

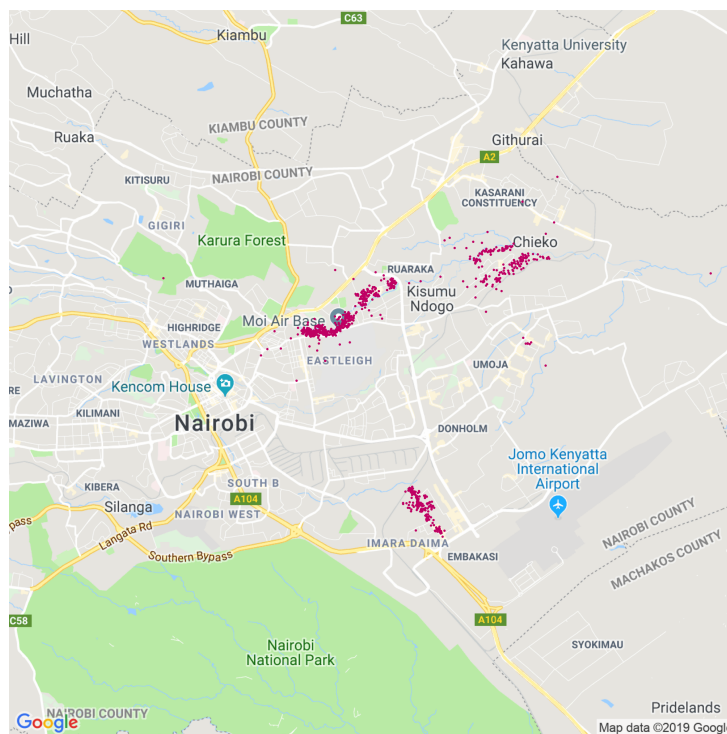
Supplemental Tables and Figures

Figure S1: Kenyan Ceramic Jiko and energy efficient stove



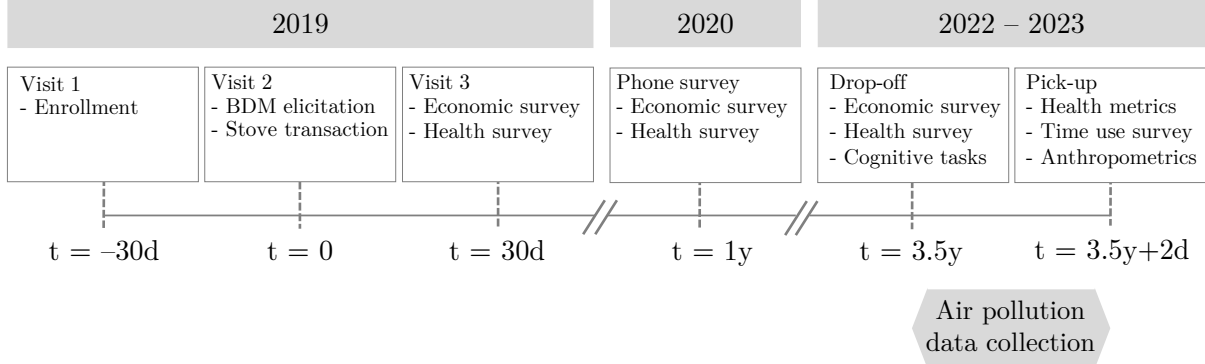
Notes: Reproduced from (Berkouwer and Dean, 2022a). On the left is the traditional *jiko*. On the right is the energy efficient stove. The two stoves use the same type of charcoal and the same process for cooking food, hence the energy efficient stove requires essentially no learning to use. After usage, the user disposes of the ash using the tray at the bottom. The central chamber of the energy efficient stove is constructed using insulating materials.

Figure S2: Approximate respondent locations across Nairobi



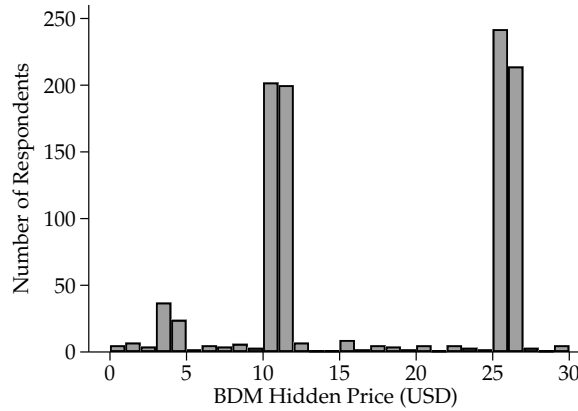
Notes: Approximate locations of study participants' home residences across Nairobi, Kenya. Reproduced from (Berkouwer and Dean, 2022a).

