Measuring Protest Participation as a Latent Variable

Frederick Solt
University of Iowa

Two Forerunning Literatures

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- Estimate latent public opinion in one country from many surveys

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how to deal with sparse pooled cross-sections: Random Walk Priors

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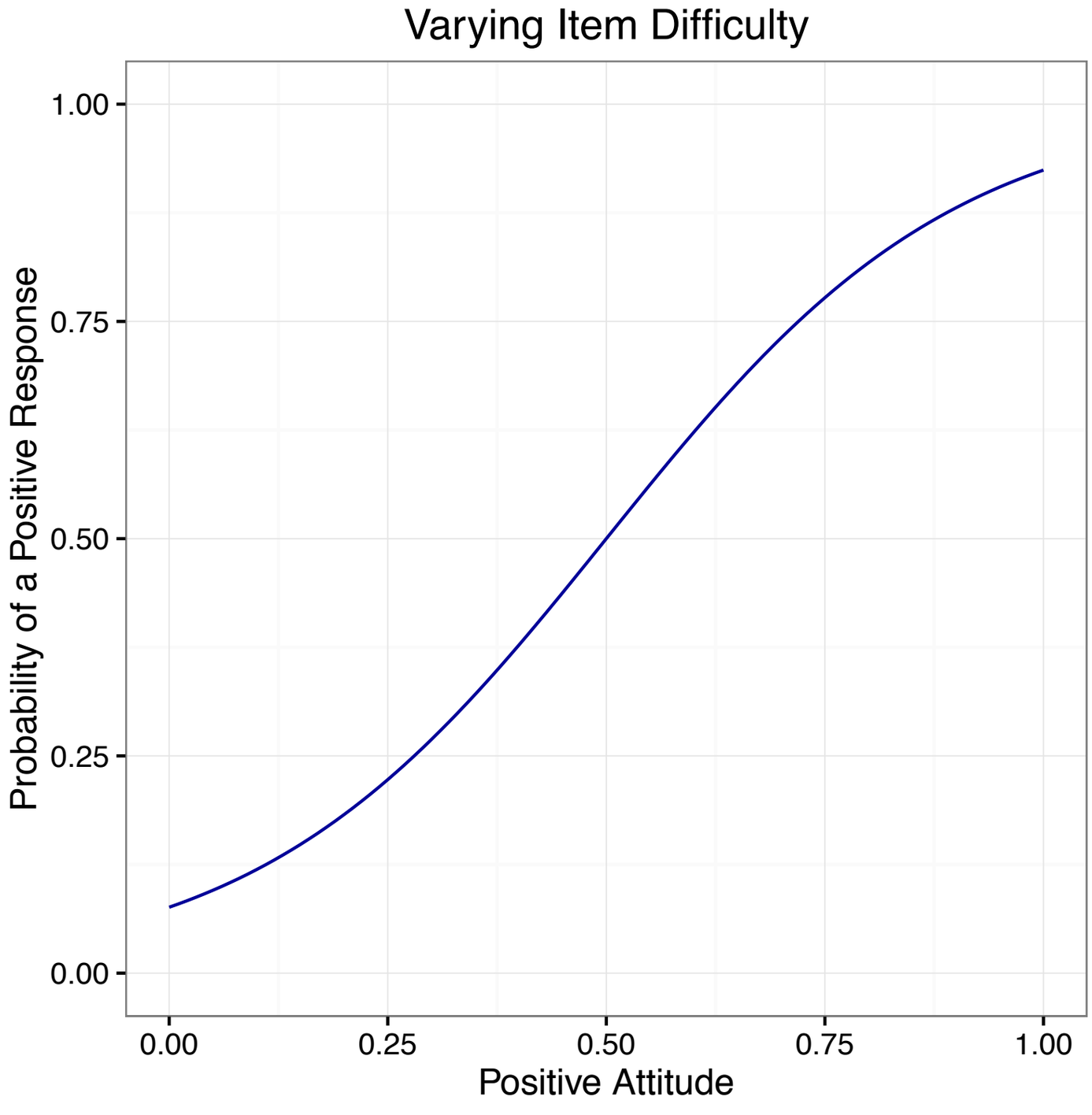

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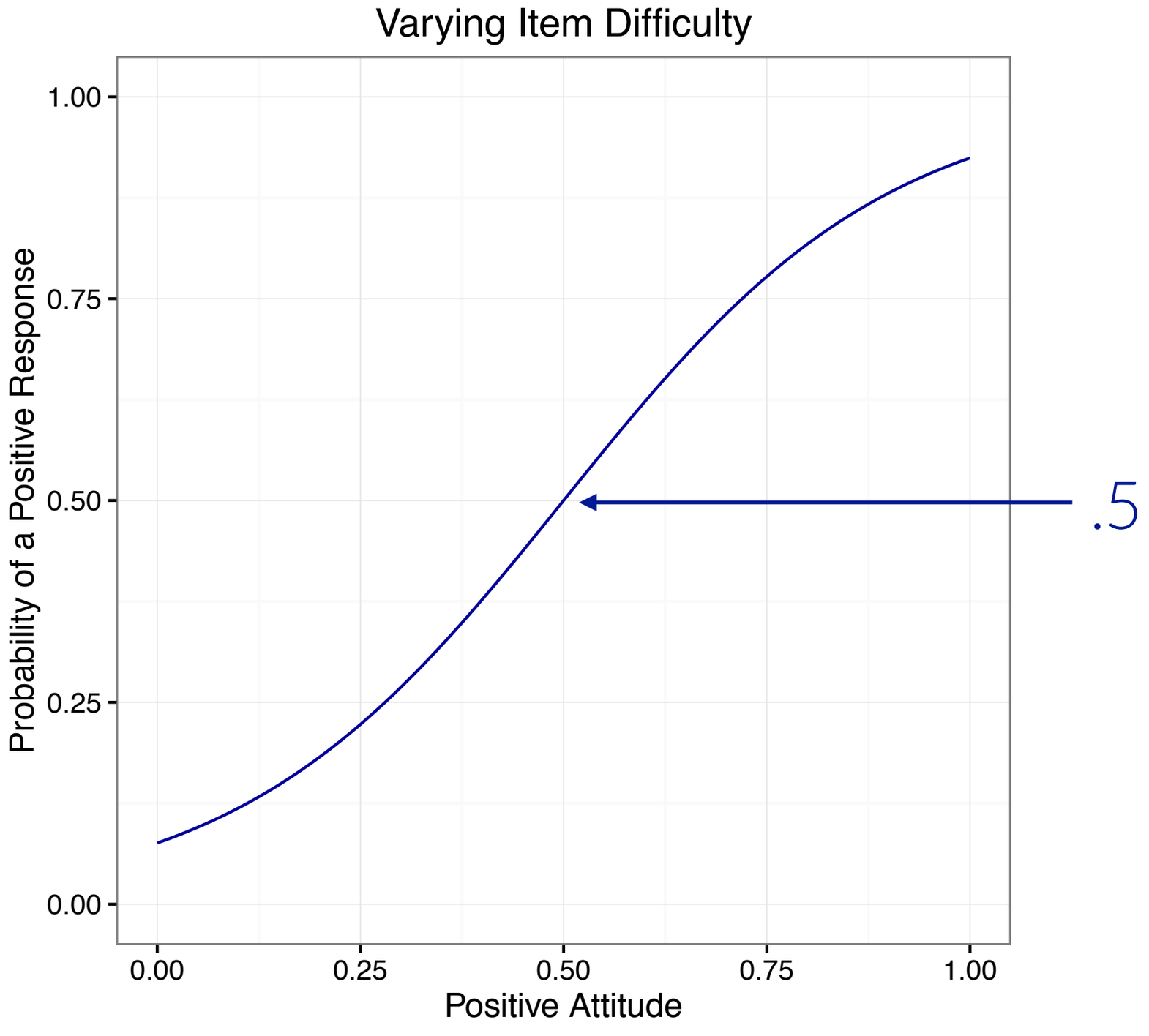

