

Online Appendix for:

**“Do Nudges Reduce Borrowing and Consumer Confusion in the
Credit Card Market?”**

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Table A1: Summary statistics for Experiment 1 ‘Statement Disclosures’ and Experiment 2 ‘Automatic Minimum Payment Nudges’ using mean values from the month preceding start of experiment

Outcomes	Experiment 1:	Experiment 2:		
	Statement Disclosure	Automatic	Minimum Payment	Nudge
	Lender 3	Lender 1	Lender 2	Lender 3
Age (years)	46.9	45.79	42.06	44.41
Female (% cards)	45.66	40.54	42.90	40.60
Credit Limit (£)	7,862.74	5,987.56	6,656.97	8,517.67
Credit Score (0-100)	69.91	66.42	63.8	69.24
Purchases Rate (%)	17.97	21.82	22.62	17.75
Balance Transfer (% cards)	48.73	10.51	11.86	52.73
Any Automatic Payment Set-up (% cards)	3.11	99.95	98.73	96.71
Any Automatic Full Payment Set-up (% cards)	0.01	0.00	0.07	0.18
Any Automatic Fixed Payment Set-up (% cards)	1.43	0.02	0.46	5.17
Any Automatic Minimum Payment Set-up (%cards)	1.67	99.93	98.2	91.37
Credit Card Statement Balance (£)	3,532.11	3,423.11	3,630.27	4,430.29
Credit Card Statement Balance Net of Payments (£)	3,236.41	3,191.47	3,352.93	4,186.83
Full Payment in Preceding Cycle (% cards)	13.78	1.80	3.41	9.43
Minimum Payments in Preceding Cycle (% cards)	15.22	76.82	78.46	75.86
Number of Full Payments in Prior 12 Cycles	0.68	1.15	0.77	0.38
Number of Minimum Payments in Prior 12 Cycles	2.03	8.24	8.91	10.33
Any Full Payments In Prior 12 Cycles (% cards)	31.05	34.4	25.57	16.78
All Minimum Payments in Prior 12 Cycles (% cards)	3.01	30.99	34.97	54.23
Credit Card Statement Balance	79.09	91.91	90.55	86.53
Net of Payments (% Statement Balance)				
Total Credit Card Statement Balances (£)	8,916.96	8,834.78	7,979.41	11,664.54
Total Net Credit Card Statement Balances (£)	7,946.98	8,215.13	7,456.34	10,633.98
N	29,683	65,394	60,000	28,364

Table A2: Balance checks between control and treatments for statement nudges and automatic minimum payment nudges

Variable	Treatment	Statement Nudges							
		Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
Age (years)	Time To Repay	46.86	46.82	-0.04	-0.09	-0.37	0.29	0.812	0.238
Female (% cards)		46.08	45.07	-1.01	-2.20	-2.40	0.38	0.153	1.428
Credit Limit (£)		7,889.24	7,802.36	-86.88	-1.10	-218.95	45.20	0.197	1.289
Credit Score (0-100)		70.03	69.75	-0.28**	-0.39	-0.48	-0.07	0.009	2.614
Purchases Rate (%)		17.95	18.02	0.07	0.38	-0.02	0.16	0.129	1.520
Balance Transfer (% cards)		48.75	48.61	-0.14	-0.30	-1.54	1.25	0.840	0.202
Total Credit Card Statement Balances Net of Payments (£)		7,833.88	8,076.06	242.18	3.09	-3.70	488.07	0.054	1.931
Age (years)	Time+Cost To Repay	46.86	47.02	0.16	0.35	-0.17	0.50	0.334	0.966
Female (% cards)		46.08	45.85	-0.23	-0.50	-1.62	1.16	0.744	0.327
Credit Limit (£)		7,889.24	7,920.02	30.78	0.39	-101.76	163.33	0.649	0.455
Credit Score (0-100)		70.03	70.01	-0.02	-0.02	-0.22	0.19	0.880	0.151
Purchases Rate (%)		17.95	17.94	-0.01	-0.03	-0.09	0.08	0.907	0.117
Balance Transfer (% cards)		48.75	48.84	0.09	0.18	-1.31	1.48	0.904	0.121
Total Credit Card Statement Balances Net of Payments (£)		7,833.88	7,929.44	95.56	1.22	-148.72	339.85	0.443	0.767

N (control) = 9,807, N (Time To Repay) = 9,943, N (Time+Cost To Repay) = 9,933 . *** P value < 0.005, ** < 0.01, * < 0.05.

Automatic Minimum Payment Nudges										
Variable	Lender	Treatment	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
Age (years)	1	Time To Repay	45.75	45.80	0.05	0.10	-0.24	0.34	0.747	0.322
Female (% cards)			39.99	40.46	0.47	1.18	-0.66	1.60	0.413	0.819
Credit Limit (£)			6,004.57	6,074.31	69.74	1.16	-29.63	169.11	0.169	1.376
Credit Score (0-100)			66.32	66.50	0.18	0.27	-0.01	0.36	0.063	1.856
Purchases Rate (%)			21.80	21.86	0.06	0.28	-0.04	0.16	0.223	1.218
Balance Transfer (% cards)			10.43	10.69	0.25	2.43	-0.45	0.96	0.482	0.703
Total Credit Card Statement Balances Net of Payments (£)			8,202.67	8,261.42	58.75	0.72	-160.59	278.10	0.600	0.525
Age (years)	1	Time+Cost To Repay	45.75	45.71	-0.04	-0.09	-0.33	0.25	0.792	0.264
Female (% cards)			39.99	41.43	1.44	3.60	0.31	2.57	0.013	2.492
Credit Limit (£)			6,004.57	5,957.92	-46.66	-0.78	-145.51	52.20	0.355	0.925
Credit Score (0-100)			66.32	66.42	0.10	0.15	-0.09	0.29	0.298	1.041
Purchases Rate (%)			21.80	21.81	0.01	0.06	-0.08	0.11	0.792	0.264
Balance Transfer (% cards)			10.43	10.11	-0.33	-3.12	-1.02	0.37	0.360	0.915
Total Credit Card Statement Balances Net of Payments (£)			8,202.67	8,156.01	-46.66	-0.57	-265.60	172.28	0.676	0.418
N (Lender 1, control) = 22,056, N (Lender 1, Time To Repay) = 10,808, N (Lender 1, Time+Cost To Repay) = 10,814. *** P value < 0.005, ** < 0.01, * < 0.05.										

Variable	Lender	Treatment	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
Age (years)	2	Time To Repay	42.02	42.13	0.11	0.26	-0.16	0.38	0.425	0.798
Female (% cards)			42.55	42.37	-0.18	-0.42	-1.37	1.01	0.769	0.294
Credit Limit (£)			6,767.64	6,763.41	-4.23	-0.06	-115.48	107.01	0.941	0.075
Credit Score (0-100)			63.76	63.69	-0.06	-0.10	-0.28	0.16	0.590	0.538
Purchases Rate (%)			22.62	22.58	-0.04	-0.17	-0.18	0.10	0.592	0.536
Balance Transfer (% cards)			11.97	11.99	0.02	0.13	-0.76	0.80	0.968	0.040
Total Credit Card Statement Balances Net of Payments (£)			7,503.18	7,627.91	124.73	1.66	-85.52	334.98	0.245	1.163
Age (years)	2	Time+Cost To Repay	42.02	42.05	0.03	0.08	-0.24	0.31	0.818	0.231
Female (% cards)			42.55	43.22	0.68	1.59	-0.52	1.87	0.266	1.112
Credit Limit (£)			6,767.64	6,746.39	-21.25	-0.31	-132.30	89.80	0.708	0.375
Credit Score (0-100)			63.76	63.93	0.18	0.28	-0.04	0.40	0.113	1.585
Purchases Rate (%)			22.62	22.59	-0.03	-0.15	-0.18	0.11	0.637	0.472
Balance Transfer (% cards)			11.97	12.17	0.20	1.70	-0.58	0.99	0.611	0.509
Total Credit Card Statement Balances Net of Payments (£)			7,503.18	7,435.31	-67.87	-0.90	-274.35	138.62	0.519	0.644

N (Lender 2, control) = 20,000, N (Lender 2, Time To Repay) = 9,970, N (Lender 2, Time+Cost To Repay) = 9,956 . *** P value < 0.005, ** < 0.01, * < 0.05 .

Variable	Lender	Treatment	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
Age (years)	3	Time To Repay	44.38	44.49	0.11	0.26	-0.19	0.42	0.467	0.728
Female (% cards)			40.90	40.37	-0.53	-1.30	-1.93	0.87	0.455	0.747
Credit Limit (£)			8,569.28	8,543.40	-25.88	-0.30	-168.29	116.54	0.722	0.356
Credit Score (0-100)			69.18	69.43	0.24	0.35	0.04	0.44	0.017	2.389
Purchases Rate (%)			17.78	17.74	-0.05	-0.26	-0.13	0.03	0.262	1.122
Balance Transfer (% cards)			52.39	52.89	0.50	0.95	-0.92	1.92	0.491	0.688
Total Credit Card Statement Balances Net of Payments (£)			10,881.92	10,475.12	-406.79**	-3.74	-699.38	-114.20	0.006	2.725
Age (years)	3	Time+Cost To Repay	44.38	44.36	-0.02	-0.04	-0.33	0.29	0.902	0.124
Female (% cards)			40.90	40.55	-0.35	-0.84	-1.75	1.06	0.629	0.482
Credit Limit (£)			8,569.28	8,445.59	-123.69	-1.44	-266.83	19.45	0.090	1.694
Credit Score (0-100)			69.18	69.11	-0.07	-0.10	-0.27	0.13	0.488	0.693
Purchases Rate (%)			17.78	17.75	-0.04	-0.21	-0.12	0.04	0.374	0.889
Balance Transfer (% cards)			52.39	52.91	0.52	1.00	-0.90	1.95	0.472	0.719
Total Credit Card Statement Balances Net of Payments (£)			10,881.92	10,548.56	-333.36*	-3.06	-626.01	-40.71	0.026	2.233

N (Lender 3, control) = 9,367, N (Lender 3, Time To Repay) = 9,528, N (Lender 3, Time+Cost To Repay) = 9,469 . *** P value < 0.005, ** < 0.01, * < 0.05.

Table A3: Automatic minimum payment nudges - treatment effects on primary outcomes after nine completed statement cycles

1. Any exact minimum payment							
Treatment	Lender	Estimate	95% Confidence Interval	P Value	Cards	Degrees of Freedom	Adjusted R Squared
Time To Repay	1	-0.0144* * (0.0055)	[-0.0251, -0.0037]	0.0086	43678	598379	0.1641
	2	-0.0080 (0.0055)	[-0.0188, 0.0028]	0.1473	39926	478265	0.1756
	3	-0.0246* * (0.0089)	[-0.0420, -0.0071]	0.0058	28364	225842	0.2944
Time+Cost To Repay	1	-0.0037 (0.0054)	[-0.0143, 0.0070]	0.5000	43678	598379	0.1641
	2	-0.0041 (0.0055)	[-0.0149, 0.0068]	0.463	39926	478265	0.1756
	3	-0.0112 (0.0089)	[-0.0286, 0.0062]	0.2065	28364	225842	0.2944
Reminder: Time To Repay	1	-0.0136* (0.0054)	[-0.0243, -0.0029]	0.0125	41968	382792	0.1362
	2	-0.0282* * * (0.0056)	[-0.0391, -0.0173]	0.0000	40074	319775	0.1417
Reminder: Time+Cost To Repay	1	-0.0169* * * (0.0055)	[-0.0276, -0.0062]	0.002	41968	382792	0.1362
	2	-0.0216* * * (0.0056)	[-0.0325, -0.0107]	0.0001	40074	319775	0.1417
2. Any full payment							
Time To Repay	1	0.0047 (0.0039)	[-0.0030, 0.0124]	0.2357	43678	598379	0.0591
	2	-0.0033 (0.0044)	[-0.0119, 0.0053]	0.4556	39926	478265	0.0725
	3	0.0007 (0.0065)	[-0.0119, 0.0134]	0.909	28364	225842	0.1473
Time+Cost To Repay	1	0.0053 (0.0039)	[-0.0024, 0.0130]	0.1741	43678	598379	0.0591
	2	0.0004 (0.0045)	[-0.0084, 0.0091]	0.9356	39926	478265	0.0725
	3	0.0120 (0.0066)	[-0.0009, 0.0248]	0.0673	28364	225842	0.1473
Reminder: Time To Repay	1	-0.0014 (0.0039)	[-0.0089, 0.0062]	0.724	41968	382792	0.0571
	2	0.0113* (0.0045)	[0.0024, 0.0201]	0.0127	40074	319775	0.0497
Reminder: Time+Cost To Repay	1	0.0019 (0.0039)	[-0.0057, 0.0096]	0.6256	41968	382792	0.0571
	2	0.0047 (0.0045)	[-0.0041, 0.0134]	0.2938	40074	319775	0.0497

