## Overview

The code in this replication package constructs the analysis files from three sources (Lewis et al, 2019; Spenkuch et al 2018a; Fouirnaies and Hall 2021) using R. Four main files run all of the code to generate the data for the 5 figures and 9 tables new in the paper (excluding one table and one figure reproduced from Spenkuch et al 2018b). Because of the extensive simulations, the replicator should expect the code to run for approximately 5 days. The replication file includes datasets generated by the simulations for reviewers who wish to skip the computing-intensive simulations.

## Data Availability and Provenance Statements

### Statement about Rights

- ■ I certify that the author(s) of the manuscript have legitimate access to and permission to use the data used in this manuscript.
- ■ I certify that the author(s) of the manuscript have documented permission to redistribute/publish the data contained within this replication package.

### Summary of Availability

- ■ All data **are** publicly available.
- ☐ Some data **cannot be made** publicly available.
- ☐ **No data can be made** publicly available.

### Details on each Data Source

| Data.Name | Data.Files | Provided | Citation |
|---|---|---|---|
| "Backward Induction in the Wild Replication Data" | biitw_data_output.Rdata<br>s35_112_clean.dta<br>sen81corr.xlsx | TRUE | Spenkuch et al (2018a) |
| "State Legislature Votes" | ca_votes.csv<br>ar_votes.csv<br>sd_votes.csv | TRUE | Fouirnaies and Hall (2021) |
| "VoteView Data" | Sall_votes.csv<br>Hall_votes.csv<br>Sall_members.csv<br>Hall_members.csv | TRUE | Lewis et al (2019) |

"Backward Induction in the Wild Replication Data" for Spenkuch et al (2018b) can be downloaded from https://www.openicpsr.org/openicpsr/project/113078/version/V1/view. One file is taken directly from the replication file ("sen81corr.xlsx") while the other two must be generated: Running the Stata code "rf_main.do" from the BIITW replication archive generates "s35_112_clea.dta", the main dataset used in the original paper; "biitw_data_output.Rdata" is an identical RData version of the same dataset.

Datafile: `sen81corr.xlsx`

s35_112_clea.dta

`biitw_data_output.Rdata`

"State Legislature Votes" provided by Fouirnaies and Hall (2021) can be downloaded from https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/LHTRWM. The replication code provides "ca_ votes.csv," "ar_ votes.csv," and "sd_votes.csv".

To bring California and Arkansas roll call votes up to the present, https://leginfo.legislature.ca.gov and http://www.arkleg.state.ar.us/assembly were scraped using slightly modified versions of the python code also provided by Fouirnaies and Hall. Updated roll call votes are "ar_votes_updated.csv" and "ca_votes_updated.csv".

Finally, the F&H data does not include senators' partisanship – that is collected manually and merged through the state files ending "FH_data_W_party.csv".

Datafile: `ca_votes.csv`

`ar_votes.csv`

`sd_votes.csv`

ar_votes_updated.csv

ca_votes_updated.csv

ar_senators_FH_data_W_PARTY.csv

ca_senators_FH_data_W_PARTY.csv

sd_senators_FH_data_W_PARTY.csv

"VoteView" data is provided by Lewis et al (2019) can be downloaded from https://voteview.com/data. Replicators should download the Data types "Member Ideology" to yield "Hall_members.csv" / "Sall_members.csv" and type "Members' Votes" to yield "Hall_votes.csv" / "Sall_votes.csv". The two files can be downloaded separately by specifying the "Chamber" option, or together as one master file. I have provided them separately. Replicators can choose to download "All" in the Congress prompt. Note that

VoteView not only updates their datasets as votes are cast, but also makes changes to past votes to fix errors without logging these corrections.

Datafile: `Sall_votes.csv`

`Hall_votes.csv`

`Sall_members.csv`

`Hall_members.csv`

See Codebook.xlsx for description of variables.