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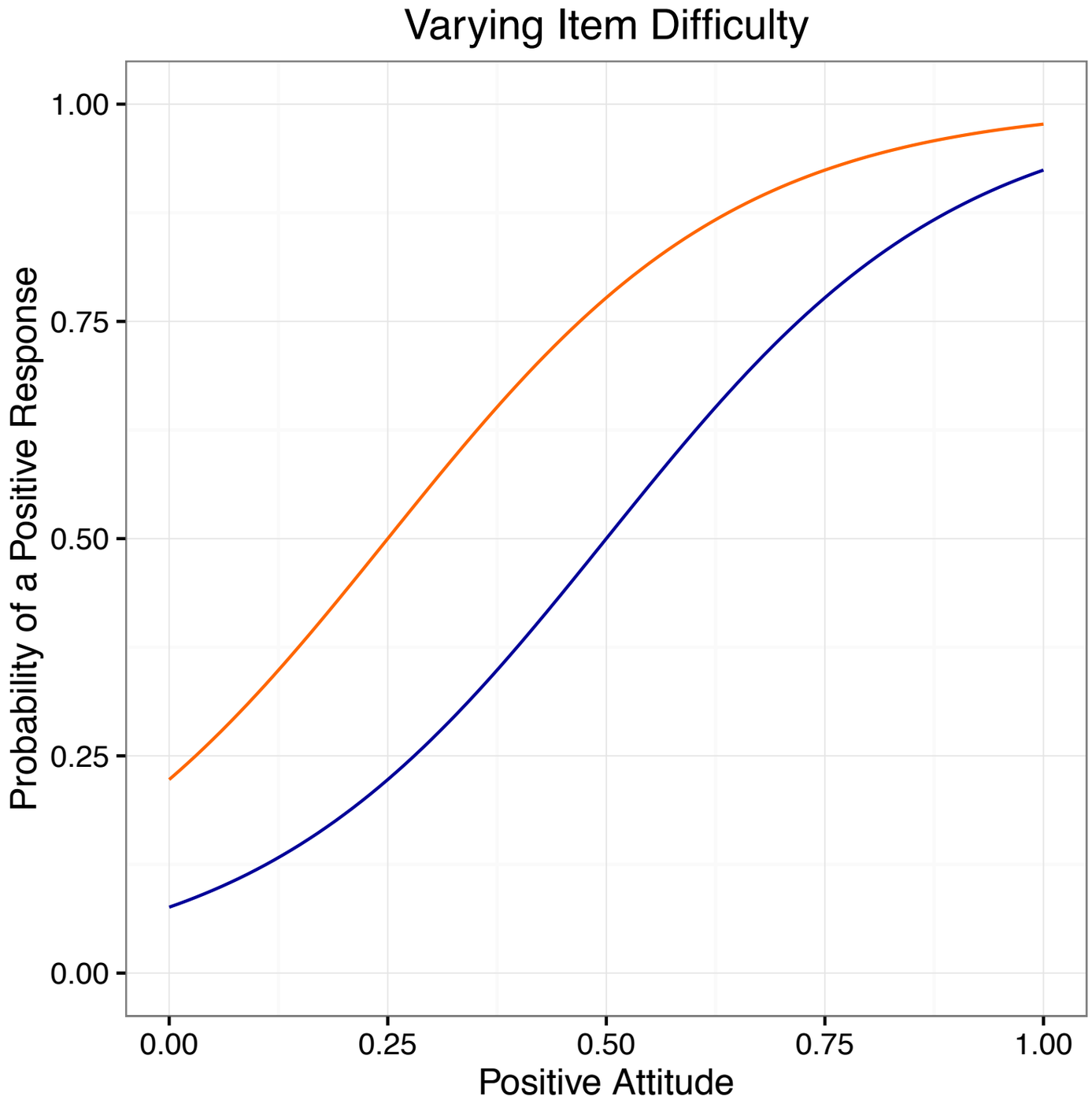

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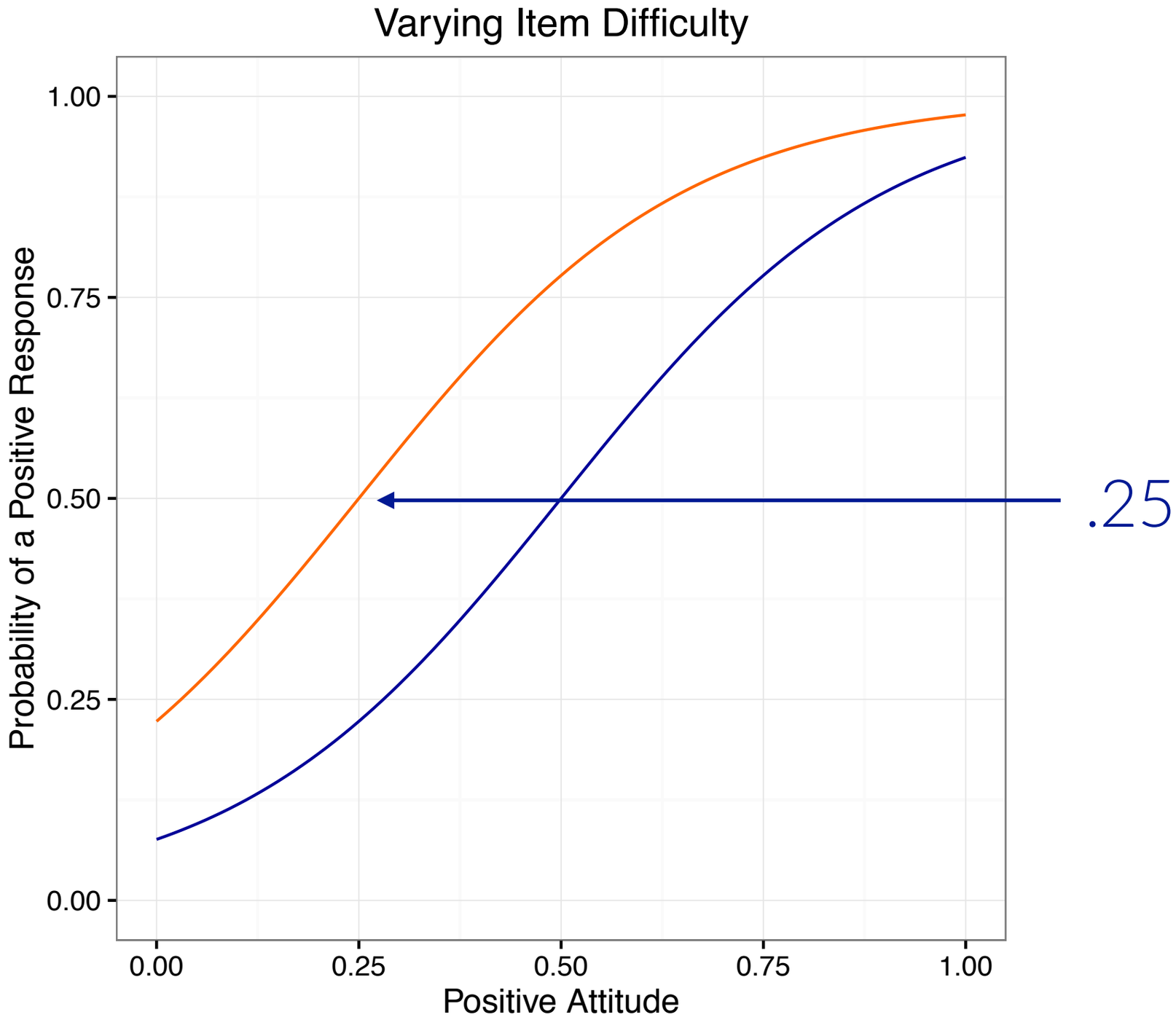

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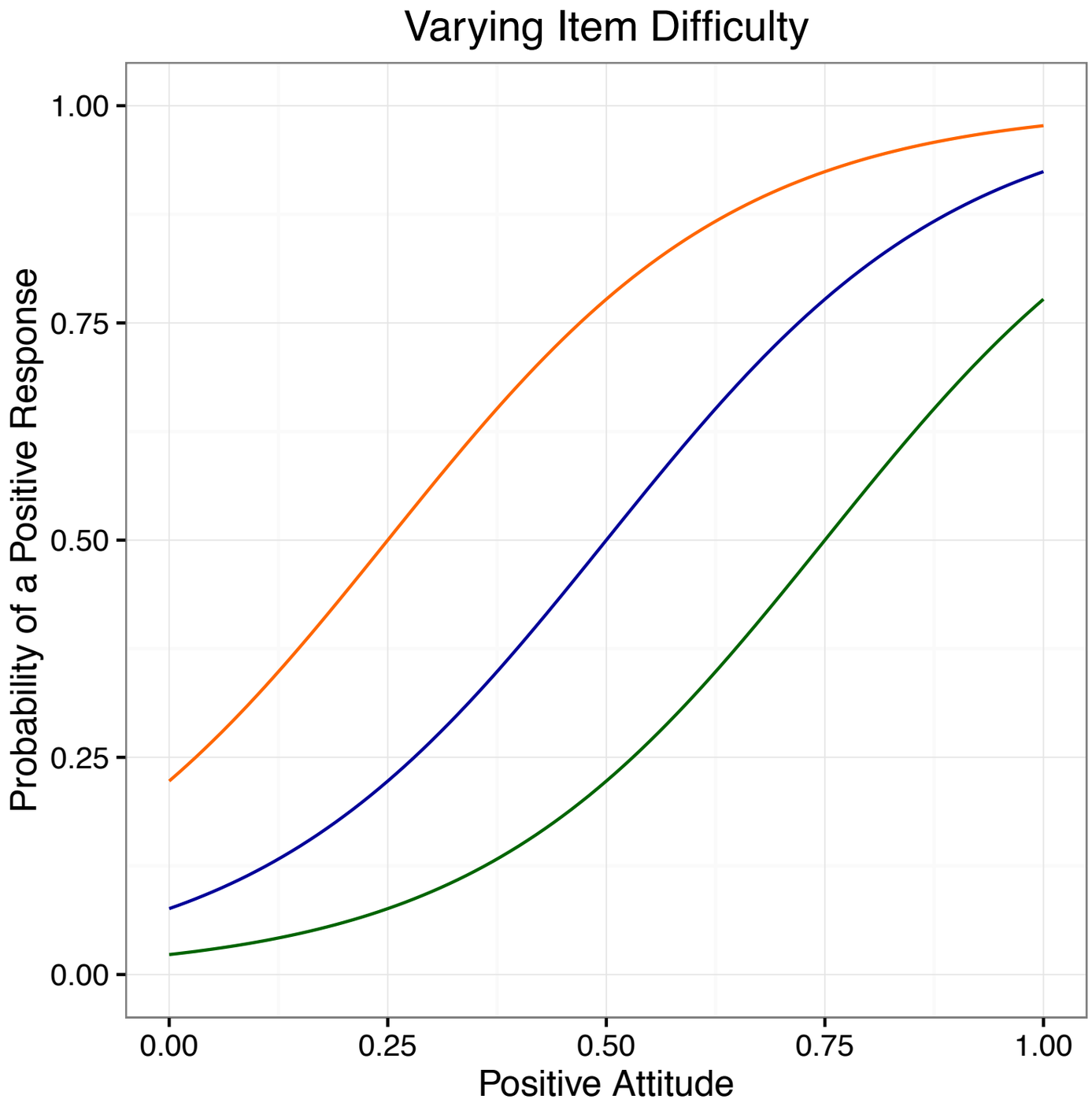

