

# Online Appendix

to

## Integrating Large-Scale Online Surveys and Aggregate Data at the Constituency Level: The Estimation of Voter Transitions in the 2015 British General Elections

Paul. W. Thurner\*, Ingrid Maurerer\*, Maxim Bort† ,

André Klima†, Helmut Küchenhoff†

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\*Department of Political Science, LMU Munich

†Statistical consulting unit StaBLab, Department of Statistics, LMU Munich

# A Additional Descriptive Statistics

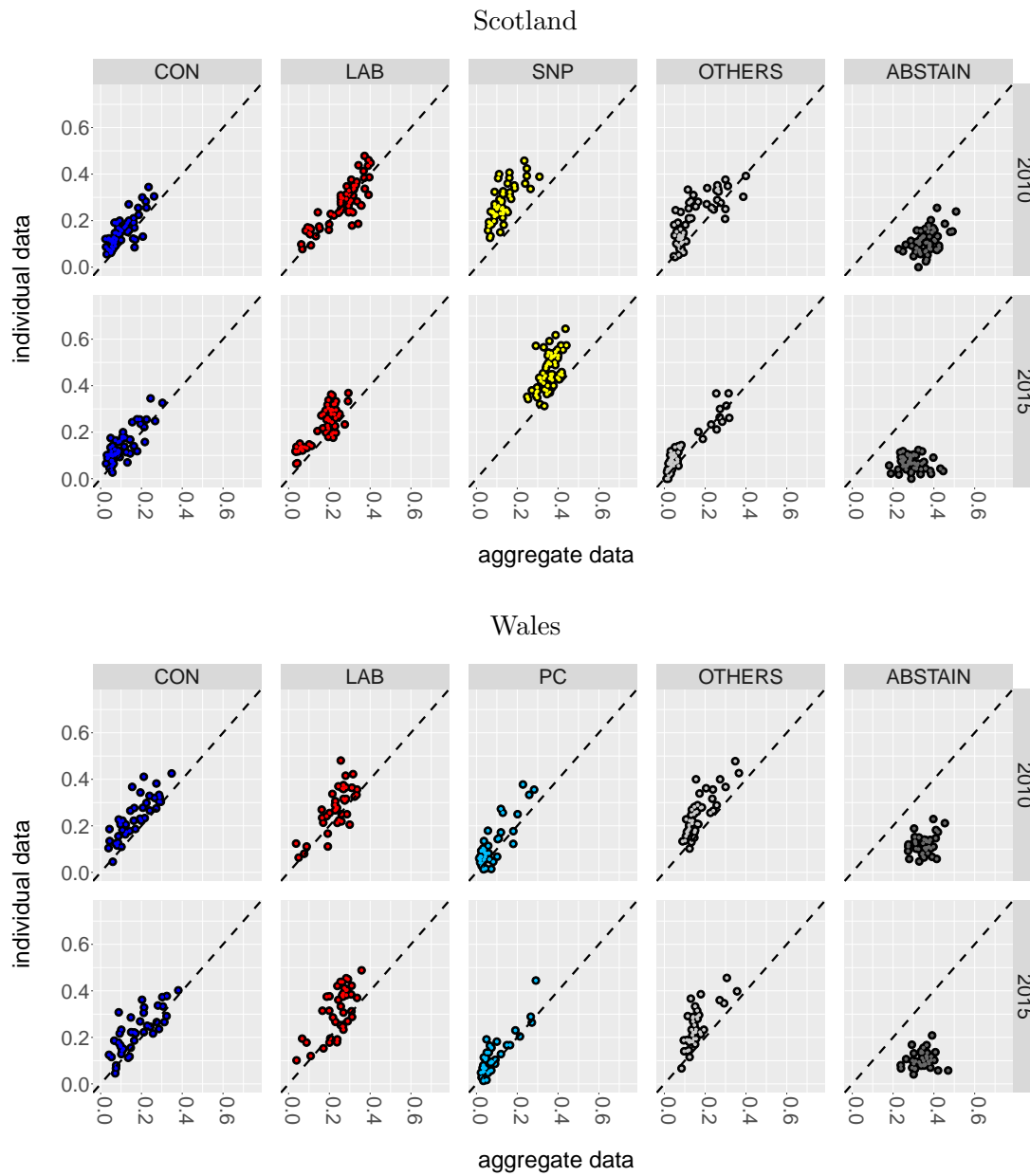
Table A1: Vote shares in the 2010 and 2015 British general elections: Aggregate and individual data compared.

