

**Supporting Information for “Assessing
Threats to Inference with Simultaneous
Sensitivity Analysis: The Case of U.S.
Supreme Court Oral Arguments”**

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October 1, 2015

Software for Rosenbaum-style Sensitivity Analysis

In R, Keele (2014) implements primal sensitivity analysis after pair matching, for binary and ordinal/continuous responses. Keele (2014) also allows primal sensitivity analysis after fixed-ratio matching with two or three controls, for ordinal/continuous responses. Primal sensitivity analysis for matched pairs is implemented in Stata by Gangl (2004) (for continuous responses) and by Subramanian and Overby (2014) (for binary responses). For Stata, Lempert (2015) describes software implementing simultaneous sensitivity analysis after pair matching, for binary or continuous responses, and after matching with multiple controls and full matching, for ordinal/continuous responses.

In all of the software above, inference is based on one of the commonly-used nonparametric tests: the McNemar Test, the Wilcoxon Signed-Rank Test, or the Hodges-Lehmann Aligned Rank Test. Two R packages described in Rosenbaum (2015) implement primal sensitivity analysis based on M-Tests for matched pairs and for matching with multiple controls. A two-parameter interpretation of the primal sensitivity analysis (which, roughly speaking, transforms a primal sensitivity analysis into a simultaneous sensitivity analysis) after pair matching is also available. Questions of design and analysis related to the power of a sensitivity analysis are addressed in Rosenbaum (2012) and Small, Cheng, Halloran and Rosenbaum (2013); the latter paper points to software that implements both papers' methods.

Supplemental Tables

Supplemental Tables 1-6 give information about balance. Supplemental Tables 7-15 present additional sensitivity analyses. Finally, Supplemental Table 16 gives the regression results associated with Figure 2 in main text.

Covariate	Pre-Matching		Specification 1		Specification 2	
	sdm	<i>p</i>	sdm	<i>p</i>	sdm	<i>p</i>
U.S. Appellant	.1183	.3329	.0341	.7370	.0729	.5119
U.S. Appellee	-.1382	.2584	-.1315	.2503	-.0374	.7460
S.G. Appellant	.3404	.0060	.1425	.0791	.0128	.8732
S.G. Appellee	.0577	.6364	.0047	.9683	.0072	.9524
D.C. Elite Appellant	.0032	.9790	.0131	.8879	.0600	.5359
D.C. Elite Appellee	-.1231	.3137	-.0285	.7815	-.0366	.6422
Law Professor Appellant	.0468	.7013	.0100	.9383	.0110	.9383
Law Professor Appellee	-.0771	.5276	-.0515	.6949	-.0284	.8348
Clerk Appellant	.0083	.9456	0	1	-.0205	.8479
Clerk Appellee	-.0980	.4223	-.0159	.8788	-.0263	.8185
Elite Law School Appellant	.0156	.8981	.0084	.9382	.0196	.8559
Elite Law School Appellee	-.2187	.0747	-.0178	.8592	.0683	.5265
Liberal Decision Below	.1558	.2029	.0028	.9769	-.1288	.1606
Relative Experience	.2665	.0304	.1016	.3710	-.0065	.9459
Case Complexity	-.0881	.4707	-.0269	.7850	.0402	.6852
Court Median Ideology	.1626	.1841	.0448	.5953	.0199	.8238

Supplemental Table 1. Covariate balance for two matching specifications. The standardized difference of means (sdm) and a randomization inference-based *p* value are presented for the unmatched sample and matching Specifications 1 and 2. Petitioner-better, positive-difference cases are considered treated; the corresponding sensitivity analyses are presented in Table 1 and Supplemental Table 7. See text for details.

Covariate	Pre-Matching		Specification 1		Specification 2	
	sdm	<i>p</i>	sdm	<i>p</i>	sdm	<i>p</i>
U.S. Appellant	-.1040	.3688	-.0147	.8689	.0428	.6394
U.S. Appellee	.1763	.1287	.1808	.0464	.0007	.9940
S.G. Appellant	-.1384	.2323	-.0592	.5178	-.0133	.8909
S.G. Appellee	.2264	.0516	.2357	.0091	.0222	.8040
D.C. Elite Appellant	.0557	.6301	.1066	.1721	.0457	.5118
D.C. Elite Appellee	.0725	.5307	.1053	.1546	.0570	.5305
Law Professor Appellant	.0537	.6427	.0512	.3173	.0549	.4416
Law Professor Appellee	.0537	.6427	0	1	.0279	.5637
Clerk Appellant	-.0606	.6003	.0180	.8399	0	1
Clerk Appellee	.1311	.2578	.0984	.2191	.0203	.8292
Elite Law School Appellant	-.1284	.2676	-.0352	.6537	-.0398	.5954
Elite Law School Appellee	.0949	.4124	.1271	.1372	-.0293	.7449
Liberal Decision Below	-.0334	.7724	-.0904	.2915	-.0405	.6495
Relative Experience	-.3462	.0032	-.2204	.0190	.0713	.3047
Case Complexity	-.1563	.1775	-.0288	.7082	.0425	.6008
Court Median Ideology	.0358	.7569	.0324	.7203	.0390	.6697

