The intended and unintended consequences of large electricity subsidies: Evidence from Mongolia

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Research question

Does a large electricity subsidy program to reduce air pollution have any welfare-enhancing effect?

Contribution

- Adds to the growing literature on the impact of an electricity subsidy on improving health outcomes in developing countries and the literature on habit formation for clean energy use†

Main findings

- Reduction in the probability of reporting illness: 5-6 pp
- Reduction in the probability of reporting respiratory illness: 3-5 pp
- The program positively affects the beneficiaries: 17-24 % increase in electricity expenses †

- SDG7: affordable, reliable, sustainable and modern energy for all
- 2.6 billion people use harmful fuels for cooking
- Coal: main energy source for cold regions such as Mongolia, north China and Russia
- Coal: main contributor to air pollution and climate change

- Existing evidence linking air pollution to morbidity and mortality (Neidell, 2004; Currie et al., 2009a,b)
- Product use to habit formation and behavioral change (Jessoe and Rapson, 2014; Meriggi et al., 2021)
- Mostly focused on the effect of electricity subsidy on welfare (Giuliano et al., 2020; Hahn and Metcalfe, 2021; Alvarez and Tol, 2021),
- Energy demand (Burke and Kurniawati, 2018; Durmaz et al., 2020),
- Energy conservation (Allcott and Rogers, 2014; Ito, 2015; Boccard and Gautier, 2021)
- Lost opportunities (Davis, 2014; Plante, 2014; Coady et al., 2019).

Air pollution

- Ulaanbaatar: $30^{\circ}C$ to $-30^{\circ}C$
- 1^{st} in 2010 with $P.M_{10}$=279 $\mu g/m^3$ and 4^{th} in 2020†
- Over 60% of households burn 600,000 tons of raw coal
- 98% of households has access to electricity

Health impacts

- Air pollution is the sixth riskiest factor
- 89 deaths per 100,000 population in 2017
- Disease of the respiratory system: leading cause of morbidity among children
- Pneumonia: most frequent for under-five & 28% of morbidity

Table 1: Overview of electricity subsidy programs

Date	Policy name	Actions
2 Nov 2011	Government Resolution No.309 on air pollution reduction and electricity tariff discount	50% discount for night-time use
17 Jul 2014	Joint Resolution No.263/A-616 of Minister of Environment & Green Development and Ulaanbaatar City Mayor	50% discount for night-time use
28 Dec 2016	Government Resolution No.214 on air pollution reduction and electricity tariff discount	100% discount for night-time use
4 Jul 2017	Government Resolution No.199 on air pollution reduction and electricity tariff discount	100% discount from 9 pm to 6 am
25 Oct 2018	Energy Regulatory Commission Resolution on discount for night-time tariff	100% for up to 700kWh for 220V & 1500 kWh for 380V; 50% on excess for night-time use

Eligibility criteria

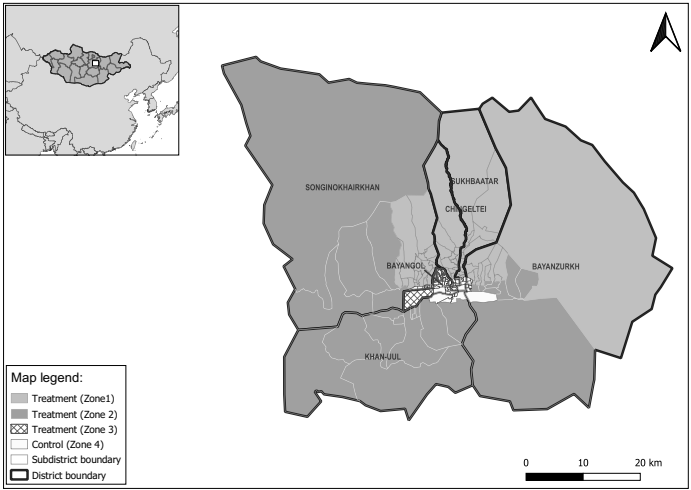
1. Live in the air pollution reduction zones
2. Have heating system in the residential property
3. Have no outstanding electricity payment
4. Have both day-time and night-time use meters

Outreach of the subsidy

- MNT6.8B (US$2.8M) for 101,326 households in 2017
- MNT9.4B (US$3.5M) for 109,213 households in 2018
- Scaled to national level in 2019

Empirical model

$$y_{izt} = \alpha + \beta d_z + \sum_{t=2012,2014,2016,2018} (\gamma_t d_t + \delta_t d_z \times d_t) + \boldsymbol{\theta} \mathbf{X_{it}} + \phi_z + \varepsilon_{izt} \quad (1)$$