3. Any missed payment							
Treatment	Lender	Estimate	95% Confidence Interval	P Value	Cards	Degrees of Freedom	Adjusted R Squared
Time To Repay	1	0.002 (0.0018)	[-0.0015, 0.0055]	0.2649	43678	598379	0.0286
	2	0.0014 (0.0024)	[-0.0034, 0.0062]	0.5757	39926	478265	0.0554
	3	0.0048 (0.0034)	[-0.0018, 0.0114]	0.1531	28364	225842	0.255
Time+Cost To Repay	1	-0.0024 (0.0017)	[-0.0057, 0.0009]	0.1552	43678	598379	0.0286
	2	-0.0009 (0.0024)	[-0.0056, 0.0038]	0.7014	39926	478265	0.0554
	3	0.0007 (0.0033)	[-0.0057, 0.0071]	0.8313	28364	225842	0.255
Reminder: Time To Repay	1	0.0016 (0.0018)	[-0.0019, 0.0051]	0.3645	41968	382792	0.0331
	2	0.0013 (0.0024)	[-0.0035, 0.006]	0.5935	40074	319775	0.0487
Reminder: Time+Cost To Repay	1	-0.0008 (0.0017)	[-0.0042, 0.0025]	0.6223	41968	382792	0.0331
	2	-0.0012 (0.0024)	[-0.0059, 0.0035]	0.6087	40074	319775	0.0487
4. Statement balance net of payments (% statement balance)							
Time To Repay	1	-0.0047 (0.004)	[-0.0124, 0.0031]	0.2408	43678	598379	0.0947
	2	0.0016 (0.0043)	[-0.0068, 0.0101]	0.7028	39926	478265	0.0959
	3	-0.0065 (0.0065)	[-0.0193, 0.0063]	0.3200	28364	225842	0.1772
Time+Cost To Repay	1	-0.0024 (0.0039)	[-0.0101, 0.0054]	0.5458	43678	598379	0.0947
	2	0.0001 (0.0044)	[-0.0084, 0.0087]	0.9772	39926	478265	0.0959
	3	-0.0145* (0.0066)	[-0.0274, -0.0016]	0.0275	28364	225842	0.1772
Reminder: Time To Repay	1	-0.0014 (0.0039)	[-0.0091, 0.0062]	0.7125	41968	382792	0.0878
	2	-0.0126* * * (0.0044)	[-0.0212, -0.0039]	0.0045	40074	319775	0.0695
Reminder: Time+Cost To Repay	1	-0.0014 (0.0039)	[-0.0091, 0.0064]	0.7299	41968	382792	0.0878
	2	-0.0066 (0.0044)	[-0.0152, 0.002]	0.1312	40074	319775	0.0695

*** P value < 0.005, ** < 0.01, * < 0.05. OLS with controls and standard errors clustered at the card-level.

5. Borrowing costs (% statement balance)							
Treatment	Lender	Estimate	95% Confidence Interval	P Value	Cards	Degrees of Freedom	Adjusted R Squared
Time To Repay	1	-0.0002 (0.0014)	[-0.0031, 0.0026]	0.8818	43678	598379	0.0061
	2	0.0005 (0.0008)	[-0.0011, 0.0021]	0.5211	39926	478265	0.0092
	3	-0.0032 (0.0025)	[-0.0082, 0.0018]	0.2047	28364	225842	0.0147
Time+Cost To Repay	1	-0.0006 (0.0014)	[-0.0034, 0.0022]	0.6797	43678	598379	0.0061
	2	0.0003 (0.0008)	[-0.0013, 0.0019]	0.7318	39926	478265	0.0092
	3	0.0002 (0.0026)	[-0.005, 0.0054]	0.9346	28364	225842	0.0147
Reminder: Time To Repay	1	0.0007 (0.0015)	[-0.0022, 0.0035]	0.6533	41968	382792	0.0051
	2	-0.0004 (0.0008)	[-0.0019, 0.0011]	0.6019	40074	319775	0.0074
Reminder: Time+Cost To Repay	1	0.0014 (0.0015)	[-0.0016, 0.0043]	0.3556	41968	382792	0.0051
	2	0.0004 (0.0008)	[-0.0012, 0.002]	0.6321	40074	319775	0.0074
6. New spending (% statement balance)							
Time To Repay	1	0.0032 (0.0031)	[-0.0029, 0.0093]	0.3087	43678	598379	0.1273
	2	-0.0008 (0.0026)	[-0.006, 0.0044]	0.7627	39926	478265	0.1192
	3	0.0054 (0.0037)	[-0.0018, 0.0127]	0.1414	28364	225842	0.122
Time+Cost To Repay	1	-0.0003 (0.0031)	[-0.0063, 0.0057]	0.9254	43678	598379	0.1273
	2	0.0035 (0.0027)	[-0.0018, 0.0088]	0.1976	39926	478265	0.1192
	3	0.0049 (0.0037)	[-0.0024, 0.0121]	0.1873	28364	225842	0.122
Reminder: Time To Repay	1	0.0002 (0.0031)	[-0.0058, 0.0062]	0.9434	41968	382792	0.1148
	2	0.0049 (0.0027)	[-0.0005, 0.0102]	0.0746	40074	319775	0.1049
Reminder: Time+Cost To Repay	1	0.0003 (0.0031)	[-0.0057, 0.0063]	0.928	41968	382792	0.1148
	2	0.0016 (0.0027)	[-0.0037, 0.0068]	0.5634	40074	319775	0.1049

*** P value < 0.005, ** < 0.01, * < 0.05. OLS with controls and standard errors clustered at the card-level.

7. Portfolio share minimum payment (% credit cards)							
Treatment	Lender	Estimate	95% Confidence Interval	P Value	Cards	Degrees of Freedom	Adjusted R Squared
Time To Repay	1	-0.0100* * (0.0037)	[-0.0173, -0.0026]	0.0078	43678	598379	0.5331
	2	-0.0063 (0.0038)	[-0.0137, 0.0011]	0.0964	39926	478265	0.4969
	3	-0.0074 (0.0052)	[-0.0177, 0.0029]	0.1581	28364	225842	0.5015
Time+Cost To Repay	1	-0.0040 (0.0037)	[-0.0113, 0.0033]	0.2842	43678	598379	0.5331
	2	-0.0078* (0.0038)	[-0.0152, -0.0005]	0.0374	39926	478265	0.4969
	3	0.0008 (0.0053)	[-0.0096, 0.0111]	0.8844	28364	225842	0.5015
Reminder: Time To Repay	1	-0.0090* (0.0039)	[-0.0167, -0.0014]	0.0209	41968	382792	0.5551
	2	-0.0139* * * (0.0038)	[-0.0214, -0.0063]	0.0003	40074	319775	0.4896
Reminder: Time+Cost To Repay	1	-0.0098* (0.0039)	[-0.0174, -0.0022]	0.0117	41968	382792	0.5551
	2	-0.0137* * * (0.0038)	[-0.0213, -0.0062]	0.0003	40074	319775	0.4896
8. Portfolio share full payment (% credit cards)							
Time To Repay	1	0.0016 (0.003)	[-0.0043, 0.0076]	0.5889	43678	598379	0.7414
	2	-0.0038 (0.0032)	[-0.0100, 0.0025]	0.2405	39926	478265	0.663
	3	-0.0025 (0.0048)	[-0.0119, 0.0070]	0.6100	28364	225842	0.5536
Time+Cost To Repay	1	0.0007 (0.003)	[-0.0051, 0.0066]	0.8035	43678	598379	0.7414
	2	0.0033 (0.0033)	[-0.0031, 0.0097]	0.3143	39926	478265	0.663
	3	-0.0028 (0.0048)	[-0.0123, 0.0067]	0.5677	28364	225842	0.5536
Reminder: Time To Repay	1	-0.0033 (0.0031)	[-0.0094, 0.0028]	0.2908	41968	382792	0.7604
	2	0.0054 (0.0033)	[-0.0011, 0.0118]	0.1045	40074	319775	0.6705
Reminder: Time+Cost To Repay	1	-0.0025 (0.0031)	[-0.0086, 0.0036]	0.4264	41968	382792	0.7604
	2	0.0016 (0.0033)	[-0.0048, 0.0081]	0.6175	40074	319775	0.6705

*** P value < 0.005, ** < 0.01, * < 0.05. OLS with controls and standard errors clustered at the card-level.

9. Portfolio share missed payments(% credit cards)							
Treatment	Lender	Estimate	95% Confidence Interval	P Value	Cards	Degrees of Freedom	Adjusted R Squared
Time To Repay	1	0.0008 (0.0012)	[-0.0015, 0.0030]	0.5094	43678	598379	0.0962
	2	0.0016 (0.0018)	[-0.0018, 0.0050]	0.3634	39926	478265	0.1513
	3	0.0025 (0.0017)	[-0.0009, 0.0058]	0.1538	28364	225842	0.2354
Time+Cost To Repay	1	-0.0010 (0.0011)	[-0.0031, 0.0012]	0.3832	43678	598379	0.0962
	2	-0.0002 (0.0017)	[-0.0035, 0.0032]	0.9271	39926	478265	0.1513
	3	0.0002 (0.0017)	[-0.0031, 0.0035]	0.8905	28364	225842	0.2354
Reminder: Time To Repay	1	-0.0002 (0.0011)	[-0.0024, 0.0021]	0.8871	41968	382792	0.0654
	2	0.0009 (0.0017)	[-0.0026, 0.0043]	0.6229	40074	319775	0.1174
Reminder: Time+Cost To Repay	1	0.0012 (0.0012)	[-0.0012, 0.0035]	0.3308	41968	382792	0.0654
	2	0.0004 (0.0017)	[-0.0030, 0.0038]	0.8052	40074	319775	0.1174
10. Portfolio balances net of payments (% credit card portfolio statement balances)							
Time To Repay	1	-0.0018 (0.003)	[-0.0077, 0.0041]	0.5422	43678	598379	0.7902
	2	0.0043 (0.0032)	[-0.0019, 0.0106]	0.1734	39926	478265	0.6998
	3	-0.0056 (0.0047)	[-0.0147, 0.0036]	0.2351	28364	225842	0.2909
Time+Cost To Repay	1	0.0002 (0.003)	[-0.0056, 0.0060]	0.9419	43678	598379	0.7902
	2	-0.0050 (0.0033)	[-0.0114, 0.0014]	0.1256	39926	478265	0.6998
	3	-0.0062 (0.0047)	[-0.0154, 0.0029]	0.1829	28364	225842	0.2909
Reminder: Time To Repay	1	0.0002 (0.003)	[-0.0058, 0.0061]	0.9520	41968	382792	0.8223
	2	-0.0035 (0.0033)	[-0.0099, 0.0030]	0.2903	40074	319775	0.7301
Reminder: Time+Cost To Repay	1	0.0023 (0.003)	[-0.0036, 0.0082]	0.4359	41968	382792	0.8223
	2	-0.0042 (0.0033)	[-0.0106, 0.0022]	0.1989	40074	319775	0.7301

*** P value < 0.005, ** < 0.01, * < 0.05. OLS with controls and standard errors clustered at the card-level.

Table A4: Automatic minimum payment nudges – heterogeneous treatment effects on any exact minimum payment after nine completed statement cycles

Effect By	Levels	Treatment	Lender	Estimate	95% Confidence Interval	P Value
Balance Transfer Debt	None	Time To Repay	1+2	-0.0082 (0.0044)	[-0.0168, 0.0003]	0.0593
		Time+Cost To Repay	1+2	-0.0022 (0.0044)	[-0.0107, 0.0064]	0.6177
		Time To Repay	3	-0.0170 (0.0171)	[-0.0505, 0.0164]	0.3186
		Time+Cost To Repay	3	-0.0036 (0.0170)	[-0.0370, 0.0298]	0.8331
	Any	Time To Repay	1+2	-0.0300* (0.0120)	[-0.0534, -0.0065]	0.0122
		Time+Cost To Repay	1+2	-0.0274* (0.0121)	[-0.0511, -0.0037]	0.0237
		Time To Repay	3	-0.0266* (0.0118)	[-0.0498, -0.0034]	0.0245
		Time+Cost To Repay	3	-0.0036 (0.0117)	[-0.0265, 0.0193]	0.7554

*** P value < 0.005, ** < 0.01, * < 0.05. OLS with controls and standard errors clustered at the card-level.

Effect By	Levels	Treatment	Lender	Estimate	95% Confidence Interval
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Credit Score Buckets (0=missing,1=low score,10=high score)	0	Time To Repay	1+2	-0.0418 (0.0286)	[-0.098, 0.0143]
		Time+Cost To Repay		-0.0239 (0.0290)	[-0.0808, 0.033]
	1	Time To Repay		-0.0256 (0.0132)	[-0.0514, 0.0002]
		Time+Cost To Repay		0.0019 (0.0135)	[-0.0246, 0.0284]
	2	Time To Repay		-0.0015 (0.0131)	[-0.0272, 0.0242]
		Time+Cost To Repay		-0.0077 (0.0129)	[-0.03300, 0.0176]
	3	Time To Repay		-0.0040 (0.0133)	[-0.0300, 0.0220]
		Time+Cost To Repay		0.0148 (0.0133)	[-0.0113, 0.0410]
	4	Time To Repay		-0.0436* * * (0.013)	[-0.0691, -0.0181]
		Time+Cost To Repay		0.0030 (0.0125)	[-0.0215, 0.0275]
	5	Time To Repay		0.0028 (0.0132)	[-0.0231, 0.0286]
		Time+Cost To Repay		-0.0079 (0.0134)	[-0.0342, 0.0183]
	6	Time To Repay		-0.0078 (0.013)	[-0.0333, 0.0176]
		Time+Cost To Repay		0.0104 (0.0128)	[-0.0147, 0.0355]
	7	Time To Repay		-0.0141 (0.013)	[-0.0395, 0.0113]
		Time+Cost To Repay		-0.0146 (0.0128)	[-0.0397, 0.0106]
	8	Time To Repay		0.0023 (0.0128)	[-0.0229, 0.0274]
		Time+Cost To Repay		-0.0100 (0.013)	[-0.0356, 0.0156]
	9	Time To Repay		-0.0057 (0.0129)	[-0.0311, 0.0197]
		Time+Cost To Repay		-0.0107 (0.0129)	[-0.0360, 0.0146]
	10	Time To Repay		-0.0003 (0.0136)	[-0.0270, 0.0264]
		Time+Cost To Repay		-0.026 (0.0137)	[-0.0528, 0.0009]