Scotland				
Parties	(A) Aggregate Data		(B) Individual Data	
	2010	2015	2010	2015
CON	10.6	10.6	15.8	14.6
LAB	26.8	17.2	26.7	22.4
SNP	12.7	35.5	26.6	45.0
OTHERS	13.7	7.7	20.0	11.3
ABSTAIN	36.2	29.0	10.9	6.7

Wales				
Parties	(A) Aggregate Data		(B) Individual Data	
	2010	2015	2010	2015
CON	16.9	17.9	24.2	22.6
LAB	23.5	24.2	27.5	31.6
PC	7.3	8.0	10.9	10.8
OTHERS	17.0	15.6	25.8	24.8
ABSTAIN	35.2	34.4	11.7	10.2

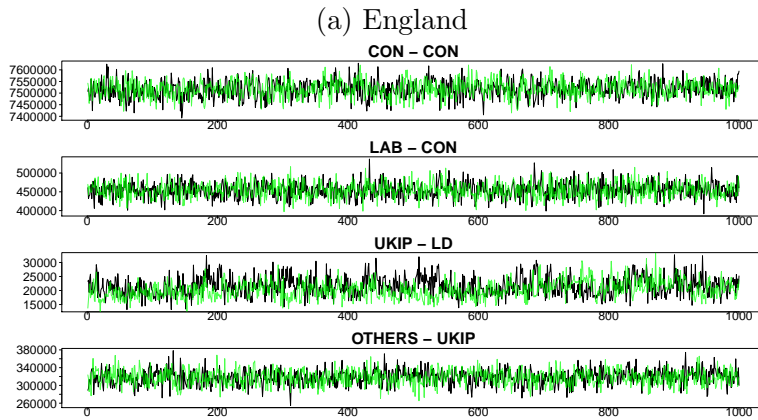
*Note:* (A) are the official results at the constituency level (U.K. Electoral Commission), (B) are the observed shares in Wave 5 in the BESIP (Fieldhouse et al. 2015).



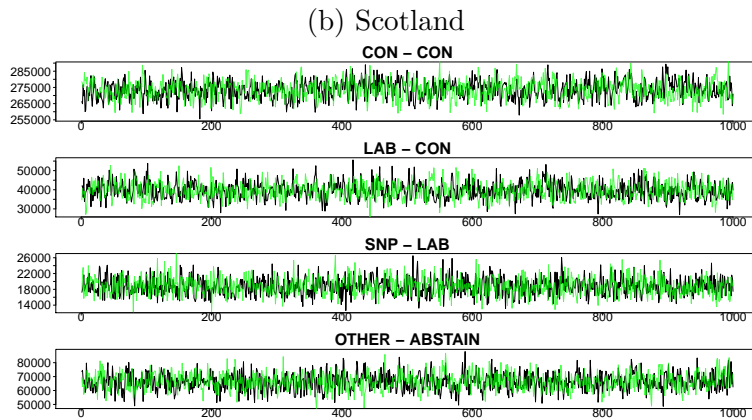
*Note:* The y-axis shows the relative vote shares in the individual survey data and the x-axis the corresponding shares in the aggregate data. Each dot represents one of the 59 and 40 constituencies in Scotland and Wales, respectively.

Figure A1: The relationship between aggregate and individual survey data at the constituency level, 2010 and 2015 British general elections.