Source: Compiled by authors

Figure 1: Ulaanbaatar city district zoning map for air pollution reduction

Figure 2: Treatment and control households in summer vs. winter

Figure 3: Treatment (yurts & basic houses in Zones 1 & 2) and control households (Apartments in Zones 3 & 4)

Data

- Five rounds of the Mongolia Household Socio-Economic Survey (2010, 2012, 2014, 2016, 2018)
- A nationally representative survey
- Household income, consumption, electricity expenditures
- Self-reported sickness
- Household member age, gender, education, consumption per capita and house type

Table 2: Summary statistics of dependent variables

	2010		2012		2014		2016		2018	
Variable	T	C	T	C	T	C	T	C	T	C
Panel A: Individual illness in winter months										
Sick in the past month	0.09	0.06	0.07	0.10	0.07	0.10	0.11	0.08	0.11	0.13
	(0.28)	(0.24)	(0.26)	(0.30)	(0.26)	(0.30)	(0.31)	(0.27)	(0.31)	(0.34)
Respiratory illness	0.04	0.02	0.04	0.04	0.04	0.06	0.07	0.04	0.04	0.07
	(0.19)	(0.15)	(0.19)	(0.20)	(0.19)	(0.24)	(0.25)	(0.20)	(0.21)	(0.25)
Number of individuals	2,203	1,306	3,266	1,508	2,996	1,305	3,117	1,474	3,069	1,741
Panel B: Individual illness in non-winter months										
Sick in the past month	0.05	0.05	0.06	0.07	0.07	0.05	0.07	0.06	0.10	0.07
	(0.23)	(0.22)	(0.24)	(0.25)	(0.25)	(0.21)	(0.25)	(0.24)	(0.30)	(0.25)
Respiratory illness	0.02	0.01	0.02	0.03	0.02	0.02	0.02	0.03	0.03	0.01
	(0.12)	(0.11)	(0.14)	(0.17)	(0.14)	(0.14)	(0.15)	(0.16)	(0.17)	(0.12)
Number of individuals	2,979	1,949	4,133	2,456	4,369	1,948	4,227	1,687	4,352	1,713

Table 3: Summary statistics of dependent variables

	2010		2012		2014		2016		2018	
Variable	T	C	T	C	T	C	T	C	T	C
Panel C: Energy expenditures in winter										
Electricity expenses	12.47	15.85	14.14	15.62	13.56	13.88	15.31	16.41	15.64	15.10
	(7.53)	(6.65)	(9.68)	(8.55)	(10.99)	(6.17)	(10.78)	(6.36)	(12.18)	(5.52)
Share of electricity expenses (%)	2.99	2.69	2.78	2.19	2.66	1.90	3.39	2.73	3.40	2.38
	(1.62)	(1.32)	(1.76)	(1.43)	(1.85)	(1.16)	(2.11)	(1.36)	(2.44)	(1.37)
Other energy expenses	29.25	0.07	50.02	0.16	34.87	0.07	28.28	0.02	27.04	0.03
	(31.81)	(1.18)	(55.90)	(2.04)	(35.19)	(1.00)	(29.88)	(0.37)	(25.74)	(0.51)
Share of other energy expenses (%)	7.05	0.00	10.12	0.03	7.63	0.01	6.63	0.00	6.35	0.00
	(7.65)	(0.03)	(12.23)	(0.34)	(9.16)	(0.10)	(7.69)	(0.06)	(7.24)	(0.04)
Number of households	528	353	797	424	798	387	802	424	758	495
Panel D: Energy expenditures in non-winter										
Electricity expenses	13.91	15.96	14.74	15.91	13.70	13.69	15.28	15.71	16.96	14.70
	(9.32)	(6.10)	(8.31)	(6.74)	(11.65)	(5.36)	(9.18)	(5.64)	(12.82)	(4.71)
Share of electricity expenses (%)	3.18	2.90	2.94	2.18	2.60	1.85	3.56	2.78	3.49	2.35
	(1.83)	(1.71)	(2.17)	(1.53)	(1.78)	(0.97)	(1.91)	(2.16)	(2.33)	(1.30)
Other energy expenses	15.69	0.07	19.75	0.13	11.11	0.12	16.04	0.02	11.73	0.04
	(35.44)	(1.05)	(39.14)	(1.43)	(27.93)	(1.53)	(32.95)	(0.36)	(22.52)	(0.90)
Share of other energy expenses (%)	3.92	0.01	3.86	0.02	2.25	0.01	3.87	0.00	2.62	0.01
	(9.12)	(0.22)	(8.10)	(0.24)	(6.47)	(0.17)	(8.00)	(0.04)	(5.97)	(0.13)
Number of households	718	544	1,048	711	1,155	587	1,133	505	1,089	485