*** P value < 0.005, ** < 0.01, * < 0.05. OLS with controls and standard errors clustered at the card-level.

Effect By	Levels	Treatment	Lender	Estimate	95% C.I.
Number Full Payments (0-12)	0	Time To Repay	1+2	-0.0133* * (0.0048)	[-0.0227, -0.0039]
		Time+Cost To Repay		-0.0079 (0.0048)	[-0.0173, 0.0014]
	1	Time To Repay		-0.0097 (0.0150)	[-0.0391, 0.0197]
		Time+Cost To Repay		0.0127 (0.0150)	[-0.0166, 0.042]
	2	Time To Repay		-0.0056 (0.0170)	[-0.039, 0.0278]
		Time+Cost To Repay		-0.0021 (0.0174)	[-0.0362, 0.032]
	3	Time To Repay		-0.0124 (0.0204)	[-0.0523, 0.0275]
		Time+Cost To Repay		-0.0032 (0.0201)	[-0.0426, 0.0363]
	4	Time To Repay		0.0209 (0.0241)	[-0.0262, 0.0681]
		Time+Cost To Repay		0.0388 (0.0236)	[-0.0074, 0.0849]
	5	Time To Repay		0.0029 (0.0247)	[-0.0455, 0.0513]
		Time+Cost To Repay		-0.0147 (0.0251)	[-0.0638, 0.0345]
	6	Time To Repay		-0.0231 (0.0289)	[-0.0797, 0.0336]
		Time+Cost To Repay		-0.0277 (0.0295)	[-0.0855, 0.0301]
	7	Time To Repay		-0.0230 (0.0318)	[-0.0853, 0.0392]
		Time+Cost To Repay		-0.0268 (0.0316)	[-0.0887, 0.0352]
	8	Time To Repay		-0.0298 (0.0523)	[-0.1324, 0.0728]
		Time+Cost To Repay		-0.0692 (0.0514)	[-0.1700, 0.0316]
	9	Time To Repay		0.0456 (0.0628)	[-0.0775, 0.1686]
		Time+Cost To Repay		-0.0304 (0.0615)	[-0.151, 0.0902]
	10	Time To Repay		-0.2068 (0.2273)	[-0.6524, 0.2388]
		Time+Cost To Repay		-0.3280* (0.1620)	[-0.6455, -0.0106]
	11	Time To Repay		-0.4270 (0.2764)	[-0.9688, 0.1148]
		Time+Cost To Repay		-0.4453 (0.2763)	[-0.9868, 0.0962]

Effect By	Levels	Treatment	Lender	Estimate	95% Confidence Interval
Number Minimum Payments (0-12)	0	Time To Repay	1+2	-0.0105 (0.0140)	[-0.0379, 0.0169]
		Time+Cost To Repay		0.0042 (0.0139)	[-0.0231, 0.0315]
	1	Time To Repay		0.0000 (0.0220)	[-0.0432, 0.0431]
		Time+Cost To Repay		-0.0354 (0.0216)	[-0.0777, 0.007]
	2	Time To Repay		-0.0233 (0.0237)	[-0.0698, 0.0231]
		Time+Cost To Repay		-0.0155 (0.0231)	[-0.0607, 0.0298]
	3	Time To Repay		-0.0287 (0.0232)	[-0.0742, 0.0169]
		Time+Cost To Repay		-0.0445 (0.0229)	[-0.0894, 0.0003]
	4	Time To Repay		-0.0232 (0.0225)	[-0.0673, 0.021]
		Time+Cost To Repay		-0.0209 (0.0224)	[-0.0648, 0.023]
	5	Time To Repay		0.0106 (0.0204)	[-0.0293, 0.0505]
		Time+Cost To Repay		0.0464* (0.0205)	[0.0062, 0.0866]
	6	Time To Repay		-0.0097 (0.0195)	[-0.0479, 0.0285]
		Time+Cost To Repay		0.0038 (0.0195)	[-0.0344, 0.0421]
	7	Time To Repay		-0.0256 (0.0187)	[-0.0623, 0.0111]
		Time+Cost To Repay		-0.0207 (0.0188)	[-0.0576, 0.0162]
	8	Time To Repay		0.0021 (0.0177)	[-0.0327, 0.0368]
		Time+Cost To Repay		0.0101 (0.0179)	[-0.0249, 0.0451]
	9	Time To Repay		-0.0138 (0.0155)	[-0.0442, 0.0166]
		Time+Cost To Repay		0.0110 (0.0156)	[-0.0196, 0.0417]
	10	Time To Repay		-0.0045 (0.0137)	[-0.0313, 0.0223]
		Time+Cost To Repay		0.0192 (0.0136)	[-0.0074, 0.0457]
	11	Time To Repay		-0.0112 (0.0104)	[-0.0316, 0.0092]

	Time+Cost To Repay	-0.0187 (0.0106)	[-0.0395, 0.002]
12	Time To Repay	-0.0129* (0.0061)	[-0.0248, -0.001]
	Time+Cost To Repay	-0.0087 (0.0060)	[-0.0204, 0.0031]

*** P value < 0.005, ** < 0.01, * < 0.05. OLS with controls and standard errors clustered at the card-level. Zero observations for 12 full payments

Table A5: Automatic minimum payment nudges – heterogeneous treatment effects on outstanding debt net of payments (£) after nine completed statement cycles

Effect By	Levels	Treatment	Lender	Estimate	95% Confidence Interval	P Value
Balance Transfer Debt	None	Time To Repay	1+2	-6.12 (23.97)	[-53.10, 40.86]	0.7986
		Time+Cost To Repay	1+2	-9.51 (23.64)	[-55.84, 36.82]	0.6873
		Time To Repay	3	-109.32 (117.67)	[-339.95, 121.31]	0.3529
		Time+Cost To Repay	3	5.65 (115.79)	[-221.29, 232.59]	0.9611
	Any	Time To Repay	1+2	-90.37 (73.07)	[-233.58, 52.85]	0.2162
		Time+Cost To Repay	1+2	-60.40 (76.72)	[-210.77, 89.97]	0.4311
		Time To Repay	3	-92.77 (77.60)	[-244.86, 59.32]	0.2319
		Time+Cost To Repay	3	-112.52 (77.74)	[-264.9, 39.85]	0.1478

*** P value < 0.005, ** < 0.01, * < 0.05. OLS with controls and standard errors clustered at the card-level.

Effect By	Levels	Treatment	Lender	Estimate	95% Confidence Interval
Credit Score Buckets (0=missing,1=low score,10=high score)	0	Time To Repay	1+2	-437.39* (185.11)	[-800.21, -74.57]
		Time+Cost To Repay		-89.16 (188.63)	[-458.88, 280.56]
	1	Time To Repay		-2.40 (48.33)	[-97.13, 92.32]
		Time+Cost To Repay		90.79 (48.55)	[-4.37, 185.94]
	2	Time To Repay		-20.22 (53.45)	[-124.97, 84.53]
		Time+Cost To Repay		-40.87 (52.89)	[-144.54, 62.80]
	3	Time To Repay		-5.17 (63.68)	[-129.98, 119.64]
		Time+Cost To Repay		89.01 (62.91)	[-34.30, 212.32]
	4	Time To Repay		26.91 (69.43)	[-109.18, 162.99]
		Time+Cost To Repay		1.41 (66.48)	[-128.89, 131.7]
	5	Time To Repay		64.99 (78.03)	[-87.96, 217.94]
		Time+Cost To Repay		-112.21 (80.27)	[-269.53, 45.12]
	6	Time To Repay		-8.89 (84.34)	[-174.19, 156.41]
		Time+Cost To Repay		-20.78 (82.22)	[-181.93, 140.36]
	7	Time To Repay		-23.93 (86.90)	[-194.26, 146.4]
		Time+Cost To Repay		-64.42 (85.23)	[-231.47, 102.63]
	8	Time To Repay		-33.72 (82.89)	[-196.18, 128.74]
		Time+Cost To Repay		-4.45 (83.10)	[-167.32, 158.43]
	9	Time To Repay		3.14 (78.20)	[-150.13, 156.40]
		Time+Cost To Repay		75.88 (79.21)	[-79.36, 231.13]
	10	Time To Repay		-65.53 (71.03)	[-204.75, 73.69]
		Time+Cost To Repay		-156.95* (69.92)	[-293.99, -19.90]
*** P value < 0.005, ** < 0.01, * < 0.05. OLS with controls and standard errors clustered at the card-level.					

Effect By	Levels	Treatment	Lender	Estimate	95% C.I.
Number Full Payments (0-12)	0	Time To Repay	1+2	-3.22 (27.95)	[-58.01, 51.57]
		Time+Cost To Repay		-30.64 (27.69)	[-84.90, 23.63]
	1	Time To Repay		-9.62 (79.93)	[-166.29, 147.05]
		Time+Cost To Repay		-74.37 (82.67)	[-236.40, 87.66]
	2	Time To Repay		-81.87 (86.71)	[-251.84, 88.09]
		Time+Cost To Repay		8.63 (88.93)	[-165.67, 182.92]
	3	Time To Repay		-15.15 (102.07)	[-215.20, 184.91]
		Time+Cost To Repay		191.71* (97.74)	[0.150, 383.28]
	4	Time To Repay		-166.65 (112.45)	[-387.05, 53.74]
		Time+Cost To Repay		58.02 (106.19)	[-150.10, 266.15]
	5	Time To Repay		42.14 (111.18)	[-175.78, 260.06]
		Time+Cost To Repay		-80.78 (111.79)	[-299.89, 138.33]
	6	Time To Repay		-206.25 (131.96)	[-464.89, 52.39]
		Time+Cost To Repay		53.32 (135.92)	[-213.09, 319.73]
	7	Time To Repay		-9.48 (137.66)	[-279.29, 260.33]
		Time+Cost To Repay		14.16 (132.24)	[-245.03, 273.36]
	8	Time To Repay		20.46 (243.45)	[-456.7, 497.61]
		Time+Cost To Repay		273.60 (243.45)	[-203.56, 750.76]
	9	Time To Repay		7.78 (273.00)	[-527.3, 542.87]
		Time+Cost To Repay		-332.51 (300.02)	[-920.55, 255.53]
	10	Time To Repay		-2387.27* * * (567.41)	[-3499.40, -1275.14]
		Time+Cost To Repay		-227.98 (781.25)	[-1759.23, 1303.27]
	11	Time To Repay		788.47* (375.71)	[52.07, 1524.86]

		Time+Cost To Repay		-485.36 (376.53)	[-1223.36, 252.63]	
Effect By	Levels	Treatment	Lender	Estimate	95% Confidence Interval	P Value
Number Minimum Payments (0-12)	0	Time To Repay	1+2	10.39 (93.43)	[-172.74, 193.51]	0.9115
		Time+Cost To Repay		-106.03 (86.17)	[-274.92, 62.86]	0.2185
	1	Time To Repay		-85.46 (111.73)	[-304.46, 133.53]	0.4443
		Time+Cost To Repay		17.21 (108.46)	[-195.37, 229.79]	0.8739
	2	Time To Repay		-369.60* * * (112.64)	[-590.38, -148.83]	0.0010
		Time+Cost To Repay		-272.09* (113.13)	[-493.83, -50.36]	0.0162
	3	Time To Repay		-117.35 (109.72)	[-332.39, 97.69]	0.2848
		Time+Cost To Repay		-74.28 (111.04)	[-291.93, 143.37]	0.5036
	4	Time To Repay		-131.87 (104.31)	[-336.31, 72.57]	0.2061
		Time+Cost To Repay		10.05 (108.81)	[-203.21, 223.32]	0.9264
	5	Time To Repay		161.23 (100.68)	[-36.10, 358.57]	0.1093
		Time+Cost To Repay		129.4 (101.46)	[-69.47, 328.27]	0.2022
	6	Time To Repay		-88.74 (96.33)	[-277.55, 100.07]	0.3569
		Time+Cost To Repay		98.07 (94.04)	[-86.24, 282.38]	0.2970
	7	Time To Repay		19.90 (95.10)	[-166.51, 206.3]	0.8343
		Time+Cost To Repay		9.31 (101.95)	[-190.51, 209.13]	0.9272
	8	Time To Repay		32.98 (98.45)	[-159.99, 225.95]	0.7376
		Time+Cost To Repay		70.25 (95.73)	[-117.38, 257.87]	0.4631
	9	Time To Repay		7.22 (88.36)	[-165.98, 180.41]	0.9349
		Time+Cost To Repay		54.22 (89.68)	[-121.56, 229.99]	0.5455
	10	Time To Repay		62.89 (83.45)	[-100.68, 226.45]	0.4511
		Time+Cost To Repay		77.33 (83.67)	[-86.66, 241.32]	0.3554

11	Time To Repay	83.21 (68.92)	[-51.87, 218.29]	0.2273
	Time+Cost To Repay	-16.47 (70.03)	[-153.72, 120.79]	0.8141
12	Time To Repay	-52.24 (40.07)	[-130.79, 26.30]	0.1924
	Time+Cost To Repay	-69.86 (39.19)	[-146.67, 6.95]	0.0746

*** P value < 0.005, ** < 0.01, * < 0.05. OLS with controls and standard errors clustered at the card-level.

Zero observations for 12 full payments.

Table A6: Statement nudges - treatment effects on selected secondary outcomes after six completed statement cycles

Outcome	Treatment	Estimate	95% Confidence Interval	P Value	Adjusted R Squared
Statement balance net of payments (£)	Time To Repay	18.6531 (34.9523)	[-49.8535, 87.1596]	0.5936	0.6467
	Time+Cost To Repay	-0.6055 (34.482)	[-68.1902, 66.9792]	0.986	0.6467
Cumulative borrowing costs across statements (£)	Time To Repay	0.6142 (1.359)	[-2.0494, 3.2778]	0.6513	0.7542
	Time+Cost To Repay	0.7022 (1.338)	[-1.9204, 3.3247]	0.5997	0.7542
Cumulative payments across statements (£)	Time To Repay	-21.1282 (24.0342)	[-68.2353, 25.9788]	0.3794	0.5879
	Time+Cost To Repay	-21.5765 (24.153)	[-68.9163, 25.7634]	0.3717	0.5879

Degrees of Freedom 254,104. *** P value < 0.005, ** < 0.01, * < 0.05. OLS with controls and standard errors clustered at the card-level.