Supplemental Table 2. Covariate balance for two matching specifications. The standardized difference of means (sdm) and a randomization inference-based *p* value are presented for the unmatched sample and matching Specifications 1 and 2. Respondent-better, positive-difference cases are considered treated; the corresponding sensitivity analyses are presented in Supplemental Tables 10 and 13. See text for details.

Covariate	Pre-Matching		Specification 1		Specification 2	
	sdm	<i>p</i>	sdm	<i>p</i>	sdm	<i>p</i>
U.S. Appellant	.0894	.4843	-.0272	.7843	-.0662	.5560
U.S. Appellee	-.2242	.0812	-.1629	.1955	-.0108	.9300
S.G. Appellant	.3630	.0052	.1976	.0401	-.0288	.7240
S.G. Appellee	-.0231	.8564	.0214	.8683	.0575	.6730
D.C. Elite Appellant	-.0108	.9325	-.0429	.6121	-.0311	.7320
D.C. Elite Appellee	-.2030	.1139	-.1400	.2088	-.0578	.5586
Law Professor Appellant	.0754	.5551	.0623	.6547	.0704	.6547
Law Professor Appellee	-.0606	.6354	-.0801	.5637	-.0905	.5637
Clerk Appellant	.0385	.7635	.0051	.9572	-.0348	.7591
Clerk Appellee	-.1262	.3242	-.0529	.5637	-.0598	.5637
Elite Law School Appellant	.0275	.8295	-.0152	.8878	-.0971	.3989
Elite Law School Appellee	-.2615	.0424	-.1132	.2609	-.0329	.7602
Liberal Decision Below	.1646	.1992	.0629	.5175	-.1388	.1422
Relative Experience	.3606	.0055	.2186	.0504	-.0458	.6431
Case Complexity	-.1354	.2905	-.0666	.5489	-.0041	.9726
Court Median Ideology	.1704	.1838	.0442	.6178	.0123	.8922

Supplemental Table 3. Covariate balance for two matching specifications. The standardized difference of means (sdm) and a randomization inference-based *p* value are presented for the unmatched sample and matching Specifications 1 and 2. Petitioner-better, medium-difference cases are considered treated; the corresponding sensitivity analyses are presented in Table 2 and Supplemental Table 8. See text for details.

Covariate	Pre-Matching		Specification 1		Specification 2	
	sdm	<i>p</i>	sdm	<i>p</i>	sdm	<i>p</i>
U.S. Appellant	-.3371	.0070	-.2938	.0098	-.0669	.5277
U.S. Appellee	.1752	.1570	.1297	.2212	-.0223	.8514
S.G. Appellant	-.3247	.0094	-.2535	.0153	-.0150	.8514
S.G. Appellee	.2281	.0662	.2039	.0504	.0095	.9281
D.C. Elite Appellant	-.1105	.3712	-.1128	.2438	-.0938	.3855
D.C. Elite Appellee	-.0053	.9660	-.0088	.9257	-.0251	.8029
Law Professor Appellant	-.0019	.9877	.0662	.3173	.0759	.3173
Law Professor Appellee	.0535	.6647	.0594	.3173	-.0511	.6858
Clerk Appellant	-.1589	.1991	-.1213	.1917	-.0664	.4817
Clerk Appellee	.1604	.1947	.1169	.1317	-.0402	.6115
Elite Law School Appellant	-.1901	.1249	-.1278	.1491	-.0966	.2761
Elite Law School Appellee	.0046	.9702	.0537	.4977	.0143	.8776
Liberal Decision Below	-.0320	.7956	-.1223	.2236	-.1088	.2832
Relative Experience	-.4593	.0003	-.3467	.0021	-.0073	.9228
Case Complexity	-.1678	.1753	-.0277	.6973	.0376	.6439
Court Median Ideology	.0303	.8060	-.0329	.7230	-.0043	.9673

Supplemental Table 4. Covariate balance for two matching specifications. The standardized difference of means (sdm) and a randomization inference-based *p* value are presented for the unmatched sample and matching Specifications 1 and 2. Respondent-better, medium-difference cases are considered treated; the corresponding sensitivity analyses are presented in Supplemental Tables 11 and 14. See text for details.

