondents, which improves the quality of the statistical models that are estimated.

The process of repeated participation by a respondent has a potential downside. The act of answering survey questions may change the subjects by increasing awareness, intensifying interest, imparting information, or even changing opinion about a subject. Thus, survey participation may alter responses to questions in future waves of the survey. In doing so, the act of interviewing subjects may spoil them as a representative sample of the larger population that the analyst seeks to understand. "Panel conditioning" is the term used to describe this process.<sup>1</sup>

*The American Panel Study* (TAPS) is a national probability sample of about 2000 people that began in late 2011. Operated by the Weidenbaum Center and administered by GfK, the survey items focus on public affairs issues, although a variety of psychological, lifestyle, and other types of questions have been asked. Some panelists that have completed a monthly survey during nearly all months since late 2011 are likely to exhibit panel conditioning.

One possible path for conditioning in a survey like TAPS is that repeated questions about public affairs will stimulate more interest in political news and, through greater attentiveness, increase one's knowledge of political affairs. We explore that possibility here by exploiting the TAPS 10-item battery on basic facts about American government. The battery has been asked four times: January 2012, May 2013, May 2014, and September 2015.

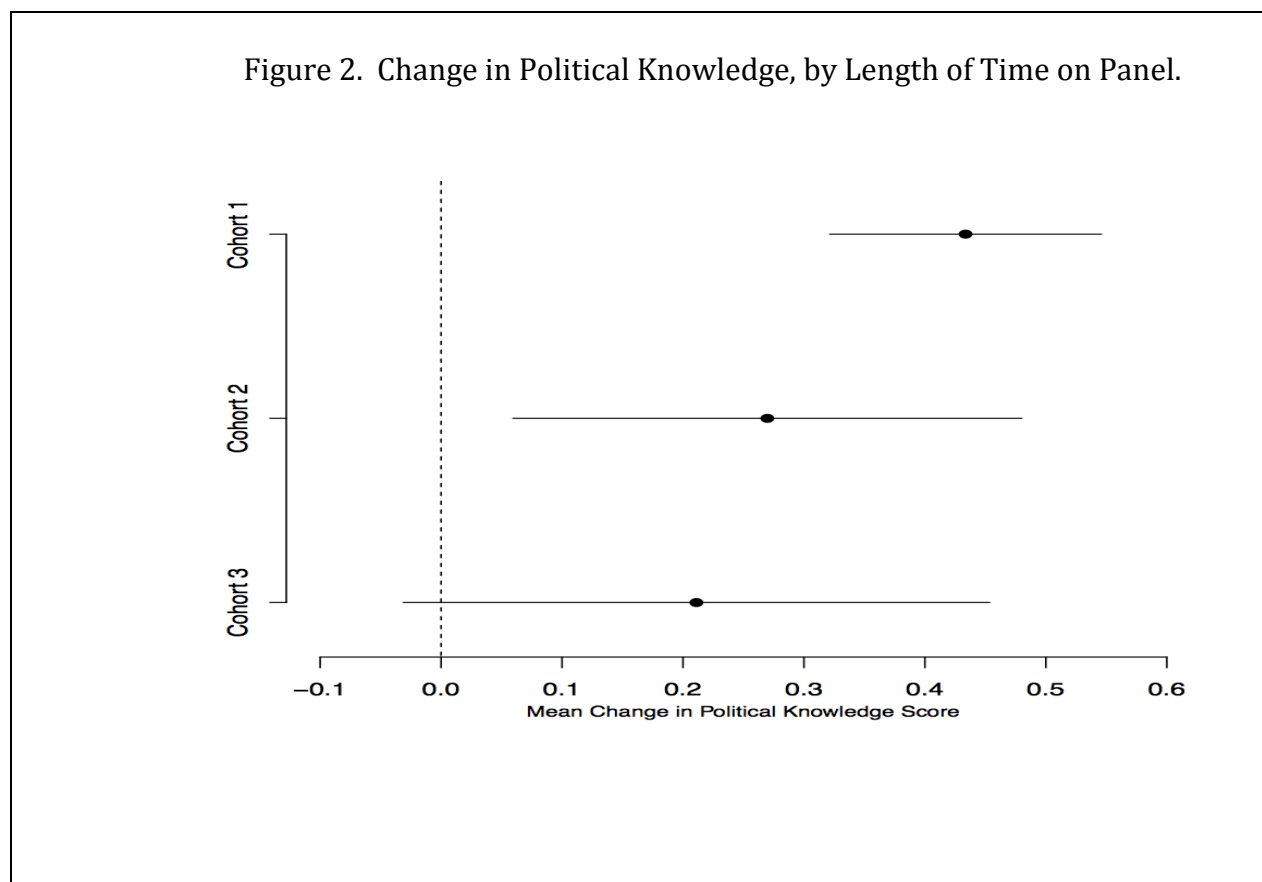
The distribution of these scores for those panelists who answered all four waves are shown in Figure 1.<sup>2</sup> With the distribution leaning toward higher scores, the knowledge questions appear to have been fairly "easy" from the start. Some conditioning may



be present. For this group, the average score increased 0.43 (less than one more question correct) from January 2012 to September 2015. About 44 percent increased in their scores, 30 percent received identical scores, and 26 percent received lower scores. The difference between the percent improving and the percent performing less well (44 – 26) gives evidence of modest conditioning on basic knowledge of American government.