Table A7: Statement nudges – unconditional mean comparison of treatment effects on outcomes after six completed statement cycles

Outcome	Treatment	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
1. Any exact minimum payment	Time To Repay	0.160	0.163	0.0028	1.740	-0.008	0.014	0.623	0.491
	Time+Cost To Repay	0.160	0.154	-0.0059	-3.660	-0.017	0.005	0.296	1.044
2. Any full payment	Time To Repay	0.178	0.170	-0.0084	-4.710	-0.020	0.003	0.151	1.438
	Time+Cost To Repay	0.178	0.181	0.0025	1.420	-0.009	0.014	0.669	0.428
3. Any missed payment	Time To Repay	0.059	0.060	0.0011	1.830	-0.006	0.008	0.767	0.297
	Time+Cost To Repay	0.059	0.060	0.0011	1.910	-0.006	0.008	0.758	0.308
4. Statement balance net of payments (% statement balance)	Time To Repay	0.750	0.758	0.0082	1.090	-0.003	0.020	0.158	1.413
	Time+Cost To Repay	0.750	0.750	0.0002	0.020	-0.011	0.012	0.976	0.030
5. Borrowing costs (% statement balance)	Time To Repay	0.024	0.022	-0.0013	-5.690	-0.005	0.002	0.468	0.726
	Time+Cost To Repay	0.024	0.024	0.0005	2.320	-0.003	0.004	0.775	0.286
6. New spending (% statement balance)	Time To Repay	0.087	0.094	0.0064	7.380	-0.001	0.014	0.083	1.736
	Time+Cost To Repay	0.087	0.086	-0.0013	-1.480	-0.008	0.006	0.723	0.354
7. Portfolio share full repayment (% credit cards)	Time To Repay	0.130	0.129	-0.0015	-1.180	-0.009	0.006	0.672	0.423
	Time+Cost To Repay	0.130	0.127	-0.0034	-2.590	-0.010	0.004	0.355	0.925

Outcome	Treatment	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
8. Portfolio share full payment (% credit cards)	Time To Repay	0.390	0.387	-0.003	-0.780	-0.012	0.006	0.524	0.638
	Time+Cost To Repay	0.390	0.389	-0.0014	-0.360	-0.011	0.008	0.772	0.290
9. Portfolio share missed payment (% credit cards)	Time To Repay	0.010	0.012	0.0018	17.970	-0.0005	0.004	0.123	1.544
	Time+Cost To Repay	0.010	0.010	0.0001	0.680	-0.002	0.002	0.950	0.062
10. Portfolio balances net of payments (% statement balances)	Time To Repay	0.808	0.812	0.004	0.490	-0.005	0.013	0.366	0.904
	Time+Cost To Repay	0.808	0.813	0.0055	0.680	-0.003	0.014	0.213	1.245
Statement balance net of payments (£)	Time To Repay	3,072.600	3,100.508	27.9079	0.910	-77.636	133.452	0.604	0.518
	Time+Cost To Repay	3,072.600	3,081.846	9.2457	0.300	-96.694	115.185	0.864	0.171
Cumulative borrowing costs across statements (£)	Time To Repay	161.453	167.762	6.3088	3.910	-2.202	14.819	0.146	1.453
	Time+Cost To Repay	161.453	162.487	1.0334	0.640	-7.365	9.432	0.809	0.241
Cumulative new spending across statements (£)	Time To Repay	1,805.397	1,767.665	-37.7326	-2.090	-115.161	39.696	0.340	0.955
	Time+Cost To Repay	1,805.397	1,766.893	-38.5037	-2.130	-115.923	38.916	0.330	0.975

N (Control) = 7,251. N (Time To Repay) = 7,465, N (Time+Cost To Repay) = 7,365. *** P value < 0.005, ** < 0.01, * < 0.05.

Table A8: Automatic payment nudges – unconditional mean comparison of treatment effects on outcomes after nine completed statement cycles

Outcome	Treatment	Lender	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
1. Any exact minimum payment	Time To Repay	1	0.653	0.636	-0.0174* * *	-2.670	-0.029	-0.006	0.003	2.958
		2	0.630	0.626	-0.0032	-0.500	-0.015	0.008	0.593	0.535
		3	0.717	0.697	-0.0201*	-2.800	-0.036	-0.005	0.011	2.536
	Time+Cost To Repay	1	0.653	0.648	-0.0060	-0.920	-0.018	0.006	0.308	1.020
		2	0.630	0.625	-0.0043	-0.680	-0.016	0.007	0.469	0.725
		3	0.717	0.712	-0.0049	-0.680	-0.020	0.010	0.532	0.625
	Reminder: Time To Repay	1	0.653	0.638	-0.0156* *	-2.380	-0.027	-0.004	0.008	2.643
		2	0.630	0.601	-0.0287* * *	-4.550	-0.040	-0.017	0	4.804
	Reminder: Time+Cost To Repay	1	0.653	0.634	-0.0196* * *	-3.000	-0.031	-0.008	0.001	3.323
		2	0.630	0.606	-0.0232* * *	-3.690	-0.035	-0.012	0.0001	3.901
2. Any full payment	Time To Repay	1	0.122	0.126	0.0047	3.900	-0.003	0.013	0.243	1.168
		2	0.163	0.157	-0.006	-3.670	-0.015	0.003	0.182	1.335
		3	0.103	0.105	0.0023	2.250	-0.008	0.013	0.663	0.436
	Time+Cost To Repay	1	0.122	0.127	0.0053	4.360	-0.003	0.013	0.192	1.304
		2	0.163	0.163	0.0007	0.410	-0.008	0.010	0.883	0.148
		3	0.103	0.113	0.0096	9.320	-0.001	0.020	0.075	1.780

Outcome	Treatment	Lender	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
3. Any missed payment	Reminder: Time To Repay	1	0.122	0.120	-0.0014	-1.170	-0.009	0.006	0.722	0.356
		2	0.163	0.174	0.0109*	6.720	0.002	0.020	0.017	2.378
	Reminder: Time+Cost To Repay	1	0.122	0.122	0.0003	0.260	-0.008	0.008	0.937	0.079
		2	0.163	0.168	0.0050	3.080	-0.004	0.014	0.271	1.101
	Time To Repay	1	0.021	0.023	0.0018	8.640	-0.002	0.005	0.312	1.011
		2	0.042	0.044	0.002	4.750	-0.003	0.007	0.426	0.796
		3	0.026	0.028	0.0025	9.630	-0.003	0.008	0.378	0.882
	Time+Cost To Repay	1	0.021	0.019	-0.0027	-12.600	-0.006	0.001	0.114	1.582
		2	0.042	0.040	-0.0017	-4.010	-0.006	0.003	0.490	0.691
		3	0.026	0.025	-0.0009	-3.510	-0.006	0.004	0.740	0.332
	Reminder: Time To Repay	1	0.021	0.023	0.0013	5.900	-0.002	0.005	0.486	0.696
		2	0.042	0.042	0.0006	1.490	-0.004	0.005	0.800	0.253
	Reminder: Time+Cost To Repay	1	0.021	0.020	-0.0014	-6.430	-0.005	0.002	0.429	0.791
		2	0.042	0.041	-0.0009	-2.230	-0.006	0.004	0.702	0.383
4. Statement balance net of payments (% statement balance)	Time To Repay	1	0.816	0.811	-0.0049	-0.610	-0.013	0.003	0.235	1.188
		2	0.783	0.788	0.005	0.640	-0.004	0.014	0.260	1.127
		3	0.856	0.850	-0.0061	-0.710	-0.017	0.004	0.260	1.127

Outcome	Treatment	Lender	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
5. Borrowing costs (% statement balance)	Time+Cost To Repay	1	0.816	0.813	-0.0029	-0.360	-0.011	0.005	0.483	0.702
		2	0.783	0.783	-0.0001	-0.010	-0.009	0.009	0.981	0.024
		3	0.856	0.846	-0.0101	-1.180	-0.021	0.001	0.064	1.851
	Reminder: Time To Repay	1	0.816	0.814	-0.0014	-0.170	-0.010	0.007	0.730	0.345
		2	0.783	0.770	-0.0132* * *	-1.690	-0.022	-0.004	0.004	2.912
	Reminder: Time+Cost To Repay	1	0.816	0.816	-0.0002	-0.030	-0.008	0.008	0.960	0.050
		2	0.783	0.776	-0.0075	-0.960	-0.016	0.001	0.095	1.670
	Time To Repay	1	0.028	0.028	-0.0003	-1.010	-0.003	0.003	0.846	0.194
		2	0.020	0.020	0.0005	2.470	-0.001	0.002	0.550	0.597
		3	0.023	0.020	-0.0029	-12.610	-0.007	0.001	0.156	1.418
	Time+Cost To Repay	1	0.028	0.027	-0.0006	-1.980	-0.003	0.002	0.701	0.384
		2	0.020	0.020	0.0003	1.310	-0.001	0.002	0.748	0.321
		3	0.023	0.023	-0.0004	-1.800	-0.005	0.004	0.846	0.194
	Reminder: Time To Repay	1	0.028	0.028	0.0006	2.040	-0.002	0.004	0.699	0.387
		2	0.020	0.020	-0.0004	-2.010	-0.002	0.001	0.608	0.512
	Reminder: Time+Cost To Repay	1	0.028	0.029	0.0011	4.050	-0.002	0.004	0.450	0.756
		2	0.020	0.020	0.0004	2.070	-0.001	0.002	0.611	0.509

Outcome	Treatment	Lender	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
6. New spending (% statement balance)	Time To Repay	1	0.114	0.117	0.0029	2.570	-0.004	0.009	0.374	0.889
		2	0.094	0.091	-0.0029	-3.060	-0.008	0.003	0.304	1.028
		3	0.047	0.050	0.0036	7.770	-0.002	0.010	0.239	1.178
	Time+Cost To Repay	1	0.114	0.114	0.0003	0.230	-0.006	0.007	0.936	0.080
		2	0.094	0.096	0.0025	2.720	-0.003	0.008	0.372	0.893
		3	0.047	0.050	0.0027	5.850	-0.003	0.009	0.372	0.893
	Reminder: Time To Repay	1	0.114	0.115	0.0007	0.640	-0.006	0.007	0.822	0.225
		2	0.094	0.099	0.0049	5.180	-0.001	0.010	0.090	1.694
	Reminder: Time+Cost To Repay	1	0.114	0.114	-0.0004	-0.310	-0.007	0.006	0.913	0.109
		2	0.094	0.096	0.0027	2.830	-0.003	0.008	0.351	0.932
7. Portfolio share minimum payment (% credit cards)	Time To Repay	1	0.450	0.439	-0.0103*	-2.280	-0.019	-0.001	0.023	2.273
		2	0.438	0.433	-0.0046	-1.050	-0.013	0.004	0.302	1.032
		3	0.418	0.411	-0.0071	-1.700	-0.018	0.004	0.188	1.318
	Time+Cost To Repay	1	0.450	0.445	-0.0042	-0.930	-0.013	0.005	0.355	0.924
		2	0.438	0.430	-0.008	-1.830	-0.017	0.001	0.070	1.811
		3	0.418	0.418	0	0	-0.010	0.010	0.999	0.002
	Reminder: Time To Repay	1	0.450	0.441	-0.0088	-1.950	-0.018	0.0001	0.053	1.935
		2	0.438	0.423	-0.0149* * *	-3.410	-0.024	-0.006	0.001	3.366

Outcome	Treatment	Lender	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
8. Portfolio share full payment (% credit cards)	Reminder: Time+Cost To Repay	1	0.450	0.442	-0.0079	-1.750	-0.017	0.001	0.080	1.752
		2	0.438	0.421	-0.0163* * *	-3.730	-0.025	-0.008	0.0002	3.687
	Time To Repay	1	0.316	0.317	0.0012	0.390	-0.007	0.009	0.761	0.304
		2	0.301	0.297	-0.0038	-1.280	-0.012	0.004	0.327	0.979
		3	0.366	0.365	-0.0013	-0.350	-0.011	0.009	0.807	0.245
	Time+Cost To Repay	1	0.316	0.316	0.0005	0.170	-0.007	0.008	0.895	0.132
		2	0.301	0.304	0.0037	1.220	-0.004	0.012	0.359	0.917
		3	0.366	0.364	-0.0013	-0.370	-0.011	0.009	0.794	0.262
	Reminder: Time To Repay	1	0.316	0.312	-0.0036	-1.130	-0.012	0.004	0.380	0.879
		2	0.301	0.308	0.0068	2.250	-0.001	0.015	0.088	1.706
	Reminder: Time+Cost To Repay	1	0.316	0.311	-0.0052	-1.640	-0.013	0.003	0.198	1.286
		2	0.301	0.303	0.0025	0.830	-0.005	0.010	0.532	0.625
9. Portfolio share missed payment (% credit cards)	Time To Repay	1	0.017	0.017	0.0005	2.870	-0.002	0.003	0.692	0.396
		2	0.036	0.038	0.0013	3.690	-0.002	0.005	0.475	0.714
		3	0.012	0.014	0.0017	14.400	-0.001	0.005	0.232	1.195
	Time+Cost To Repay	1	0.017	0.016	-0.0012	-6.900	-0.004	0.001	0.321	0.992
		2	0.036	0.036	-0.0009	-2.590	-0.005	0.003	0.609	0.511
		3	0.012	0.013	0.0005	4.540	-0.002	0.003	0.699	0.387

Outcome	Treatment	Lender	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
10. Portfolio balances net of payments (% statement balances)	Reminder: Time To Repay	1	0.017	0.017	-0.0002	-1.060	-0.002	0.002	0.879	0.152
		2	0.036	0.037	0.0006	1.560	-0.003	0.004	0.758	0.308
	Reminder: Time+Cost To Repay	1	0.017	0.018	0.001	5.870	-0.001	0.003	0.423	0.801
		2	0.036	0.037	0.0002	0.630	-0.003	0.004	0.902	0.123
	Time To Repay	1	0.819	0.816	-0.003	-0.360	-0.010	0.004	0.438	0.776
		2	0.840	0.844	0.0036	0.430	-0.004	0.011	0.321	0.992
		3	0.864	0.858	-0.0063	-0.730	-0.015	0.002	0.158	1.413
	Time+Cost To Repay	1	0.819	0.821	0.0015	0.190	-0.006	0.009	0.687	0.403
		2	0.840	0.833	-0.0067	-0.790	-0.014	0.001	0.071	1.805
		3	0.864	0.858	-0.0056	-0.650	-0.014	0.003	0.205	1.268
	Reminder: Time To Repay	1	0.819	0.820	0.001	0.120	-0.006	0.008	0.791	0.265
		2	0.840	0.834	-0.0057	-0.680	-0.013	0.002	0.122	1.545
Any automatic payment enrollment	Reminder: Time+Cost To Repay	1	0.819	0.825	0.0058	0.710	-0.002	0.013	0.120	1.557
		2	0.840	0.835	-0.0049	-0.580	-0.012	0.002	0.184	1.327
	Time To Repay	1	0.949	0.945	-0.004	-0.420	-0.009	0.001	0.151	1.437
		2	0.885	0.882	-0.0038	-0.420	-0.012	0.004	0.341	0.952
		3	0.950	0.944	-0.0067	-0.700	-0.014	0.001	0.088	1.709