Covariate	Pre-Matching		Specification 1		Specification 2	
	sdm	<i>p</i>	sdm	<i>p</i>	sdm	<i>p</i>
U.S. Appellant	.2543	.0924	.0362	.7492	-.1302	.3564
U.S. Appellee	-.2506	.0972	-.3124	.0453	-.0923	.4857
S.G. Appellant	.4094	.0074	.1426	.1566	-.0640	.5949
S.G. Appellee	-.0935	.5333	-.1129	.4658	-.0281	.8557
D.C. Elite Appellant	-.0598	.6904	-.1057	.4294	-.1099	.3722
D.C. Elite Appellee	-.1662	.2693	-.1527	.2773	-.0825	.5338
Law Professor Appellant	-.0037	.9802	-.0977	.3173	-.1105	.3173
Law Professor Appellee	-.0037	.9802	-.0488	.7630	-.1105	.5637
Clerk Appellant	.1174	.4345	-.0203	.8886	-.1339	.3861
Clerk Appellee	-.1366	.3637	-.1395	.1573	-.0789	.3173
Elite Law School Appellant	.0080	.9572	-.1156	.3672	-.1556	.2105
Elite Law School Appellee	-.1490	.3216	-.1445	.2654	-.0120	.9346
Liberal Decision Below	.1475	.3267	.1538	.2545	-.0055	.9669
Relative Experience	.4105	.0072	.2156	.0596	-.0608	.6312
Case Complexity	-.1307	.3846	-.0636	.5940	.0472	.7177
Court Median Ideology	.1070	.4763	.0584	.6252	-.0250	.8541

Supplemental Table 5. Covariate balance for two matching specifications. The standardized difference of means (sdm) and a randomization inference-based *p* value are presented for the unmatched sample and matching Specifications 1 and 2. Petitioner-better, large-difference cases are considered treated; the corresponding sensitivity analyses are presented in Table 3 and Supplemental Table 9. See text for details.

Covariate	Pre-Matching		Specification 1		Specification 2	
	sdm	<i>p</i>	sdm	<i>p</i>	sdm	<i>p</i>
U.S. Appellant	-.4907	.0005	-.5338	.0001	-.0289	.6467
U.S. Appellee	.3027	.0287	.2075	.0237	.0091	.9415
S.G. Appellant	-.4180	.0028	-.3926	.0019	-.0027	.9763
S.G. Appellee	.3152	.0228	.2275	.0112	.0268	.8150
D.C. Elite Appellant	-.0624	.6484	-.0833	.4922	-.0814	.4890
D.C. Elite Appellee	.0456	.7390	.0157	.8694	-.0388	.7663
Law Professor Appellant	.0510	.7096	.0748	.3173	.0921	.3173
Law Professor Appellee	.0510	.7096	0	1	.0077	.9334
Clerk Appellant	-.0669	.6248	-.1310	.2087	-.1038	.3972
Clerk Appellee	.2141	.1197	.1278	.1797	-.0227	.8457
Elite Law School Appellant	-.2189	.1117	-.1713	.0881	.0106	.9258
Elite Law School Appellee	.0495	.7174	.1246	.1573	.0102	.9198
Liberal Decision Below	-.1520	.2678	-.0735	.5008	.0095	.9305
Relative Experience	-.6658	.0000	-.5307	.0002	-.0250	.7976
Case Complexity	-.2267	.0996	-.1141	.3013	.0517	.6274
Court Median Ideology	-.0391	.7753	-.0557	.6572	-.0072	.9525

Supplemental Table 6. Covariate balance for two matching specifications. The standardized difference of means (sdm) and a randomization inference-based *p* value are presented for the unmatched sample and matching Specifications 1 and 2. Respondent-better, large-difference cases are considered treated; the corresponding sensitivity analyses are presented in Supplemental Tables 12 and 15. See text for details.

