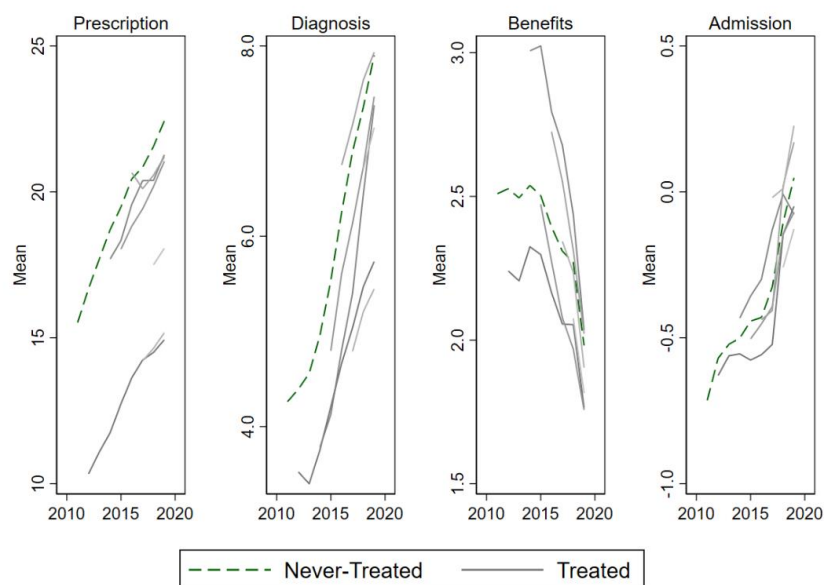
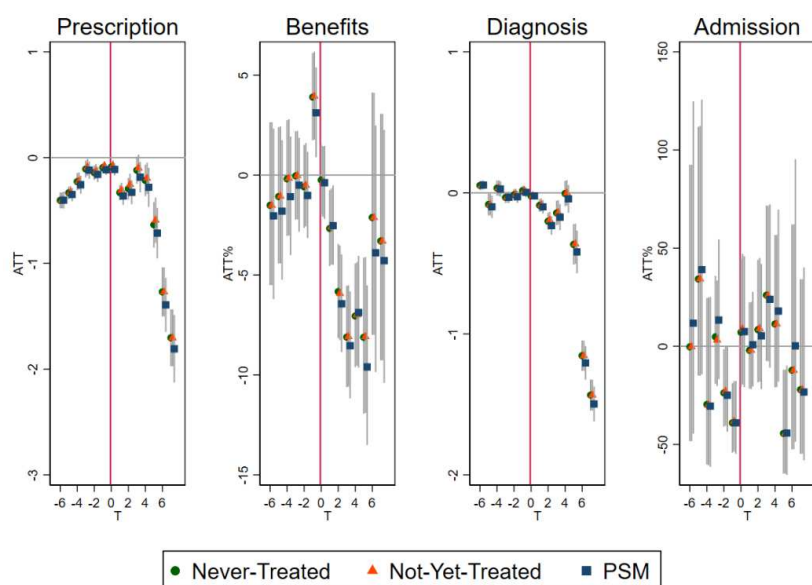


