Supplementary Materials (For Online Publication Only)

Alcohol Consumption and Intimate Partner Violence: Long-Term Effects of Temporary Alcohol Ban

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This supplementary material first presents details on demographic controls (Appendix A) and additional figures that report more results (Appendix B). Second, it provides results from robustness checks on consumption effects (Appendix C) and additional results from checking the mechanisms and sources of changes in alcohol consumption (Appendix D). Third, the material includes results on domestic violence effects from additional heterogeneity analysis (Appendix E), robustness checks (Appendix F), and analysis examining potential mechanisms (Appendix G).

A Details on Demographic Controls

In the text, we defined our primary outcomes for intimate partner violence and alcohol consumption and explained the construction of treatment intensity measures. In this appendix, we provide details on measures of covariates controlled in our physical violence regressions.

A.1 Demographic Characteristics

The demographic characteristics first include a woman's age. To capture the possible non-linear relationship between age and alcohol-related externalities, we also consider the square of age, i.e., younger or older individuals are less likely to drink and generate related externalities than middle-aged people. Additionally, we include other individual demographics, including educational attainment, working status, and marital status, in our domestic violence regressions. Other demographic or cultural characteristics are the religion (Auld, 2005) and scheduled caste or tribe to which the household belongs. Despite the Islamic religion, there is still a significant amount of alcohol consumption by Muslim households, according to the NSS data over the period from 2001-2002 through 2011-2012.

A.2 Socioeconomic Characteristics

According to the literature, social and economic features of a household, such as household wealth and household size, affect alcohol consumption behavior. Low-income males in developing countries, including India, commonly use alcohol (Schilbach, 2019). There is also some effect of economic conditions such as income and unemployment on alcoholism (Fajnzylber et al., 2002; Fleisher, 1966). Thus, we control for the household wealth index. The place of residence–rural/urban exposure–is also associated with drinking. Iparraguirre (2015) systematically surveys literature that explores the determinants of harmful alcohol drinking in old age.

Table A.1 presents summary statistics on household and individual characteristics for the treatment and control groups captured in the pre-policy DHS data we use—DHS-2 conducted during 1998-2000. A comparison of the demographic characteristics of women suggests that women in the affected group are more from rural areas and slightly wealthier. Women in the treatment group are also more educated than those in the neighboring states. Women in the treatment group are less likely to be employed than those in the neighboring states, while more than 90% of women in both treated and control groups are currently married. Women in the treatment group are less likely to be Hindu than those in the comparison group. Women's age and household size are roughly equal across treatment and control groups. They are in their early 30s and from a household with around 6 members. Women in the treatment and comparison groups are indeed not too different, except for a few characteristics.

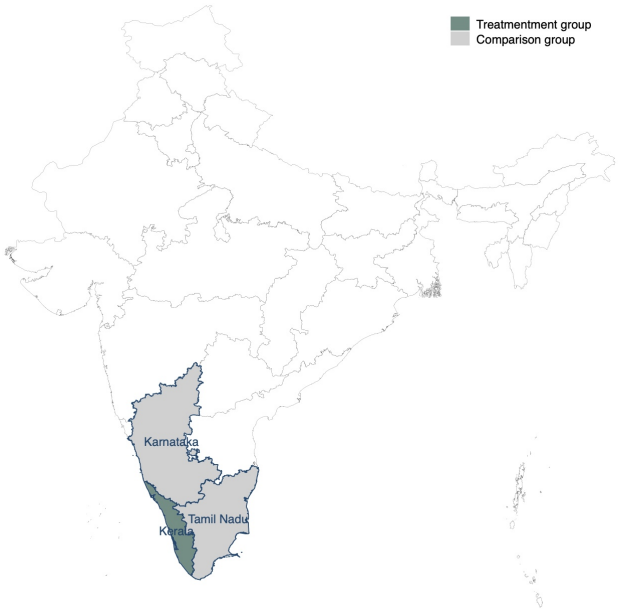
Table A.1: Comparison of Treatment and Control Groups

	Treatment group mean	Control group mean		
	Kerala	Neighbors	Karnataka	Tamil Nadu
Urban	23.1	34.7	34.9	34.6
Household wealth				
High	29.5	21.2	23.3	19.6
Middle	60.1	48.5	44.9	51.3
Low	10.4	30.3	31.8	29.1
Education level				
Higher	19.0	9.5	9.8	9.3
Secondary	52.7	28.4	27.7	28.9
Primary	20.9	21.2	13.9	26.6
Uneducated	7.3	40.9	48.6	35.2
Employed	23.1	50.8	51.2	50.6
Married, currently	92.8	91.3	91.9	90.8
Religion				
Hindu	51.3	87.5	85.7	88.7
Muslim	32.6	8.1	10.9	5.9
Christian	16.0	4.1	2.6	5.2
Other	0.1	0.4	0.8	0.1
Age (years)	33.8	31.8	31.2	32.3
Household size (members)	6.5	5.8	6.6	5.1
District's real NDP per capita (thous. ₹/person)	32.2	31.4	36.4	26.7

Notes: The table summarizes the characteristics of women in the treatment group (Kerala) and the control group (Karnataka and Tamil Nadu) before the ban using data from the second wave of India's DHS (1998-2000). The information on district-specific net domestic product per capita (gross domestic product net of depreciation) expressed at 2011-2012 constant prices is collected from each state's statistical yearbooks or annual economic surveys. We present the average real NDP per capita between 1998-2000 to be consistent with other variables. The average real NDP per capita over the entire pre-treatment period, 1998-2013, is comparable across treatment and control states. Units are percent % unless otherwise specified.