Γ	$\Delta=1$	$\Delta=1.1$	$\Delta=1.2$	$\Delta=1.5$	$\Delta=2$	$\Delta=2.5$	$\Delta=3$	$\Delta=\infty$
1	.0358	.0358	.0358	.0358	.0358	.0358	.0358	.0358
1.1	.0358	.0375	.0392	.0437	.0497	.0542	.0576	.0823
1.2	.0358	.0392	.0425	.0521	.0657	.0767	.0854	.1550
1.5	.0358	.0438	.0522	.0790	.1239	.1638	.1973	.4751
2	.0358	.0501	.0668	.1260	.2362	.3371	.4192	.8782
2.5	.0358	.0553	.0795	.1721	.3464	.4977	.6103	.9833
3	.0358	.0596	.0905	.2148	.4442	.6248	.7452	.9983
∞	.0358	.1055	.2260	.6984	.9853	.9998	1	1

Supplemental Table 7. Simultaneous sensitivity analysis for selected values of Δ and Γ , Matching Specification 1. Petitioner-better, positive-difference cases are considered treated; balance is evaluated in Supplemental Table 1. See text for details.

Γ	$\Delta=1$	$\Delta=1.1$	$\Delta=1.2$	$\Delta=1.5$	$\Delta=2$	$\Delta=2.5$	$\Delta=3$	$\Delta=\infty$
1	.0292	.0292	.0292	.0292	.0292	.0292	.0292	.0292
1.1	.0292	.0307	.0322	.0361	.0411	.0449	.0478	.0680
1.2	.0292	.0322	.0351	.0434	.0552	.0645	.0719	.1300
1.5	.0292	.0362	.0436	.0676	.1076	.1429	.1726	.4213
2	.0292	.0417	.0565	.1107	.2127	.3062	.3830	.8405
2.5	.0292	.0461	.0675	.1527	.3189	.4634	.5725	.9733
3	.0292	.0497	.0770	.1914	.4140	.5923	.7125	.9966
∞	.0292	.0877	.1924	.6434	.9760	.9995	1	1

Supplemental Table 8. Simultaneous sensitivity analysis for selected values of Δ and Γ , Matching Specification 1. Petitioner-better, medium-difference cases are considered treated; balance is evaluated in Supplemental Table 3. See text for details.

Γ	$\Delta=1$	$\Delta=1.1$	$\Delta=1.2$	$\Delta=1.5$	$\Delta=2$	$\Delta=2.5$	$\Delta=3$	$\Delta=\infty$
1	.0016	.0016	.0016	.0016	.0016	.0016	.0016	.0016
1.1	.0016	.0017	.0018	.0020	.0023	.0026	.0027	.0043
1.2	.0016	.0018	.0019	.0025	.0032	.0039	.0044	.0099
1.5	.0016	.0020	.0025	.0040	.0070	.0101	.0130	.0566
2	.0016	.0023	.0033	.0071	.0166	.0283	.0404	.2597
2.5	.0016	.0026	.0040	.0106	.0293	.0545	.0820	.5315
3	.0016	.0028	.0046	.0142	.0439	.0858	.1322	.7492
∞	.0016	.0060	.0169	.1247	.5274	.8448	.9640	1

Supplemental Table 9. Simultaneous sensitivity analysis for selected values of Δ and Γ , Matching Specification 1. Petitioner-better, large-difference cases are considered treated; balance is evaluated in Supplemental Table 5. See text for details.

Γ	$\Delta=1$	$\Delta=1.1$	$\Delta=1.2$	$\Delta=1.5$	$\Delta=2$	$\Delta=2.5$	$\Delta=3$	$\Delta=\infty$
1	.1804	.1804	.1804	.1804	.1804	.1804	.1804	.1804
1.1	.1804	.1872	.1935	.2098	.2299	.2440	.2543	.3213
1.2	.1804	.1935	.2059	.2388	.2809	.3110	.3332	.4785
1.5	.1804	.2102	.2395	.3210	.4292	.5059	.5605	.8414
2	.1804	.2321	.2852	.4361	.6258	.7422	.8123	.9913
2.5	.1804	.2488	.3209	.5251	.7542	.8689	.9244	.9997
3	.1804	.2620	.3493	.5928	.8348	.9317	.9691	1
∞	.1804	.3791	.5964	.9525	.9998	1	1	1

Supplemental Table 10. Simultaneous sensitivity analysis for selected values of Δ and Γ , Matching Specification 1. Respondent-better, positive-difference cases are considered treated; balance is evaluated in Supplemental Table 2. See text for details.

