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Appendix - Implausible states: prevalence of EQ-5D-5L states in the general population and its effect on health state valuation

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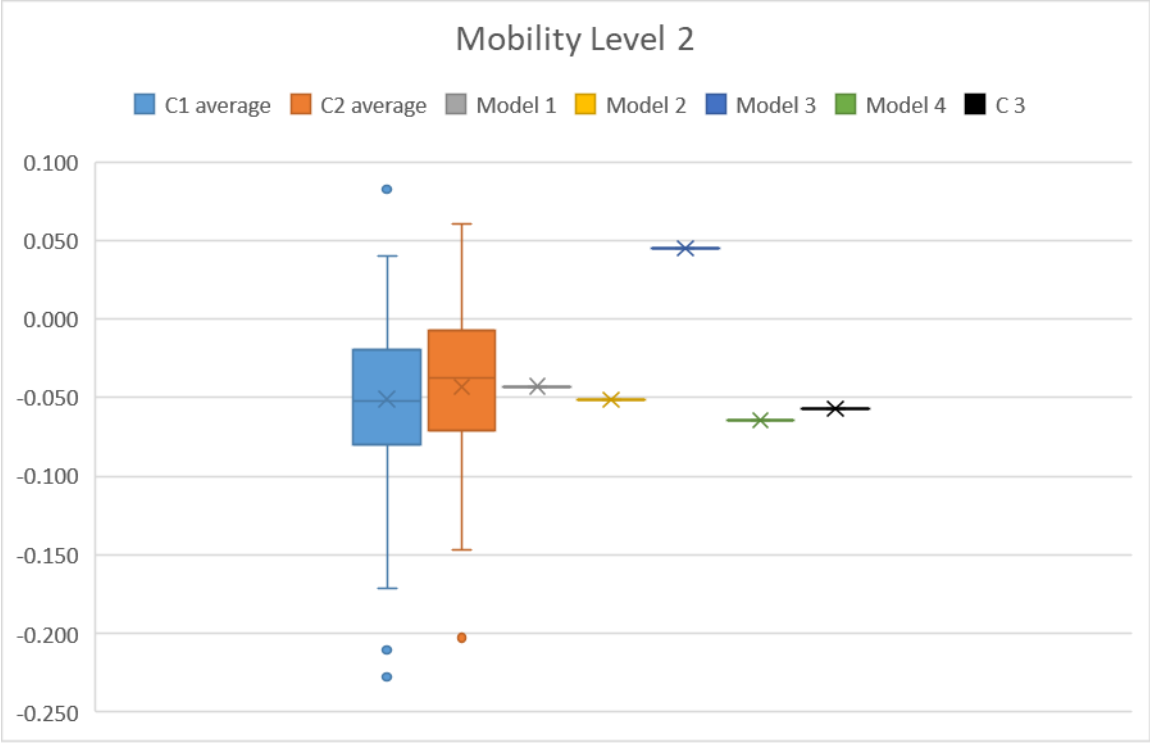
Summary

To examine the change on parameter estimates between the full model (C3), the random comparator models and the non-random treatment models, we aimed to inspect what part is due to the exclusion of observations itself and which is caused by excluding health states of perceived implausibility and empirically rare health states. We used box plots for each dimension-level to locate the full model parameter and implausibility based exclusions on the distribution of random exclusions. Moreover, to assess the balance of the resulting designs we present the dimension-level representation and Pearson correlation matrices for models T1 to T4 and the full model C3 (Section E).

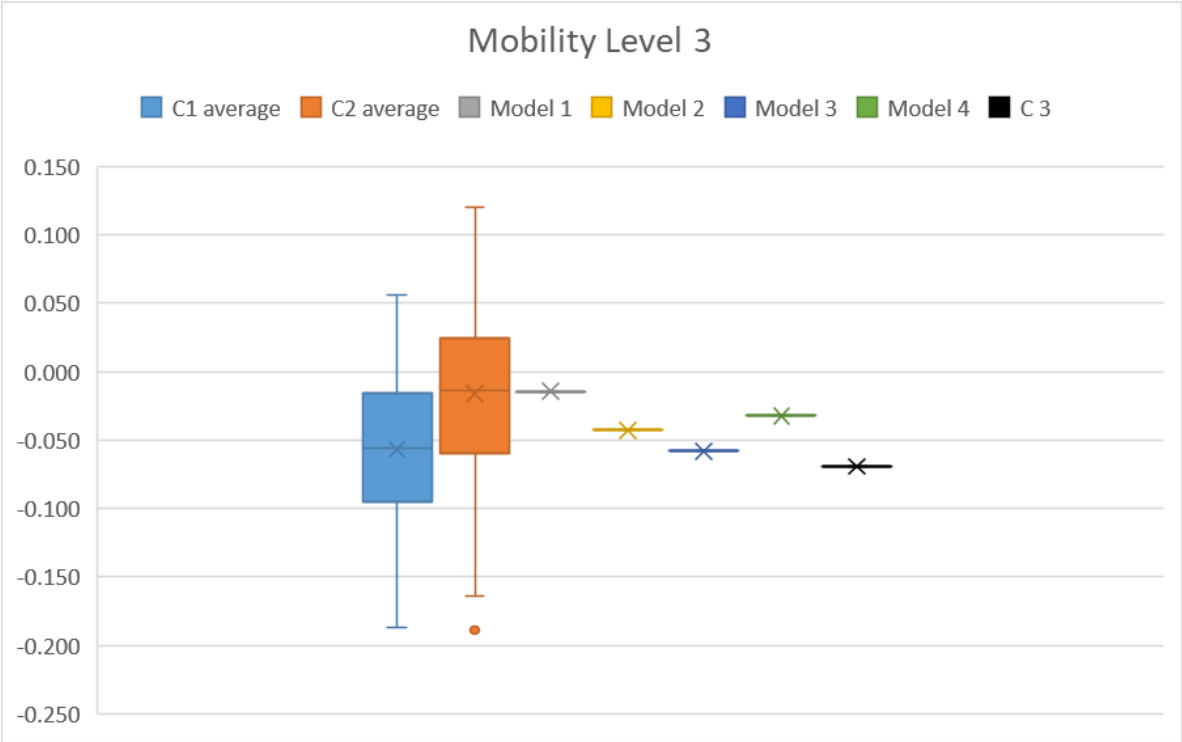
Appendix section C presents 20 box plots for each dimension-level estimate to locate the implausible exclusion on the distribution of random exclusions. The parameter estimates for C3 and models T1 – T4 can be found in Appendix table 21 along with the first and third quartile for C1 and C2 (Section D). The estimates from models T1 and T4 are most frequently lying in the tails of the C1 and C2 distribution, i.e. 15 (and 13) of the 20 coefficients are not located between the first and third quartile of the C1 (respectively C2) distribution for the T1 model, whereas 12 (and 10) of the estimates from T4 are not represented by the middle 50% of the C1 (C2) distribution. The parameters of T2 and T3 are less often outlying (see Appendix Table 21).