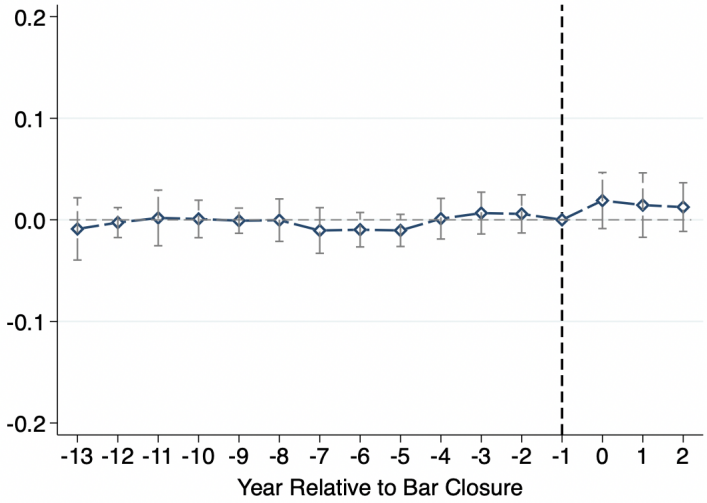
B Additional Figures

Figure B.1: Location of Treatment and Control Groups



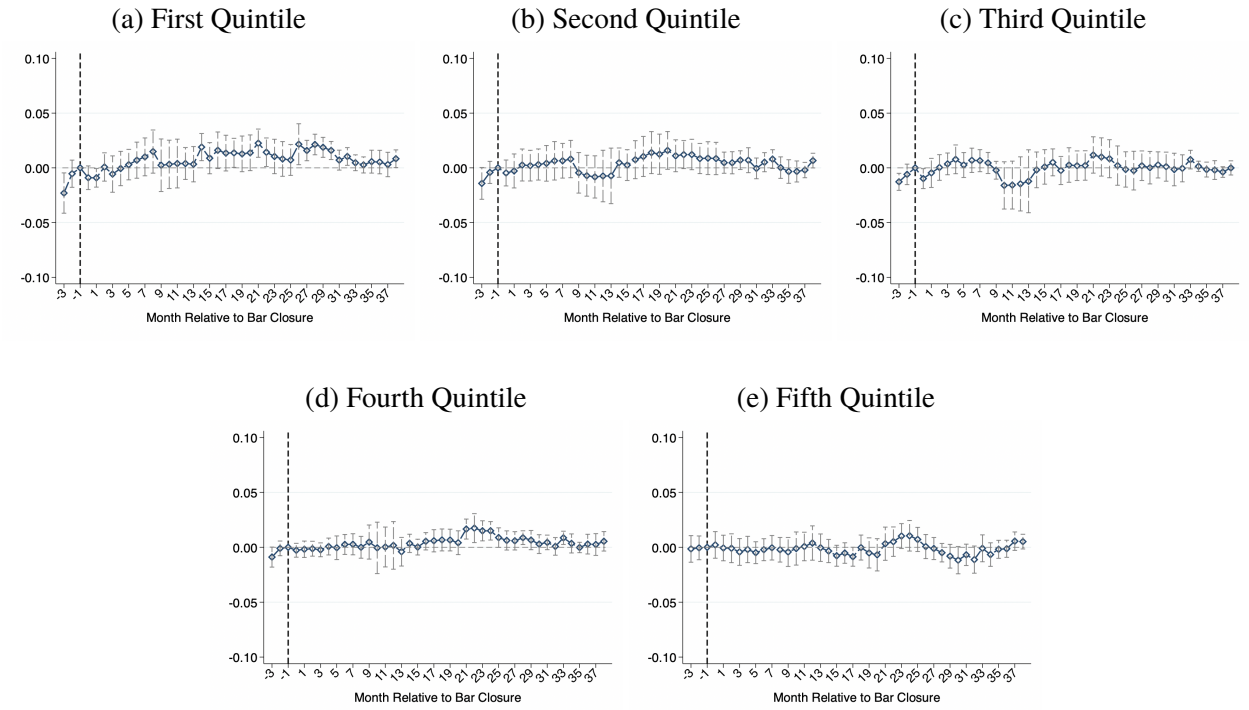
Notes: The figure plots the location of our treatment and control groups. Kerala is the treatment group, while its two neighboring states, Karnataka and Tamil Nadu, are in the comparison/control group.

Figure B.2: Event Study—Test of Parallel Pre-Trend in District-Level Domestic Violence (Control group = Karnataka)



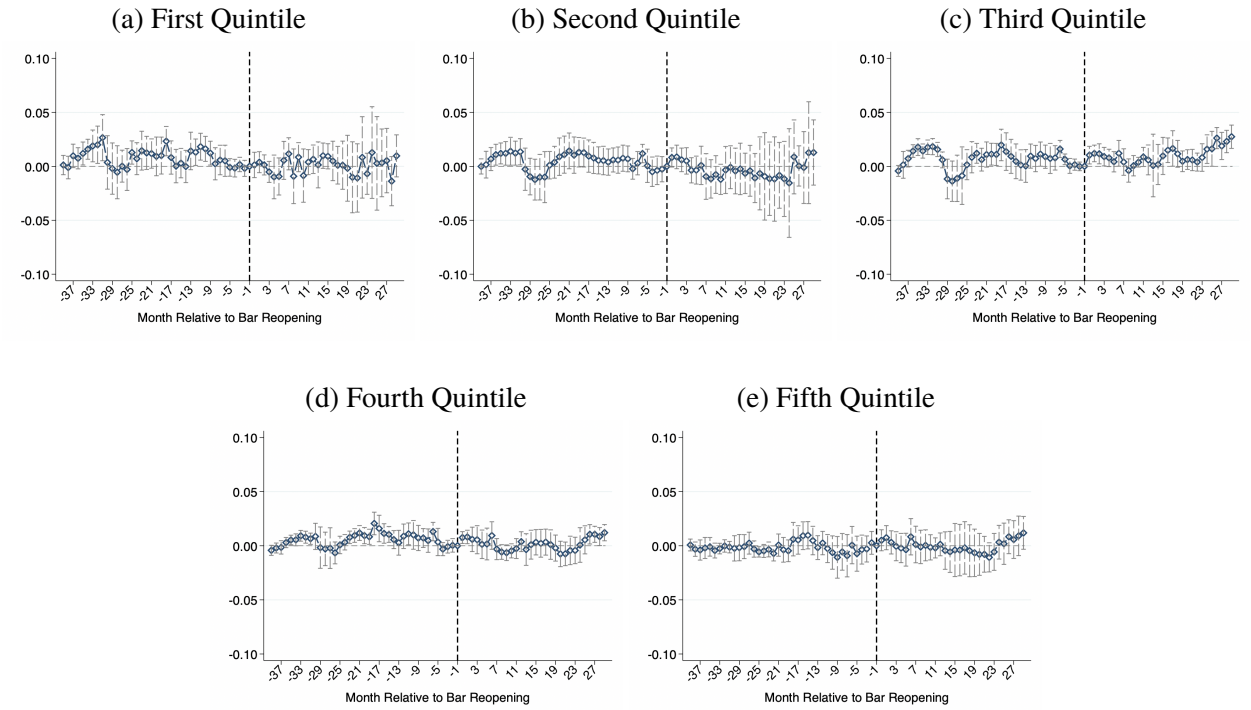
Notes: The figure shows results from event study analysis testing parallel pre-trends in domestic violence at the district level in Kerala and Karnataka. The analysis uses district-level data on crime records from the National Crime Record Bureau (NCRB) for 13 years before Kerala's liquor ban (2001 through 2013) and 3 years after the ban (2014 through 2016) but before the policy reversal in 2017, with a base year of 2013. Each observation corresponds to (log) the number of domestic violence incidents (number of cruelty by husband or his relatives) per 1000 population by district and year. The data includes all 14 districts in Kerala and 29 districts in Karnataka. All specifications control for district-specific (log) real GDP per capita (net of depreciation), district and year fixed effects, state-by-year FEs, and a constant term. Standard errors are clustered by districts, and 95% confidence intervals are shown. Using wild cluster bootstrap, following Roodman et al. (2019), with 999 replications, gives qualitatively similar results.