Like all panels, TAPS experiences attrition. To replace lost panelists, TAPS recruited three refreshment cohorts in June 2012, March 2013, and August 2015. These four separate recruitment waves create an opportunity to examine how length of time in the panel is related to political knowledge, another indicator of conditioning effects. It should be noted that the average initial political knowledge scores for all cohorts were very similar: 6.4, 6.2, 6.2, 6.5, respectively.<sup>3</sup> Figure 2 shows how the mean score has changed for the first three cohorts. For those who entered the panel in the original sample, we find a significant increase in political knowledge score from January 2012 to September 2015 of about .43 points. On average, panelists from Cohort 2 improved their political knowledge score by .27 points, while those from Cohort 3 did so by about .21 points. The increase for the third group is not statistically distinct from zero.

We speculated that a path to a higher political knowledge score is through greater interest in politics stimulated by participation in the survey. We have asked panelists to report their interest in politics so we can determine for the original sample whether an increase in interest is associated with a larger improvement in political knowledge score. To test this hypothesis, we regressed the change in each original panelist's political knowledge



score (from initial observation to September 2015) on a series of time-invariant covariates and the change in a 4-point political interest score. Additionally, we include dummy controls for each cohort. The results of this model estimated using ordinary least squares are reported in Table 1.

The hypothesis that those panelists who increased their level of political interest would show the greatest improvement in political knowledge is not confirmed. The positive sign is in the predicted direction but the effect is weak. A one-unit change in the interest scale corresponded to roughly one-tenth point improvement in our measure of knowledge. Although we included time-invariant covariates of education, race, income, and age, none provided a significant effect on changes in political knowledge.

An unexpected finding is that women learned more than men, all things being equal. This may reflect the fact that women start with a lower political knowledge score and exhibit lower levels of political interest and are affected disproportionately by participation in the panel study.

Table 1: Predicting Change in Political Knowledge, Original Cohort, 2011-2015.	
	DV=Change in Political Knowledge Score
Change in Political Interest	0.117 (0.092)
Education	0.002 (0.041)
White	-0.119 (0.181)
Female	0.279* (0.141)
Income	-0.002 (0.022)
Age	-0.003 (0.004)
Cohort 2	-0.221 (0.166)
Cohort 3	-0.356 (0.199)
Constant	0.579 (0.544)
<i>N</i>	1137
R <sup>2</sup>	0.02
Dependent variable = change in 11-point political knowledge score from initial to final observation. Standard errors in parentheses. * p<.05	

With respect to political knowledge, these findings confirm that long-term panels may produce learning. The effect is fairly small—for the four-year cohort, the mean increase is less than one-half question on an eleven-point scale (6.5 to 6.9)—so that the increase probably does not represent a materially greater understanding of American national government.

In this brief report, we have not fully accounted for the effects of attrition. While the numbers reported in Figure 2 are calculated for the same panelists (those who answered both

the earliest and the latest knowledge battery for their cohort), it is possible that the increase in knowledge is related to attrition. That is, those panelists who dropped out of the panel were more, or even less likely, to have learned more about American government by virtue of participation in the study. The effects of attrition deserve additional study.

### **About the Authors**

Patrick D. Tucker is a PhD candidate in Political Science at Washington University in St. Louis. Steven S. Smith is the Kate M. Gregg Distinguished Professor of Social Sciences, Professor of Political Science, and Director of Weidenbaum Center on the Economy, Government, and Public Policy at Washington University in St. Louis.

### **About *The American Panel Survey***

*The American Panel Survey* (TAPS) is a monthly online panel survey of over 2,200 people. Panelists were recruited as a national probability sample with an addressed-based sampling frame. The survey is conducted by GfK Knowledge Networks for the Weidenbaum Center at Washington University. Individuals without Internet access were provided a laptop and internet service at the expense of the Weidenbaum Center. In a typical month, about 1,700 of the panelists complete the online survey. Analyses in this report use weights based on CPS benchmarks. Technical information about TAPS is available at [taps.wustl.edu](http://taps.wustl.edu).

### **Notes**

1. For a review of the literature on panel conditioning, see John Robert Warren and Andrew Halpern-Manners, "Panel Conditioning in Longitudinal Social Science Surveys," *Sociological Methods Research* 41:4 (November 2012): 491-534.
2. These figures display only those individuals who answered both the first and fourth political knowledge batteries. By focusing only on those who remained in the panel, we are able to increase our confidence that changes in political knowledge are related to conditioning and not attrition. To be sure, the changes in mean political knowledge are slightly more pronounced when including all respondents who answered at any time, but the pattern remains similar.
3. The estimated means of these cohorts are weighted using post-stratified weights constructed uniquely for each cohort to match demographical proportions provided by the 2011 CPS. All estimates were statistically indistinguishable from each other at the 95% confidence level.