Outcome	Treatment	Lender	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
Any automatic full payment enrollment	Time+Cost To Repay	1	0.949	0.954	0.0046	0.480	-0.001	0.010	0.080	1.749
		2	0.885	0.888	0.0029	0.330	-0.005	0.010	0.453	0.750
		3	0.950	0.943	-0.0075	-0.790	-0.015	0.0001	0.054	1.924
	Reminder: Time To Repay	1	0.949	0.952	0.0032	0.340	-0.002	0.008	0.230	1.200
		2	0.885	0.881	-0.0046	-0.520	-0.012	0.003	0.239	1.177
	Reminder: Time+Cost To Repay	1	0.949	0.951	0.0021	0.220	-0.003	0.007	0.432	0.787
		2	0.885	0.880	-0.0051	-0.570	-0.013	0.003	0.198	1.286
	Time To Repay	1	0.006	0.007	0.0011	19.270	-0.001	0.003	0.253	1.142
		2	0.006	0.006	-0.0003	-4.480	-0.002	0.002	0.768	0.295
		3	0.006	0.005	-0.0013	-21.620	-0.004	0.001	0.309	1.017
	Time+Cost To Repay	1	0.006	0.006	0.0004	7.480	-0.002	0.002	0.646	0.459
		2	0.006	0.007	0.0003	5.220	-0.002	0.002	0.739	0.333
		3	0.006	0.006	-0.0001	-1.190	-0.003	0.002	0.958	0.053
	Reminder: Time To Repay	1	0.006	0.007	0.0013	21.100	-0.001	0.003	0.214	1.244
		2	0.006	0.006	-0.0004	-6.630	-0.002	0.001	0.659	0.441
	Reminder: Time+Cost To Repay	1	0.006	0.006	0.0005	8.630	-0.001	0.002	0.597	0.529
		2	0.006	0.008	0.0016	24.850	-0.0005	0.004	0.134	1.499

Outcome	Treatment	Lender	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
Any automatic fixed payment enrollment	Time To Repay	1	0.032	0.044	0.0118* * *	37.170	0.007	0.016	0	4.913
		2	0.041	0.054	0.0132* * *	32.180	0.008	0.018	0	4.943
		3	0.097	0.114	0.0165* * *	17	0.006	0.027	0.002	3.094
	Time+Cost To Repay	1	0.032	0.045	0.0134* * *	42.150	0.009	0.018	0	5.499
		2	0.041	0.051	0.0105* * *	25.740	0.005	0.016	0.0001	4.019
		3	0.097	0.098	0.0013	1.290	-0.009	0.011	0.808	0.243
	Reminder: Time To Repay	1	0.032	0.049	0.0175* * *	55.270	0.013	0.022	0	6.989
		2	0.041	0.062	0.0213* * *	52.110	0.016	0.027	0	7.642
	Reminder: Time+Cost To Repay	1	0.032	0.045	0.0133* * *	42.070	0.009	0.018	0	5.500
		2	0.041	0.063	0.022* * *	53.850	0.016	0.028	0	7.869
Any automatic fixed payment enrollment for greater than contractual minimum payment that statement	Time To Repay	1	0.029	0.040	0.0111* * *	38.050	0.007	0.016	0	4.810
		2	0.034	0.044	0.0094* * *	27.580	0.005	0.014	0.0001	3.903
		3	0.090	0.105	0.0154* * *	17.120	0.005	0.026	0.003	2.986
	Time+Cost To Repay	1	0.029	0.042	0.0126* * *	43.090	0.008	0.017	0	5.376
		2	0.034	0.041	0.0064* *	18.650	0.002	0.011	0.007	2.704
		3	0.090	0.090	0.0003	0.320	-0.010	0.010	0.954	0.057
	Reminder: Time To Repay	1	0.029	0.045	0.0156* * *	53.510	0.011	0.020	0	6.510

		2	0.034	0.053	0.0188* * *	55.090	0.014	0.024	0	7.301
Outcome	Treatment	Lender	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
Any automatic minimum payment enrollment	Reminder: Time+Cost To Repay	1	0.029	0.042	0.0131* * *	44.790	0.008	0.018	0	5.575
		2	0.034	0.054	0.0203* * *	59.240	0.015	0.025	0	7.782
	Time To Repay	1	0.911	0.893	-0.0175* * *	-1.930	-0.025	-0.010	0	4.730
		2	0.838	0.822	-0.0166* * *	-1.980	-0.026	-0.008	0.0003	3.589
		3	0.847	0.825	-0.0219* * *	-2.580	-0.034	-0.009	0.001	3.403
	Time+Cost To Repay	1	0.911	0.901	-0.0092*	-1.010	-0.016	-0.002	0.011	2.551
		2	0.838	0.830	-0.0079	-0.950	-0.017	0.001	0.082	1.737
		3	0.847	0.839	-0.0087	-1.030	-0.021	0.004	0.169	1.376
	Reminder: Time To Repay	1	0.911	0.894	-0.0162* * *	-1.780	-0.024	-0.009	0	4.391
		2	0.838	0.813	-0.0255* * *	-3.050	-0.035	-0.016	0	5.449
Statement balance net of payments (£)	Reminder: Time+Cost To Repay	1	0.911	0.898	-0.0122* * *	-1.340	-0.019	-0.005	0.001	3.339
		2	0.838	0.810	-0.0287* * *	-3.420	-0.038	-0.019	0	6.092
	Time To Repay	1	2,786.820	2,788.558	1.7385	0.060	-71.806	75.283	0.963	0.046
		2	3,092.518	3,122.077	29.5596	0.960	-55.032	114.151	0.493	0.685
		3	4,122.707	4,019.640	-103.0664	-2.500	-232.375	26.243	0.118	1.562
	Time+Cost To Repay	1	2,786.820	2,737.213	-49.6068	-1.780	-122.577	23.363	0.183	1.332
		2	3,092.518	3,065.418	-27.0995	-0.880	-111.077	56.878	0.527	0.632
		3	4,122.707	4,022.037	-100.6698	-2.440	-231.085	29.745	0.130	1.513

Outcome	Treatment	Lender	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
Cumulative borrowing costs across statements (£)	Reminder: Time To Repay	1	2,786.820	2,759.349	-27.4707	-0.990	-100.978	46.036	0.464	0.732
		2	3,092.518	2,941.549	-150.9691* * *	-4.880	-234.421	-67.517	0.0004	3.546
	Reminder: Time+Cost To Repay	1	2,786.820	2,790.169	3.3491	0.120	-70.042	76.740	0.929	0.089
		2	3,092.518	2,998.398	-94.1198*	-3.040	-177.195	-11.045	0.026	2.221
	Time To Repay	1	333.985	336.736	2.7512	0.820	-7.520	13.022	0.600	0.525
		2	452.510	459.488	6.9782	1.540	-4.284	18.240	0.225	1.214
		3	259.469	254.584	-4.885	-1.880	-19.344	9.574	0.508	0.662
	Time+Cost To Repay	1	333.985	331.232	-2.7527	-0.820	-12.824	7.319	0.592	0.536
		2	452.510	448.284	-4.226	-0.930	-15.176	6.724	0.449	0.756
		3	259.469	253.250	-6.2185	-2.400	-20.687	8.250	0.400	0.842
	Reminder: Time To Repay	1	333.985	333.113	-0.8719	-0.260	-11.033	9.289	0.866	0.168
		2	452.510	435.225	-17.2848* * *	-3.820	-28.194	-6.376	0.002	3.106
	Reminder: Time+Cost To Repay	1	333.985	337.182	3.1965	0.960	-7.010	13.402	0.539	0.614
		2	452.510	444.922	-7.5882	-1.680	-18.486	3.310	0.172	1.365

Outcome	Treatment	Lender	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
Cumulative new spending across statements (£)	Time To Repay	1	1,521.756	1,518.902	-2.8544	-0.190	-85.647	79.939	0.946	0.068
		2	1,475.760	1,483.611	7.8508	0.530	-61.311	77.013	0.824	0.222
		3	538.215	526.947	-11.2684	-2.090	-67.660	45.123	0.695	0.392
	Time+Cost To Repay	1	1,521.756	1,527.328	5.5713	0.370	-76.276	87.419	0.894	0.133
		2	1,475.760	1,478.690	2.93	0.200	-62.916	68.776	0.930	0.087
		3	538.215	510.170	-28.045	-5.210	-83.537	27.447	0.322	0.991
	Reminder: Time To Repay	1	1,521.756	1,490.400	-31.3566	-2.060	-113.741	51.028	0.456	0.746
		2	1,475.760	1,456.899	-18.8604	-1.280	-86.318	48.597	0.584	0.548
	Reminder: Time+Cost To Repay	1	1,521.756	1,526.006	4.2495	0.280	-74.956	83.455	0.916	0.105
		2	1,475.760	1,489.945	14.185	0.960	-50.550	78.919	0.668	0.430
Cumulative payments across statements (£)	Time To Repay	1	2,542.261	2,606.586	64.3252	2.530	-27.363	156.014	0.169	1.375
		2	2,397.563	2,419.064	21.5004	0.900	-60.659	103.659	0.608	0.513
		3	2,044.988	1,987.112	-57.8757	-2.830	-162.669	46.917	0.279	1.083
	Time+Cost To Repay	1	2,542.261	2,533.015	-9.2454	-0.360	-100.448	81.957	0.842	0.199
		2	2,397.563	2,411.410	13.8462	0.580	-66.501	94.193	0.736	0.338
		3	2,044.988	2,023.895	-21.0924	-1.030	-127.096	84.912	0.696	0.390
	Reminder: Time To Repay	1	2,542.261	2,520.076	-22.1842	-0.870	-113.521	69.152	0.634	0.476
		2	2,397.563	2,409.646	12.0831	0.500	-69.722	93.889	0.772	0.290

Outcome	Treatment	Lender	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
Cumulative automatic payments across statements (£)	Reminder: Time+Cost To Repay	1	2,542.261	2,579.812	37.5515	1.480	-51.948	127.051	0.411	0.822
		2	2,397.563	2,412.041	14.4774	0.600	-65.016	93.971	0.721	0.357
	Time To Repay	1	525.006	528.852	3.8466	0.730	-14.800	22.494	0.686	0.404
		2	685.201	703.320	18.1188	2.640	-2.467	38.704	0.084	1.725
		3	722.080	717.555	-4.5249	-0.630	-32.570	23.520	0.752	0.316
	Time+Cost To Repay	1	525.006	523.297	-1.7085	-0.330	-20.531	17.114	0.859	0.178
		2	685.201	685.781	0.5797	0.080	-19.518	20.678	0.955	0.056
		3	722.080	709.500	-12.5797	-1.740	-40.495	15.336	0.377	0.883
	Reminder: Time To Repay	1	525.006	535.429	10.4228	1.990	-8.969	29.815	0.292	1.054
		2	685.201	667.929	-17.272	-2.520	-37.441	2.897	0.093	1.679
Cumulative manual payments across statements (£)	Reminder: Time+Cost To Repay	1	525.006	525.600	0.5944	0.110	-17.341	18.530	0.948	0.065
		2	685.201	687.408	2.2062	0.320	-18.267	22.679	0.833	0.211
	Time To Repay	1	2,021.569	2,082.780	61.2104	3.030	-28.116	150.537	0.179	1.343
		2	1,716.945	1,720.360	3.4146	0.200	-75.986	82.815	0.933	0.084
		3	1,330.406	1,274.603	-55.8031	-4.190	-153.540	41.934	0.263	1.119
	Time+Cost To Repay	1	2,021.569	2,014.627	-6.9422	-0.340	-95.805	81.921	0.878	0.153
		2	1,716.945	1,730.226	13.2814	0.770	-64.725	91.288	0.739	0.334

3	1,330.406	1,320.226	-10.1796	-0.770	-109.159	88.800	0.840	0.202
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Outcome	Treatment	Lender	Mean (Control)	Mean (Treatment)	Mean Difference (Treatment- Control)	Percentage Difference Relative to Control	CI Lower (Treatment- Control)	CI Upper (Treatment- Control)	P Value	T Statistic
Any payments via both automatic AND manual	Reminder: Time To Repay	1	2,021.569	1,989.385	-32.1844	-1.590	-120.922	56.554	0.477	0.711
		2	1,716.945	1,746.645	29.7005	1.730	-49.565	108.966	0.463	0.734
	Reminder: Time+Cost To Repay	1	2,021.569	2,059.122	37.5531	1.860	-49.981	125.088	0.400	0.841
		2	1,716.945	1,730.297	13.3519	0.780	-63.272	89.976	0.733	0.342
	Time To Repay	1	0.066	0.064	-0.0023	-3.440	-0.008	0.004	0.452	0.753
		2	0.051	0.054	0.0034	6.640	-0.002	0.009	0.220	1.226
		3	0.083	0.087	0.0045	5.510	-0.005	0.014	0.348	0.939
	Time+Cost To Repay	1	0.066	0.065	-0.001	-1.480	-0.007	0.005	0.748	0.322
		2	0.051	0.048	-0.0023	-4.520	-0.008	0.003	0.388	0.863
		3	0.083	0.079	-0.0035	-4.280	-0.013	0.006	0.456	0.746
	Reminder: Time To Repay	1	0.066	0.066	0.0002	0.340	-0.006	0.006	0.941	0.074
		2	0.051	0.053	0.0021	4.230	-0.003	0.008	0.431	0.788
	Reminder: Time+Cost To Repay	1	0.066	0.066	0.0001	0.160	-0.006	0.006	0.972	0.035
		2	0.051	0.056	0.0057*	11.170	0.0002	0.011	0.042	2.039