Figure S3: Timeline of field activities



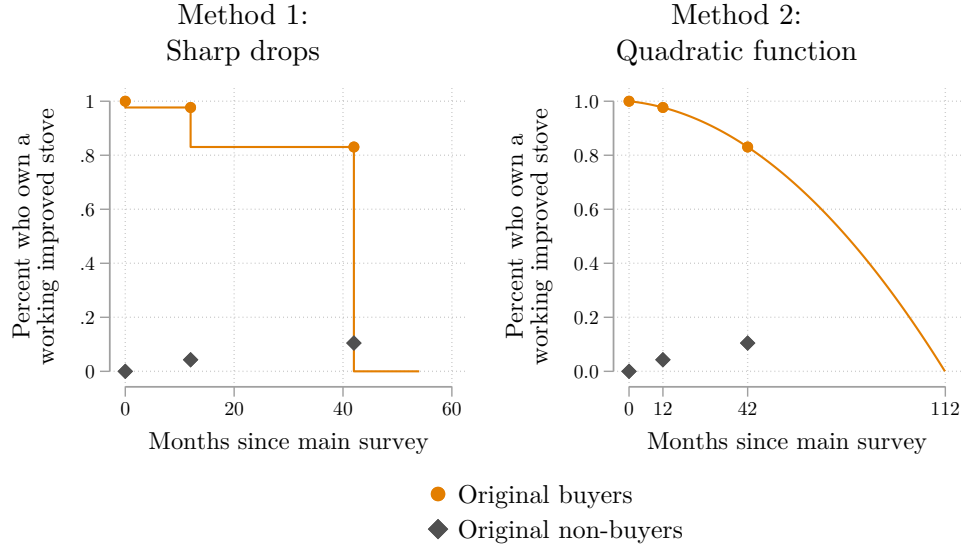
Notes: Participants who purchased the stove did so during the main visit ($t = 0$). For 89% of respondents the long-term endline was conducted 3.4–3.7 years after the main visit. Child anthropometrics were collected on either drop-off or pickup depending on presence. Due to health restrictions, the 2020 survey was conducted by phone.

Figure S4: BDM Hidden price distribution



Notes: Reproduced from (Berkouwer and Dean, 2022a). The distribution of prices P_i used in the BDM elicitation mechanism. 6% of participants are allocated a price drawn from $U[3.50, 4.50]$, 39% of participants are allocated a price drawn from $U[10, 12]$, and 44% of participants are allocated a price drawn from $U[25, 27]$. The remaining prices are drawn from a uniform distribution over the entire interval $U[0.01, 29.99]$. Respondents buy the stove if and only if $WTP_i \geq P_i$.

Figure S5: Extrapolation between and after visits to estimate stove-year additionality



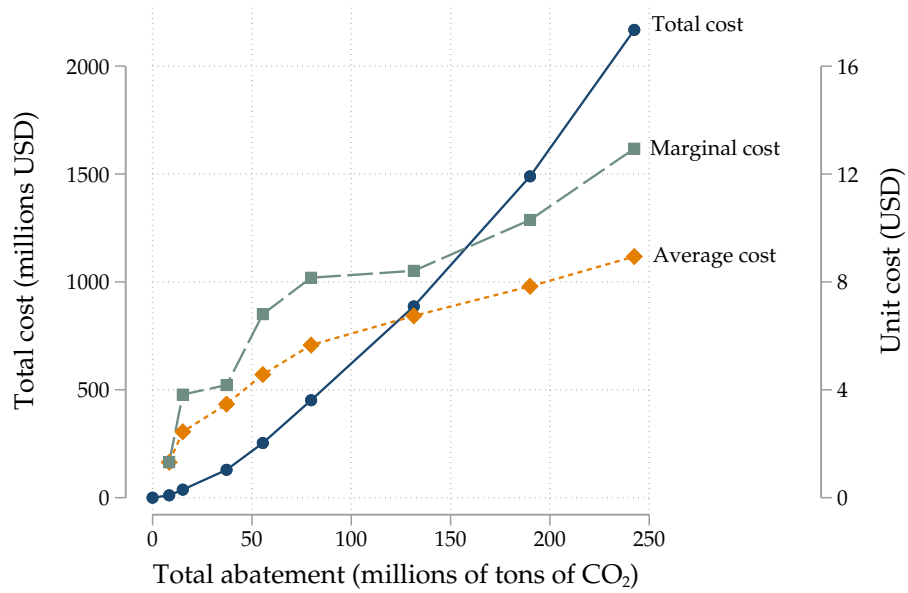
Notes: The dots show the observed improved stove ownership rates separated by those who bought the improved stove during the initial visit and those who did not. During the 42-month visit ownership of a working stove was established by visual inspection of the stove by an independent research staff member. The 12-month visit took place in September 2020; for public health reasons this survey was conducted by phone. The lines show interpolations across these points using two different methods. Method 1 assumes immediately after the one year endline ownership changes to what was observed 3.5 years later, and that ownership drops to zero immediately after the 3.5 year endline survey: this is the more conservative method, offering a lower bound on durability, and we therefore use it for the main calculations in the text. Method 2 assumes a quadratic fit. Method 1 generates an estimated 3.1 stove lifetime; method 2 yields 6 years. After netting out adoption in the control group, this results in an additional 2.8 or 5.4 years of working stove ownership, respectively.