Γ	$\Delta=1$	$\Delta=1.1$	$\Delta=1.2$	$\Delta=1.5$	$\Delta=2$	$\Delta=2.5$	$\Delta=3$	$\Delta=\infty$
1	.1424	.1424	.1424	.1424	.1424	.1424	.1424	.1424
1.1	.1424	.1478	.1529	.1662	.1829	.1948	.2034	.2588
1.2	.1424	.1529	.1630	.1900	.2254	.2513	.2705	.3966
1.5	.1424	.1665	.1905	.2590	.3541	.4247	.4766	.7651
2	.1424	.1845	.2287	.3599	.5389	.6591	.7371	.9773
2.5	.1424	.1984	.2590	.4416	.6720	.8040	.8757	.9987
3	.1424	.2094	.2836	.5065	.7631	.8859	.9410	.9999
∞	.1424	.3081	.5063	.9109	.9991	1	1	1

Supplemental Table 11. Simultaneous sensitivity analysis for selected values of Δ and Γ , Matching Specification 1. Respondent-better, medium-difference cases are considered treated; balance is evaluated in Supplemental Table 4. See text for details.

Γ	$\Delta=1$	$\Delta=1.1$	$\Delta=1.2$	$\Delta=1.5$	$\Delta=2$	$\Delta=2.5$	$\Delta=3$	$\Delta=\infty$
1	.0343	.0343	.0343	.0343	.0343	.0343	.0343	.0343
1.1	.0343	.0359	.0374	.0415	.0467	.0505	.0534	.0745
1.2	.0343	.0374	.0405	.0489	.0607	.0699	.0771	.1356
1.5	.0343	.0415	.0491	.0726	.1106	.1436	.1712	.4103
2	.0343	.0471	.0617	.1127	.2055	.2903	.3604	.8149
2.5	.0343	.0515	.0722	.1506	.2988	.4308	.5333	.9618
3	.0343	.0550	.0812	.1852	.3830	.5478	.6660	.9940
∞	.0343	.0932	.1922	.6094	.9615	.9985	1	1

Supplemental Table 12. Simultaneous sensitivity analysis for selected values of Δ and Γ , Matching Specification 1. Respondent-better, large-difference cases are considered treated; balance is evaluated in Supplemental Table 6. See text for details.

Γ	$\Delta=1$	$\Delta=1.1$	$\Delta=1.2$	$\Delta=1.5$	$\Delta=2$	$\Delta=2.5$	$\Delta=3$	$\Delta=\infty$
1	.3189	.3189	.3189	.3189	.3189	.3189	.3189	.3189
1.1	.3189	.3279	.3360	.3567	.3815	.3983	.4104	.4864
1.2	.3189	.3361	.3519	.3924	.4412	.4745	.4982	.6422
1.5	.3189	.3573	.3933	.4859	.5953	.6653	.7120	.9176
2	.3189	.3841	.4462	.6022	.7657	.8513	.8979	.9969
2.5	.3189	.4040	.4853	.6827	.8602	.9332	.9643	.9999
3	.3189	.4193	.5152	.7392	.9128	.9684	.9869	1
∞	.3189	.5442	.7397	.9784	.9999	1	1	1

Supplemental Table 13. Simultaneous sensitivity analysis for selected values of Δ and Γ , Matching Specification 2. Respondent-better, positive-difference cases are considered treated; balance is evaluated in Supplemental Table 2. See text for details.

Γ	$\Delta=1$	$\Delta=1.1$	$\Delta=1.2$	$\Delta=1.5$	$\Delta=2$	$\Delta=2.5$	$\Delta=3$	$\Delta=\infty$
1	.1620	.1620	.1620	.1620	.1620	.1620	.1620	.1620
1.1	.1620	.1673	.1721	.1847	.2004	.2116	.2198	.2753
1.2	.1620	.1721	.1817	.2071	.2397	.2635	.2813	.4041
1.5	.1620	.1850	.2075	.2701	.3553	.4184	.4652	.7470
2	.1620	.2018	.2425	.3600	.5186	.6280	.7018	.9677
2.5	.1620	.2146	.2699	.4318	.6384	.7648	.8391	.9974
3	.1620	.2247	.2918	.4887	.7237	.8485	.9120	.9998
∞	.1620	.3185	.4984	.8848	.9974	1	1	1

Supplemental Table 14. Simultaneous sensitivity analysis for selected values of Δ and Γ , Matching Specification 2. Respondent-better, medium-difference cases are considered treated; balance is evaluated in Supplemental Table 4. See text for details.