Figure B.3: Short-Run Effects on Household Alcohol Consumption at Home, Heterogeneous by Household Income



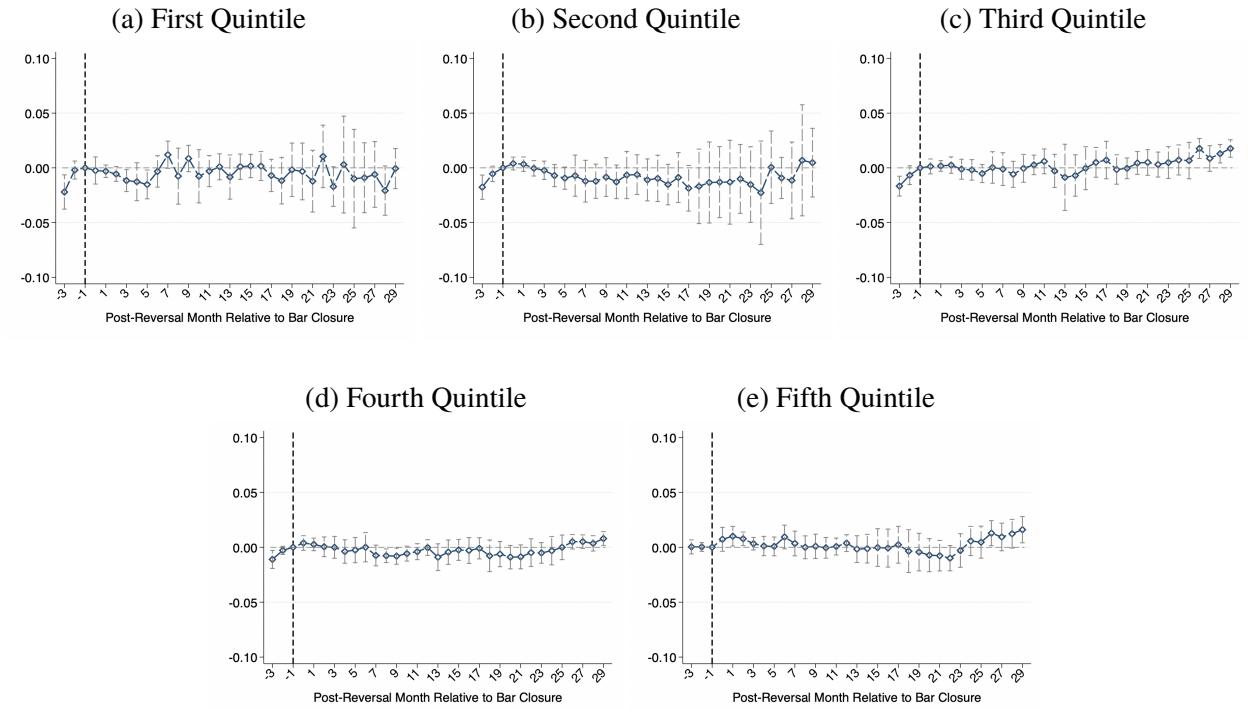
Notes: The figure presents the short-run effect of closing hard liquor-selling bars on (log) household expenditure on alcohol for consumption at home during the policy period heterogeneous by household income. The treatment intensity is our baseline measure based on the district's share of hard liquor consumption in the state's total consumption. Panel (a)-(e) includes households in the first-fifth quintile of household income distribution, respectively. The event date I_0 in these event-study specifications is April 2014, and the time frame is between January 2014 and June 2017.

Figure B.4: Effects of Policy Reversal on Household Alcohol Consumption at Home, Heterogeneous by Household Income



Notes: The figure presents the effect of policy reversal or reopening of bar hotels on (log) household expenditure on alcohol for consumption at home heterogeneous by household income. The treatment intensity is our baseline measure based on the district's share of hard liquor consumption in the state's total consumption. Panel (a)-(e) includes households in the first-fifth quintile of household income distribution, respectively. The event date I_0 in these event-study specifications is July 2017, and the time frame is between April 2014 and December 2019.

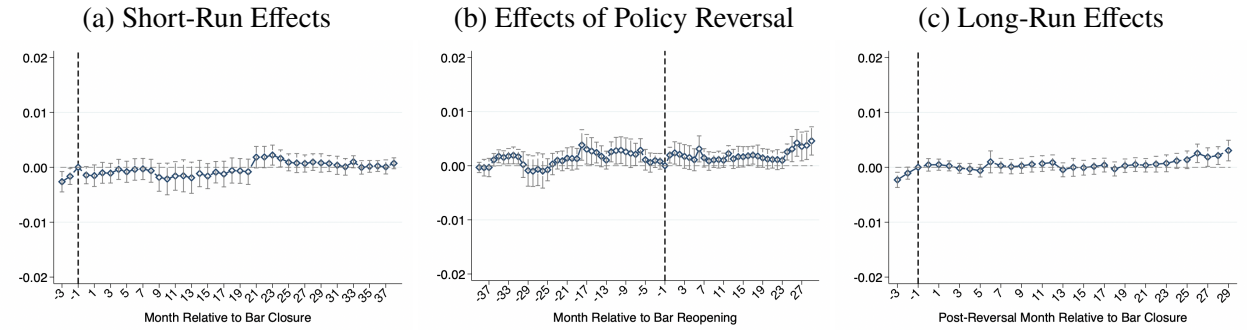
Figure B.5: Long-Run Effects on Household Alcohol Consumption at Home, Heterogeneous by Household Income



Notes: The figure presents the long-run effect of shutting down hard liquor-selling bars on (log) household expenditure on alcohol for consumption at home heterogeneous by household income. The treatment intensity is our baseline measure based on the district's share of hard liquor consumption in the state's total consumption. Panel (a)-(e) includes households in the first-fifth quintile of household income distribution, respectively. The event date I_0 in these event-study specifications is July 2017, and the time frame covers January-March 2014 (pre-treatment) and July-December 2019 (post-treatment).