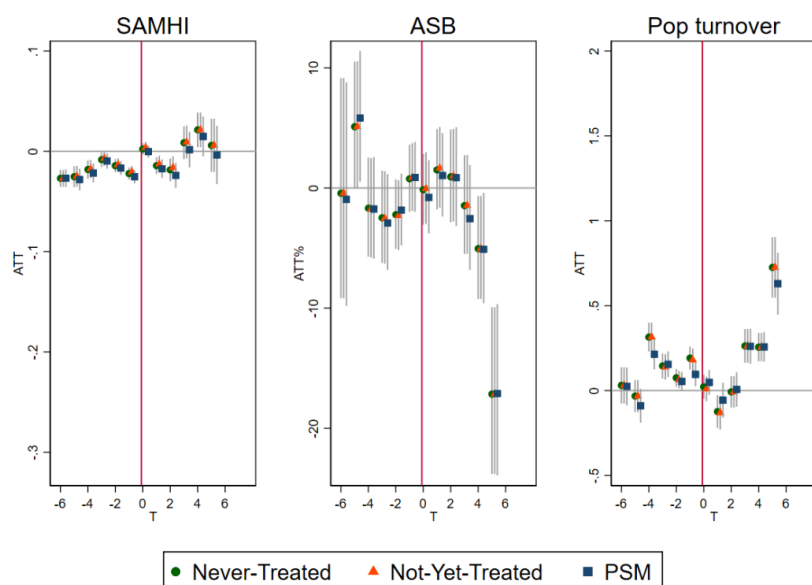
## Supplementary materials



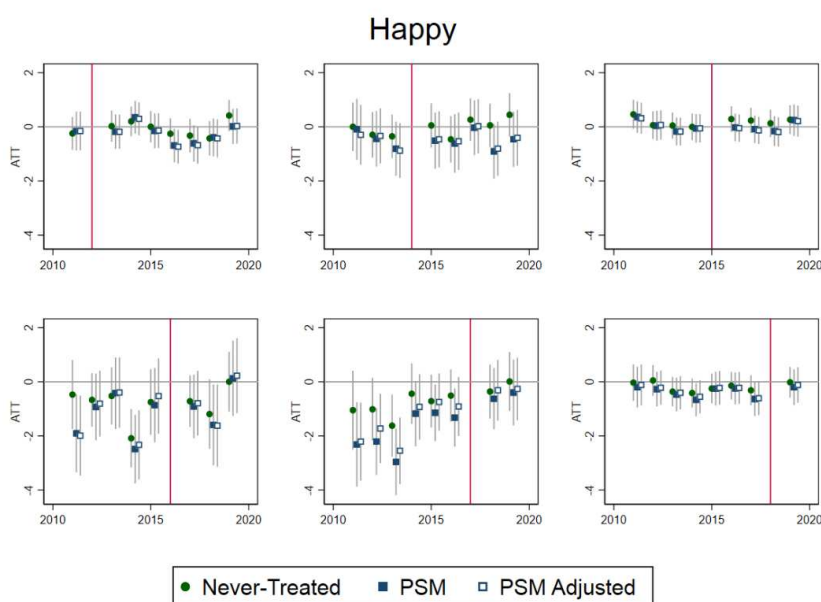
**Supplementary Figure 1** Trend in Small Area Mental Health Index (SAMHI) sub-scores (PRESCRIPTION, DIAGNOSIS, BENEFITS, ADMISSION) for never-treated versus treated areas in Greater London, 2011-2019. Treated areas shown from year of initiation onwards..



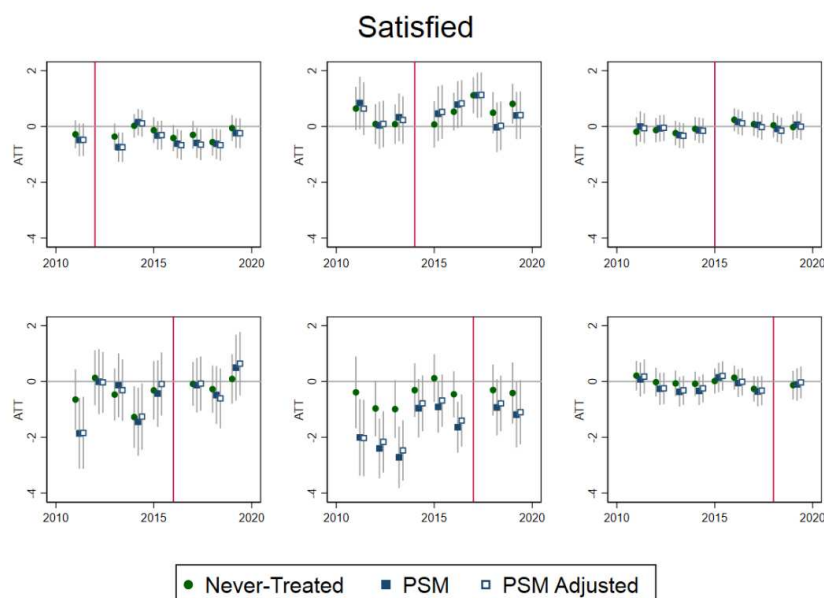
**Supplementary Figure 2** Average treatment effect on the treated (ATT) for area-level impacts of selective licencing (SL) on Small Area Mental Health Index (SAMHI) underlying indicators PRESCRIPTION, BENEFITS, DIAGNOSIS, and ADMISSION, in Greater London, 2011-2019. BENEFITS and ADMISSION were ln-transformed and ATT shown as ATT%.