*** P value < 0.005, ** < 0.01, * < 0.05

Table A9: Automatic minimum payment nudges - treatment effects on selected secondary outcomes after nine completed statement cycles

Outcome	Treatment	Lender	Estimate	95% Confidence Interval	P Value	Adjusted R Squared
Any automatic payment enrollment	Time To Repay	1	-0.0042 (0.0027)	[-0.0095, 0.0012]	0.1278	0.0351
		2	-0.002 (0.0037)	[-0.0094, 0.0053]	0.5899	0.1208
		3	-0.0102* (0.0044)	[-0.0188, - 0.0016]	0.0205	0.3302
	Time+Cost To Repay	1	0.0042 (0.0026)	[-0.0008, 0.0093]	0.1025	0.0351
		2	0.0021 (0.0037)	[-0.0052, 0.0093]	0.5731	0.1208
		3	-0.0092* (0.0044)	[-0.0179, - 0.0005]	0.0379	0.3302
	Reminder: Time To Repay	1	0.0027 (0.0026)	[-0.0025, 0.0078]	0.3087	0.0361
		2	-0.0062 (0.0038)	[-0.0136, 0.0012]	0.1018	0.0957
	Reminder: Time+Cost To Repay	1	0.0012 (0.0026)	[-0.0039, 0.0063]	0.6471	0.0361
		2	-0.0038 (0.0038)	[-0.0112, 0.0036]	0.3153	0.0957
Any automatic full payment enrollment	Time To Repay	1	0.0012 (0.001)	[-0.0008, 0.0031]	0.2432	0.0098
		2	-0.0001 (0.0009)	[-0.0019, 0.0018]	0.9403	0.0616
		3	-0.0018 (0.0016)	[-0.0049, 0.0012]	0.2451	0.1553
	Time+Cost To Repay	1	0.0004 (0.001)	[-0.0015, 0.0023]	0.6618	0.0098
		2	0.0002 (0.001)	[-0.0017, 0.0021]	0.8569	0.0616
		3	-0.0012 (0.0016)	[-0.0043, 0.002]	0.461	0.1553
	Reminder: Time To Repay	1	0.0012 (0.001)	[-0.0007, 0.0032]	0.2168	0.0106
		2	-0.0005 (0.0009)	[-0.0023, 0.0014]	0.627	0.0473
	Reminder: Time+Cost To Repay	1	0.0005 (0.001)	[-0.0014, 0.0024]	0.5803	0.0106
		2	0.0017 (0.001)	[-0.0003, 0.0038]	0.0896	0.0473

Outcome	Treatment	Lender	Estimate	95% Confidence Interval	P Value	Adjusted R Squared
Any automatic fixed payment enrollment	Time To Repay	1	0.012* * * (0.0024)	[0.0073, 0.0167]	0	0.0156
		2	0.0124* * * (0.0026)	[0.0073, 0.0174]	0	0.0823
		3	0.0194* * * (0.0053)	[0.0089, 0.0298]	0.0003	0.4992
	Time+Cost To Repay	1	0.0134* * * (0.0024)	[0.0087, 0.0181]	0	0.0156
		2	0.0107* * * (0.0026)	[0.0057, 0.0157]	0	0.0823
		3	0.0036 (0.0053)	[-0.0067, 0.0139]	0.4943	0.4992
	Reminder: Time To Repay	1	0.018* * * (0.0025)	[0.0131, 0.0229]	0	0.0114
		2	0.0207* * * (0.0027)	[0.0154, 0.026]	0	0.0601
	Reminder: Time+Cost To Repay	1	0.0134* * * (0.0024)	[0.0087, 0.0182]	0	0.0114
		2	0.0221* * * (0.0027)	[0.0167, 0.0274]	0	0.0601
Any automatic fixed payment enrollment for greater than contractual minimum payment that statement	Time To Repay	1	0.0113* * * (0.0023)	[0.0068, 0.0158]	0	0.0144
		2	0.0086* * * (0.0023)	[0.004, 0.0131]	0.0003	0.0702
		3	0.0179* * * (0.0053)	[0.0075, 0.0282]	0.0007	0.4783
	Time+Cost To Repay	1	0.0126* * * (0.0023)	[0.008, 0.0172]	0	0.0144
		2	0.0063* * * (0.0023)	[0.0017, 0.0108]	0.0069	0.0702
		3	0.0027 (0.0052)	[-0.0075, 0.013]	0.6017	0.4783
	Reminder: Time To Repay	1	0.0161* * * (0.0024)	[0.0114, 0.0208]	0	0.0113
		2	0.0181* * * (0.0025)	[0.0131, 0.023]	0	0.0507
	Reminder: Time+Cost To Repay	1	0.0131* * * (0.0023)	[0.0086, 0.0177]	0	0.0113
		2	0.02* * * (0.0026)	[0.015, 0.025]	0	0.0507

Outcome	Treatment	Lender	Estimate	95% Confidence Interval	P Value	Adjusted R Squared
Any automatic minimum payment enrollment	Time To Repay	1	-0.0179* * * (0.0037)	[-0.025, - 0.0107]	0	0.0377
		2	-0.0143* * * (0.0044)	[-0.023, - 0.0057]	0.0011	0.1265
		3	-0.0281* * * (0.0067)	[-0.0411, - 0.015]	0	0.4601
	Time+Cost To Repay	1	-0.0096* * (0.0036)	[-0.0166, - 0.0026]	0.0071	0.0377
		2	-0.0089* (0.0044)	[-0.0174, - 0.0003]	0.0424	0.1265
		3	-0.0117 (0.0066)	[-0.0246, 0.0012]	0.0761	0.4601
	Reminder: Time To Repay	1	-0.0171* * * (0.0037)	[-0.0243, -0.01]	0	0.0275
		2	-0.0265* * * (0.0045)	[-0.0353, - 0.0177]	0	0.098
	Reminder: Time+Cost To Repay	1	-0.0131* * * (0.0036)	[-0.0202, - 0.0061]	0.0003	0.0275
		2	-0.0272* * * (0.0045)	[-0.0361, - 0.0184]	0	0.098
Statement balance net of payments (£)	Time To Repay	1	-25.3162 (25.4288)	[-75.1566, 24.5242]	0.3195	0.6023
		2	6.5708 (29.9321)	[-52.0961, 65.2378]	0.8262	0.6086
		3	-77.0862 (55.1313)	[-185.1436, 30.9712]	0.162	0.6619
	Time+Cost To Repay	1	-22.8294 (24.7934)	[-71.4243, 25.7656]	0.3572	0.6023
		2	3.8262 (29.8787)	[-54.7361, 62.3885]	0.8981	0.6086
		3	-79.1543 (54.3025)	[-185.5871, 27.2785]	0.1449	0.6619
	Reminder: Time To Repay	1	-11.1458 (24.8186)	[-59.7903, 37.4987]	0.6534	0.5416
		2	-57.149 (29.9143)	[-115.781, 1.483]	0.0561	0.5253
	Reminder: Time+Cost To Repay	1	-30.031 (25.1314)	[-79.2885, 19.2264]	0.2321	0.5416
		2	-42.3274 (29.7872)	[-100.7103, 16.0554]	0.1553	0.5253

Outcome	Treatment	Lender	Estimate	95% Confidence Interval	P Value	Adjusted R Squared
Cumulative borrowing costs across statements (£)	Time To Repay	1	2.1511 (1.4365)	[-0.6645, 4.9668]	0.1343	0.7782
		2	1.6742 (1.8212)	[-1.8954, 5.2438]	0.3579	0.7918
		3	-3.0163 (4.2723)	[-11.39, 5.3574]	0.4802	0.7571
	Time+Cost To Repay	1	-0.5221 (1.3837)	[-3.2342, 2.19]	0.7059	0.7782
		2	-1.7685 (1.7851)	[-5.2673, 1.7302]	0.3218	0.7918
		3	-3.2628 (4.2652)	[-11.6225, 5.097]	0.4443	0.7571
	Reminder: Time To Repay	1	1.1483 (1.4425)	[-1.6789, 3.9756]	0.426	0.909
		2	-1.5153 (0.8587)	[-3.1983, 0.1677]	0.0776	0.9131
	Reminder: Time+Cost To Repay	1	1.2815 (1.4563)	[-1.5727, 4.1358]	0.3789	0.909
		2	-1.5839 (0.8637)	[-3.2767, 0.109]	0.0667	0.9131
Cumulative new spending across statements (£)	Time To Repay	1	-4.0331 (14.9989)	[-33.4309, 25.3648]	0.788	0.7112
		2	9.6533 (13.9056)	[-17.6016, 36.9082]	0.4876	0.7011
		3	-12.5642 (16.9948)	[-45.8741, 20.7456]	0.4597	0.664
	Time+Cost To Repay	1	7.2403 (14.9402)	[-22.0424, 36.5231]	0.6279	0.7112
		2	-1.65 (13.3463)	[-27.8088, 24.5087]	0.9016	0.7011
		3	-11.3731 (16.6575)	[-44.0217, 21.2756]	0.4948	0.664
	Reminder: Time To Repay	1	7.2484 (15.2549)	[-22.6512, 37.1481]	0.6347	0.8704
		2	-5.4525 (9.7064)	[-24.4771, 13.5721]	0.5743	0.8528
	Reminder: Time+Cost To Repay	1	24.734 (15.0023)	[-4.6706, 54.1386]	0.0992	0.8704
		2	7.1919 (9.4322)	[-11.2952, 25.679]	0.4458	0.8528

Outcome	Treatment	Lender	Estimate	95% Confidence Interval	P Value	Adjusted R Squared
Cumulative new spending across statements (£)	Time To Repay	1	47.559* (20.381)	[7.6123, 87.5057]	0.0196	0.7
		2	7.1329 (18.9248)	[-29.9597, 44.2255]	0.7062	0.6673
		3	-35.8221 (34.1792)	[-102.8134, 31.1691]	0.2946	0.5503
	Time+Cost To Repay	1	2.3768 (20.4869)	[-37.7775, 42.5311]	0.9076	0.7
		2	13.6845 (18.6976)	[-22.9627, 50.3318]	0.4642	0.6673
		3	9.334 (34.1617)	[-57.6229, 76.291]	0.7847	0.5503
	Reminder: Time To Repay	1	40.0558* (20.1876)	[0.4882, 79.6234]	0.0472	0.8443
		2	29.1039 (15.8089)	[-1.8815, 60.0892]	0.0656	0.8087
	Reminder: Time+Cost To Repay	1	16.5749 (21.065)	[-24.7124, 57.8623]	0.4314	0.8443
		2	4.2355 (15.8838)	[-26.8967, 35.3678]	0.7897	0.8087
Cumulative automatic payments across statements (£)	Time To Repay	1	-0.8028 (3.7505)	[-8.1537, 6.5481]	0.8305	0.6871
		2	7.1207 (3.8385)	[-0.4027, 14.6441]	0.0636	0.7399
		3	-1.2631 (8.6977)	[-18.3107, 15.7845]	0.8845	0.7079
	Time+Cost To Repay	1	-1.8313 (3.432)	[-8.5579, 4.8954]	0.5936	0.6871
		2	-0.3013 (3.7744)	[-7.6992, 7.0966]	0.9364	0.7399
		3	-6.2087 (8.624)	[-23.1118, 10.6943]	0.4716	0.7079
	Reminder: Time To Repay	1	2.4492 (3.4954)	[-4.4018, 9.3002]	0.4835	0.8654
		2	2.709 (2.5578)	[-2.3043, 7.7222]	0.2895	0.8695
	Reminder: Time+Cost To Repay	1	0.9836 (3.4035)	[-5.6872, 7.6544]	0.7726	0.8654
		2	4.0094 (2.4681)	[-0.8282, 8.8469]	0.1043	0.8695

Outcome	Treatment	Lender	Estimate	95% Confidence Interval	P Value	Adjusted R Squared
Cumulative manual payments across statements (£)	Time To Repay	1	48.8665* (20.5359)	[8.6161, 89.1168]	0.0173	0.6849
		2	0.2966 (18.7694)	[-36.4914, 37.0845]	0.9874	0.6449
		3	-36.134 (32.4317)	[-99.7001, 27.4321]	0.2652	0.5211
	Time+Cost To Repay	1	5.5147 (20.6562)	[-34.9714, 46.0009]	0.7895	0.6849
		2	14.2647 (18.5615)	[-22.1159, 50.6453]	0.4422	0.6449
		3	14.5214 (32.3239)	[-48.8334, 77.8762]	0.6533	0.5211
	Reminder: Time To Repay	1	38.7334 (20.3106)	[-1.0754, 78.5423]	0.0565	0.8355
		2	25.9499 (15.8285)	[-5.074, 56.9739]	0.1011	0.798
	Reminder: Time+Cost To Repay	1	15.586 (21.1812)	[-25.9292, 57.1012]	0.4618	0.8355
		2	0.6423 (15.9183)	[-30.5576, 31.8421]	0.9678	0.798