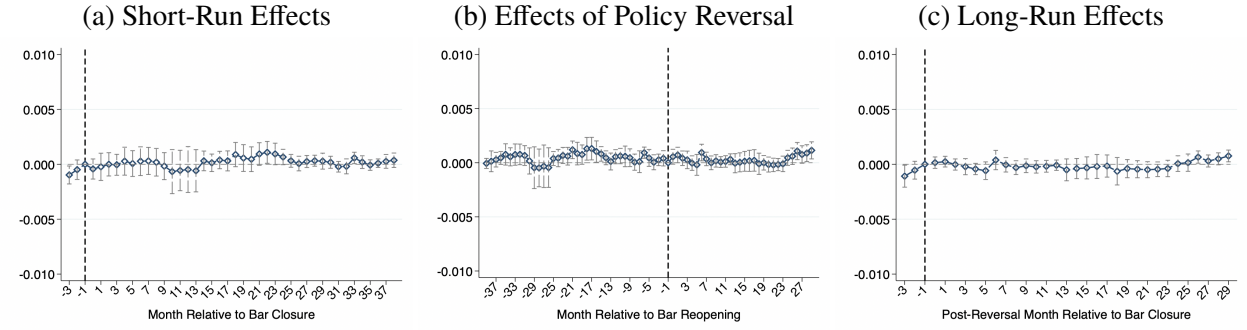
C Robustness Checks on Consumption Results

Figure C.1: Effects on Household Alcohol Consumption at Home
(Treatment intensity = District's per capita consumption of hard liquor)



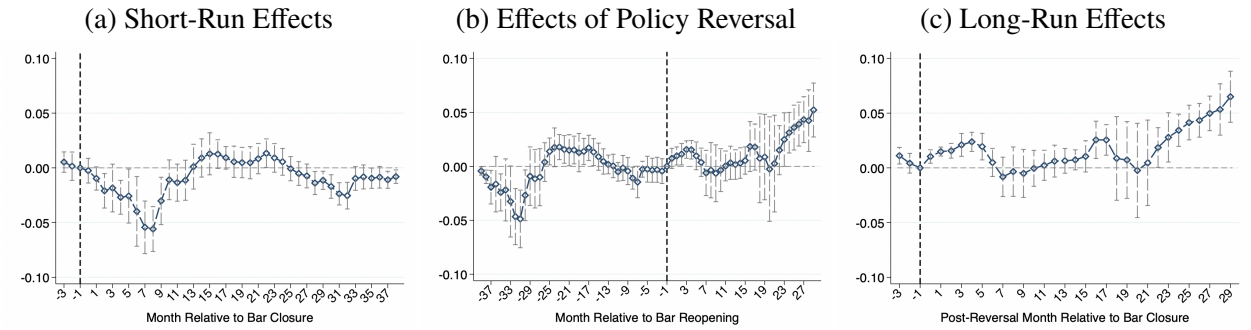
Notes: Panel (a) shows the effects of shutting down hard liquor-serving bars during the policy period. Panel (b) presents the impacts of policy removal. Panel (c) reports the policy effects when the policy was no longer effective, i.e., long-run effects. The dependent variable in all regressions is (log) expenditure by a household on the purchase of alcohol for consumption at home. *The treatment intensity in these event study regressions is based on the average consumption of hard liquor per 1000 population in 2012.* The control group includes households in neighboring states of Karnataka and Tamil Nadu in panel (a) and in Karnataka only in panels (b) and (c). The analysis uses household-level monthly panel data from the Consumer Pyramids. Each observation corresponds to (log) alcohol consumption by household and year-month. All specifications control for unreported household covariates, district-specific (log) real GDP per capita (net of depreciation), household FE, year FE, month FE, year-by-state FE, month-by-state FE, and a constant term. Household covariates include household size, urban/rural dummy, age group, occupation group, education group, gender group, and (log) income per household member. Standard errors are clustered by districts, and 95% confidence intervals are shown.

Figure C.2: Effects on Household Alcohol Consumption at Home
(Treatment intensity = Number of bars closed down)



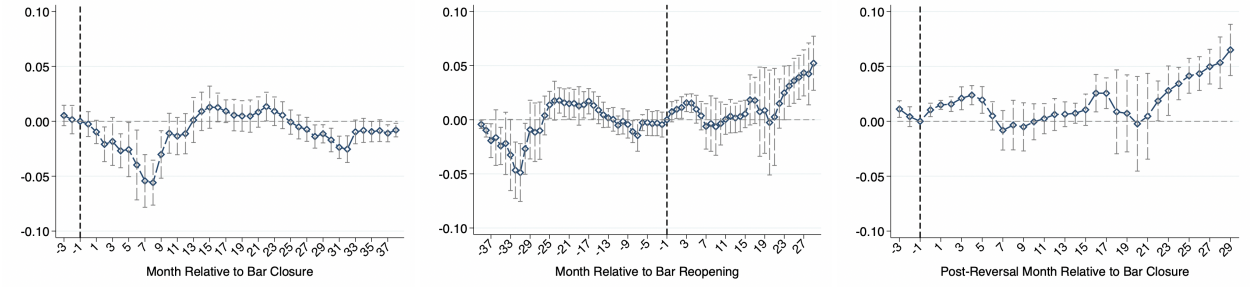
Notes: Panel (a) shows the effects of shutting down hard liquor-serving bars during the policy period. Panel (b) presents the effects of policy removal. Panel (c) reports the policy effects over the period when the policy was no longer effective, i.e., long-run effects. The dependent variable in all regressions is (log) expenditure by a household on the purchase of alcohol for consumption at home. *The treatment intensity in these event study regressions is based on the number of bars closed down due to the policy at the district level.* The control group includes households in neighboring states of Karnataka and Tamil Nadu in panel (a) and in Karnataka only in panels (b) and (c). The analysis uses household-level monthly panel data from the Consumer Pyramids. Each observation corresponds to (log) alcohol consumption by household and year-month. All specifications control for unreported household covariates, district-specific (log) real GDP per capita (net of depreciation), household FE, year FE, month FE, year-by-state FE, month-by-state FE, and a constant term. Household covariates include household size, urban/rural dummy, age group, occupation group, education group, gender group, and (log) income per household member. Standard errors are clustered by districts, and 95% confidence intervals are shown.

Figure C.3: Effects on Household Alcohol Consumption in Bars
(Control group = Interior Districts of Neighbor States)



Notes: Panel (a) shows the effects of shutting down hard liquor-serving bars during the policy period. Panel (b) presents the impacts of policy removal. Panel (c) reports the policy effects over the period when the policy was no longer effective, i.e., long-run effects. The dependent variable in all regressions is (log) expenditure by a household on the purchase of alcohol for consumption in bars. The treatment intensity in these event study regressions is our baseline measure based on district d's share of hard liquor consumption in the state's total consumption in 2012. The control group includes households in interior districts of Karnataka and Tamil Nadu in panel (a) and in interior districts of Karnataka in panels (b) and (c). The analysis uses household-level monthly panel data from the Consumer Pyramids. Each observation corresponds to (log) alcohol consumption in bars by household and year-month. All specifications control for unreported household covariates, district-specific (log) real GDP per capita (net of depreciation), household FE, year FE, month FE, year-by-state FE, month-by-state FE, and a constant term. Household covariates include household size, urban/rural dummy, age group, occupation group, education group, gender group, and (log) income per household member. Standard errors are clustered by districts, and 95% confidence intervals are shown.