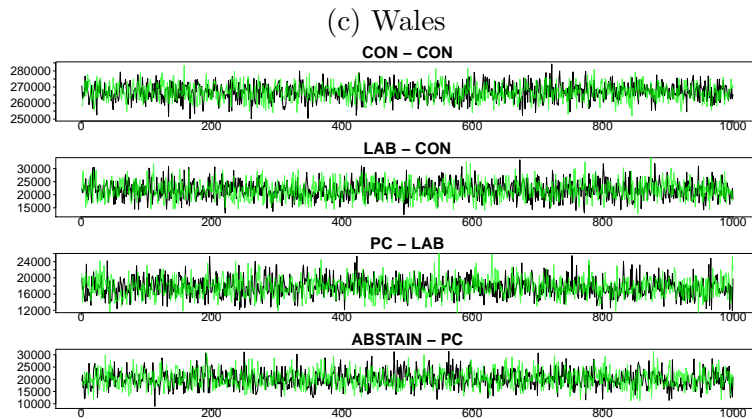
## B Convergence Diagnostics



*Note:* burn-in=500000, thinning=2000, sample=1000.

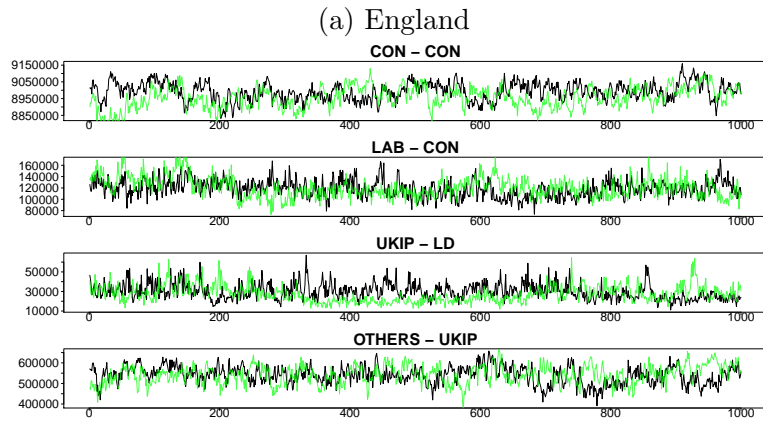


*Note:* burn-in=3000000, thinning=2000, sample=1000.

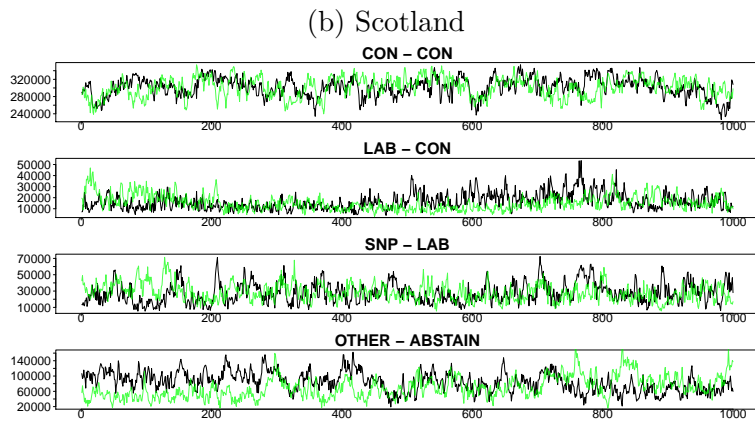


*Note:* burn-in=1500000, thinning=2000, sample=1000.

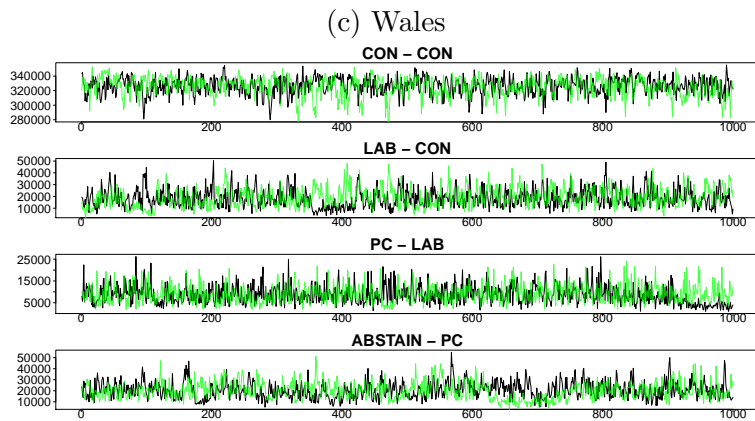
Figure A2: Chain plots of the HHMD models without prior knowledge.