Γ	$\Delta=1$	$\Delta=1.1$	$\Delta=1.2$	$\Delta=1.5$	$\Delta=2$	$\Delta=2.5$	$\Delta=3$	$\Delta=\infty$
1	.1283	.1283	.1283	.1283	.1283	.1283	.1283	.1283
1.1	.1283	.1317	.1348	.1428	.1530	.1604	.1660	.2087
1.2	.1283	.1348	.1408	.1570	.1780	.1937	.2057	.3027
1.5	.1283	.1430	.1572	.1967	.2519	.2949	.3286	.5932
2	.1283	.1537	.1794	.2545	.3632	.4478	.5123	.8870
2.5	.1283	.1621	.1972	.3029	.4550	.5691	.6506	.9753
3	.1283	.1687	.2117	.3432	.5295	.6602	.7479	.9954
∞	.1283	.2373	.3689	.7386	.9722	.9984	.9999	1

Supplemental Table 15. Simultaneous sensitivity analysis for selected values of Δ and Γ , Matching Specification 2. Respondent-better, large-difference cases are considered treated; balance is evaluated in Supplemental Table 6. See text for details.

Covariate	Conference vote	Report vote
Oral Argument Grade	0.323*** (0.083)	0.339*** (0.056)
Ideological Affinity	0.310*** (0.048)	0.354*** (0.053)
Case Complexity	0.004 (0.078)	0.035 (0.062)
OAG × Case Complexity	0.070 (0.157)	-0.041 (0.121)
OAG × Ideological Affinity	0.030* (0.014)	0.037** (0.012)
US Appellant	0.413*** (0.105)	0.411*** (0.092)
US Appellee	-0.839*** (0.196)	-0.896*** (0.082)
SG Appellant	0.268* (0.112)	0.197* (0.097)
SG Appellee	0.267 (0.073)	-0.070 (0.154)
Washington Elite Appellant	0.227 (0.128)	0.209* (0.089)
Washington Elite Appellee	-0.048 (0.177)	0.075 (0.144)
Law Professor Appellant	-0.385 (0.236)	-0.708 (0.180)
Law Professor Appellee	-0.919* (0.416)	-1.085*** (0.204)
Clerk Appellant	0.382** (0.128)	-0.116 (0.102)
Clerk Appellee	-0.306 (0.278)	0.196 (0.238)
Elite Law School Appellant	-0.135 (0.102)	-0.069 (0.109)
Elite Law School Appellee	-0.001 (0.115)	-0.066 (0.074)
Difference in Litigating Experience	-0.045 (0.026)	-0.116 (0.016)
Constant	0.254 (0.073)	0.436 (0.054)

Supplemental Table 16. Factors impacting conference merits vote and final, report vote. Dependent variable: Did justice vote to reverse? (1=yes.) Logit coefficients; standard errors in parentheses, clustered on justice. $N = 3471$ (conference vote); $N = 3874$ (report vote). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

References

- Gangl, Markus. 2004. “rbounds: module to perform Rosenbaum sensitivity analysis for average treatment effects on the treated.” <http://fmwww.bc.edu/RePEc/bocode/r/rbounds.ado>.
- Keele, Luke. 2014. *rbounds*. R Package Version 2.0.
- Lempert, Daniel. 2015. “Simultaneous Sensitivity Analysis in Stata: arsimens and pairsim-sens.” *Observational Studies* 1(1): 74–90.
- Rosenbaum, Paul R. 2012. “An exact, adaptive test with superior design sensitivity in an observational study of treatments for ovarian cancer.” *Annals of Applied Statistics* 6(0): 83–105.
- Rosenbaum, Paul R. 2015. “Two R Packages for Sensitivity Analysis in Observational Studies.” *Observational Studies* 1(1): 1–17.
- Small, Dylan, Jing Cheng, M. Elizabeth Halloran and Paul R. Rosenbaum. 2013. “Case Definition and Design Sensitivity.” *Journal of the American Statistical Association* 108(504): 1457–1468.
- Subramanian, Hemang C and Eric Overby. 2014. “mbsens: module to compute sensitivity metric for matched sample using McNemar’s test.” <http://fmwww.bc.edu/RePEc/bocode/m/mbsens.ado>.