Table S1: Instrumental variables estimates of the effect of improved stove ownership on various independent measures of charcoal usage

	1 month later			1 year later		3.5 years later	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
	kg	USD	USD	USD	USD	$\mu\text{g}/\text{m}^3$	USD
Owns improved stove (=1)	-1.48 (0.27)	-2.28 (0.29)	-1.55 (0.34)	-2.50 (0.42)	-2.68 (0.47)	-45.30 (19.48)	-1.35 (1.00)
Observations	796	7853	911	6979	855	593	696
Control Mean	3.37	5.72	4.96	6.17	6.30	93.74	5.00
Treatment Effect	-0.44	-0.40	-0.31	-0.41	-0.42	-0.48	-0.27
SES controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Data Source	Buckets	SMSes	Survey	SMSes	Phone	PA-II	Survey

Notes: Results from instrumental variables regressions in which the randomly assigned subsidy is an instrument for whether the respondent owns the improved stove to estimate the impact of improved stove ownership on various outcomes. Column (a) uses the weight of ash generated through charcoal stove usage. Columns (b) and (d) use self-reported weekly charcoal expenditures collected through a recurring SMS survey (standard errors clustered by respondent). Columns (c) and (g) use self-reported weekly charcoal expenditures collected through in-person surveys. Column (e) uses self-reported weekly charcoal expenditures collected through a phone survey (due to COVID-19, no in-person surveys were conducted in 2020). Column (f) uses PM2.5 data collected by Purple Air II sensors (in $\mu\text{g}/\text{m}^3$). The baseline survey was conducted in May-June 2019. The 1-month follow-up survey was conducted in June-July 2019. Regressions control for baseline charcoal spending, income, wealth, risk aversion, credit constrainedness, household size, and beliefs about stove benefits.

Figure S6: Supply curve of abatement at different subsidy levels



Notes: This graph plots the total abatement, total cost, average cost, and marginal cost for subsidies of {0, 5, 10, 15, 20, 25, 30, 35, 40} applied to a US\$40 competitive market price. This graph assumes that the demand curves for the 54.3 million households that use charcoal as their primary cooking fuel are similar in demand and usage as our research sample. At all quantities, the average and marginal abatement costs are below the United States Environmental Protection Agency (US EPA)'s most conservative Social Cost of Carbon (SCC) estimate of US\$120 (EPA, 2023).

Table S2: Households using charcoal and wood as primary fuels

Country	Households (millions)	Charcoal households (millions)	Wood households (millions)	Source
China	522.7	17.7	50.1	CNSB (2020)
Madagascar	6.9	4.5	2.2	MNIS (2022, 2023)
Tanzania	13.8	3.6	7.7	TNBS (2022)
Nigeria	40.8	3.2	23.4	NNBS (2024)
Burkina Faso	18.3	3.1	4.4	BFNISD (2021)
Dem. Rep. of the Congo	13.2	3.1	9.9	DMPH (2021)
Ghana	8.4	2.6	3	GSS (2022)
Philippines	23	2	8.5	PSA (2022)
Uganda	7.2	1.7	5.1	UBS (2020)
Bangladesh	41	1.7	28.2	BBS (2023a, 2023b)
Ethiopia	19.5	1.6	15.7	EPHI (2019)
Mozambique	6.2	1.4	4.3	MNIS (2023)
Kenya	12	1.4	6.4	KNBS (2022)
Zambia	2.8	1.2	1.4	ZSA (2018)
Myanmar	11.2	1.1	6.7	MMPF (2017)
India	291.7	1	95.1	INSO (2024)
Angola	5.8	.9	1.9	ANIS (2016)
Malawi	4.1	.8	3.3	MNSO (2020)
Mali	2.4	.5	1.8	INSTAT (2021)
Sierra Leone	1.3	.4	.8	SSL (2019)
Ivory Coast	6.6	.4	3.6	CINS (2021)
Cameroon	3.5	.3	1	CNIS (2022)
Senegal	1.6	.2	.6	ANSD (2023)
Chad	1.9	.1	1.6	INSEED (2019)
Pakistan	38	0	16.6	PBS (2020)
Other		.1	2.3	
Total		54.3	305.9	

Notes: Charcoal or wood households are those that use charcoal or wood as their primary cooking fuel, respectively. The table shows numbers of households in countries where census data either lists at least 1 million households as using charcoal or at least 5 million households using either charcoal or wood as their primary daily cooking fuel. Some countries may be missing.