Section C - locating the implausible exclusion on the distribution of random exclusions

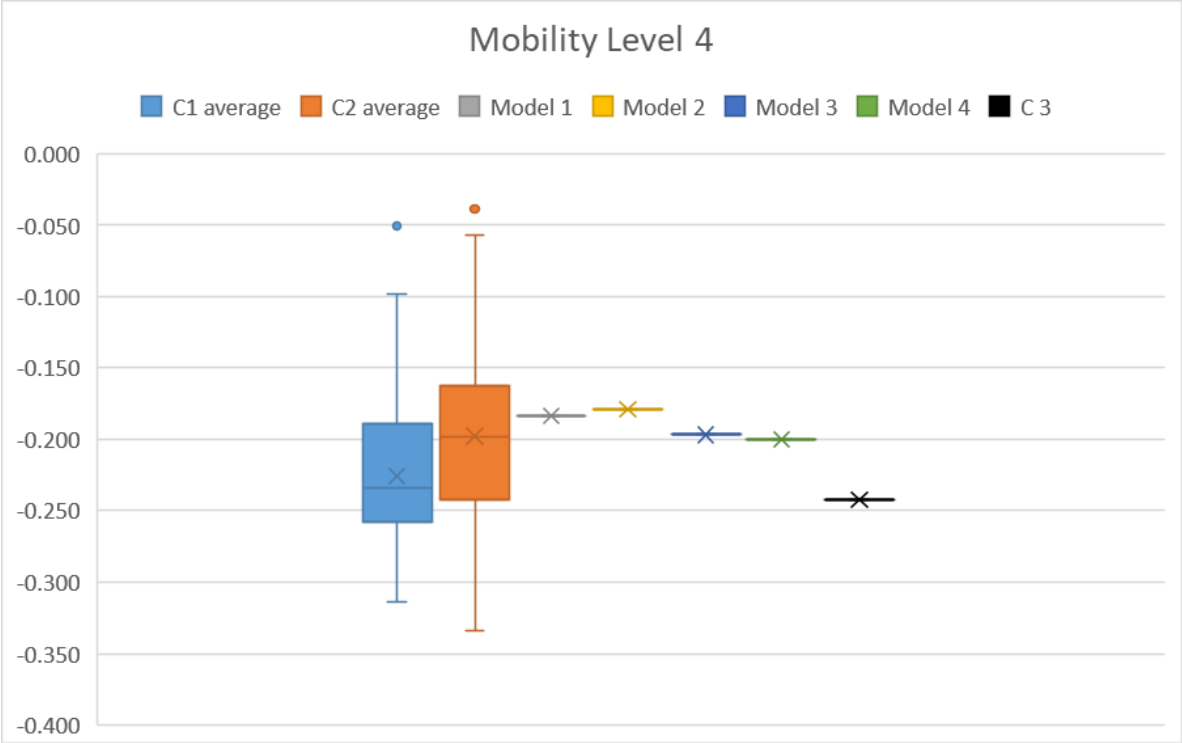
Appendix figure 1: Box plot of the Mobility level 2 coefficients for two random comparator models based on 100 draws each and five one-shot models.



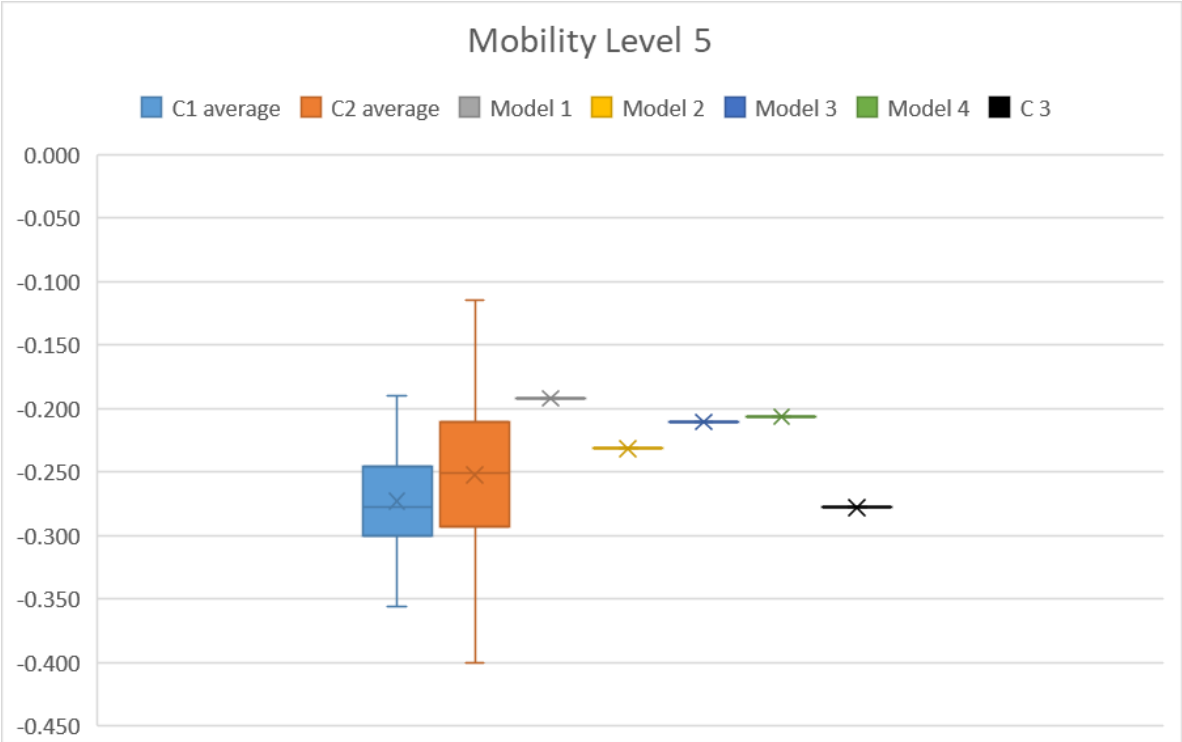
Appendix figure 2: Box plot of the Mobility level 3 coefficients for two random comparator models based on 100 draws each and five one-shot models.



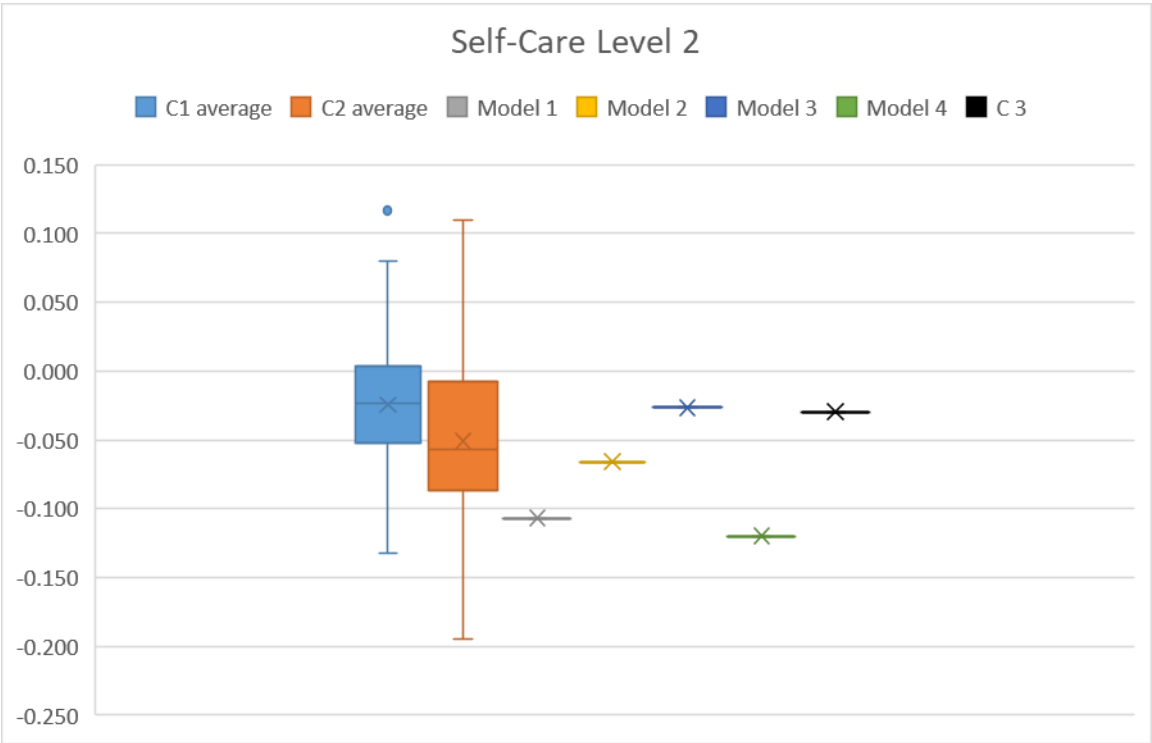
Appendix figure 3: Box plot of the Mobility level 4 coefficients for two random comparator models based on 100 draws each and five one-shot models.