*Note:* burn-in=500000, thinning=2000, sample=1000.



*Note:* burn-in=5000000, thinning=5000, sample=1000.



*Note:* burn-in=2000000, thinning=4000, sample=1000.

Figure A3: Chain plots of the Ecological Inference models without prior knowledge.

Table A2: Comparison of models and chains based on the AD (Absolute Distance) index, England.

	Ecological Inference		Ecological Inference with prior		HHMD		HHMD with prior	
Ecological Inference	0.0090	0.0090	0.0244	0.0272	0.3579	0.3586	0.3513	0.3514
			0.0213	0.0241	0.3545	0.3552	0.3477	0.3479
Ecological Inference with prior	0.0244	0.0213	0.0070	0.0070	0.3565	0.3571	0.3491	0.3492
	0.0272	0.0241	0.0070	0.0070	0.3574	0.3580	0.3499	0.3501
HHMD	0.3579	0.3545	0.3565	0.3574	0.0012	0.0012	0.0089	0.0089
	0.3586	0.3552	0.3571	0.3580	0.0012	0.0012	0.0092	0.0092
HHMD with prior	0.3513	0.3477	0.3491	0.3499	0.0089	0.0092	0.0010	0.0010
	0.3514	0.3479	0.3492	0.3501	0.0089	0.0092	0.0010	0.0010
	Chain 1	Chain 2	Chain 1	Chain 2	Chain 1	Chain 2	Chain 1	Chain 2

Table A3: Comparison of models and chains based on the AD (Absolute Distance) index, Scotland.

	Ecological Inference		Ecological Inference with prior		HHMD		HHMD with prior	
Ecological Inference	0.1362	0.1362	0.2238	0.2375	0.2364	0.2352	0.2311	0.2310
	0.1362		0.1033	0.1177	0.2087	0.2099	0.1934	0.1933
Ecological Inference with prior	0.2238	0.1033	0.0430	0.0430	0.2190	0.2205	0.1958	0.1957
	0.2375	0.1177	0.0430		0.2168	0.2192	0.1924	0.1921
HHMD	0.2364	0.2087	0.2190	0.2168		0.0027	0.0262	0.0264
	0.2352	0.2099	0.2205	0.2192	0.0027		0.0284	0.0287
HHMD with prior	0.2311	0.1934	0.1958	0.1924	0.0262	0.0284		0.0014
	0.2310	0.1933	0.1957	0.1921	0.0264	0.0287	0.0014	
Chain 1	Chain 2	Chain 1	Chain 2	Chain 1	Chain 2	Chain 1	Chain 2	Chain 1
Chain 1	Chain 2	Chain 1	Chain 2	Chain 1	Chain 2	Chain 1	Chain 2	Chain 1

Table A4: Comparison of models and chains based on the AD (Absolute Distance) index, Wales.

	Ecological Inference		Ecological Inference with prior		HHMD		HHMD with prior	
Ecological Inference	0.0111	0.0111	0.0128	0.0128	0.3101	0.3106	0.3059	0.3108
			0.0121	0.0196	0.3023	0.3030	0.2981	0.3030
Ecological Inference with prior	0.0128	0.0121		0.0184	0.3118	0.3123	0.3076	0.3125
	0.0162	0.0196	0.0184		0.3183	0.3188	0.3141	0.3190
HHMD	0.3101	0.3023	0.3118	0.3183		0.0014	0.0053	0.0021
	0.3106	0.3030	0.3123	0.3188	0.0014		0.0055	0.0021
HHMD with prior	0.3059	0.2981	0.3076	0.3141	0.0053	0.0055		0.0057
	0.3108	0.3030	0.3125	0.3190	0.0021	0.0021	0.0057	
	Chain 1	Chain 2	Chain 1	Chain 2	Chain 1	Chain 2	Chain 1	Chain 2



## References

Fieldhouse, E., J. Green., G. Evans, H. Schmitt, C. van der Eijk, J. Mellon, and C. Prosser (2015). British Election Study Internet Panel 2014-2015 (Waves 1-6). Data File Version 1.2. The University of Manchester. DOI: 10.15127/1.293723.

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