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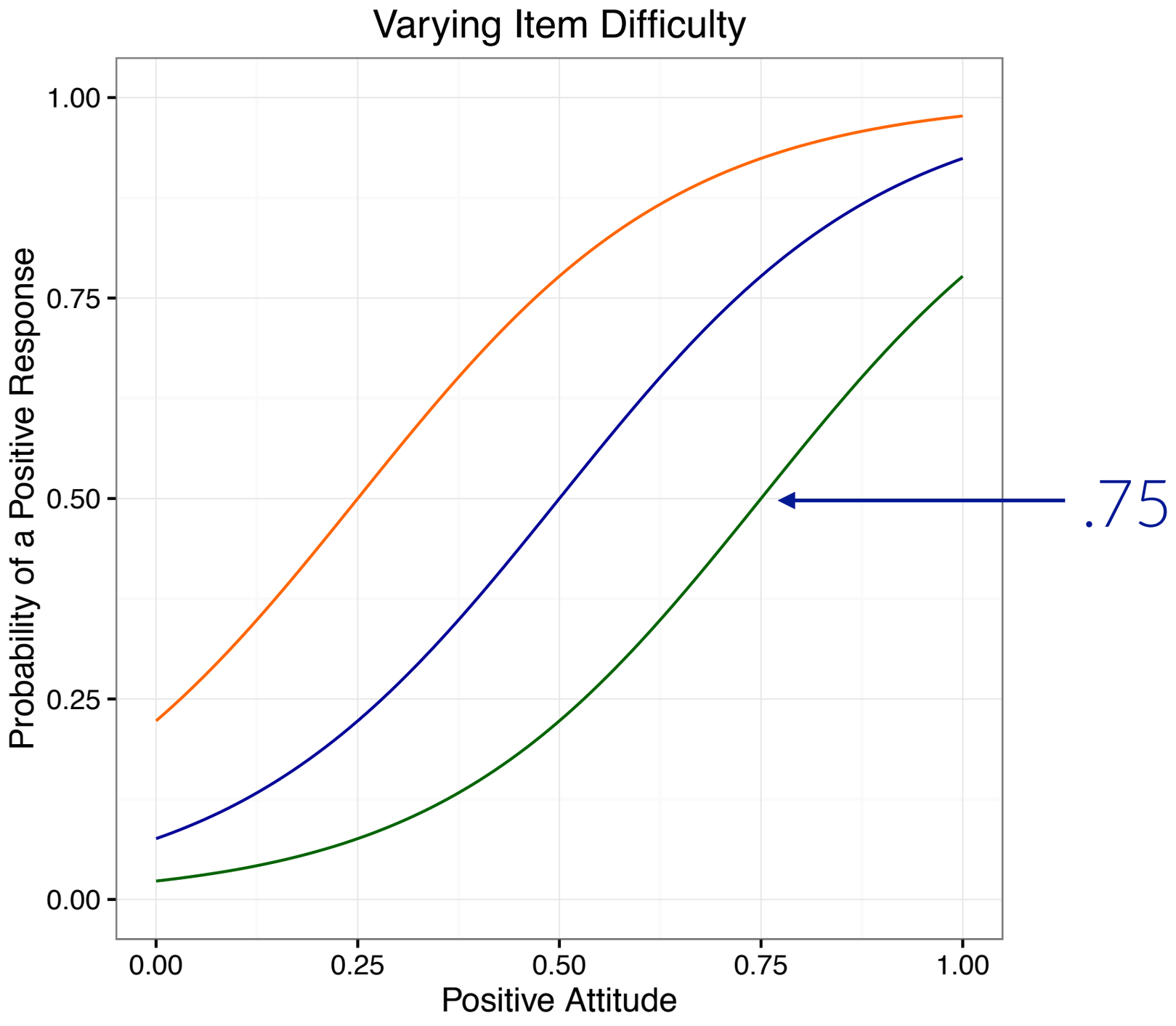

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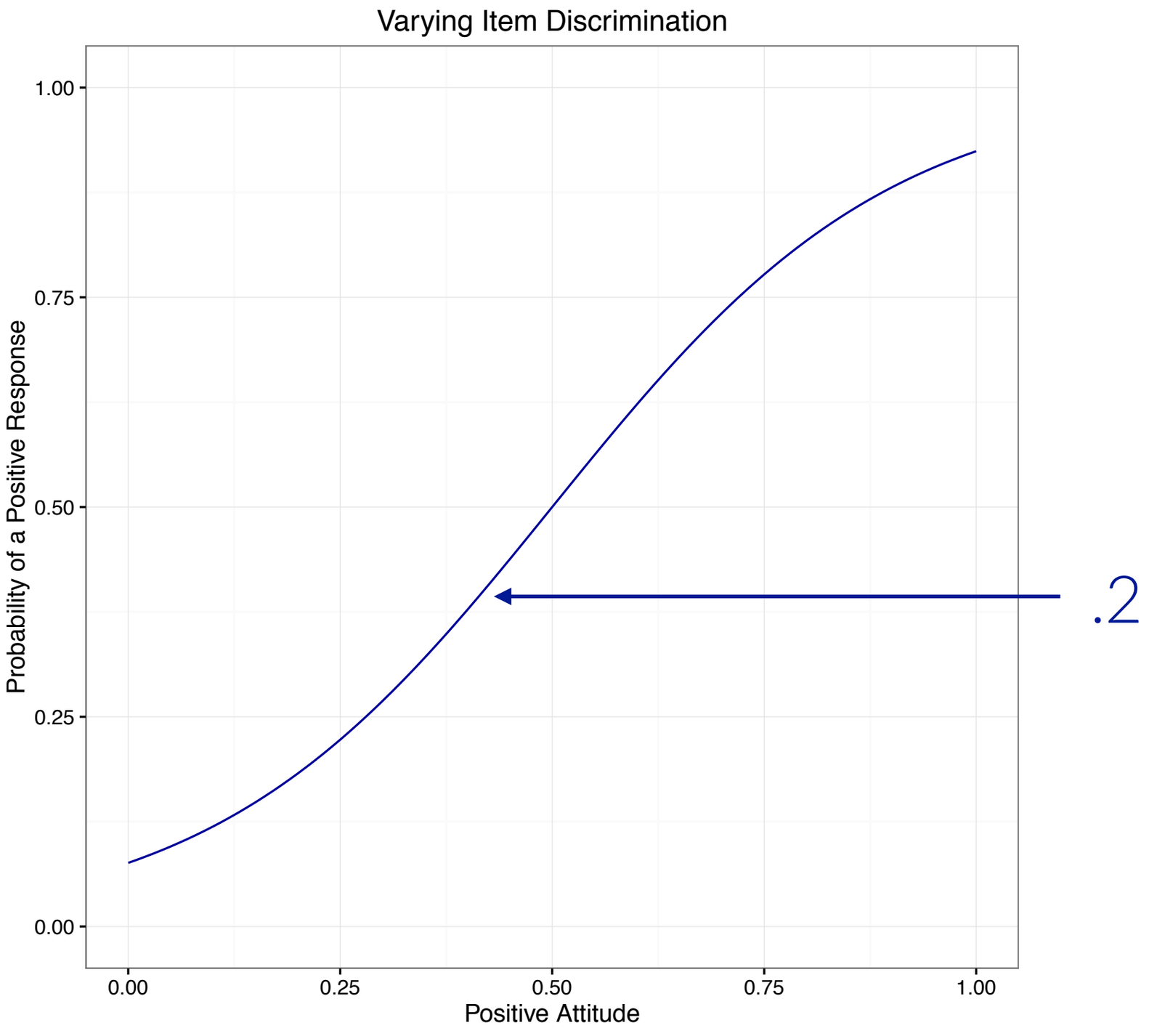