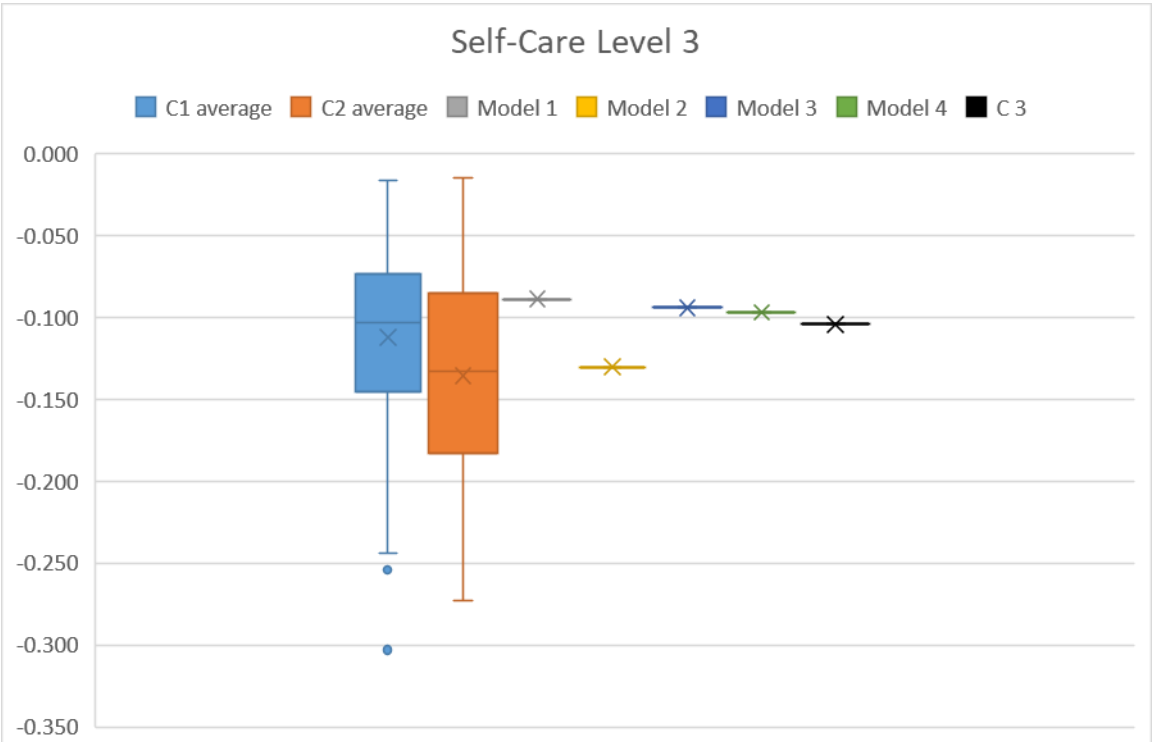
Appendix figure 4: Box plot of the Mobility level 5 coefficients for two random comparator models based on 100 draws each and five one-shot models.



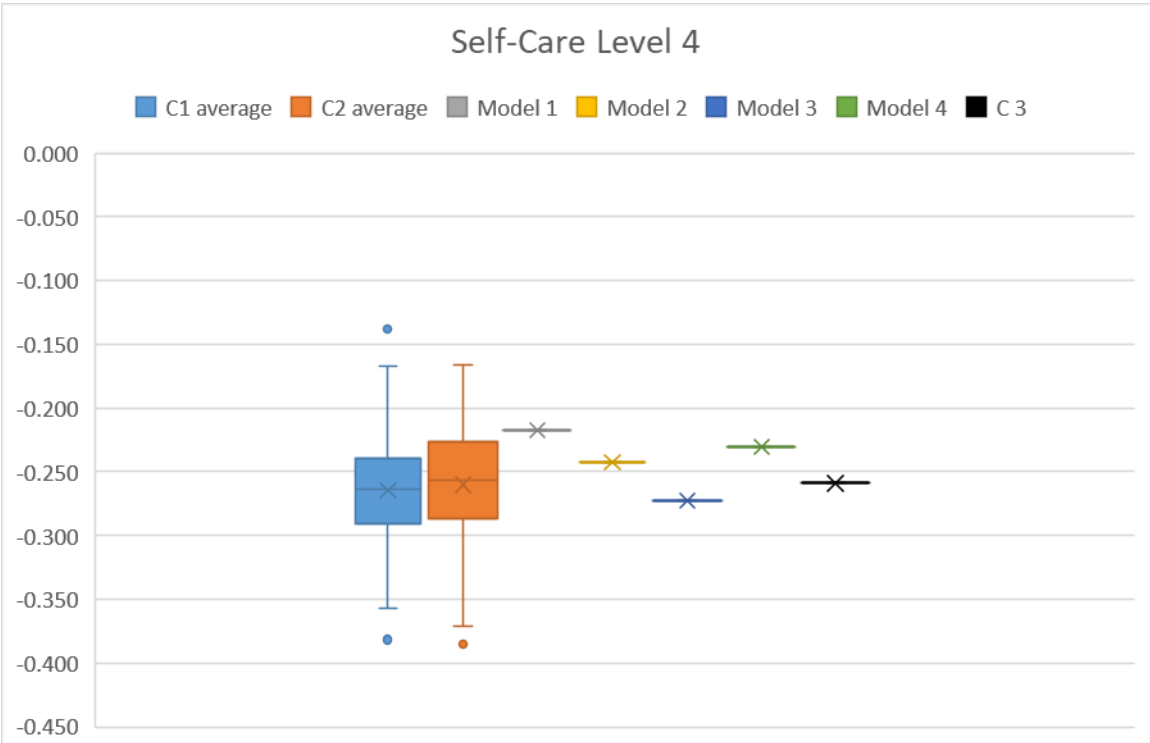
Appendix figure 5: Box plot of the Self-care level 2 coefficients for two random comparator models based on 100 draws each and five one-shot models.



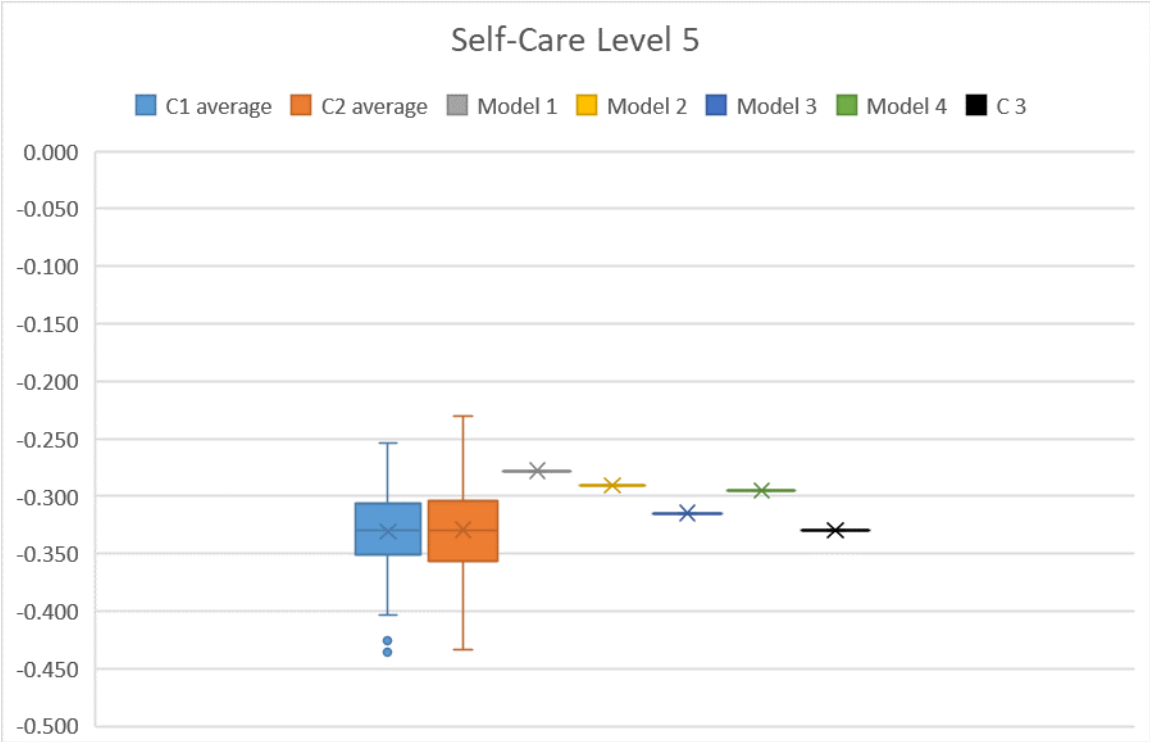
Appendix figure 6: Box plot of the Self-care level 3 coefficients for two random comparator models based on 100 draws each and five one-shot models.