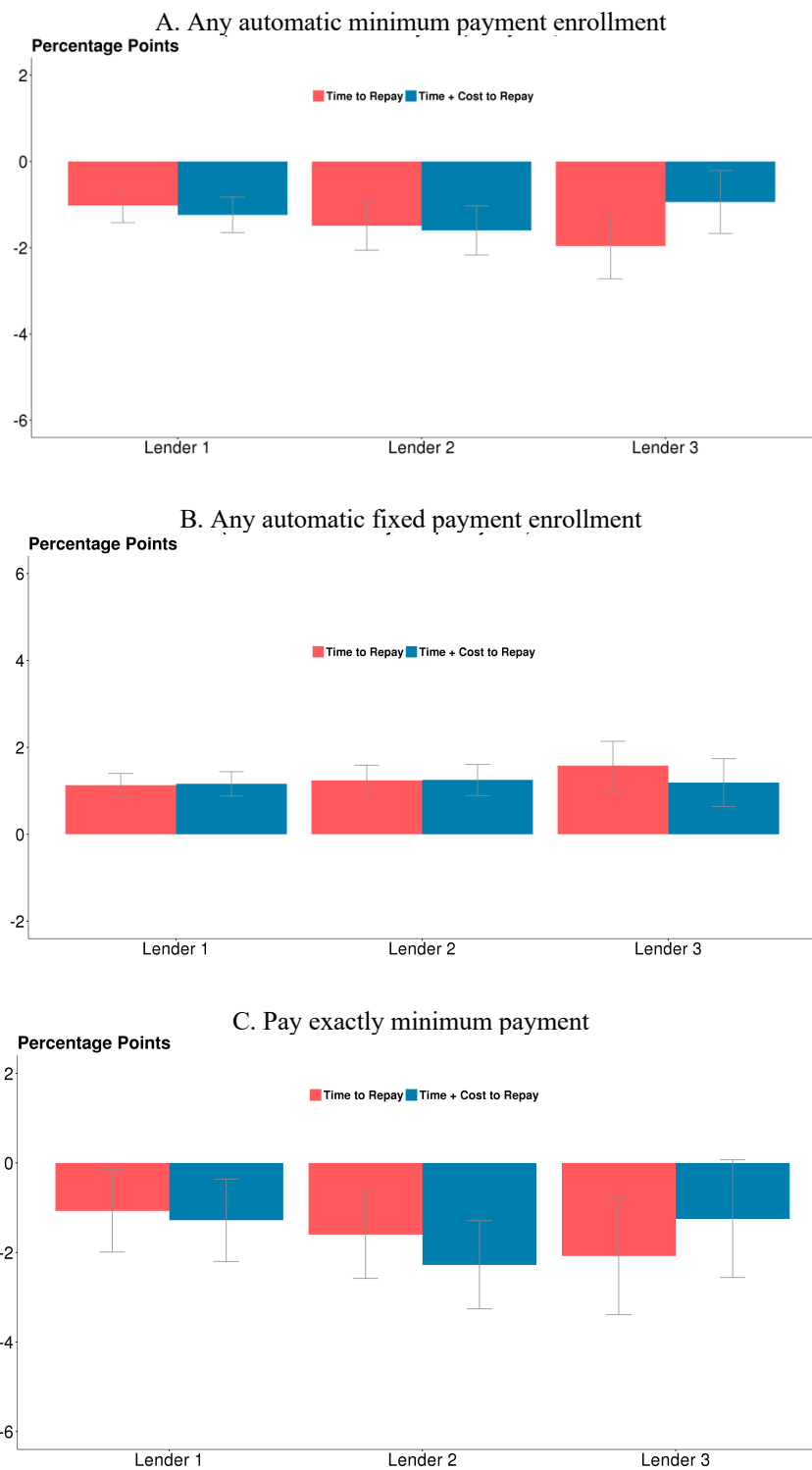
*** P value < 0.005, ** < 0.01, * < 0.05.

Table A10: Automatic minimum payment nudges – survey summary statistics

Question	Outcome (%)	Mean	95 % C.I.
Why have automatic payment?	Prevents late fee	0.5815	[0.5530, 0.6101]
	Prevents credit score impact	0.5510	[0.5222, 0.5798]
	Prefer this control	0.2764	[0.2505, 0.3023]
	Easy	0.1822	[0.1599, 0.2046]
	Unstable finances	0.0767	[0.0613, 0.0921]
	Never thought why	0.0235	[0.0148, 0.0323]
	Wanted to cancel, didn't get around to	0.0017	[-0.0007, 0.0042]
	Other	0.0096	[0.0039, 0.0152]
	Number of responses (#)	1.70	[1.64, 1.76]
Why automatic minimum payment not automatic fixed payment?	Prefer this control	0.3976	[0.3692, 0.4259]
	Didn't know could	0.1805	[0.1582, 0.2027]
	Only afford minimum	0.1988	[0.1757, 0.2219]
	Prefer minimum	0.1744	[0.1524, 0.1963]
	Easy	0.1613	[0.1400, 0.1826]
	Unstable finances	0.1046	[0.0869, 0.1223]
	Never thought why	0.0488	[0.0363, 0.0613]
	Didn't understand	0.0340	[0.0235, 0.0445]
	No benefit	0.0323	[0.0220, 0.0425]
	Faster amortisation	0.0148	[0.0078, 0.0218]
	Wanted to cancel, didn't get around to	0.0078	[0.0027, 0.0130]
	Other	0.0174	[0.0099, 0.0250]
Liquidity Constraints (How well keeping up with bills?)	Number of responses (#)	1.37	[1.33, 1.41]
	Keeping up, no problem	0.3810	[0.3529, 0.4091]
	Keeping up, occasional struggle	0.4246	[0.3960, 0.4532]
	Keeping up, constant struggle	0.1404	[0.1203, 0.1605]
	Falling behind with some	0.0366	[0.0257, 0.0475]
	Having real problems & fallen behind with many	0.0113	[0.0052, 0.0175]
	No commitments	0.0061	[0.0016, 0.0106]
Stated Preferences	Reduce debt	0.7071	[0.6807, 0.7334]
	Save more	0.2668	[0.2412, 0.2924]
(In one year prefer to...)	Spend more	0.0087	[0.0033, 0.0141]
	Don't know	0.0174	[0.0099, 0.0250]
Minimum Payment	Correct Answer (months)	225	
Amortization Beliefs	Expected (months)	78.28	[73.64, 82.92]
(If only pay minimum how long expect to repay?)	Expected < 3 years	0.3435	[0.3160, 0.3710]
	Expected < 5 years	0.5920	[0.5635, 0.6204]
	Expected < Correct	0.9372	[0.9232, 0.9513]
	Confidence in Expected (1-10)	3.84	[3.70, 3.98]
Desired Minimum Amortization	Desired (months)	38.36	[35.18, 41.55]
	Unable to Afford	0.0392	[0.0280, 0.0505]

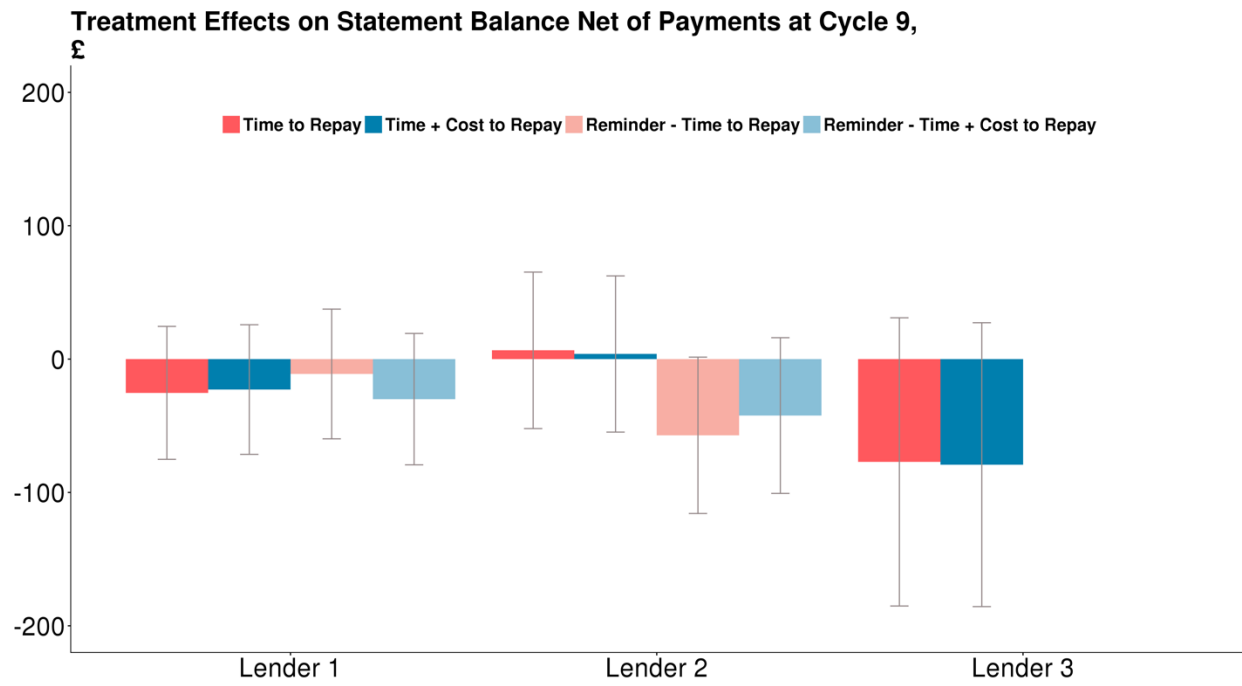
Notes: See Online Appendix section 'B: Survey Questionnaire' for exact question drafting. $N = 1,147$ respondents who confirmed they still had automatic minimum payment at time of survey.

Figure B1: Automatic minimum payment nudges - treatment effects on (A) Any automatic minimum payment enrollment, (B) Any automatic fixed payment enrollment (C) Pay exactly minimum payment after two statement cycles



Notes: Estimates are $\delta_{k,2}$ from Equation 1 OLS regression that includes time fixed effects and pre-experiment control variables with standard errors clustered at card-level.

Figure B2: Automatic minimum payment nudges - treatment effects on statement balance net of payments (£) after nine statement cycles



Notes: Estimates are $\delta_{k,9}$ from Equation 1 OLS regression that includes time fixed effects and pre-experiment control variables with standard errors clustered at card-level.

C. Survey Questionnaire

[n.b. XXXX or LENDER indicates firm-specific brand information has been redacted.]

Thank you for taking part in this survey!

It should take you no more than **5 minutes** to complete. You have the chance to enter a prize draw where two people will each win **£500** and **15 people will each win £100** in Amazon e-vouchers (terms and conditions apply). You will have the opportunity to enter the prize draw at the end of the survey.

The team at XXXX are looking to understand more about consumers' views and experiences of credit cards to help support work they are doing with the Financial Conduct Authority (FCA). The FCA is the regulator of financial services and markets in the UK. It has an objective of protecting consumers of financial products and services.

Q1	Which one of the following statements best describes how well you are keeping up with your bills and credit commitments at the moment? Are you:	1	Keeping up with all of them without any difficulties	Single Code
		2	Keeping up with all of them, but it is a struggle from time to time	
		3	Keeping up with all of them, but it is a constant struggle	
		4	Falling behind with some of them	
		5	Having real financial problems and have fallen behind with many of them	
		6	Don't have any commitments	

Q3	<p>For the next question, we'd like you to think about how much money you have right now.</p> <p>There is an example credit card bill below. Obviously you might not expect to get a bill like this. But if you did, bearing in mind how much money you actually have, how much would you repay?</p>	Randomized to view one of Q3.1a,1b, 2a,2b.
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Q3.1a	SCENARIO 1 (LOW) (title is just our ref. do not show respondent)	1	Full statement balance £532.60	SHOW TO RESPONDENTS WHERE 'Q3ScenarioPart' is 'Q3.1 – MinimumDisplayed' AND 'Q3ScenarioBalance' is '532.60'
		2	The minimum £11.98	
		3	This much (please specify)	

Q3.1b	SCENARIO 1 (HIGH) (title is just our ref. do not show respondent)	1	Full statement balance £3217.36	SHOW TO RESPONDENTS WHERE 'Q3ScenarioPart' is 'Q3.1 – MinimumDisplayed' AND 'Q3ScenarioBalance' is '3,217.36'
		2	The minimum £72.38	
		3	This much (please specify)	

Q3.2a	SCENARIO 2 (LOW) (title is just our ref. do not show respondent)	1	Full statement balance £532.60	SHOW TO RESPONDENTS WHERE 'Q3ScenarioPart' is 'Q3.2 – NoMinimumDisplayed' AND 'Q3ScenarioBalance' is '532.60'
		2	This much (please specify)	

Q3.2b	SCENARIO 2 (HIGH) (title is just our ref. do not show respondent)	1	Full statement balance £3217.36	SHOW TO RESPONDENTS WHERE 'Q3ScenarioPart' is 'Q3.2 – NoMinimumDisplayed' AND 'Q3ScenarioBalance' is '3,217.36'
		2	This much (please specify)	

Q2	Thinking about your financial situation in one year from now, would you most prefer to have:	1	Spent more	Single code Randomised (Code 1 – 3)
		2	Saved more	
		3	Holding less debt	
		4	Not sure / don't know	

Now some questions on how you repay your credit card.