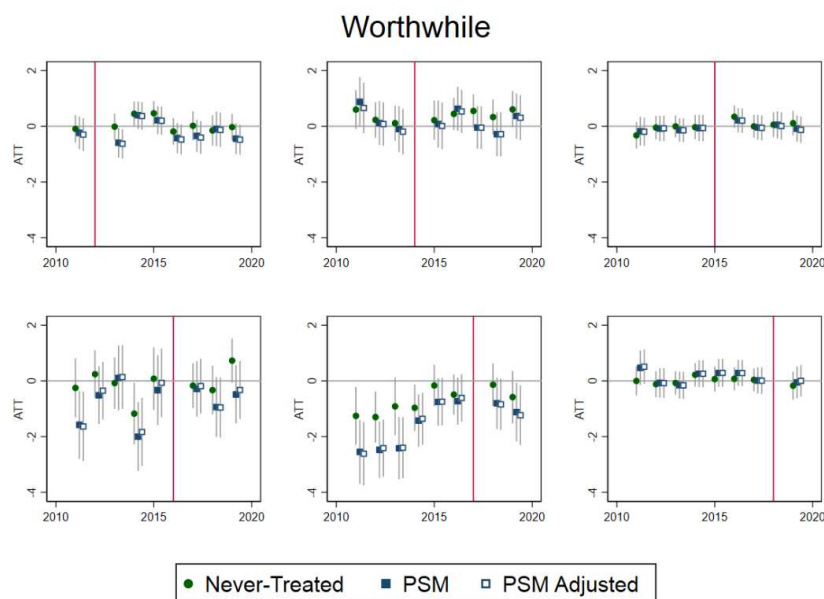
**Supplementary Figure 3** Sensitivity check excluding the earliest scheme initiated 2012 (“Olympic”). Average treatment effect on the treated (ATT) for area-level impacts of selective licencing (SL) on Small Area Mental Health Index (SAMHI), Antisocial behaviour (ASB) calls, and population (Pop) turnover in Greater London, 2011-2019. ASB was ln-transformed and ATT shown as ATT%.



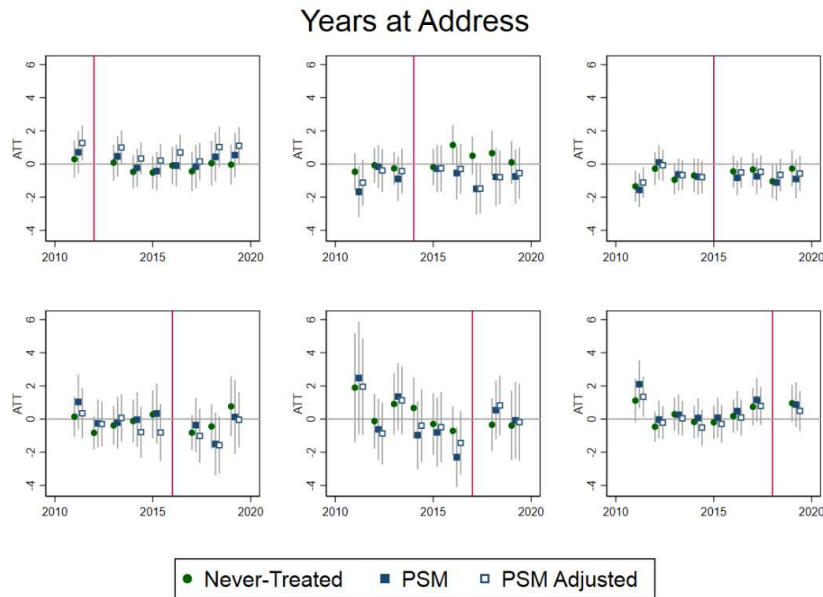
**Supplementary Figure 4** Happy. Average treatment effect on the treated (ATT) for individual-level impacts of selective licencing (SL) on self-reported happy score among private renters in Greater London by year of SL introduction, 2011-2019. Time-varying covariates in PSM Adjusted were: age group, sex, native birth, and occupational class. Abbreviations: Propensity Score Matching (PSM).



**Supplementary Figure 5** Satisfied. Average treatment effect on the treated (ATT) for individual-level impacts of selective licencing (SL) on self-reported satisfied score among private renters in Greater London by year of SL introduction, 2011-2019. Time-varying covariates in PSM Adjusted were: age group, sex, native birth, and occupational class. Abbreviations: Propensity Score Matching (PSM).



**Supplementary Figure 6** Worthwhile. Average treatment effect on the treated (ATT) for individual-level impacts of selective licencing (SL) on self-reported worthwhile score among private renters in Greater London by year of SL introduction, 2011-2019. Time-varying covariates in PSM Adjusted were: age group, sex, native birth, and occupational class. Abbreviations: Propensity Score Matching (PSM).