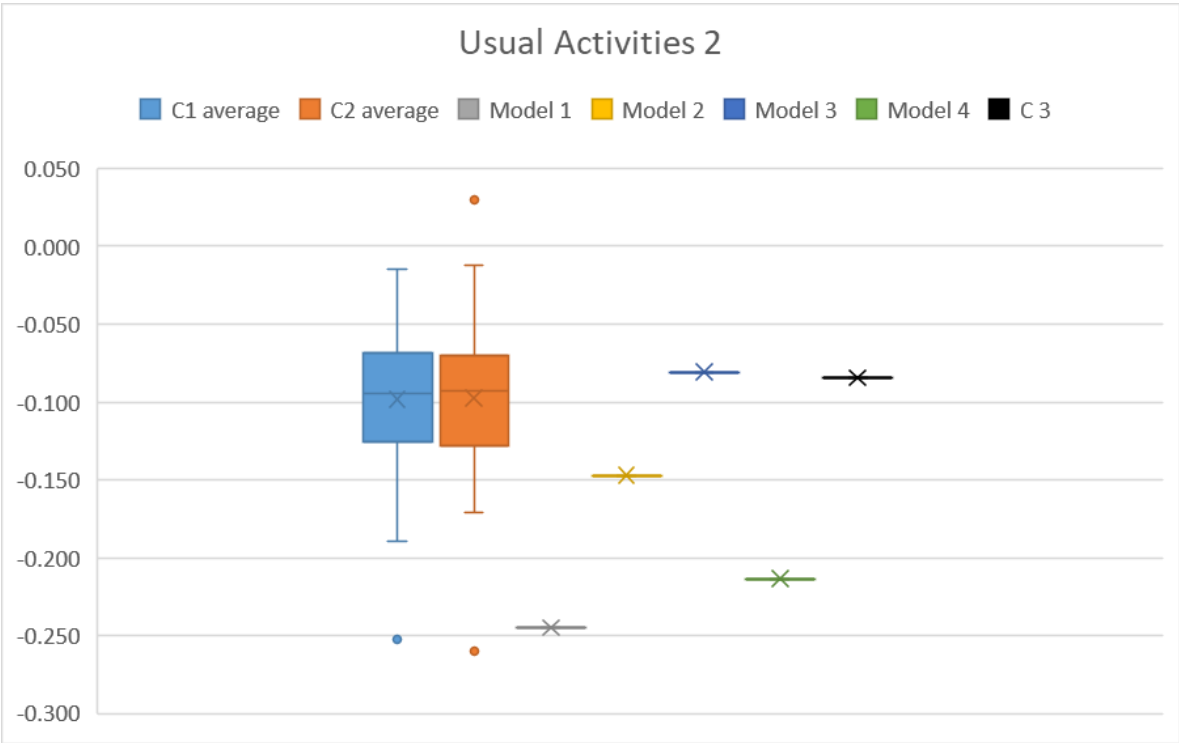
Appendix figure 7: Box plot of the Self-care level 4 coefficients for two random comparator models based on 100 draws each and five one-shot models.



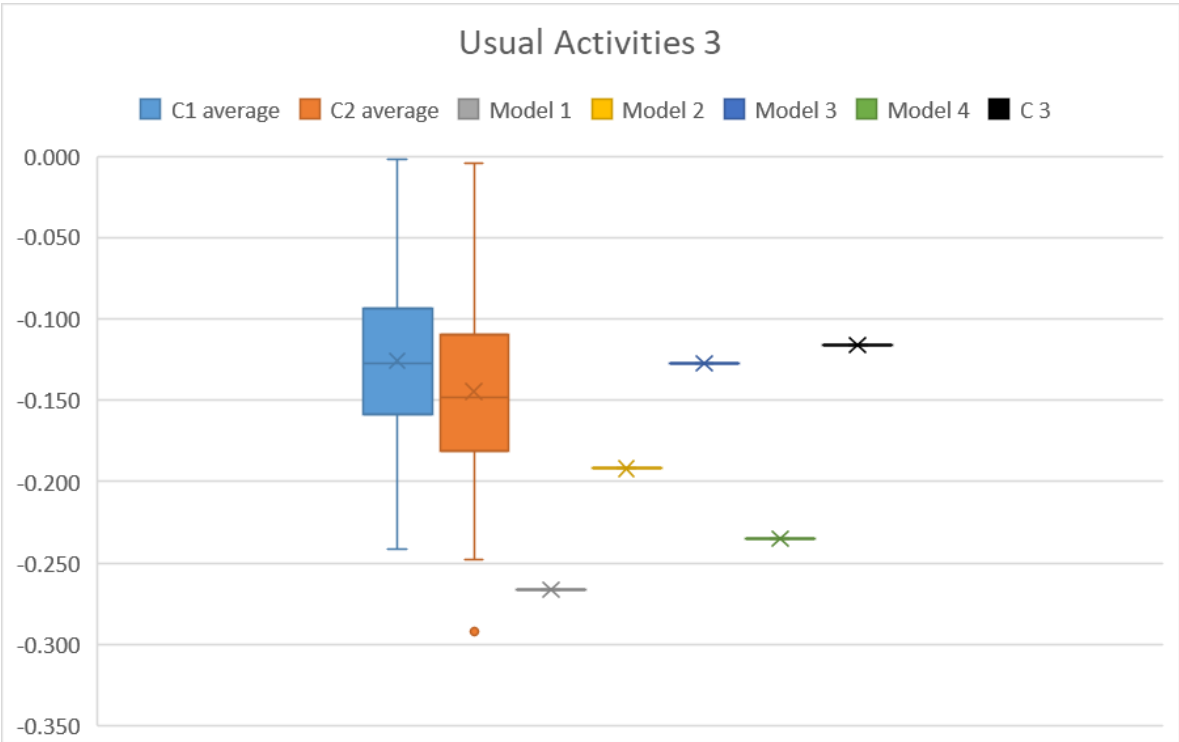
Appendix figure 8: Box plot of the Self-care level 5 coefficients for two random comparator models based on 100 draws each and five one-shot models.