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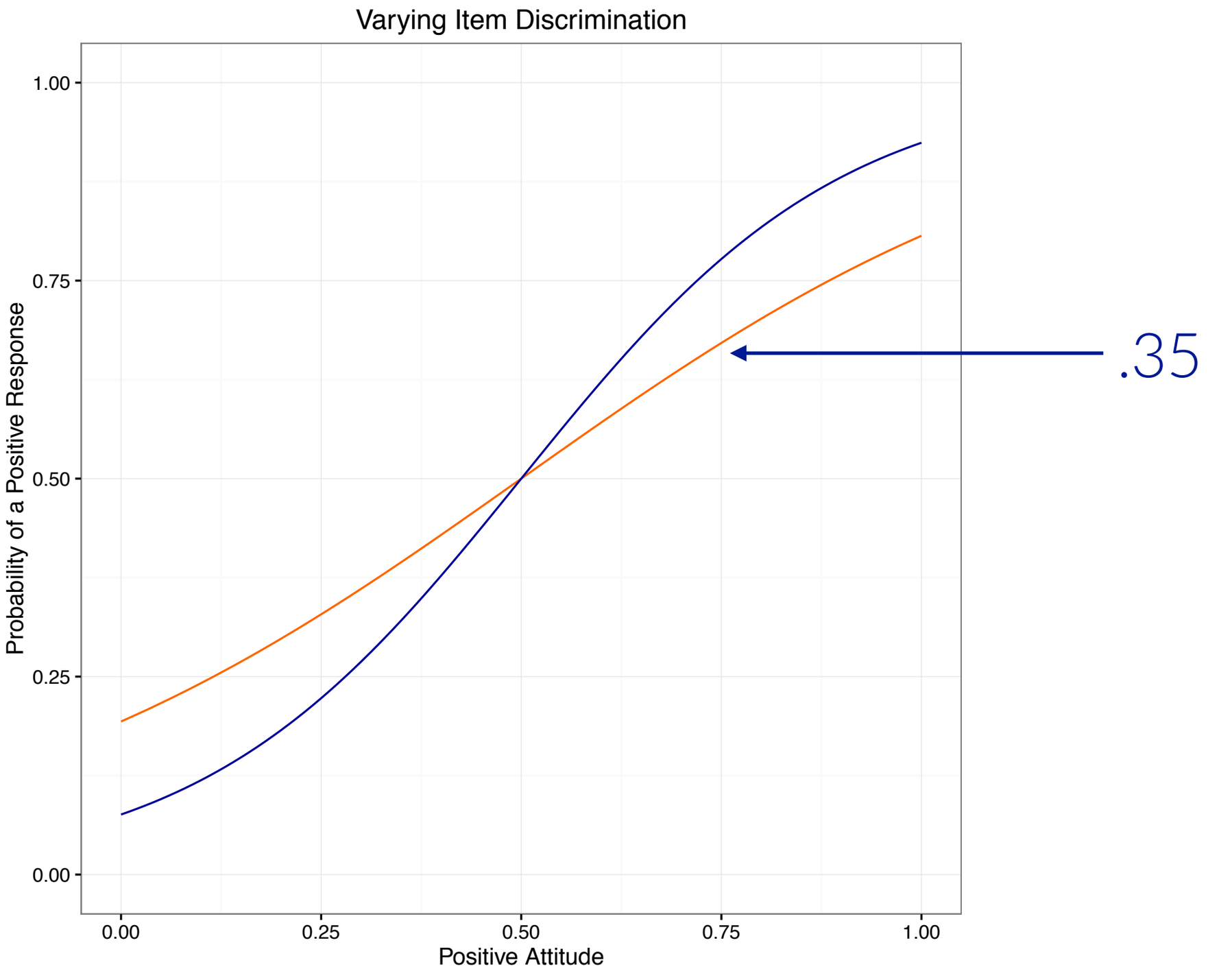

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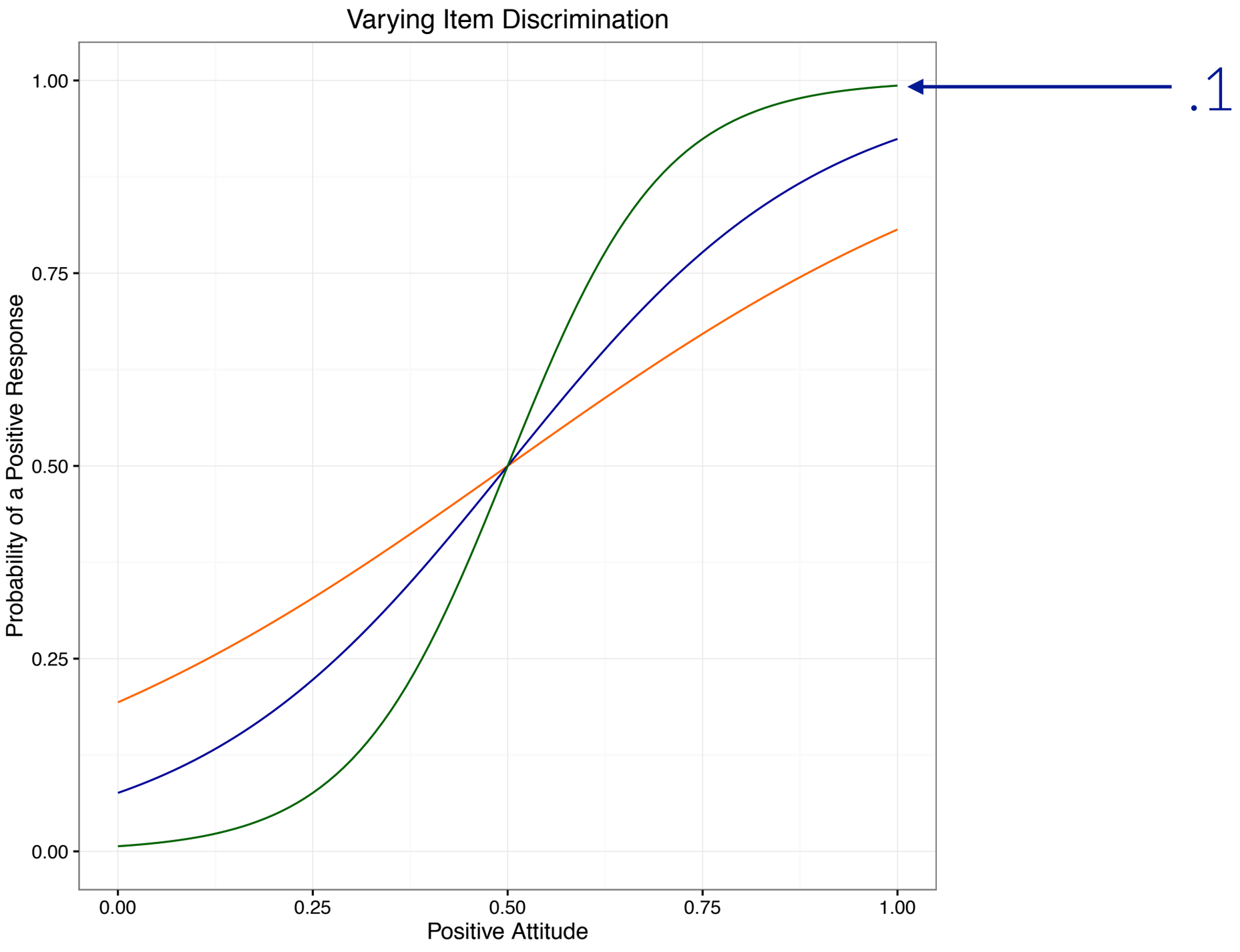

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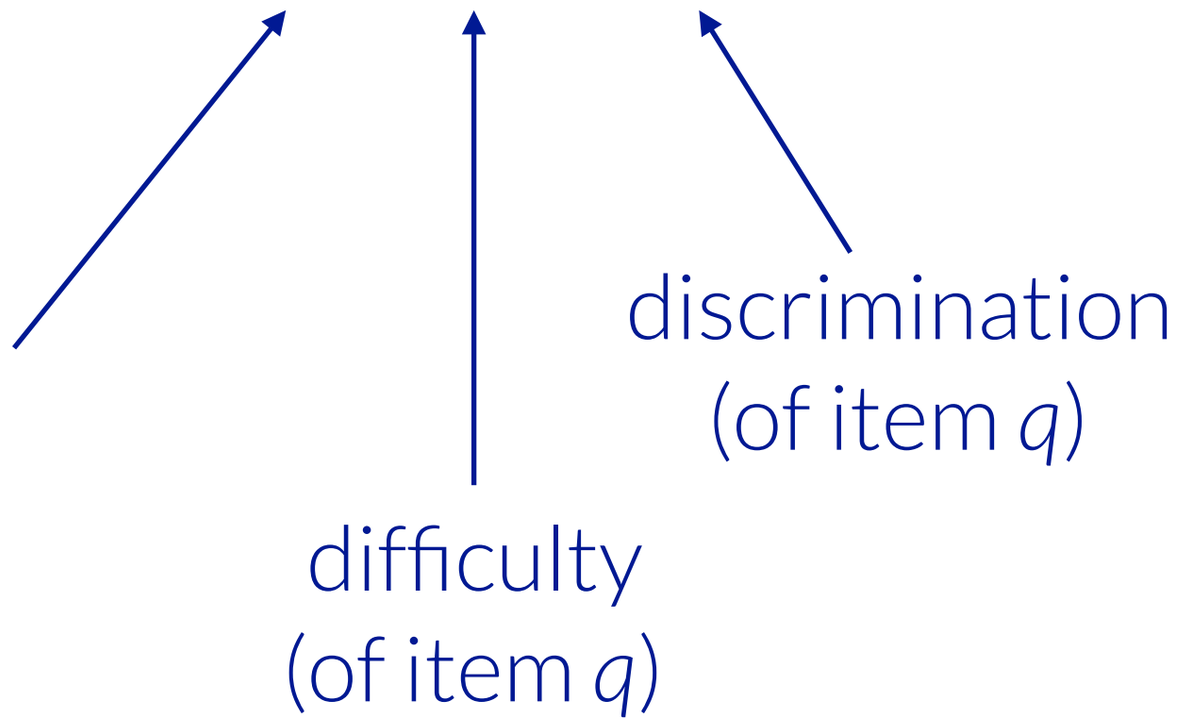