**Supplementary Figure 7** Years at address. Average treatment effect on the treated (ATT) for individual-level impacts of selective licencing (SL) on self-reported years at address among private renters in Greater London by year of SL introduction, 2011-2019. Time-varying covariates in PSM Adjusted were: age group, sex, native birth, and occupational class. Abbreviations: Propensity Score Matching (PSM).

**Supplementary Table 1** Baseline characteristics for Never-Treated and PSM control areas (LSOA) in Greater London, 2011. PSM controls were used for area-level impacts overall and for each year of treatment initiation, 2012 and 2014-2018, for individual-level impacts. Mean differences tested with a t-test except for Built pre-1945, which was tested with a Chi-square test ( $\alpha=.05$ ). Variables (Data source): Income deprived, Poor housing condition, No central heating, Unaffordable housing (Department for Communities and Local Government 2015b); Built pre-1945 (ONS 2021b); All other (ONS 2015a). Abbreviations: Lower Layer Super output Area (LSOA), Propensity Score Matched (PSM).

Characteristics	All interventions				
	Treated N=921	Never-Treated N=3,582	P-value	PSM N=2,763	P-value
Children <16yr per pop	22.2	19.3	<.001	22.2	<b>0.839</b>
Adults 16-59yr per pop	64.1	64.3	<b>0.436</b>	63.8	<b>0.217</b>
Income deprived per pop	19.3	15.6	<.001	19.2	<b>0.823</b>
native birth per pop	60	65.3	<.001	60.6	<b>0.267</b>
Private rented%	25.9	23.4	<.001	25.3	<b>0.288</b>
Social rented%	22.7	22.5	<b>0.759</b>	22.8	<b>0.881</b>
Poor housing condition%	22.5	22.4	<b>0.621</b>	22.2	<b>0.298</b>
No central heating%	2.9	2.8	0.013	2.9	<b>0.906</b>
Overcrowded%	23.9	19.7	<.001	23.5	<b>0.402</b>
Unaffordable housing measure	2.4	1.7	<.001	2.4	<b>0.193</b>
Built pre-1945	-	-	<.001	-	<b>0.434</b>
Characteristics	Interventions initiated in 2012				
	Treated N=155	Never-Treated N=3,582	P-value	PSM N=465	P-value
Children <16yr per pop	22.4	19.3	<.001	23.2	<b>0.153</b>
Adults 16-59yr per pop	68.2	64.3	<.001	67.7	<b>0.388</b>
Income deprived per pop	21.6	15.6	<.001	22.9	<b>0.15</b>
native birth per pop	46.5	65.3	<.001	47.4	<b>0.286</b>
Private rented%	33.9	23.4	<.001	33.4	<b>0.66</b>
Social rented%	28.9	22.5	<.001	31.9	<b>0.137</b>