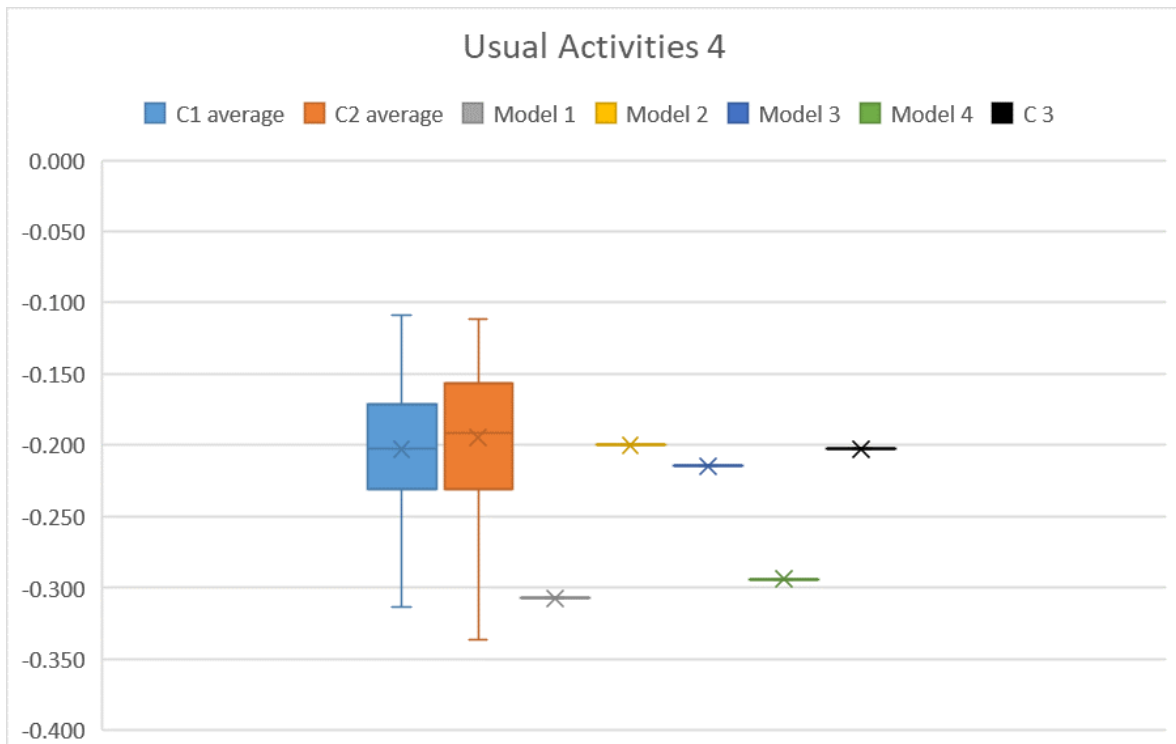
Appendix figure 9: Box plot of the Usual activities level 2 coefficients for two random comparator models based on 100 draws each and five one-shot models.



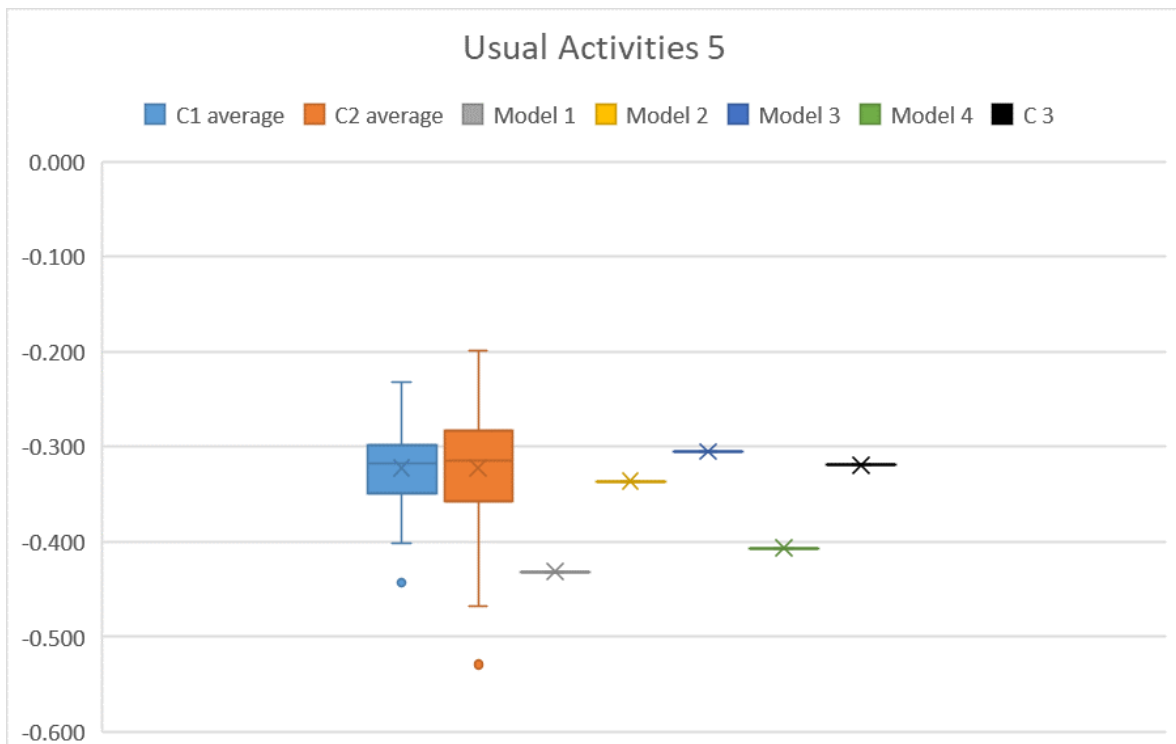
Appendix figure 10: Box plot of the Usual activities level 3 coefficients for two random comparator models based on 100 draws each and five one-shot models.



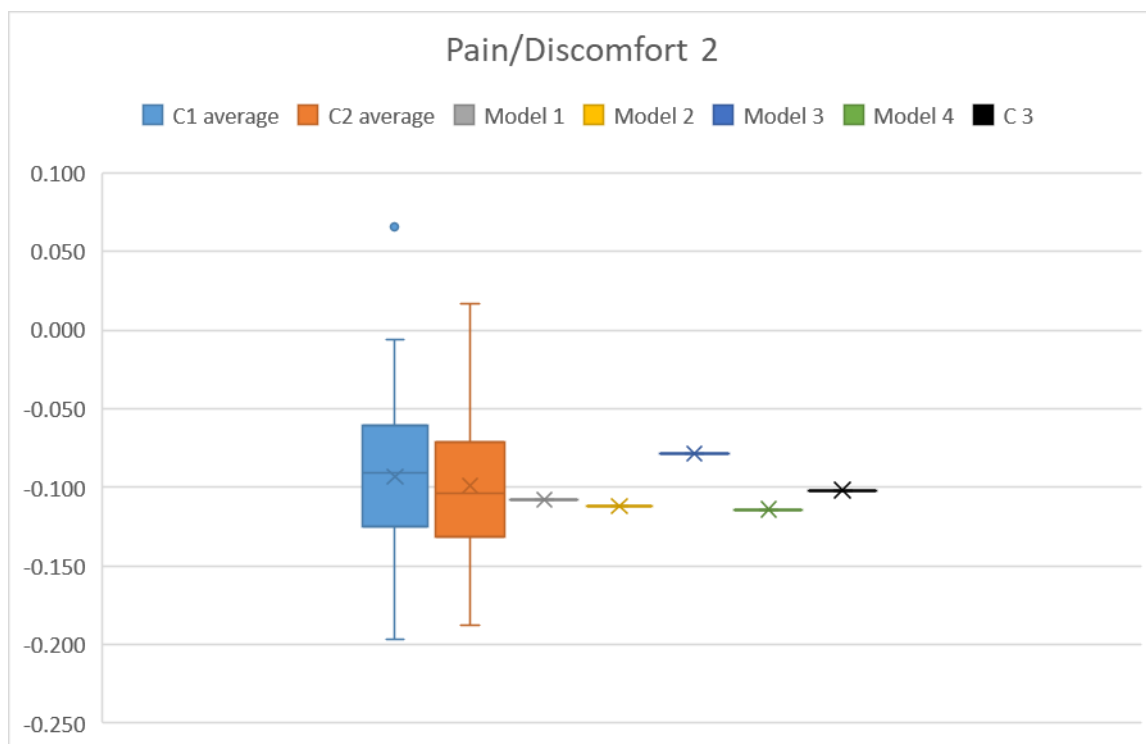
Appendix figure 11: Box plot of the Usual activities level 4 coefficients for two random comparator models based on 100 draws each and five one-shot models.