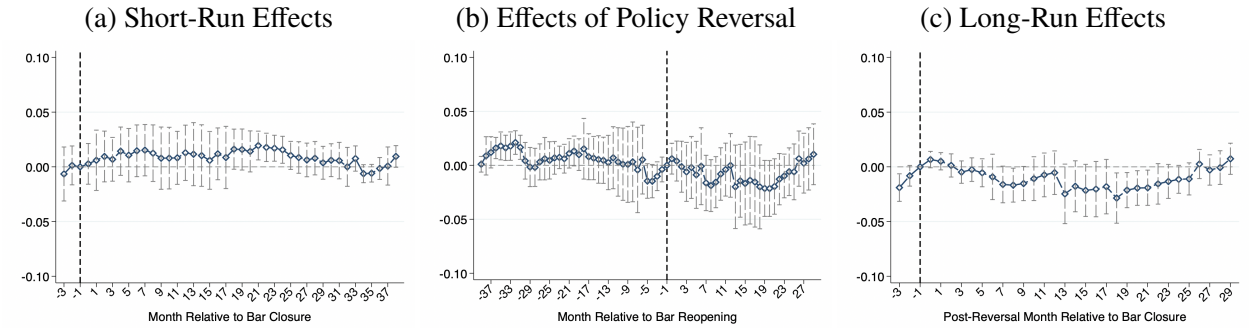
Figure C.4: Effects on Household Alcohol Consumption in Bars
(Control group = Border Districts of Neighbor States)



Notes: Panel (a) shows the effects of shutting down hard liquor-serving bars during the policy period. Panel (b) presents the impacts of policy removal. Panel (c) reports the policy effects over the period when the policy was no longer effective, i.e., long-run effects. The dependent variable in all regressions is (log) expenditure by a household on the purchase of alcohol for consumption in bars. The treatment intensity in these event study regressions is our baseline measure based on district d's share of hard liquor consumption in the state's total consumption in 2012. The control group includes households in border districts of Karnataka and Tamil Nadu in panel (a) and in border districts of Karnataka in panels (b) and (c). The analysis uses household-level monthly panel data from the Consumer Pyramids. Each observation corresponds to (log) alcohol consumption in bars by household and year-month. All specifications control for unreported household covariates, district-specific (log) real GDP per capita (net of depreciation), household FE, year FE, month FE, year-by-state FE, month-by-state FE, and a constant term. Household covariates include household size, urban/rural dummy, age group, occupation group, education group, gender group, and (log) income per household member. Standard errors are clustered by districts, and 95% confidence intervals are shown.

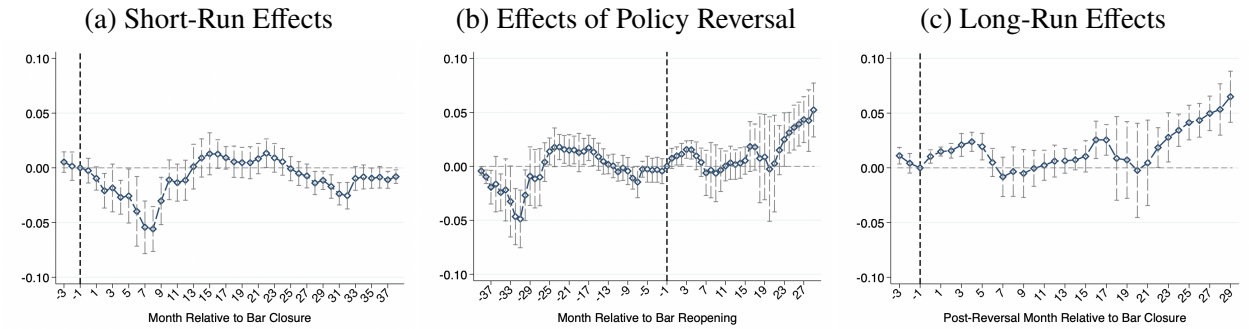
D Results on Mechanisms and Sources of Changes in Alcohol Consumption

Figure D.1: Effects on Household Alcohol Consumption at Home
(Excluding Thiruvananthapuram from the Treatment Group)



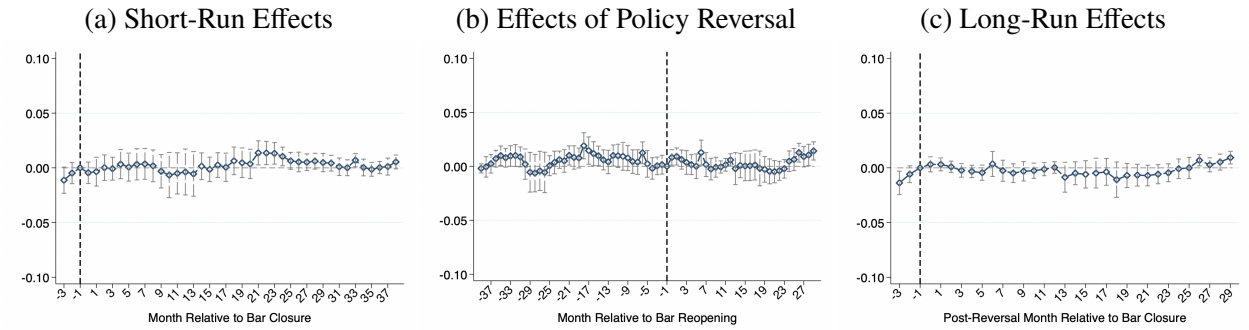
Notes: The table shows the short-run effect of liquor ban, the impact of policy reversal, and the long-run effect of liquor ban on household's alcohol consumption at home using specifications in which the capital of Kerala, Thiruvananthapuram, has been excluded from the treatment group. The dependent variable in all regressions is (log) expenditure by a household on the purchase of alcohol for consumption at home. The treatment intensity in these event study regressions is our baseline measure based on district d's share of hard liquor consumption in the state's total consumption in 2012. The control group includes households in neighboring states of Karnataka and Tamil Nadu in panel (a) and in Karnataka only in panels (b) and (c). Standard errors are clustered by districts, and 95% confidence intervals are shown.

Figure D.2: Effects on Household Alcohol Consumption in Bars
(District's population controlled)



Notes: The table shows the short-run effect of liquor ban, the impact of policy reversal, and the long-run effect of liquor ban on household's alcohol consumption in bars using specifications controlling for log of district's population. The dependent variable in all regressions is (log) expenditure by a household on the purchase of alcohol for consumption in bars. The treatment intensity in these event study regressions is our baseline measure based on district d's share of hard liquor consumption in the state's total consumption in 2012. The control group includes households in neighboring states of Karnataka and Tamil Nadu in panel (a) and in Karnataka only in panels (b) and (c). Standard errors are clustered by districts, and 95% confidence intervals are shown.

Figure D.3: Effects on Household Alcohol Consumption at Home
(District's population controlled)

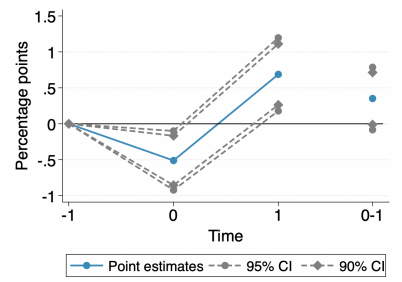


Notes: The table shows the short-run effect of liquor ban, the impact of policy reversal, and the long-run effect of liquor ban on household's alcohol consumption at home using specifications controlling for log of district's population. The dependent variable in all regressions is (log) expenditure by a household on the purchase of alcohol for consumption at home. The treatment intensity in these event study regressions is our baseline measure based on district d's share of hard liquor consumption in the state's total consumption in 2012. The control group includes households in neighboring states of Karnataka and Tamil Nadu in panel (a) and in Karnataka only in panels (b) and (c). Standard errors are clustered by districts, and 95% confidence intervals are shown.