Poor housing condition%	22.8	22.4	<b>0.368</b>	22.7	<b>0.763</b>
No central heating%	2.8	2.8	<b>0.807</b>	2.8	<b>0.906</b>
Overcrowded%	34.9	19.7	<.001	34.8	<b>0.946</b>
Unaffordable housing measure	2.8	1.7	<.001	2.9	<b>0.259</b>
Built pre-1945	-	-	<b>0.122</b>	-	<b>0.186</b>
<b>Characteristics</b>	<b>Interventions initiated in 2014</b>				
	<b>Treated</b>	<b>Never-Treated</b>		<b>PSM</b>	
	N=110	N=3,582	P-value	N=330	P-value
Children <16yr per pop	25.9	19.3	<.001	26.1	<b>0.753</b>
Adults 16-59yr per pop	59.9	64.3	<.001	59.9	<b>0.871</b>
Income deprived per pop	24.2	15.6	<.001	25.2	<b>0.354</b>
native birth per pop	69.5	65.3	0.003	69.2	<b>0.83</b>
Private rented%	17.5	23.4	<.001	16.7	<b>0.361</b>
Social rented%	33	22.5	<.001	34.8	<b>0.44</b>
Poor housing condition%	23.1	22.4	<b>0.221</b>	22.3	<b>0.115</b>
No central heating%	3	2.8	<b>0.126</b>	2.9	<b>0.49</b>
Overcrowded%	19.9	19.7	<b>0.9</b>	20	<b>0.86</b>
Unaffordable housing measure	2.7	1.7	<.001	2.74	<b>0.793</b>
Built pre-1945	-	-	<b>0.498</b>	-	<b>0.715</b>
<b>Characteristics</b>	<b>Interventions initiated in 2015</b>				
	<b>Treated</b>	<b>Never-Treated</b>		<b>PSM</b>	
	N=394	N=3,582	P-value	N=1,182	P-value
Children <16yr per pop	21.5	19.3	<.001	21.3	<b>0.468</b>
Adults 16-59yr per pop	62.8	64.3	<.001	62.2	<b>0.083</b>
Income deprived per pop	17.5	15.6	<.001	16.6	<b>0.073</b>
native birth per pop	65.6	65.3	<b>0.664</b>	67	<b>0.123</b>
Private rented%	22.6	23.4	<b>0.238</b>	21.3	<b>0.084</b>
Social rented%	19.7	22.5	0.008	18.4	<b>0.196</b>
Poor housing condition%	22	22.4	<b>0.25</b>	21.4	<b>0.079</b>
No central heating%	3	2.8	0.005	2.9	<b>0.255</b>
Overcrowded%	19.5	19.7	<b>0.7</b>	18.4	<b>0.11</b>
Unaffordable housing measure	2.2	1.7	<.001	2	<b>0.063</b>
Built pre-1945	-	-	0.001	-	<b>0.723</b>
<b>Characteristics</b>	<b>Interventions initiated in 2016</b>				
	<b>Treated</b>	<b>Never-Treated</b>		<b>PSM</b>	
	N=28	N=3,582	P-value	N=84	P-value
Children <16yr per pop	17.8	19.3	<b>0.106</b>	16.5	<b>0.319</b>
Adults 16-59yr per pop	72.4	64.3	<.001	74	<b>0.42</b>
Income deprived per pop	23.5	15.6	<.001	22	<b>0.443</b>
native birth per pop	53.6	65.3	<.001	52	<b>0.413</b>
Private rented%	33.5	23.4	<.001	36.6	<b>0.341</b>
Social rented%	33.3	22.5	0.005	28.8	<b>0.239</b>
Poor housing condition%	25.8	22.4	0.003	28	<b>0.227</b>
No central heating%	3.1	2.8	<b>0.226</b>	3.8	<b>0.184</b>
Overcrowded%	35.3	19.7	<.001	36.3	<b>0.705</b>
Unaffordable housing measure	3.2	1.7	<.001	2.8	<b>0.21</b>
Built pre-1945	-	-	0.024	-	<b>0.827</b>
<b>Characteristics</b>	<b>Interventions initiated in 2017</b>				
	<b>Treated</b>	<b>Never-Treated</b>		<b>PSM</b>	
	N=59	N=3,582	P-value	N=177	P-value
Children <16yr per pop	21.9	19.3	<.001	21.6	<b>0.79</b>
Adults 16-59yr per pop	65.5	64.3	<b>0.219</b>	66	<b>0.618</b>
Income deprived per pop	20.3	15.6	<.001	21.3	<b>0.371</b>
native birth per pop	45.4	65.3	<.001	45.5	<b>0.961</b>
Private rented%	33.2	23.4	<.001	35.1	<b>0.345</b>
Social rented%	18.6	22.5	<b>0.141</b>	20.1	<b>0.547</b>

Poor housing condition%	24	22.4	0.048	25.6	<b>0.148</b>
No central heating%	2.7	2.8	<b>0.564</b>	2.8	<b>0.701</b>
Overcrowded%	30.9	19.7	<.001	32.1	<b>0.407</b>
Unaffordable housing measure	3.5	1.7	<.001	3.3	<b>0.245</b>
Built pre-1945	-	-	0.027	-	<b>0.404</b>
<b>Characteristics</b>	<b>Interventions initiated in 2018</b>			<b>PSM</b>	
	<b>Treated</b>	<b>Never-Treated</b>			
	N=175	N=3,582	P-value	N=525	P-value
Children <16yr per pop	21.9	19.3	<.001	22.1	<b>0.806</b>
Adults 16-59yr per pop	64.3	64.3	<b>0.926</b>	64	<b>0.703</b>
Income deprived per pop	17.2	15.6	0.027	17	<b>0.787</b>
native birth per pop	58.8	65.3	<.001	58.8	<b>0.998</b>
Private rented%	27.8	23.4	<.001	27.5	<b>0.833</b>
Social rented%	17.2	22.5	<.001	17	<b>0.884</b>
Poor housing condition%	21.8	22.4	<b>0.266</b>	21.7	<b>0.708</b>
No central heating%	2.8	2.8	<b>0.866</b>	2.8	<b>0.747</b>
Overcrowded%	22.3	19.7	0.004	22	<b>0.785</b>
Unaffordable housing measure	2.2	1.7	<.001	2.2	<b>0.865</b>
Built pre-1945	-	-	0.001	-	<b>0.955</b>