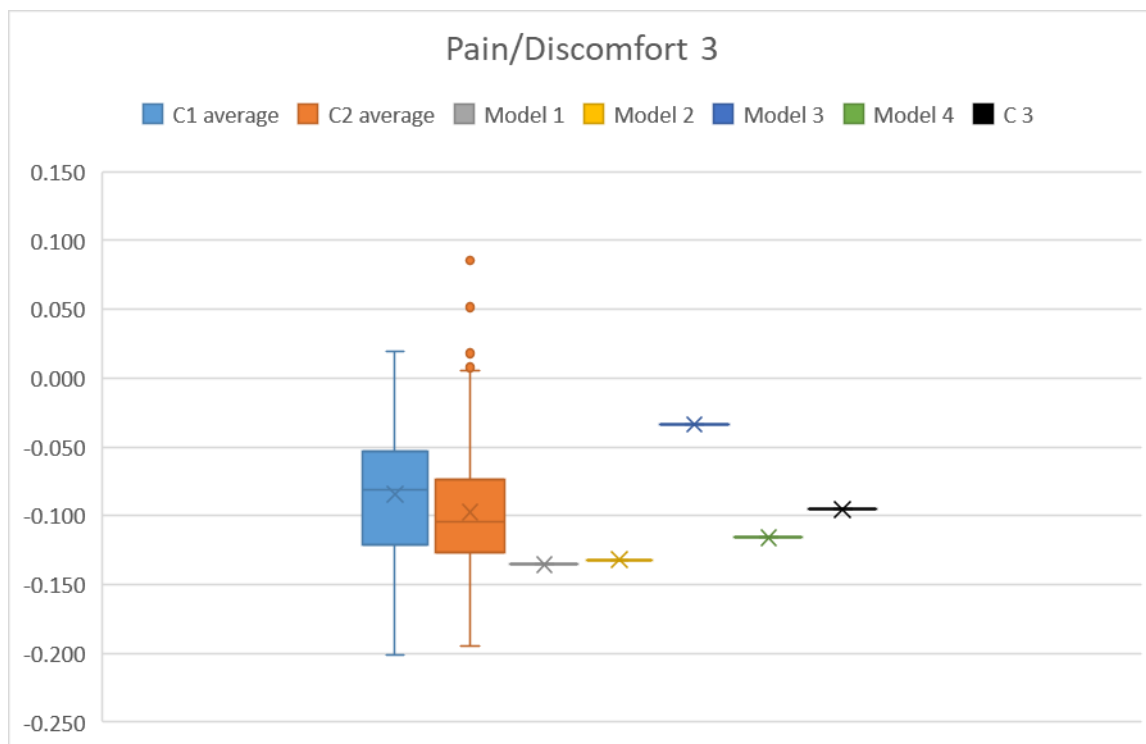
Appendix figure 12: Box plot of the Usual activities level 5 coefficients for two random comparator models based on 100 draws each and five one-shot models.



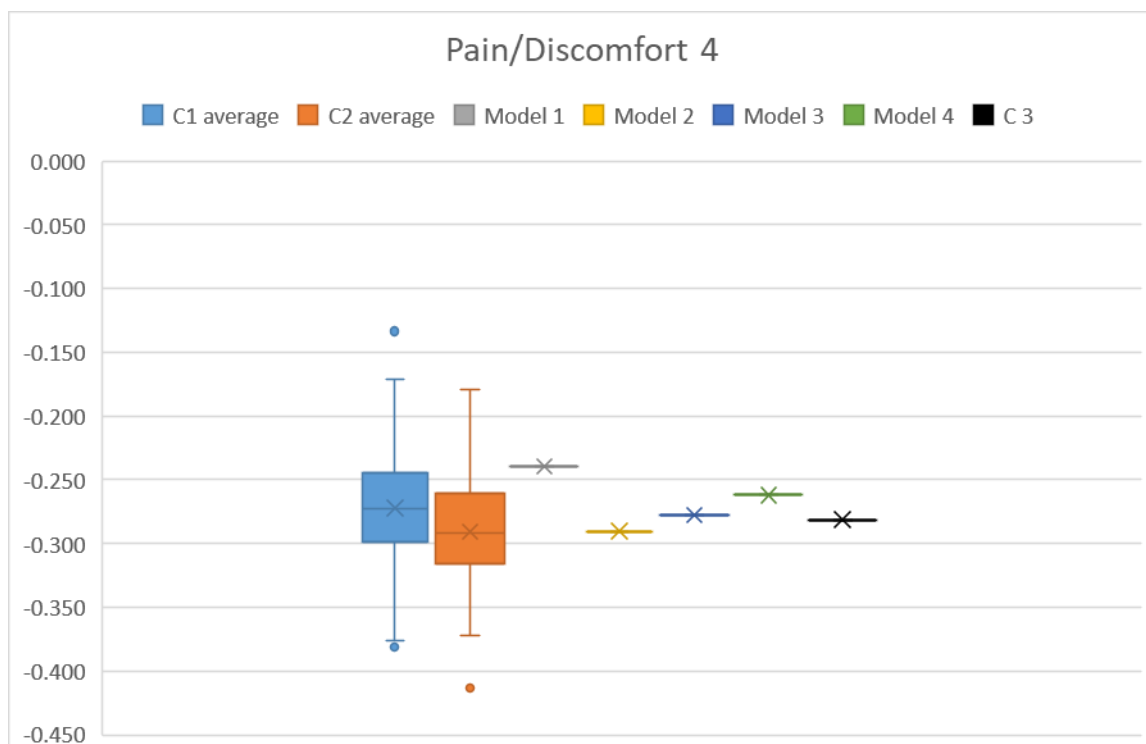
Appendix figure 13: Box plot of the Pain/Discomfort level 2 coefficients for two random comparator models based on 100 draws each and five one-shot models.



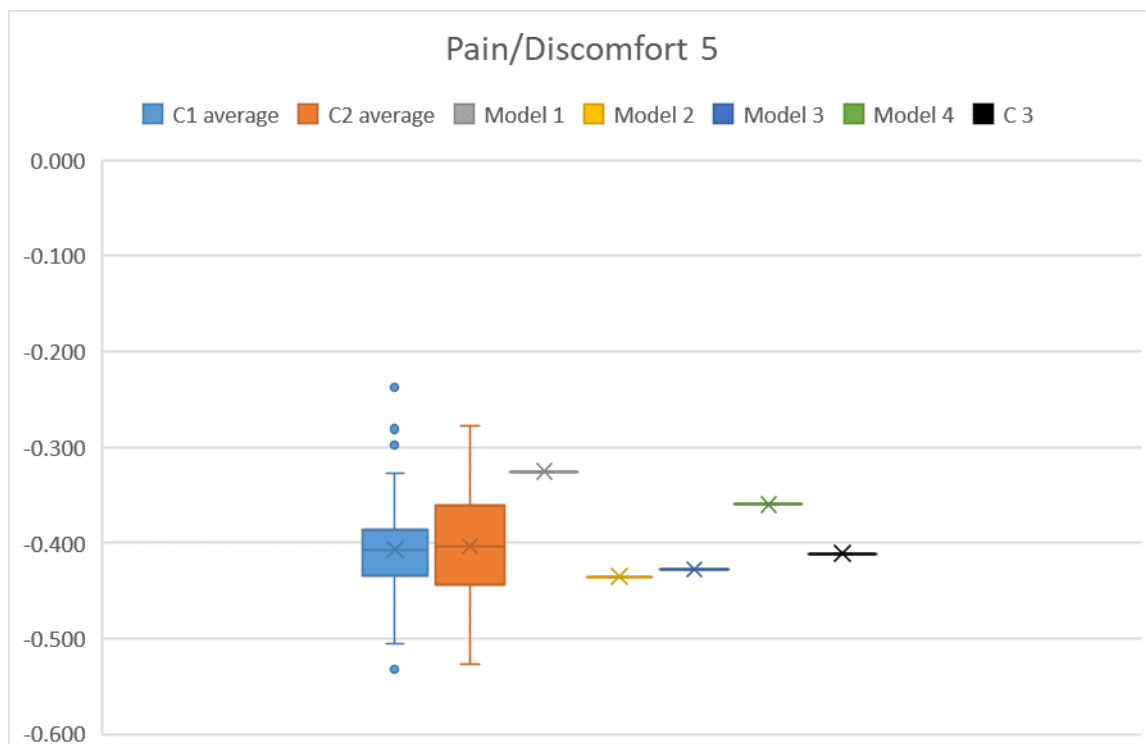
Appendix figure 14: Box plot of the Pain/Discomfort level 3 coefficients for two random comparator models based on 100 draws each and five one-shot models.