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Item Response Theory

scaled to country-year level

Responses depend on the country (*k*), year (*t*), and item (*q*):

$$m_{ktq} = Logit^{-1}((\bar{\alpha}_{kt} - \beta_q)/\gamma_q)$$

mean characteristic (in country *k* at time *t*)

difficulty (of item *q*)

discrimination (of item *q*)

Random Walk Priors

for country-year parameters

Values of time-varying parameters next year (*t+1*) in country *k* depend on their values in this year (*t*):

$$\bar{\alpha}_{kt+1} = Normal(\bar{\alpha}_{kt}, \sigma_k^2)$$

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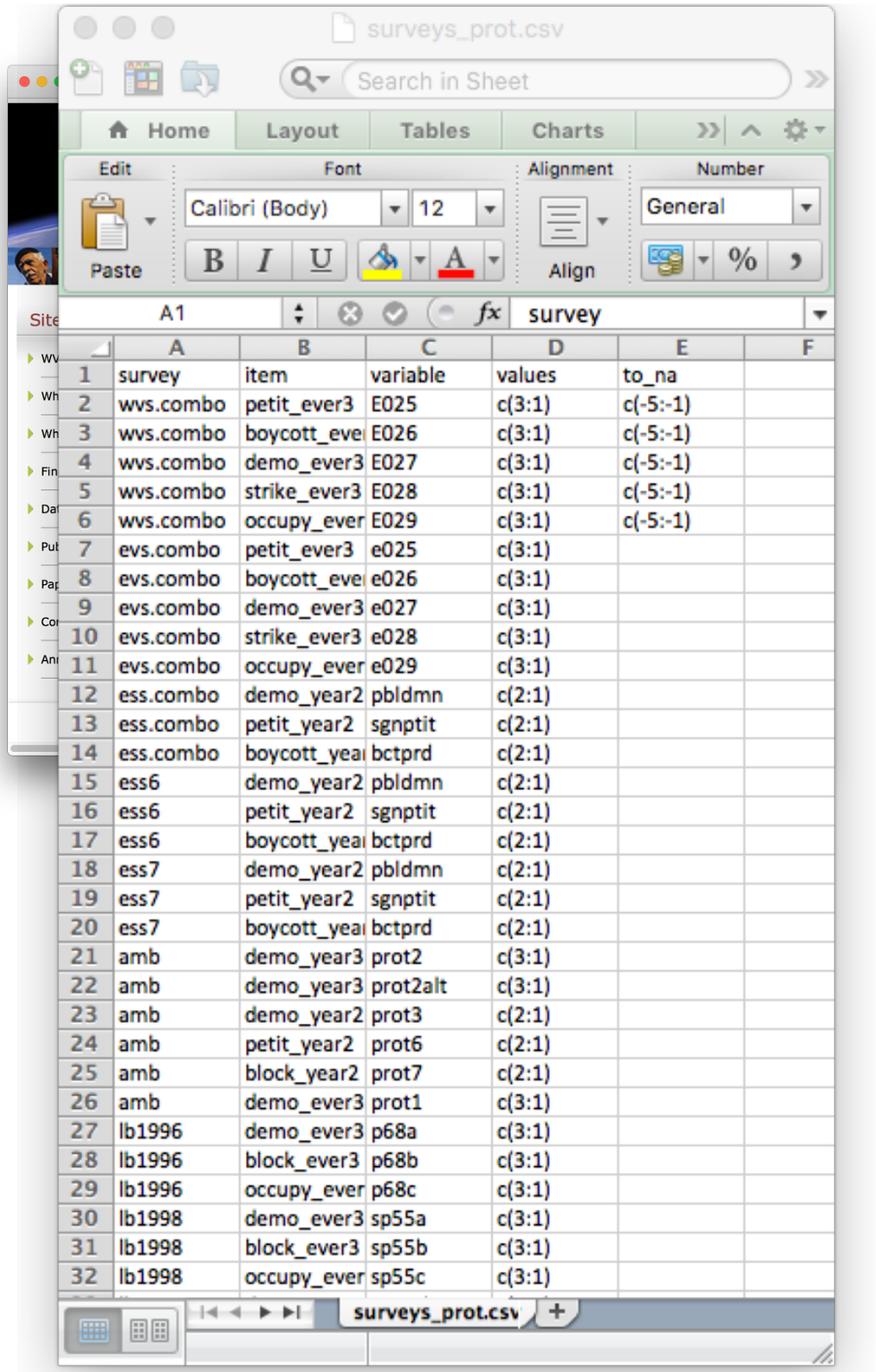
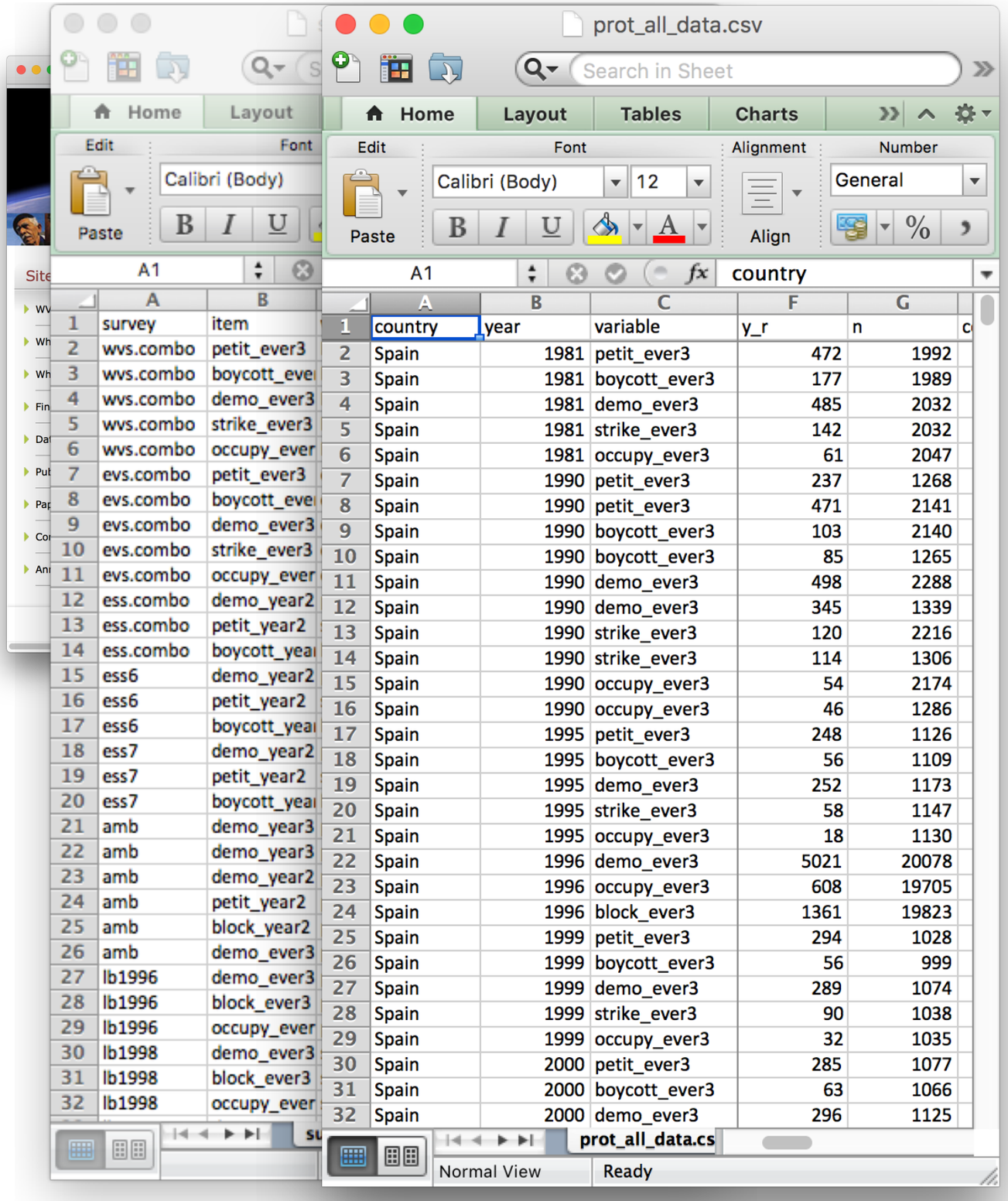
  - Standardize country, year, and weight variables
- Identify and classify relevant survey items