## Computational requirements

### Software Requirements

R version 4.1.2 (2021-11-01)

- `ggpubr_0.4.0`
- `data.table_1.14.2`
- `dplyr_1.0.7`
- `plyr_1.8.8`
- `ggplot2_3.3.5`
- `fixest_0.10.4`
- `reshape2_1.4.4`
- `readxl_1.3.1`
- `stringr_1.5.0`
- the file "`script_00_setup.R`" will install all dependencies (latest version), and should be run once prior to running other programs.

### Controlled Randomness

- Random seed is set throughout scripts 02-05 in case replicator wishes to run scripts separately.

### Memory and Runtime Requirements

Approximate time needed to reproduce the analyses on a standard 2023 desktop machine:

- ☐ <10 minutes
- ☐ 10-60 minutes
- ☐ 1-2 hours
- ☐ 2-8 hours
- ☐ 8-24 hours
- ☐ 1-3 days
- ■ 3-14 days
- ☐ > 14 days
- ☐ Not feasible to run on a desktop machine, as described below.

*Details*

The code was last run on a **16-core Intel-based desktop with Windows 10 Enterprise with 64 GB of RAM.**

## Description of programs/code (approximate runtime)

- Program script_01_replicate_original_results.R reproduces the original results in Spenkuch et al (2018b) from the datafile generated by its replication code. It also reproduces the results using data drawn directly from Lewis et al (2019) and examines discrepancies between the two sets. Creates two txt files in the Generated Files folder: "Original Table 5.txt" and "Replicated Table 5.txt" which together constitute Table 2 of the paper. (<1 hour)
- Program script_02_extend_original_results.R creates Figures 1, 2, and 5, Table 7, and Appendix Table B1. (~2 days)
- Program script_03_state_delegation_design.R creates Table 4 and Appendix Table C1 (~3 days)
- Program script_04_state_legislatures_extension.R creates Figure 6 and Tables 2 and 3. (~2 days)
- Program script_05_house_extension.R creates Tables 2 and 3. (~2 days)

## Instructions to Replicators

- `Run script_00_setup.R to install / load necessary packages and automatically run scripts 01 - 05 to generate all results.`

- A replicator interested in a particular analysis or result (for example, Extension 2 or 3) could select a specific program, but note Scripts 02 and 03 require 01 to first be run to generate the temporary file "BIW_replicated_datasets.RData", or the replicator could rely on the version of this file provided in "Data/Temp Files/".

- If a replicator wishes to skip the computing-intensive simulations, each generated dataset from simulations is included in "Data/Temp Files/". This allows a replicator to skip the simulations in script_02 (lines 31-100 and 536-566); script_03 (13-73); script_04 (89-139; 307-355; 530-580); and script_05 (82-124).

## List of tables and programs

The provided code reproduces:

- ☐ All numbers provided in text in the paper
- ■ All tables and figures in the paper
- ☐ Selected tables and figures in the paper, as explained and justified below.

## References

Fouirnaies, Alexander and Andrew B. Hall. 2021. "Replication Data for: How Do Electoral Incentives Affect Legislator Behavior? Evidence from U.S. State Legislatures". https://doi.org/10.7910/DVN/LHTRWM, Harvard Dataverse, V1.

Lewis, Jeffrey B., Keith Poole, Howard Rosenthal, Adam Boche, Aaron Rudkin, and Luke Sonnet. 2019. *Voteview: Congressional Roll-Call Votes Database*. https://voteview. com/.

Spenkuch, Jörg L., Montagnes, B. Pablo, and Magleby, Daniel B. Replication data for: Backward Induction in the Wild? Evidence from Sequential Voting in the US Senate. Nashville, TN: American Economic Association [publisher], 2018a. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2019-10-12. https://doi.org/10.3886/E113078V1

Spenkuch, Jörg L, B Pablo Montagnes, and Daniel B Magleby. 2018b. "Backward induction in the wild? Evidence from sequential voting in the US Senate." American Economic Review 108 (7): 1971–2013.

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## Acknowledgements

This document is based on the README template for social science replication packages, available here: https://social-science-data-editors.github.io/template_README/.