Table 4: Regression results of DiD models of the probability of illness in winter months

	All age groups combined		Children (under 14 years)		Working age adults (15-60 years)		Older adults (over 60 years)	
Variable name	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	0.030***	0.017	0.050*	-0.017	0.030***	0.033	0.018	0.066
	(0.012)	(0.022)	(0.026)	(0.032)	(0.011)	(0.022)	(0.052)	(0.109)
Treatment × 2012	-0.060***	-0.067***	-0.098***	-0.109***	-0.053***	-0.054***	0.002	-0.014
	(0.015)	(0.015)	(0.034)	(0.034)	(0.015)	(0.015)	(0.066)	(0.066)
Treatment × 2014	-0.058***	-0.066***	-0.117***	-0.117***	-0.050***	-0.053***	0.026	0.017
	(0.016)	(0.016)	(0.037)	(0.037)	(0.016)	(0.016)	(0.067)	(0.068)
Treatment × 2016	0.008	-0.000	-0.003	-0.009	0.005	0.002	0.002	0.012
	(0.015)	(0.015)	(0.034)	(0.034)	(0.014)	(0.014)	(0.072)	(0.071)
Treatment × 2018	-0.048***	-0.055***	-0.109***	-0.110***	-0.026	-0.028*	-0.013	-0.020
	(0.016)	(0.016)	(0.034)	(0.034)	(0.017)	(0.017)	(0.069)	(0.069)
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted-R^2	0.01	0.03	0.02	0.03	0.01	0.02	0.04	0.05
N	21,985	21,985	6,160	6,160	14,233	14,233	1,592	1,592

Table 5: Regression results of DiD models of the probability of having respiratory illness in winter months

	All age groups combined		Children (under 14 years)		Working age adults (15-60 years)		Older adults (over 60 years)	
Variable name	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	0.020**	-0.010	0.042*	-0.019	0.014**	-0.003	-0.019	-0.035
	(0.008)	(0.009)	(0.024)	(0.032)	(0.007)	(0.006)	(0.029)	(0.027)
Treatment × 2012	-0.029***	-0.031***	-0.072**	-0.074**	-0.018**	-0.018**	0.022	0.025
	(0.011)	(0.011)	(0.032)	(0.031)	(0.009)	(0.009)	(0.035)	(0.034)
Treatment × 2014	-0.045***	-0.046***	-0.106***	-0.101***	-0.027***	-0.028***	-0.011	-0.010
	(0.012)	(0.012)	(0.035)	(0.035)	(0.010)	(0.010)	(0.035)	(0.035)
Treatment × 2016	0.009	0.010	0.012	0.012	0.005	0.004	0.036	0.040
	(0.011)	(0.011)	(0.032)	(0.032)	(0.008)	(0.008)	(0.037)	(0.038)
Treatment × 2018	-0.038***	-0.040***	-0.093***	-0.081***	-0.024**	-0.025**	0.017	0.019
	(0.012)	(0.012)	(0.032)	(0.031)	(0.010)	(0.010)	(0.033)	(0.033)
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted-R^2	0.01	0.04	0.02	0.05	0.01	0.01	0.01	0.01
N	21,985	21,985	6,160	6,160	14,233	14,233	1,592	1,592

Table 6: Regression results of DiD models of the impact of subsidy on household monthly electricity expenditures

	Winter months			Non-winter months		
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	-0.296**	-0.208**	-0.339**	-0.177***	-0.116***	0.004
	(0.075)	(0.067)	(0.099)	(0.024)	(0.021)	(0.039)
Treatment × 2012	0.156***	0.208***	0.185***	0.116	0.180**	0.156*
	(0.034)	(0.047)	(0.041)	(0.060)	(0.058)	(0.066)
Treatment × 2014	0.190**	0.253***	0.193**	0.137**	0.197***	0.161***
	(0.062)	(0.059)	(0.057)	(0.036)	(0.035)	(0.035)
Treatment × 2016	0.186*	0.211**	0.173*	0.132***	0.187***	0.165***
	(0.078)	(0.069)	(0.070)	(0.033)	(0.029)	(0.026)
Treatment × 2018	0.261***	0.298***	0.237***	0.255***	0.294***	0.232***
	(0.058)	(0.057)	(0.048)	(0.031)	(0.030)	(0.032)
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.04	0.17	0.26	0.03	0.17	0.27
Number of households	5,766	5,766	5,766	7,975	7,975	7,975