	A	B	C	D	E	F
1	survey	item	variable	values	to_na	
2	wvs.combo	petit_ever3	E025	c(3:1)	c(-5:-1)	
3	wvs.combo	boycott_eve	E026	c(3:1)	c(-5:-1)	
4	wvs.combo	demo_ever3	E027	c(3:1)	c(-5:-1)	
5	wvs.combo	strike_ever3	E028	c(3:1)	c(-5:-1)	
6	wvs.combo	occupy_ever	E029	c(3:1)	c(-5:-1)	
7	evs.combo	petit_ever3	e025	c(3:1)		
8	evs.combo	boycott_eve	e026	c(3:1)		
9	evs.combo	demo_ever3	e027	c(3:1)		
10	evs.combo	strike_ever3	e028	c(3:1)		
11	evs.combo	occupy_ever	e029	c(3:1)		
12	ess.combo	demo_year2	pbldmn	c(2:1)		
13	ess.combo	petit_year2	sgnptit	c(2:1)		
14	ess.combo	boycott_yea	bctprd	c(2:1)		
15	ess6	demo_year2	pbldmn	c(2:1)		
16	ess6	petit_year2	sgnptit	c(2:1)		
17	ess6	boycott_yea	bctprd	c(2:1)		
18	ess7	demo_year2	pbldmn	c(2:1)		
19	ess7	petit_year2	sgnptit	c(2:1)		
20	ess7	boycott_yea	bctprd	c(2:1)		
21	amb	demo_year3	prot2	c(3:1)		
22	amb	demo_year3	prot2alt	c(3:1)		
23	amb	demo_year2	prot3	c(2:1)		
24	amb	petit_year2	prot6	c(2:1)		
25	amb	block_year2	prot7	c(2:1)		
26	amb	demo_ever3	prot1	c(3:1)		
27	lb1996	demo_ever3	p68a	c(3:1)		
28	lb1996	block_ever3	p68b	c(3:1)		
29	lb1996	occupy_ever	p68c	c(3:1)		
30	lb1998	demo_ever3	sp55a	c(3:1)		
31	lb1998	block_ever3	sp55b	c(3:1)		
32	lb1998	occupy_ever	sp55c	c(3:1)		

Data

- Collect cross-national and national surveys
  - Standardize country, year, and weight variables
- Identify and classify relevant survey items
- Loop through items, saving the number of respondents who claimed to participate



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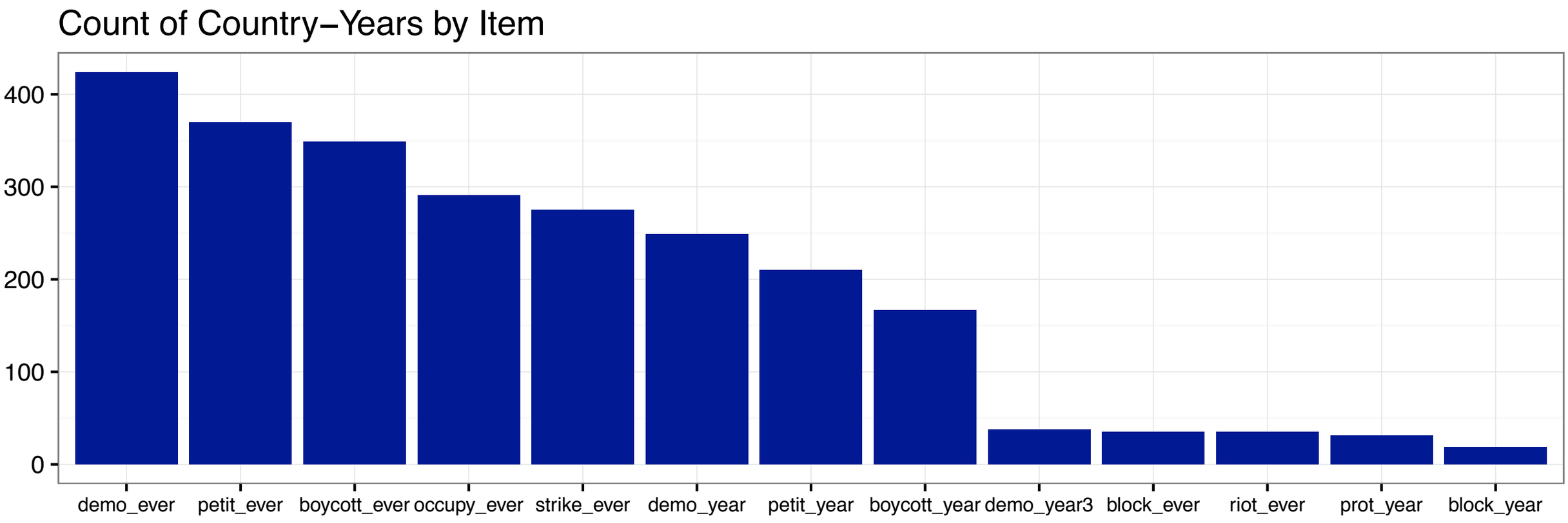
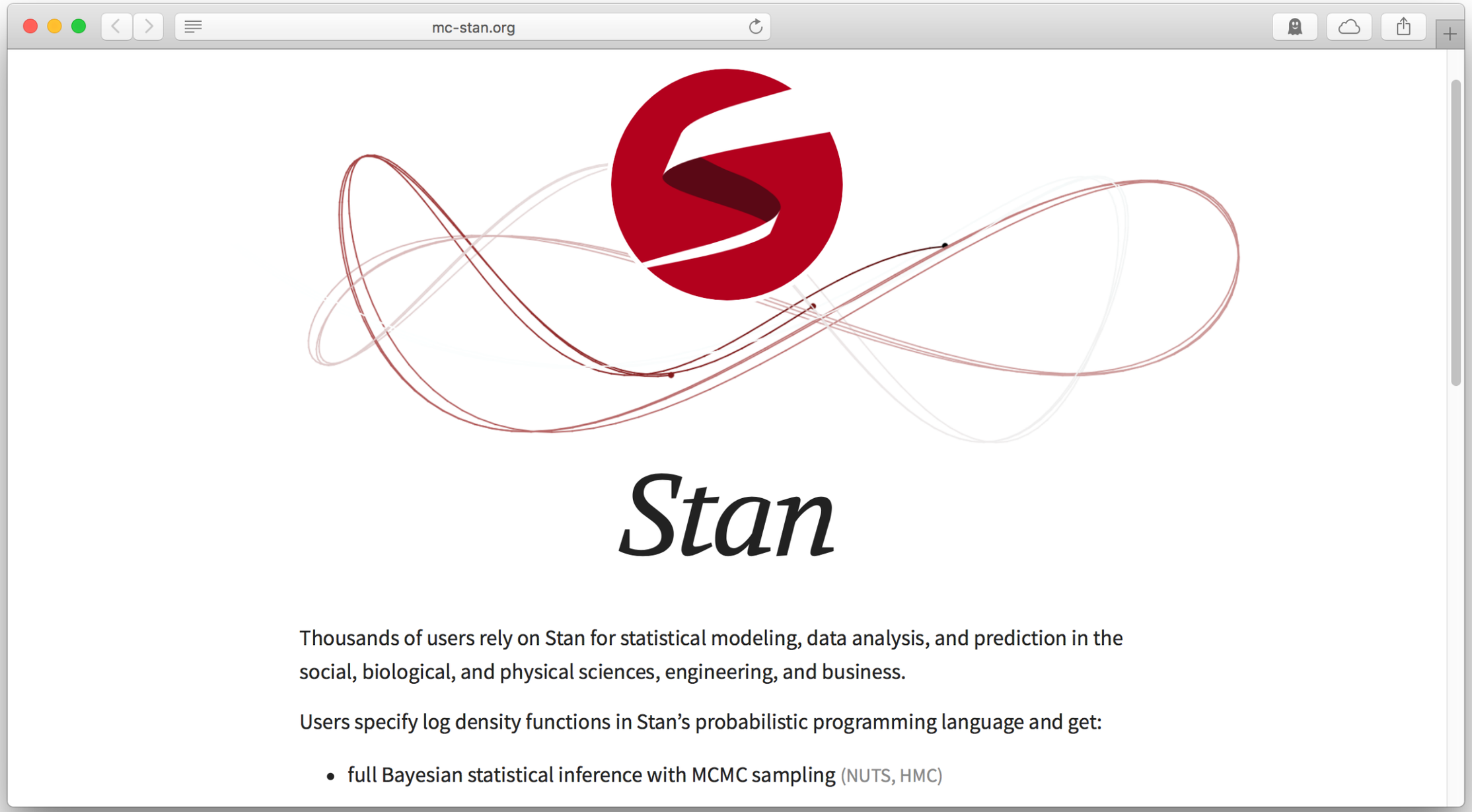
- Many surveys ask respondents' protest participation
  - WVS, EVS, ESS, LB, AmB, EQLS, etc.
- 13 different items; 2493 unique country-year-items *ktq*