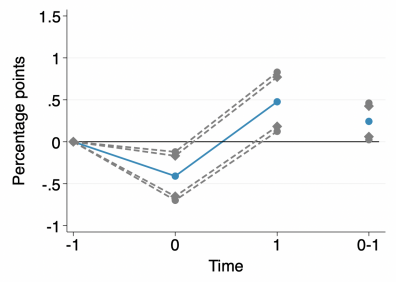
E Additional Heterogeneity Results on Domestic Violence Effects

Figure E.1: Heterogeneous Effects on Physical Violence by Education

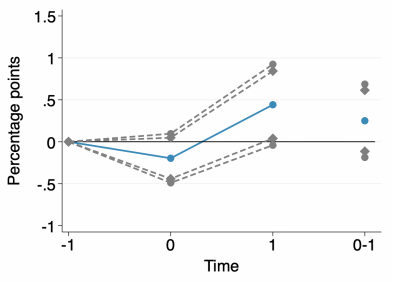
(a) Ever



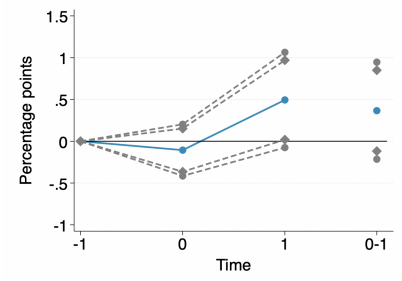
(b) Before the last 12 months



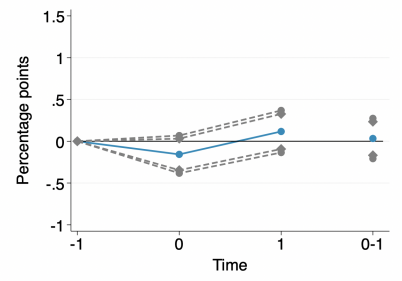
(c) In the last 12 months



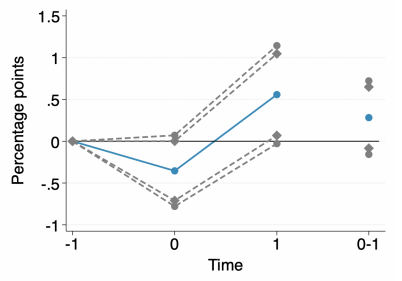
(d) Sometimes in the last 12 months



(e) Often in the last 12 months



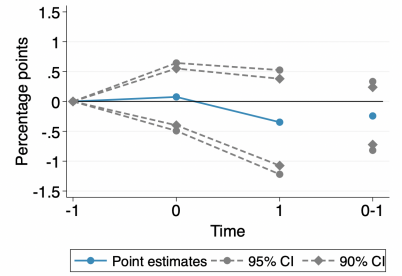
(f) Frequency in the last 12 months



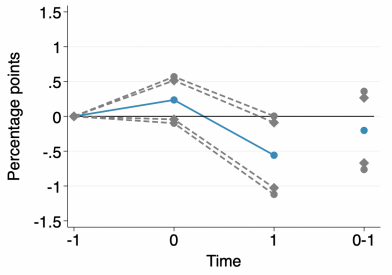
Notes: The figure presents the OLS estimates on the short- and long-run effects of Kerala's temporary partial liquor ban on physical intimate partner violence heterogeneous by woman's education. The key explanatory variable is our baseline measure of district-level treatment intensity interacted with women's education level.