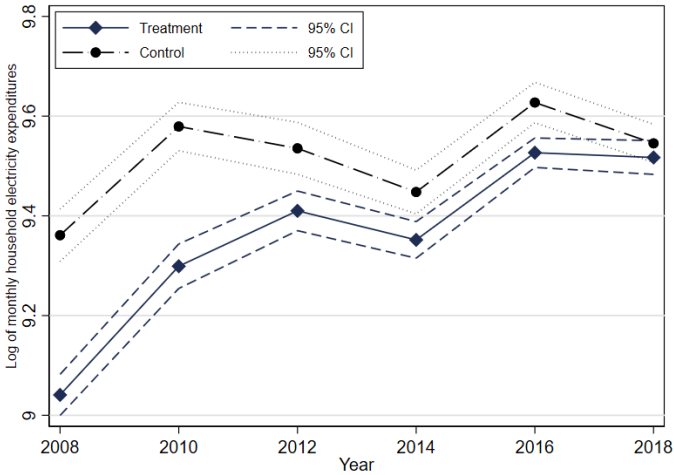
Table 7: A Placebo test results of DiD models of the probability of reporting illness

	All age groups combined		Children (under 14 years)		Working age adults (15-60 years)		Older adults (over 60 years)	
Variable name	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	0.004	0.007	0.011	0.018	0.006	0.009	-0.007	-0.009
	(0.008)	(0.015)	(0.012)	(0.025)	(0.008)	(0.015)	(0.051)	(0.101)
Treatment × 2012	-0.006	-0.012	-0.029	-0.031	-0.009	-0.008	0.111*	0.093
	(0.011)	(0.011)	(0.020)	(0.020)	(0.011)	(0.011)	(0.062)	(0.062)
Treatment × 2014	0.021**	0.016	-0.021	-0.023	0.019*	0.019*	0.146**	0.134**
	(0.010)	(0.010)	(0.019)	(0.019)	(0.011)	(0.011)	(0.060)	(0.060)
Treatment × 2016	0.004	-0.002	-0.026	-0.031	0.014	0.013	0.028	0.028
	(0.011)	(0.011)	(0.020)	(0.020)	(0.011)	(0.011)	(0.065)	(0.065)
Treatment × 2018	0.030**	0.030***	0.037**	0.031*	0.021	0.024*	0.070	0.081
	(0.012)	(0.012)	(0.017)	(0.017)	(0.014)	(0.014)	(0.063)	(0.064)
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted-R^2	0.01	0.04	0.02	0.02	0.01	0.02	0.03	0.05
N	29,813	29,813	8,379	8,379	19,325	19,325	2,109	2,109

Note: 1. Treatment households: Households living in apartments in Zones 1 & 2.

Table 8: A Placebo test results of DiD models of the probability of reporting reporting respiratory illness

	All age groups combined		Children (under 14 years)		Working age adults (15-60 years)		Older adults (over 60 years)	
Variable name	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	0.004	-0.005	0.008	0.008	0.001	-0.005*	0.002	-0.018
	(0.005)	(0.006)	(0.011)	(0.020)	(0.004)	(0.003)	(0.016)	(0.014)
Treatment × 2012	-0.015**	-0.017**	-0.025	-0.027	-0.012**	-0.012**	-0.007	-0.010
	(0.007)	(0.007)	(0.018)	(0.018)	(0.005)	(0.005)	(0.023)	(0.023)
Treatment × 2014	-0.002	-0.003	-0.015	-0.017	0.002	0.002	-0.003	-0.006
	(0.006)	(0.006)	(0.018)	(0.018)	(0.005)	(0.005)	(0.022)	(0.022)
Treatment × 2016	-0.006	-0.007	-0.022	-0.026	0.003	0.002	-0.008	-0.009
	(0.007)	(0.007)	(0.018)	(0.018)	(0.005)	(0.005)	(0.026)	(0.026)
Treatment × 2018	0.011*	0.012*	0.023	0.016	0.009*	0.009*	-0.008	-0.008
	(0.006)	(0.006)	(0.015)	(0.015)	(0.005)	(0.005)	(0.020)	(0.020)
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted-R^2	0.01	0.02	0.02	0.03	0.00	0.00	0.01	0.01
N	29,813	29,813	8,379	8,379	19,325	19,325	2,109	2,109