Appendix figure 15: Box plot of the Pain/Discomfort level 4 coefficients for two random comparator models based on 100 draws each and five one-shot models.



Appendix figure 16: Box plot of the Pain/Discomfort level 5 coefficients for two random comparator models based on 100 draws each and five one-shot models.



Section D

Appendix Table 21: Anchored model coefficients for the four treatment models, the full model (C3) and first and third quartiles for two random comparator models based on 100 draws each

	Model 1	Model 2	Model 3	Model 4	C 3	C 1 avg		C 2 avg	
						first quartile	third quartile	first quartile	third quartile
MO2	-0.043	-0.051	0.045	-0.064	-0.057	-0.080	-0.019	-0.071	-0.007
MO3	-0.014	-0.043	-0.058	-0.032	-0.069	-0.096	-0.015	-0.060	0.024
MO4	-0.184	-0.179	-0.197	-0.200	-0.242	-0.258	-0.189	-0.242	-0.162
MO5	-0.192	-0.232	-0.211	-0.206	-0.278	-0.300	-0.246	-0.293	-0.210
SC2	-0.107	-0.066	-0.027	-0.120	-0.029	-0.052	0.004	-0.087	-0.008
SC3	-0.089	-0.131	-0.094	-0.097	-0.105	-0.145	-0.074	-0.183	-0.085
SC4	-0.217	-0.242	-0.273	-0.231	-0.259	-0.290	-0.239	-0.286	-0.227
SC5	-0.278	-0.291	-0.315	-0.295	-0.330	-0.351	-0.306	-0.356	-0.304
UA2	-0.245	-0.147	-0.081	-0.213	-0.085	-0.126	-0.068	-0.128	-0.071
UA3	-0.266	-0.192	-0.127	-0.235	-0.116	-0.159	-0.093	-0.181	-0.110
UA4	-0.308	-0.200	-0.215	-0.294	-0.203	-0.231	-0.171	-0.231	-0.157
UA5	-0.431	-0.336	-0.305	-0.406	-0.319	-0.349	-0.298	-0.358	-0.283
PD2	-0.108	-0.112	-0.079	-0.114	-0.102	-0.125	-0.061	-0.132	-0.071
PD3	-0.135	-0.132	-0.034	-0.116	-0.095	-0.121	-0.053	-0.127	-0.074
PD4	-0.239	-0.290	-0.278	-0.262	-0.281	-0.298	-0.244	-0.316	-0.260
PD5	-0.326	-0.435	-0.428	-0.360	-0.411	-0.434	-0.386	-0.443	-0.361
AD2	-0.116	-0.126	-0.170	-0.099	-0.109	-0.136	-0.076	-0.148	-0.084
AD3	-0.076	-0.067	-0.160	-0.063	-0.101	-0.132	-0.067	-0.135	-0.054
AD4	-0.199	-0.286	-0.299	-0.198	-0.288	-0.310	-0.256	-0.353	-0.283
AD5	-0.263	-0.324	-0.404	-0.285	-0.359	-0.381	-0.323	-0.375	-0.319
Number of coefficients not between the 1st and 3rd quartile of the comparator distributions									
C 1	15	8	6	12	0				
C 2	13	4	5	10	2				

Section E

Appendix Table 22: EQ-5D-5L dimension-level representation for the original FEDEV experimental design and the resulting four treatment datasets.

Dimension	Level	C3 - do nothing		T1 - Dolan		T2 - Viney		T3 - emp. reported		T4 - emp. unreported	
		Alt A %	Alt B %	Alt A %	Alt B %	Alt A %	Alt B %	Alt A %	Alt B %	Alt A %	Alt B %
MO	L1	20	20	20.9	19.8	22.7	21.6	17.1	23.2	18.6	21.7
	L2	20	20	19.8	23.1	21.6	23.9	19.5	14.6	19.6	20.6
	L3	20	20	22.0	19.8	25	25	22	19.5	23.7	19.6
	L4	20	20	19.8	19.8	14.8	15.9	23.2	20.7	19.6	19.6
	L5	20	20	17.6	17.6	15.9	13.7	18.3	22	18.6	18.6
SC	L1	20	20	22.0	19.8	14.8	14.8	25.6	20.7	22.7	19.6
	L2	20	20	20.9	20.9	21.6	20.5	23.2	23.2	18.6	19.6
	L3	20	20	18.7	23.1	18.2	25	15.8	23.2	19.6	21.7
	L4	20	20	19.8	18.7	20.5	22.7	17.1	13.4	18.6	18.6
	L5	20	20	18.4	17.6	25	17.1	18.3	19.5	20.6	20.6
UA	L1	20	20	6.6	11	13.6	15.9	19.5	13.4	14.4	8.3
	L2	20	20	24.2	23.1	22.7	20.5	12.2	15.9	22.7	22.7
	L3	20	20	20.9	22	17.1	22.7	23.2	26.8	19.6	22.7
	L4	20	20	23.1	20.9	22.7	19.3	19.5	23.2	21.7	22.7
	L5	20	20	25.3	23.1	23.9	21.6	25.6	20.7	21.7	23.7
PD	L1	20	20	20.9	24.2	18.2	22.7	18.3	19.5	22.7	23.7
	L2	20	20	18.7	20.9	19.3	21.6	19.5	19.5	18.6	19.6
	L3	20	20	19.8	20.9	20.5	22.7	25.6	15.9	20.6	19.6
	L4	20	20	18.7	15.4	20.5	15.9	18.3	20.7	18.6	19.6
	L5	20	20	22.0	18.7	21.6	17.1	18.3	24.4	19.6	17.5
AD	L1	20	20	19.8	18.7	21.6	18.2	22	19.5	20.6	20.6
	L2	20	20	19.8	18.7	20.5	20.5	20.7	18.3	22.7	18.6
	L3	20	20	20.9	23.1	18.2	21.6	20.7	25.6	20.6	22.7
	L4	20	20	17.6	23.1	18.2	20.5	19.5	19.5	17.5	20.6
	L5	20	20	22.0	16.5	21.6	19.3	17.1	17.1	18.6	17.5
N		120		90		86		84		90	

Appendix Table 23: Pearson correlation matrix for the full model (original FEDEV zero prior design).

1.000762	-0.05525	0.06906	-0.01381	0.003453	0.020718	0.220168	0.189914	-0.0518	-0.08287	0.124308	-0.04834
-0.055248	1.000781	0.02085	0.041699	0.00834	0.087568	-0.17956	-0.05004	-0.0417	0.058379	0.204326	0.104248
0.06906	0.02085	1.000781	-0.08757	0	0.045869	-0.03453	0.045869	-0.00834	0.02085	-0.11259	0.045869
-0.013812	0.041699	-0.08757	1.000781	0.058379	0.037529	0.158838	0.00417	0.00417	-0.07506	0.01668	0.062549
0.003453	0.00834	0	0.058379	1.000781	0.058379	-0.14848	0.037529	0.104248	0.058379	-0.02919	0.075059
0.020718	0.087568	0.045869	0.037529	0.058379	1.000781	-0.03453	0.154287	0.01251	-0.13344	-0.00834	-0.02919
0.220168	-0.17956	-0.03453	0.158838	-0.14848	-0.03453	1.000762	0.003453	-0.03453	0.020718	0.006906	0.024171
0.189914	-0.05004	0.045869	0.00417	0.037529	0.154287	0.003453	1.000781	0.100078	0.02085	0.120928	0.154287
-0.051795	-0.0417	-0.00834	0.00417	0.104248	0.01251	-0.03453	0.100078	1.000781	0.01668	0.054209	0.045869
-0.082872	0.058379	0.02085	-0.07506	0.058379	-0.13344	0.020718	0.02085	0.01668	1.000781	-0.05421	-0.02085
0.124308	0.204326	-0.11259	0.01668	-0.02919	-0.00834	0.006906	0.120928	0.054209	-0.05421	1.000781	-0.0417
-0.048342	0.104248	0.045869	0.062549	0.075059	-0.02919	0.024171	0.154287	0.045869	-0.02085	-0.0417	1.000781

Appendix Table 24: Pearson correlation matrix for the resulting design of treatment model 1.