Figure E.2: Heterogeneous Effects on Physical Violence by Place of Residence

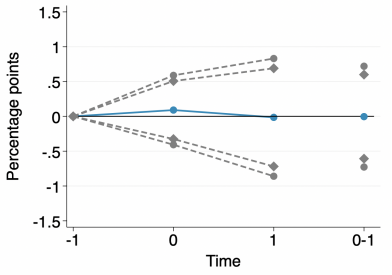
(a) Ever



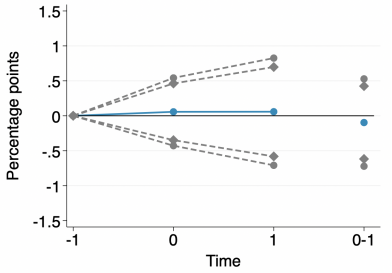
(b) Before the last 12 months



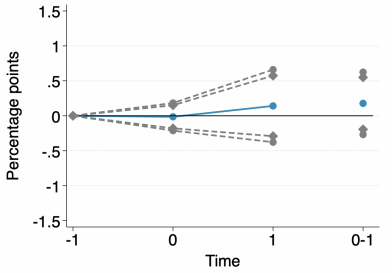
(c) In the last 12 months



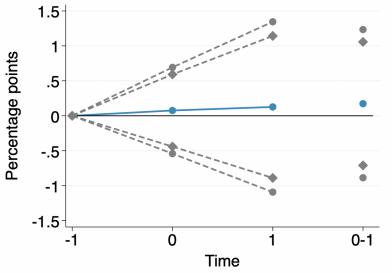
(d) Sometimes in the last 12 months



(e) Often in the last 12 months

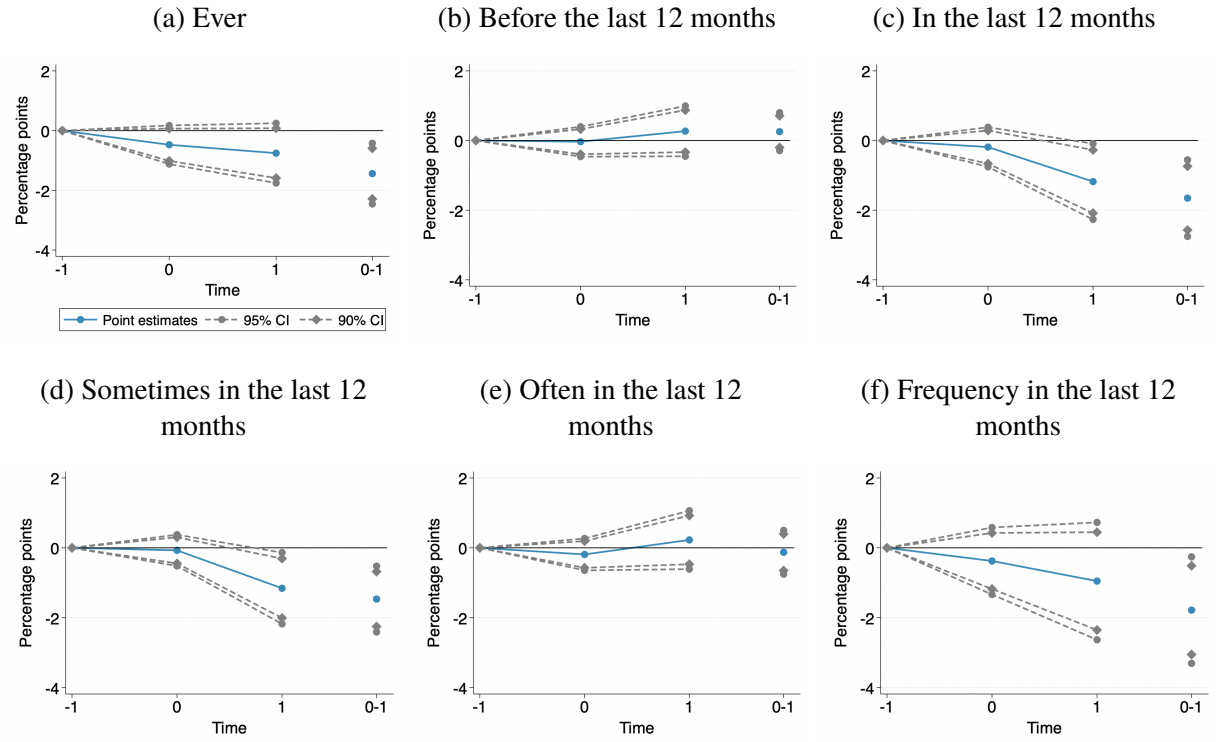


(f) Frequency in the last 12 months



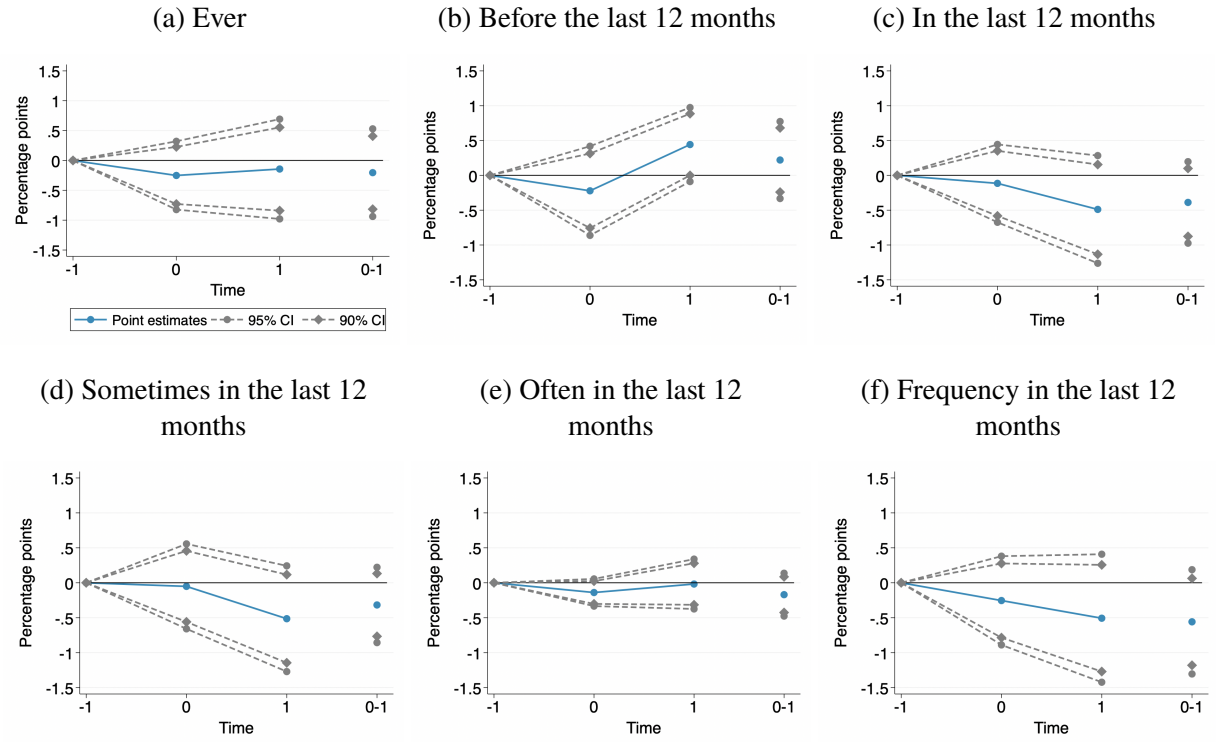
Notes: The figure presents the OLS estimates on the short- and long-run effects of Kerala's temporary partial liquor ban on physical intimate partner violence heterogeneous by place of residence. The key explanatory variable is our baseline measure of district-level treatment intensity interacted with place of residence (urban/rural dummy).

Figure E.3: Heterogeneous Effects on Physical Violence by Scheduled Caste or Tribe



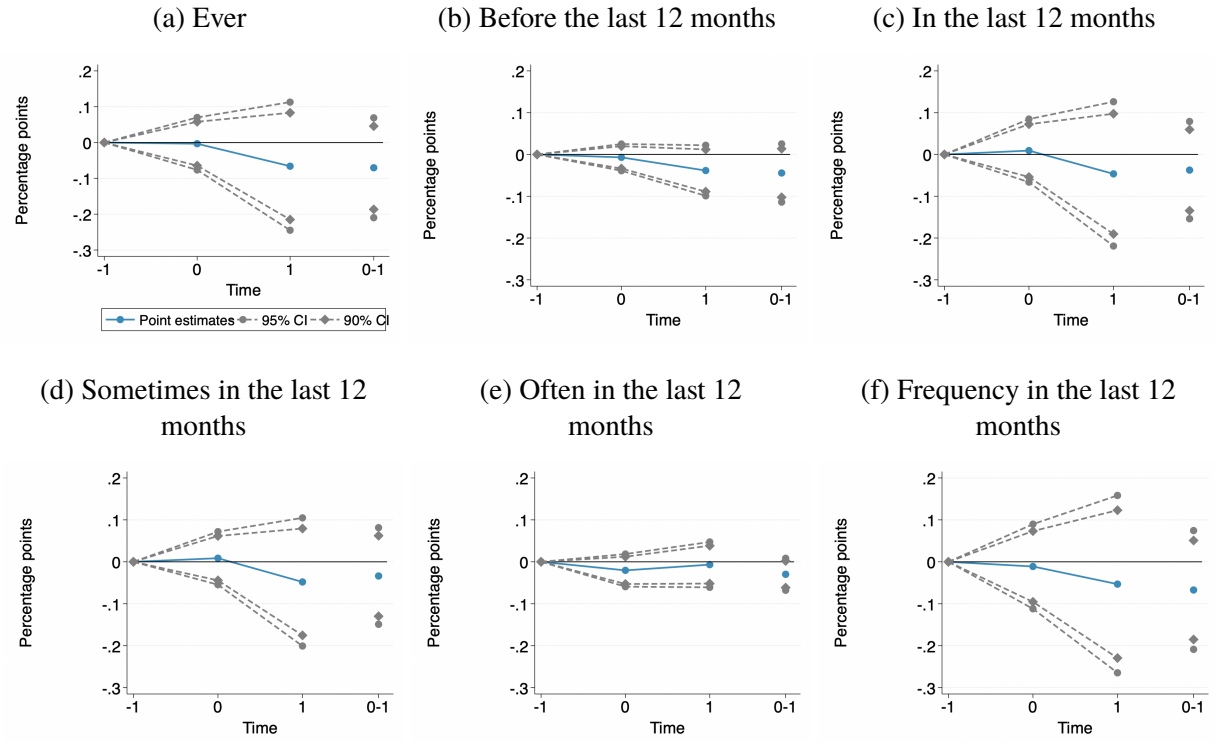
Notes: The figure presents the OLS estimates on the short- and long-run effects of Kerala's temporary partial liquor ban on physical intimate partner violence heterogeneous by caste status. The key explanatory variable is our baseline measure of district-level treatment intensity interacted with a dummy variable indicating whether a woman is from a scheduled caste or tribe.