Q4	<p>What type of direct debit do you have on your XXXX credit card?</p> <p>If you have multiple XXXX credit cards please think of the one you consider your main credit card.</p>	1	Full payment direct debit	Single code
		2	Fixed payment direct debit	
		3	Minimum payment direct debit	
		4	No direct debit	
		5	Not sure/ don't know	

Q4.1	<p>Why do you have no direct debit on your XXXX credit card (rather than a minimum, fixed or full payment direct debit)?</p> <p>Please select the most important reason(s).</p>	1	I never thought about why	<p>SHOW ONLY to CODE 4 on Q4</p> <p>Multi code, Randomised (option 1 last)</p>
		2	I do not see the point of having a direct debit.	
		3	I think my money situation is too unstable (e.g. fluctuating ingoings and / or outgoings) to have a direct debit.	
		4	I feel more in control making payments in other ways when I want to(e.g. app, bank transfers, cheque, phone, branch).	
		5	I think most people do not have a direct debit.	
		6	I did not know I could have a direct debit.	
		7	I wanted to setup a direct debit but was not sure how to.	
		8	I wanted to setup a direct debit but did not get around to it.	
		9	I am worried about direct debit payments bouncing.	
		10	I had a bad past experience with a direct debit	
		11	I think the LENDER thinks I shouldn't have a direct debit.	
		12	I was advised against having a direct debit by someone I trusted	
		13	Other (please specify)	

Q4.2	<p>Why do you have a direct debit on your XXXX credit card?</p> <p>Please select the most important reason(s).</p>	1	I never thought about why	<p>SHOW ONLY to CODE 1 and CODE 3 on Q4</p> <p>Multi code, Randomised (option 1 last)</p>
		2	It prevents me from forgetting to make a payment which would harm my credit score.	
		3	It prevents me from forgetting to make a payment which costs me a late payment fee.	
		4	It helps me manage my unstable money situation (e.g. fluctuating ingoing and / or outgoings)	
		5	I feel more in control making payments through direct debit.	
		6	I think most people have it	
		7	It was easy to setup	
		8	I wanted to cancel it but was not sure how to.	
		9	I wanted to cancel it but did not get around to it.	
		10	I had a bad past experience of not having a direct debit	
		11	I think it is what the LENDER thinks I should do.	
		12	I was advised to by someone I trusted.	
		13	I always want to repay in full.	
		14	Other (please specify)	

Q4.3	<p>Why do you have a fixed payment direct debit rather than a minimum payment direct debit on your XXXX credit card?</p> <p>Please select the most important reason(s).</p>	1	I never thought about why.	<p>SHOW ONLY to CODE 2 on Q4</p> <p>Multi code, Randomised (option 1 last)</p>
		2	I do not see a financial benefit from having a minimum payment direct debit.	
		3	I did not know I could setup a minimum payment direct debit.	
		4	I do not understand what a minimum payment direct debit is.	
		5	I do not know how to setup a minimum payment direct debit.	
		6	I prefer to pay a fixed amount through direct debit.	
		7	I think most people have a fixed payment direct debit.	
		8	It was easy to setup a fixed payment direct debit.	
		9	I feel more in control making additional payments in other ways when I want to (e.g. app, bank transfers, cheque, phone, branch)	
		10	It better helps me manage my unstable money situation (e.g. fluctuating ingoings and / or outgoing)	
		11	I wanted to cancel my fixed payment direct debit but did not get around to it.	
		12	I wanted to cancel my fixed payment direct debit but was not sure how to	
		13	I had a bad past experience with a minimum payment direct debit	
		14	A fixed payment direct debit helps me to repay my debt faster than a minimum payment direct debit would.	
		15	I think it is what LENDER thinks I should do.	
		16	Someone I trusted advised me to setup a fixed payment direct debit.	
		17	Other (please specify)	

Q4.4	<p>Why do you have a minimum payment direct debit rather than a fixed payment direct debit on your XXXX credit card.</p> <p>Please select the most important reason(s).</p>	1	I do not see a financial benefit from having a fixed payment direct debit.	<p>SHOW ONLY to CODE 3 on Q4</p> <p>Multi code</p> <p>Randomised</p>
		2	I did not know I could setup a fixed payment direct debit.	
		3	I do not understand what a fixed payment direct debit is.	
		4	I do not know how to setup a fixed payment direct debit.	
		5	I prefer to only pay the minimum through direct debit.	
		6	I think most people have a minimum payment direct debit.	
		7	It was easy to setup a minimum payment direct debit.	
		8	I wanted to cancel my minimum payment direct debit but did not get around to it.	
		9	I feel more in control making additional payments in other ways when I want to (e.g. app, bank transfers, cheque, phone, branch)	
		10	It better helps me manage my unstable money situation (e.g. fluctuating ingoings and / or outgoings)	
		11	I wanted to cancel my minimum payment direct debit but was not sure how to	
		12	I had a bad past experience with a fixed payment direct debit	
		13	I am worried I won't be able to afford more than the minimum	
		14	A minimum payment direct debit helps me to repay my debt faster than a fixed payment direct debit would.	
		15	I think it is what LENDER thinks I should do.	
		16	Someone I trusted advised me to setup a minimum payment direct debit.	
		17	I never thought about why	
		18	Other (please specify)	

Q5	<p>Imagine a credit card statement balance of £1,029.90 with an interest rate of 18.9%. If someone only repays the minimum each month and spends no more on the card approximately how long would you expect it to take them to repay?</p> <p>It doesn't matter whether the answer you give is right or wrong. We just want to find out what people understand and the question after this one lets you indicate how confident you are in your answer.</p>	
	<p>_____ years _____ months</p>	

Q6	<p>How confident are you in that last answer being correct?</p> <p>On a scale from 0 (Absolutely no idea) to 10 (Highly confident).</p>	1	0	Single Code
		2	1	
		3	2	
		4	3	
		5	4	
		6	5	
		7	6	
		8	7	
		9	8	
		10	9	
		11	10	

Q7	<p>Now, bearing in mind how much money you actually have, imagine your credit card statement balance is £1,029.90 with an interest rate of 18.9%. If you only repay the minimum each month and spend no more on the card, approximately how long would you want it to take to repay in full?</p>	
	<p>_____ years _____ months</p> <p>I could never repay this debt</p>	

Q8	<p>The Financial Conduct Authority (FCA) would like to anonymously link your answers from this survey to data it holds from regulated firms as part of its ongoing remit to help protect consumers.</p> <p>This includes information about your XXXX credit card(s) as well as your credit files and XXXX personal current account(s) and savings account(s) (if you have these).</p> <p>Consent to sharing your data will not affect your involvement with XXXX or any financial services providers. The information will be treated in strict confidence and used for research and to help the regulator of financial services to protect consumers.</p> <p>Do you give your consent to Maru/edr sharing your survey responses with the FCA in an anonymised (and therefore confidential) form to match to other data?</p>	1	Yes	Single Code
		2	No	

[HELP SCREEN PROVIDING FURTHER DETAILS AS BELOW]

Who are the FCA?

The Financial Conduct Authority (FCA) is the regulator of financial services. It has an objective of protecting consumers. It is an independent public body, accountable to the Treasury, which is responsible for the UK's financial system, and to Parliament. For more information, see <https://www.fca.org.uk/about/the-fca>

How will the linkage be done?

The Financial Conduct Authority (FCA) would like to link your survey responses with your credit file and XXXX credit card current accounts and savings accounts (if you have these). Your credit card history includes information about your credit card statement balances, transactions, repayments, interest and fees. Your credit file includes your credit score as well as information on your borrowing on other products, for example credit cards. Importantly, the matching process will protect your personal data.

We will pass the survey results to the FCA without information which identifies you. The FCA will use anonymised, numerical identifiers to match your responses with an anonymised extract from your credit file, provided by a credit reference agency, and with anonymised data on your XXXX credit card(s) and XXXX current account(s) and savings account(s) (if you have these). After linking responses the anonymous numerical identifier used for linkage will be deleted.

How will your data be used?

The Financial Conduct Authority (FCA) will use the anonymised dataset to research consumer interactions with financial service products. This research will inform the FCA in delivering its objectives of promoting effective competition in the interests of consumers, ensuring consumers are appropriately protected when using financial products and the UK financial services market has integrity and is protected. XXXX will not use your individual responses in any way that affects your involvement with their products or pass these responses on to other firms.

Q9	By taking part, you are given a chance to participate in a Prize Draw.	1	Yes please – I would like to take part in the prize draw	Single Code
	You have the chance to enter a prize draw where two people will win £500 and 15 people will each win £100 in Amazon e-vouchers. If you'd like to take part, please select Yes and enter your name and email address below			
		2	No thanks	

D. Tertiary Survey Analysis

How do the answers to our hypothetical question relate to the personalized information on cardholder's projected actual minimum payment repayment durations presented in the nudges? We use data for 906 respondents who provided permission to anonymously link survey responses to their administrative data.¹ We estimate the OLS regression, with robust standard errors, specified in the Equation below with results in Table D1.

$EXPECTATIONS_i$ is the response to hypothetical scenario (in years), $ACTUAL_i$ is actual number of years to repay their actual debt if the respondent only paid the minimum (for the treatment groups this is information provided to consumers in the Figures 2 & 3. $TREAT_i$ is an indicator for whether the cardholder is in the treatment group.

$$EXPECTATIONS_i = \alpha + \lambda ACTUAL_i + \mu TREAT_i + \theta (TREAT_i \times ACTUAL_i) + \varepsilon_i$$

The regression results (Table D1) find a noisy, average effect (μ) of the treatment (significant at the 5% level) increasing hypothetical time to repay close to the accurate duration but precise zero effects for its relationship (θ) with the actual duration provided. Figure D1 shows the non-parametric distribution between these variables. We interpret this evidence as consumers in the treatment (who responded to the survey) remember the minimum payment repayment duration is long (consistent with the qualitative evidence of being shocked by it) but do not recall the precise details of information presented to them.

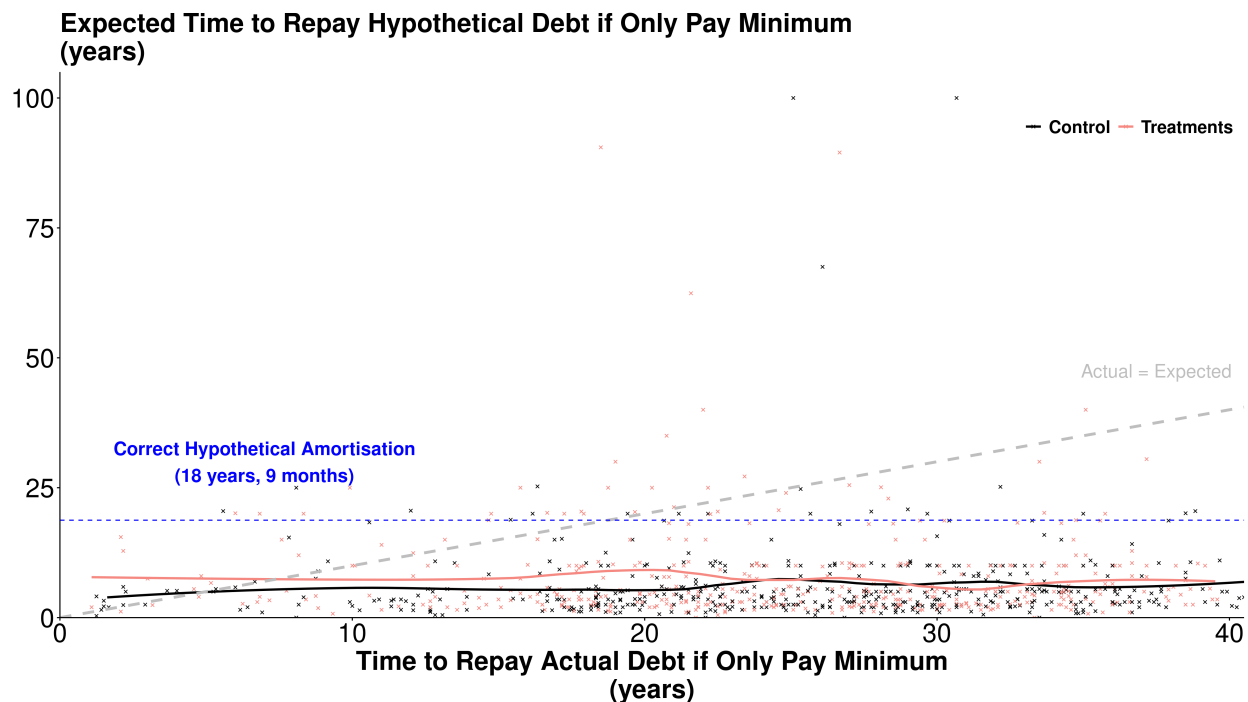
¹ There is not differential attrition between control and treatments in these consent rates. P-value 0.405 [95% C.I.: -0.0666, 0.0269]. As personalized scenarios change between initial and reminder letters, we focus on the treatment groups who received a single letter (no reminders) for this analysis.

Table D1: Experiment 2 ‘automatic minimum payment nudges’: Average treatment effects on survey expectations for time to repay hypothetical credit card debt (years) if only pay minimum by actual time to pay actual credit card debt (years) if only pay minimum observed in administrative data

EXPECTATIONS	
CONSTANT	5.0738*** (0.7699)
ACTUAL	0.0423 (0.0301)
TREAT	3.5774* (1.3986)
TREAT \times ACTUAL	-0.0906 (0.0506)

*Notes: Statistical significance denoted at *** 0.5%, ** 1.0%, * 5.0%. Estimates are from Equation 2 OLS regression with robust standard errors in parenthesis. N = 906 survey respondents who provided consent to anonymously merge responses to their administrative data and were not in treatment arms with reminders. EXPECTATIONS are answers to the survey question: “Imagine a credit card statement balance of £1,029.90 with an interest rate of 18.9%. If someone only repays the minimum each month and spends no more on the card approximately how long would you expect it to take them to repay? It doesn’t matter whether the answer you give is right or wrong. We just want to find out what people understand and the question after this one lets you indicate how confident you are in your answer.” The correct answer is 18.75 years. ACTUAL is calculated using respondent’s actual credit card balance and assumes they only pay the minimum each month and spend no more on their card: for the treatment groups this information was provided to them in the nudge. Both EXPECTATIONS and ACTUAL are denominated in years. TREAT is an indicator equal to one if the respondent is in any of the experimental treatment groups. $R^2 = 0.0079$.*

Figure D1: Automatic minimum payment nudges - survey expectations of time to repay hypothetical credit card debt (years) if only pay minimum by actual time to pay actual credit card debt (years) if only pay minimum observed in administrative data, split by control and treatment



Notes: The gray line is a 45 degree line for a one-to-one relationship between these variables. 'Time to Repay Actual Debt if Only Pay Minimum' is calculated using respondent's actual credit card balance and assumes they only pay the minimum each month and spend no more on their card: for the treatment groups this information was provided to them in the nudge. 'Expected Time to Repay Hypothetical Debt' are answers to the survey question: "Imagine a credit card statement balance of £1,029.90 with an interest rate of 18.9%. If someone only repays the minimum each month and spends no more on the card approximately how long would you expect it to take them to repay? It doesn't matter whether the answer you give is right or wrong. We just want to find out what people understand and the question after this one lets you indicate how confident you are in your answer." The correct answer is 18 years and 9 months (225 months) shown by the horizontal dotted blue line. N = 906 for survey respondents who provided consent to anonymously merge responses to their administrative data. 'Treatments' group aggregates treatments without reminders: 'Time to Repay', 'Time + Cost to Repay' into single category.