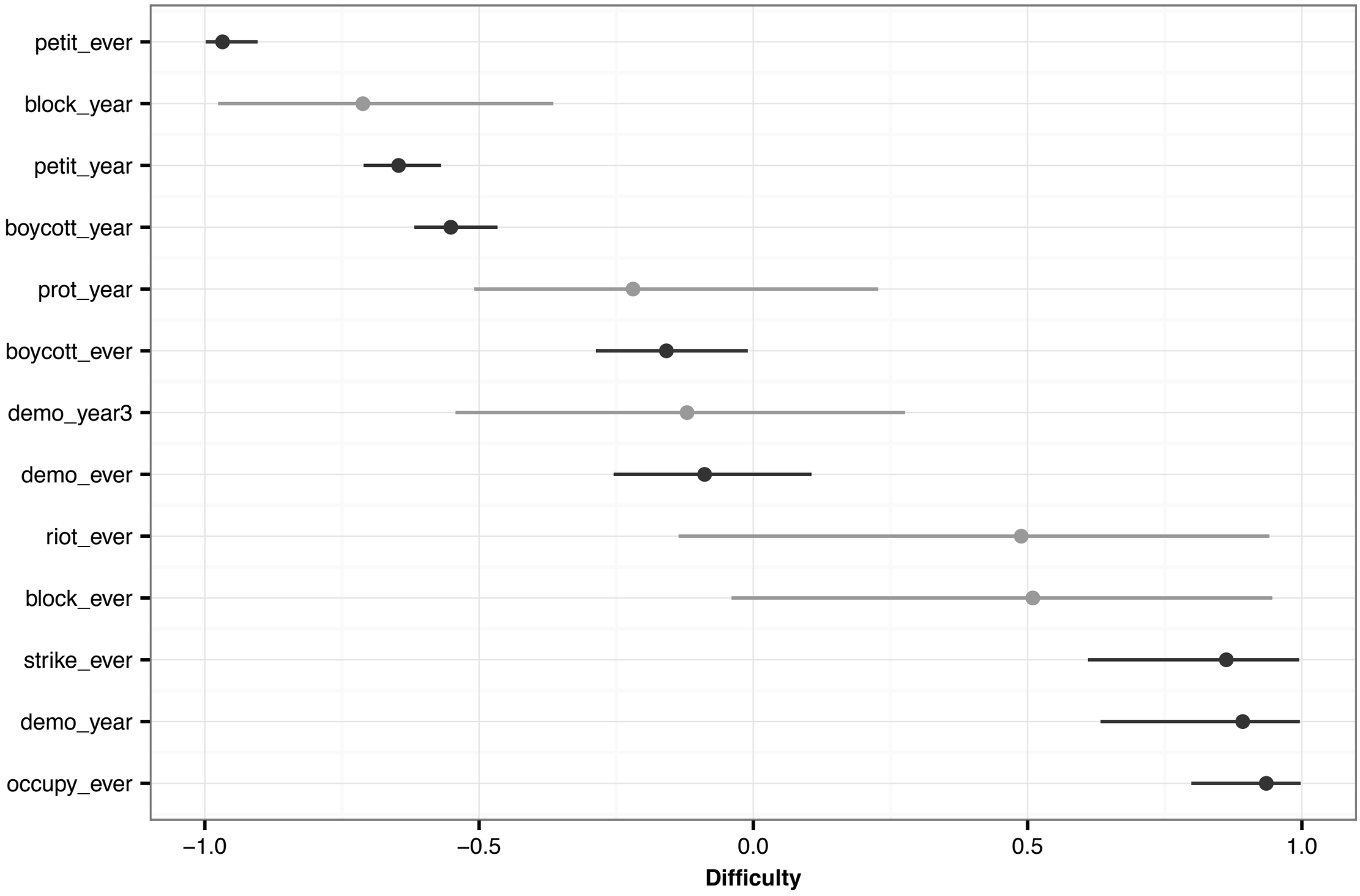
Method

- Estimated using a Bayesian approach via Stan in R



Results

Item Difficulty



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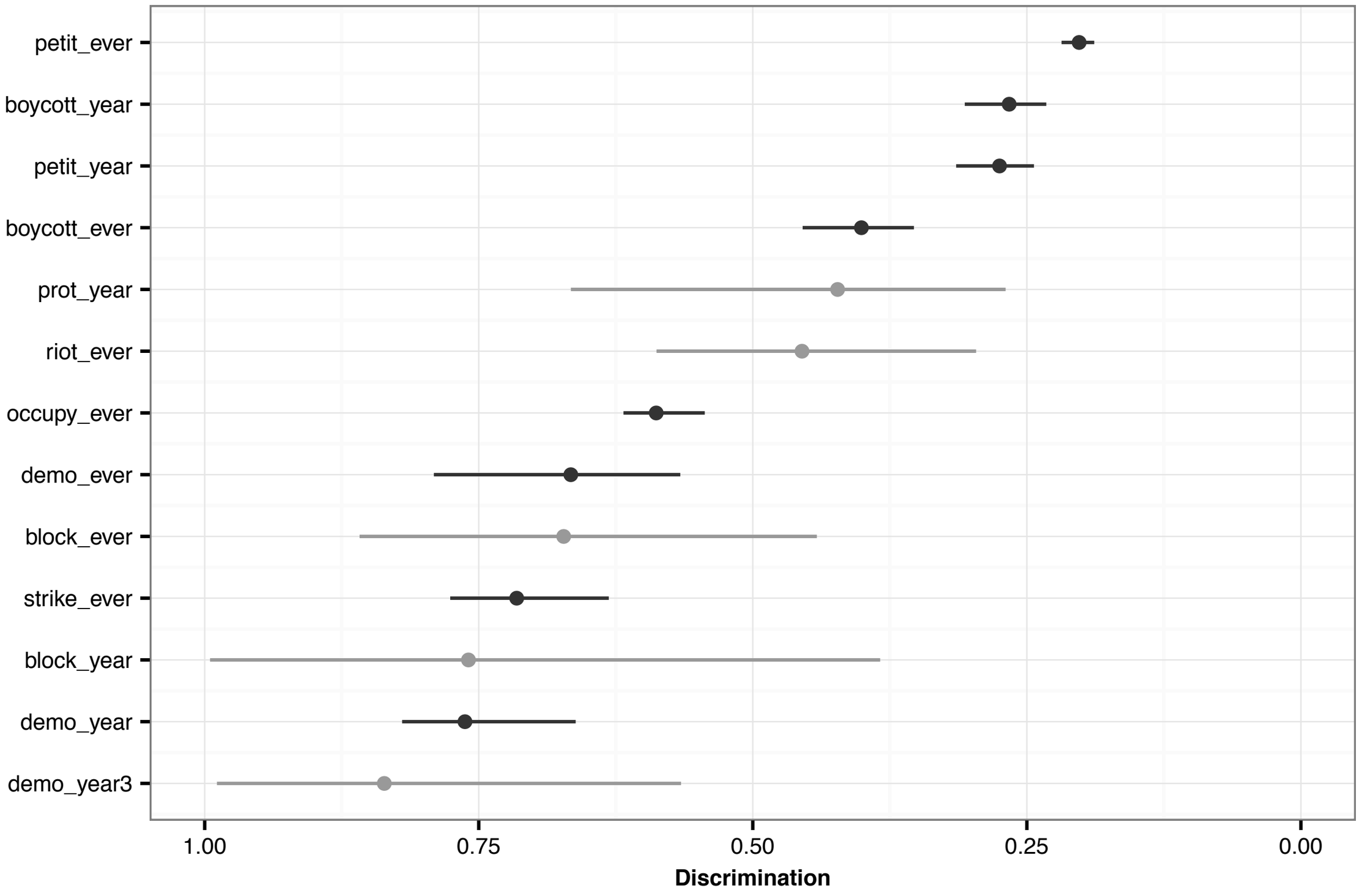
Item Discrimination



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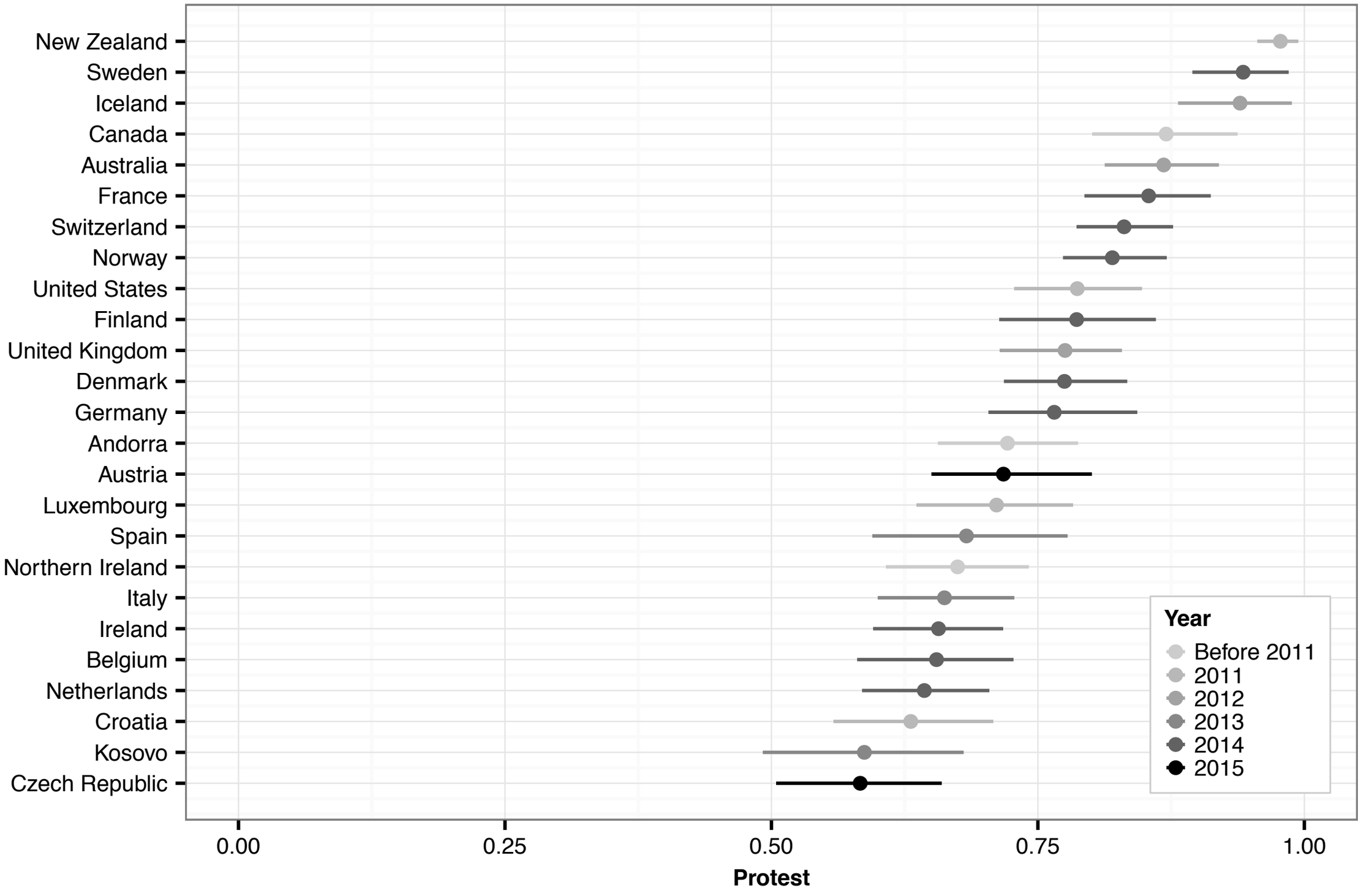