1	-0.01648	0.131197	0.028328	-0.02784	0.063181	0.1228	0.260559	-0.08948	0.001724	0.121772	-0.0308
-0.016476	1	0.153477	0.156551	-0.00234	0.1859	-0.17503	-0.00049	-0.00428	0.007535	0.237525	0.173596
0.131197	0.153477	1	-0.03634	-0.02936	0.109871	-0.01665	0.01255	0.00469	0.078095	-0.07036	-0.03324
0.028328	0.156551	-0.03634	1	0.098057	0.021051	0.066224	0.008091	-0.10788	-0.09368	0.095013	0.130749
-0.027837	-0.00234	-0.02936	0.098057	1	0.043693	-0.12441	0.112682	0.23498	0.064392	0.038427	0.068733
0.063181	0.1859	0.109871	0.021051	0.043693	1	0.034079	0.171317	-0.00847	-0.10831	-0.01672	0.050241
0.1228	-0.17503	-0.01665	0.066224	-0.12441	0.034079	1	0.053403	-0.10822	0.034209	0.002766	0.10248
0.260559	-0.00049	0.01255	0.008091	0.112682	0.171317	0.053403	1	0.157754	0.116255	0.178239	0.128019
-0.089482	-0.00428	0.00469	-0.10788	0.23498	-0.00847	-0.10822	0.157754	1	0.188615	-0.06556	0.094217
0.001724	0.007535	0.078095	-0.09368	0.064392	-0.10831	0.034209	0.116255	0.188615	1	0.029368	-0.01646
0.121772	0.237525	-0.07036	0.095013	0.038427	-0.01672	0.002766	0.178239	-0.06556	0.029368	1	0.129021
-0.030798	0.173596	-0.03324	0.130749	0.068733	0.050241	0.10248	0.128019	0.094217	-0.01646	0.129021	1

Appendix Table 25: Pearson correlation matrix for the resulting design of treatment model 2.

1	-0.013	0.142164	-0.00581	-0.0143	0.0313	0.123714	0.196902	0.054582	-0.08138	0.14107	0.004415
-0.012995	1	0.25525	0.237934	0.016295	0.184716	-0.0772	-0.0177	0.018339	-0.02123	0.140477	0.166322
0.142164	0.25525	1	-0.11897	0.021004	0.047078	0.005969	0.060204	0.03887	0.14662	0.019661	-0.01433
-0.005814	0.237934	-0.11897	1	0.042854	0.055823	0.05296	0.025474	-0.12424	-0.13209	-0.00174	0.10121
-0.014297	0.016295	0.021004	0.042854	1	0.036638	-0.19766	0.013365	0.170877	-0.01833	0.030518	0.079012
0.0313	0.184716	0.047078	0.055823	0.036638	1	-0.03965	0.049276	-0.05108	-0.10779	0.060546	0.007626
0.123714	-0.0772	0.005969	0.05296	-0.19766	-0.03965	1	0.074871	-0.07002	-0.06383	0.015236	0.148458
0.196902	-0.0177	0.060204	0.025474	0.013365	0.049276	0.074871	1	0.224871	0.148201	0.159326	0.142463
0.054582	0.018339	0.03887	-0.12424	0.170877	-0.05108	-0.07002	0.224871	1	0.08666	-0.03869	0.172049
-0.081375	-0.02123	0.14662	-0.13209	-0.01833	-0.10779	-0.06383	0.148201	0.08666	1	-0.03436	-0.03731
0.14107	0.140477	0.019661	-0.00174	0.030518	0.060546	0.015236	0.159326	-0.03869	-0.03436	1	0.116947
0.004415	0.166322	-0.01433	0.10121	0.079012	0.007626	0.148458	0.142463	0.172049	-0.03731	0.116947	1

Appendix Table 26: Pearson correlation matrix for the resulting design of treatment model 3.

1	0.022298	-0.04662	-0.03506	0.067935	0.056123	0.098348	0.201773	-0.07173	-0.06031	0.067799	0.012347
0.022298	1	0.045168	0.027214	-0.01561	0.209367	-0.19772	0.001136	0.018316	0.072156	0.224677	0.174077
-0.046615	0.045168	1	0.026336	0.023669	0.022987	-0.07125	0.09906	0.048114	-0.04663	-0.05155	0.110969
-0.035055	0.027214	0.026336	1	0.005146	0.042384	0.126398	-0.06894	-0.142	0.06399	0.061746	0.043281
0.067935	-0.01561	0.023669	0.005146	1	-0.00536	-0.18091	0.092583	-0.02383	0.1625	0.024268	0.041552
0.056123	0.209367	0.022987	0.042384	-0.00536	1	-0.09481	0.176251	-0.03685	-0.11608	-0.03947	0.097995
0.098348	-0.19772	-0.07125	0.126398	-0.18091	-0.09481	1	-0.08205	-0.1066	0.093009	-0.04533	-0.00449
0.201773	0.001136	0.09906	-0.06894	0.092583	0.176251	-0.08205	1	0.127608	0.088352	0.154465	0.063516
-0.071732	0.018316	0.048114	-0.142	-0.02383	-0.03685	-0.1066	0.127608	1	0.173429	0.059132	-0.01028
-0.060312	0.072156	-0.04663	0.06399	0.1625	-0.11608	0.093009	0.088352	0.173429	1	-0.00941	0.072111
0.067799	0.224677	-0.05155	0.061746	0.024268	-0.03947	-0.04533	0.154465	0.059132	-0.00941	1	0.024736
0.012347	0.174077	0.110969	0.043281	0.041552	0.097995	-0.00449	0.063516	-0.01028	0.072111	0.024736	1

Appendix Table 27: Pearson correlation matrix for the resulting design of treatment model 4.

1	-0.0028	0.070627	0.06743	0.032066	0.058852	0.14348	0.212357	-0.11125	-0.08955	0.176204	-0.00218
-0.002796	1	0.040031	0.046174	0.006104	0.128459	-0.18774	-0.02344	-0.00027	0.077896	0.207268	0.166611
0.070627	0.040031	1	-0.09532	0.001076	0.090796	-0.01935	0.098121	-0.014	0.094618	-0.08223	0.025638
0.06743	0.046174	-0.09532	1	0.120261	0.161537	0.102402	0.059487	-0.03003	-0.08765	-0.02279	0.06247
0.032066	0.006104	0.001076	0.120261	1	0.052125	-0.13801	0.159805	0.204084	0.099986	-0.01451	0.067842
0.058852	0.128459	0.090796	0.161537	0.052125	1	-0.00541	0.148114	0.041733	-0.18316	-0.09461	0.063823
0.14348	-0.18774	-0.01935	0.102402	-0.13801	-0.00541	1	0.013178	-0.10259	-0.01374	0.028488	0.083795
0.212357	-0.02344	0.098121	0.059487	0.159805	0.148114	0.013178	1	0.093176	0.075552	0.146361	0.16936
-0.111245	-0.00027	-0.014	-0.03003	0.204084	0.041733	-0.10259	0.093176	1	0.060478	0.03945	0.081156
-0.089545	0.077896	0.094618	-0.08765	0.099986	-0.18316	-0.01374	0.075552	0.060478	1	0.060404	0.06997
0.176204	0.207268	-0.08223	-0.02279	-0.01451	-0.09461	0.028488	0.146361	0.03945	0.060404	1	0.015597
-0.002182	0.166611	0.025638	0.06247	0.067842	0.063823	0.083795	0.16936	0.081156	0.06997	0.015597	1