Source: HSES, 2008-2018

Figure 4: Household monthly electricity expenditures in winter months, 2008-2018

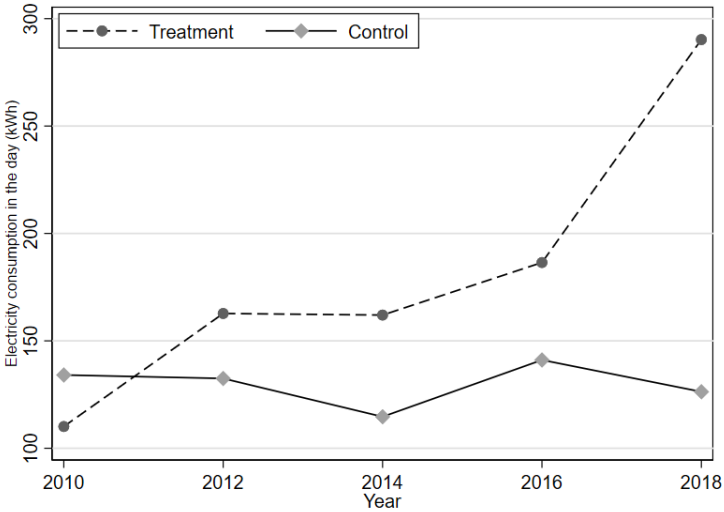


Figure 6: Back of the envelope analysis of household electricity consumption (kWh), 2010-2018

Results are robust to alternative specifications

- Full sample for all 12 months ▸ full sample
- Per capita electricity expenditures and income ▸ per capita
- Individual's education as continuous variable ▸ continuous education
- Year round sickness level ▸ 12-month sick
- Year round respiratory illness ▸ 12-month respiratory illness
- Quantile analysis ▸ quantile

Summary of key findings

- The electricity subsidy program benefits treatment households.
- There are short-run positive health impacts that will have long-term positive consequences.
- There are limitations to keep this subsidy rolling every year.
- Policymakers should consider the long-term health benefits against short-term costs.

Table A.1: The impact of subsidy on household monthly electricity expenditures

Variable	(1)	(2)	(3)
Treatment	-0.228***	-0.157***	-0.151**
	(0.022)	(0.021)	(0.063)
Treatment × 2012	0.135***	0.191***	0.165***
	(0.029)	(0.028)	(0.028)
Treatment × 2014	0.160***	0.216***	0.169***
	(0.027)	(0.026)	(0.025)
Treatment × 2016	0.158***	0.203***	0.173***
	(0.026)	(0.025)	(0.024)
Treatment × 2018	0.256***	0.299***	0.235***
	(0.027)	(0.025)	(0.025)
Household controls	No	Yes	Yes
Heating source controls	No	No	Yes
District fixed effects	Yes	Yes	Yes
Year, month fixed effects	Yes	Yes	Yes
Adjusted R^2	0.03	0.17	0.26
Number of households	13,611	13,611	13,611

return

Table A.2: The impact of subsidy on household monthly per capita electricity expenditures

	Winter month			Non-winter months		
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	-0.447***	-0.291***	-0.362***	-0.332***	-0.212***	-0.123
	(0.038)	(0.042)	(0.098)	(0.033)	(0.035)	(0.091)
Treatment × 2012	0.154***	0.259***	0.237***	0.131***	0.231***	0.207***
	(0.054)	(0.054)	(0.054)	(0.043)	(0.045)	(0.044)
Treatment × 2014	0.240***	0.301***	0.240***	0.153***	0.247***	0.212***
	(0.050)	(0.051)	(0.050)	(0.041)	(0.041)	(0.041)
Treatment × 2016	0.197***	0.238***	0.203***	0.174***	0.245***	0.224***
	(0.049)	(0.048)	(0.047)	(0.042)	(0.041)	(0.041)
Treatment × 2018	0.249***	0.323***	0.263***	0.283***	0.349***	0.286***
	(0.050)	(0.049)	(0.049)	(0.044)	(0.043)	(0.043)
Household controls	No	Yes	Yes	No	Yes	Yes
Heating source controls	No	No	Yes	No	No	Yes
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year, month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.06	0.20	0.27	0.05	0.20	0.26
Number of households	5,766	5,766	5,766	7,845	7,845	7,845

return

Table A.3: The impact of subsidy on household monthly per capita electricity expenditures