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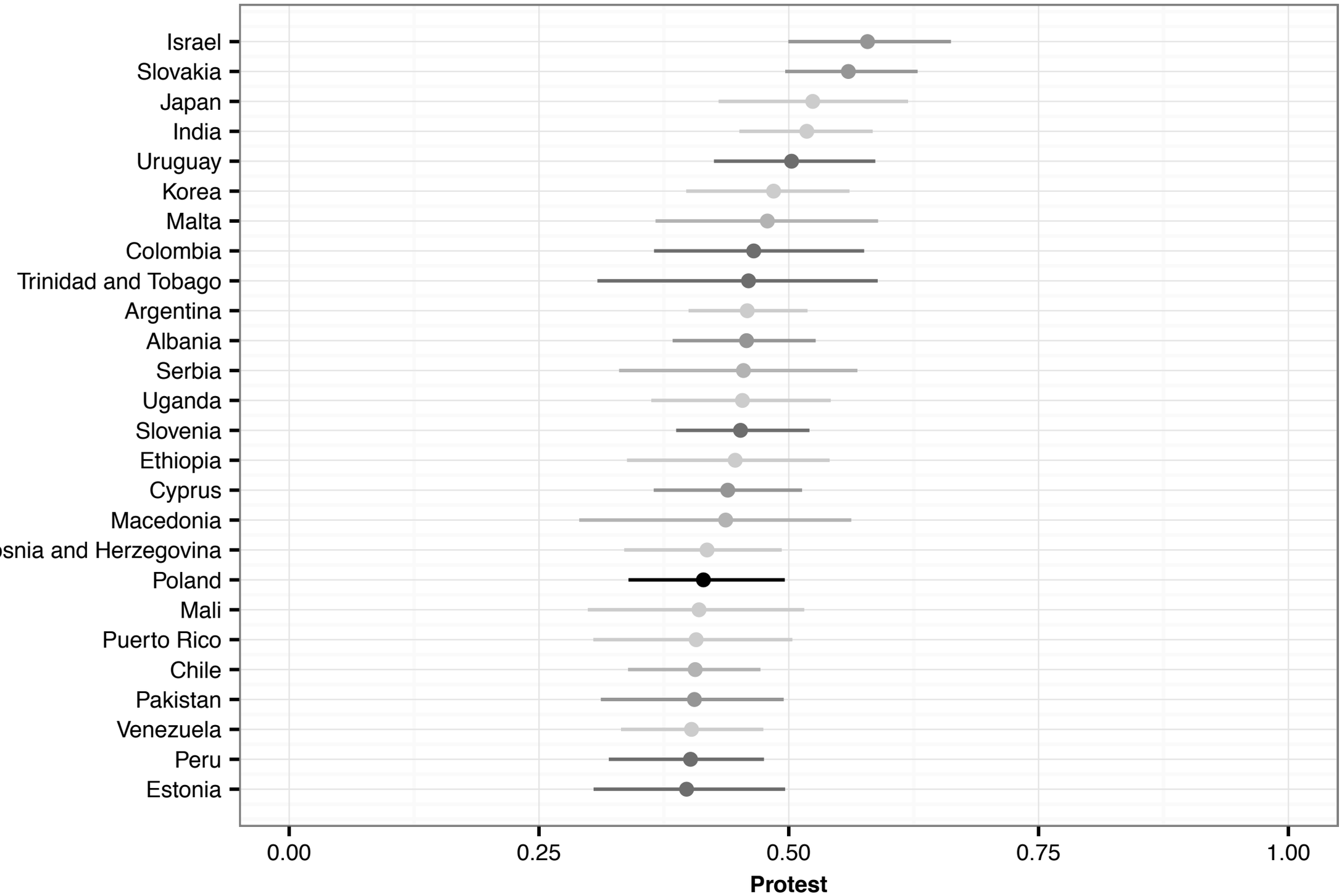

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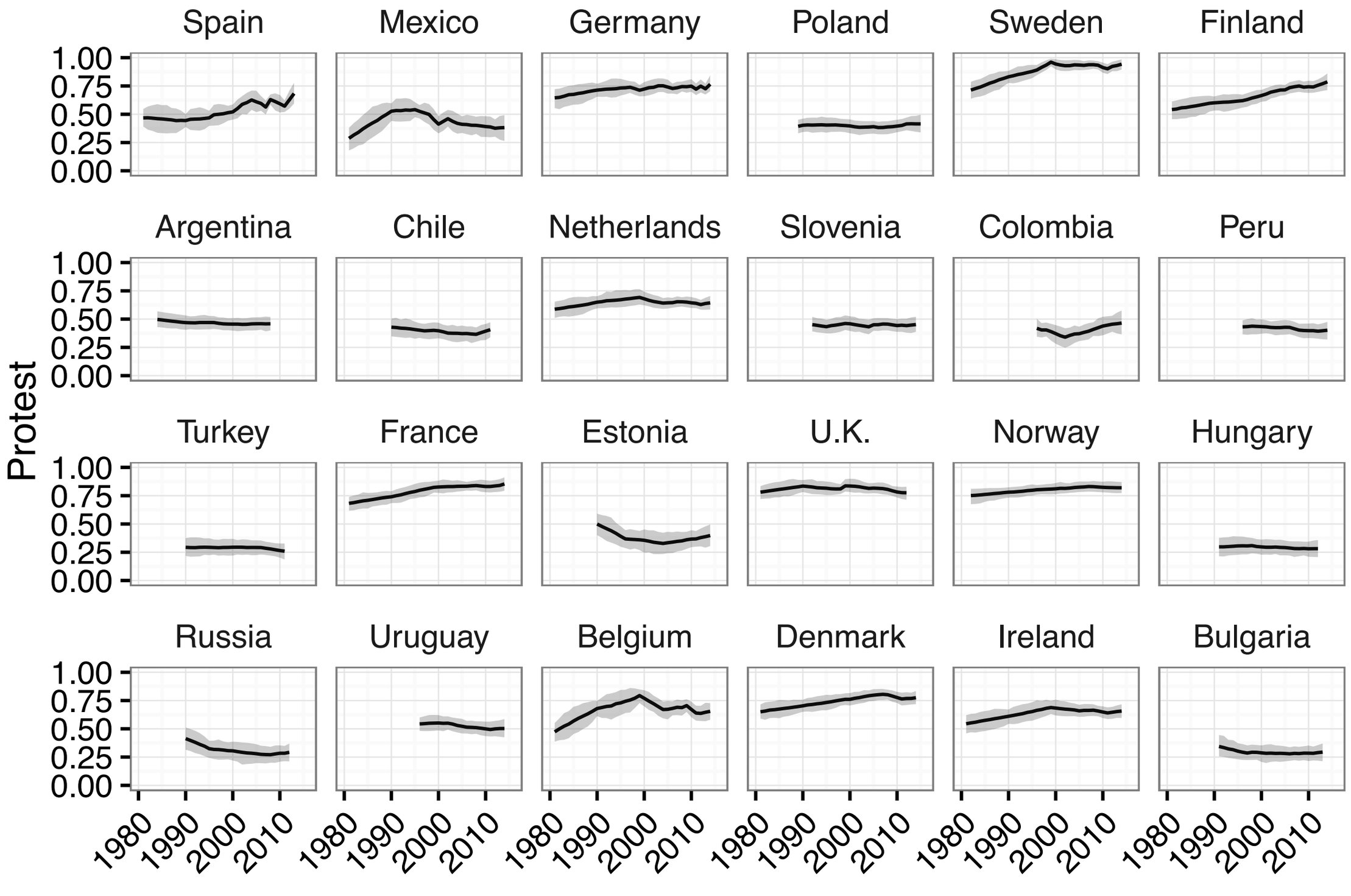
Time Series



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