	Winter month			Non-winter months		
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	-0.303***	-0.219***	-0.358***	-0.178***	-0.120***	-0.020
	(0.034)	(0.033)	(0.098)	(0.028)	(0.027)	(0.079)
Treatment × 2012	0.167***	0.221***	0.198***	0.114***	0.179***	0.155***
	(0.047)	(0.044)	(0.044)	(0.037)	(0.036)	(0.035)
Treatment × 2014	0.212***	0.271***	0.210***	0.126***	0.190***	0.154***
	(0.044)	(0.041)	(0.040)	(0.035)	(0.033)	(0.032)
Treatment × 2016	0.192***	0.220***	0.181***	0.137***	0.192***	0.170***
	(0.042)	(0.039)	(0.038)	(0.034)	(0.032)	(0.031)
Treatment × 2018	0.271***	0.310***	0.249***	0.252***	0.293***	0.232***
	(0.042)	(0.039)	(0.038)	(0.035)	(0.033)	(0.032)
Household controls	No	Yes	Yes	No	Yes	Yes
Heating source controls	No	No	Yes	No	No	Yes
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year, month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.04	0.17	0.26	0.03	0.17	0.26
Number of households	5,766	5,766	5,766	7,845	7,845	7,845

return

Table A.4: The probability of feeling sick: year-round

	All ages		0-14		15-60		60+	
Variable name	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	0.015**	0.015**	0.031**	0.034**	0.016**	0.015**	-0.004	0.000
	(0.007)	(0.007)	(0.013)	(0.014)	(0.007)	(0.007)	(0.036)	(0.036)
Treatment × 2012	-0.028***	-0.037***	-0.061***	-0.061***	-0.026***	-0.030***	0.077*	0.055
	(0.009)	(0.009)	(0.018)	(0.018)	(0.009)	(0.009)	(0.045)	(0.045)
Treatment × 2014	-0.012	-0.020**	-0.057***	-0.058***	-0.012	-0.017*	0.100**	0.086*
	(0.009)	(0.009)	(0.019)	(0.019)	(0.009)	(0.009)	(0.045)	(0.045)
Treatment × 2016	0.004	-0.005	-0.023	-0.025	0.010	0.003	0.022	0.024
	(0.009)	(0.009)	(0.018)	(0.018)	(0.009)	(0.009)	(0.047)	(0.046)
Treatment × 2018	-0.006	-0.011	-0.037**	-0.037**	0.002	-0.002	0.043	0.039
	(0.010)	(0.010)	(0.018)	(0.018)	(0.010)	(0.010)	(0.046)	(0.046)
Individual controls	No	Yes	No	Yes	No	Yes	No	Yes
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted-R^2	0.01	0.03	0.03	0.04	0.01	0.03	0.03	0.05
N	51,265	51,265	14,384	14,384	33,212	33,212	3,669	3,669

return

Table A.5: The probability of respiratory illness: year round

	All ages		0-14		15-60		60+	
Variable name	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	0.011**	0.008*	0.025**	0.028**	0.007*	0.008**	-0.011	-0.007
	(0.005)	(0.005)	(0.013)	(0.013)	(0.004)	(0.004)	(0.016)	(0.016)
Treatment × 2012	-0.021***	-0.023***	-0.047***	-0.047***	-0.013***	-0.013***	0.011	0.009
	(0.006)	(0.006)	(0.017)	(0.017)	(0.005)	(0.005)	(0.020)	(0.020)
Treatment × 2014	-0.021***	-0.022***	-0.049***	-0.049***	-0.013**	-0.013**	-0.005	-0.006
	(0.006)	(0.006)	(0.018)	(0.018)	(0.005)	(0.005)	(0.020)	(0.020)
Treatment × 2016	0.000	0.001	-0.011	-0.012	0.005	0.004	0.017	0.018
	(0.006)	(0.006)	(0.017)	(0.017)	(0.005)	(0.005)	(0.022)	(0.022)
Treatment × 2018	-0.012*	-0.013*	-0.035**	-0.035**	-0.005	-0.005	0.007	0.006
	(0.006)	(0.006)	(0.017)	(0.017)	(0.005)	(0.005)	(0.019)	(0.019)
Individual controls	No	Yes	No	Yes	No	Yes	No	Yes
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted-R^2	0.01	0.03	0.03	0.05	0.00	0.01	0.01	0.01
N	51,265	51,265	14,384	14,384	33,212	33,212	3,669	3,669

return