Figure E.4: Heterogeneous Effects on Physical Violence by Child Gender



Notes: The figure presents the OLS estimates on the short- and long-run effects of Kerala's temporary partial liquor ban on physical intimate partner violence heterogeneous by child gender. The key explanatory variable is our baseline measure of district-level treatment intensity interacted with a dummy variable indicating whether the woman has at least one male child.

Figure E.5: Heterogeneous Effects on Physical Violence by Age Difference from the Partner

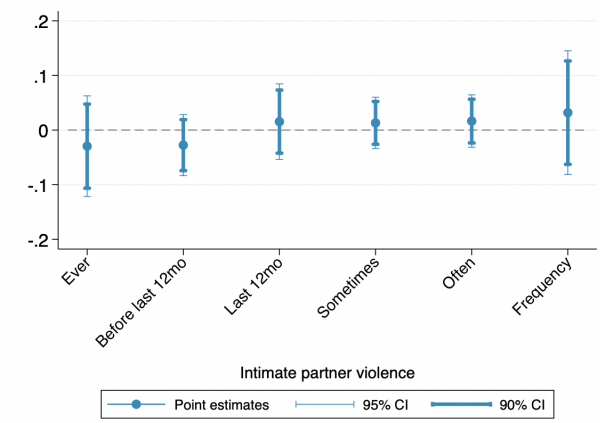


Notes: The figure presents the OLS estimates on the short- and long-run effects of Kerala's temporary partial liquor ban on physical intimate partner violence heterogeneous by woman's age difference from her partner. The key explanatory variable is our baseline measure of district-level treatment intensity interacted with the age difference between the respondent and her husband or partner (woman's age minus partner's age).

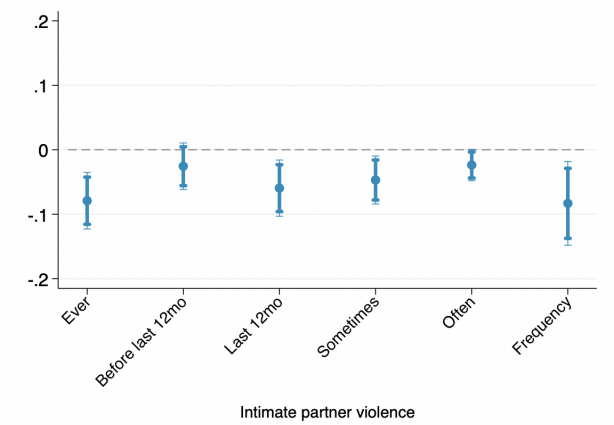
F Robustness Checks on Domestic Violence Results

Figure F.1: Short-Run Effect on Physical Violence
(Treatment intensity = District's per capita consumption of hard liquor)

(a) Baseline

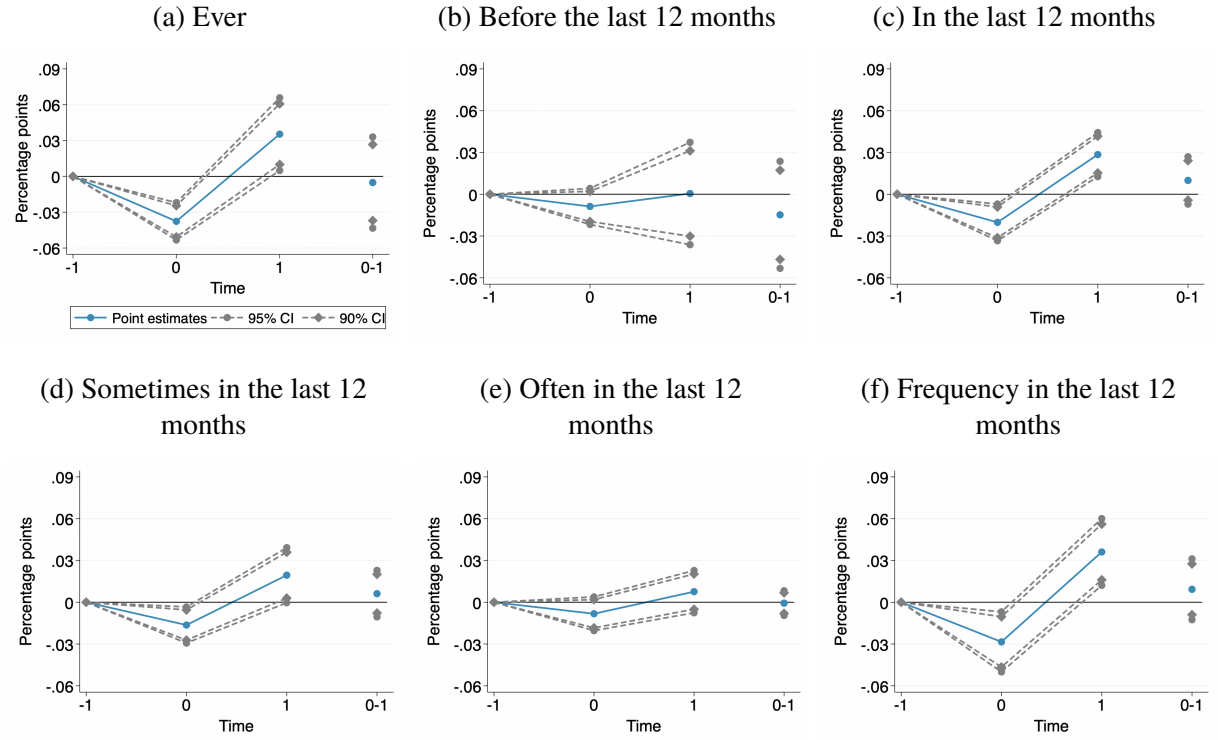


(b) Wealth Heterogeneity



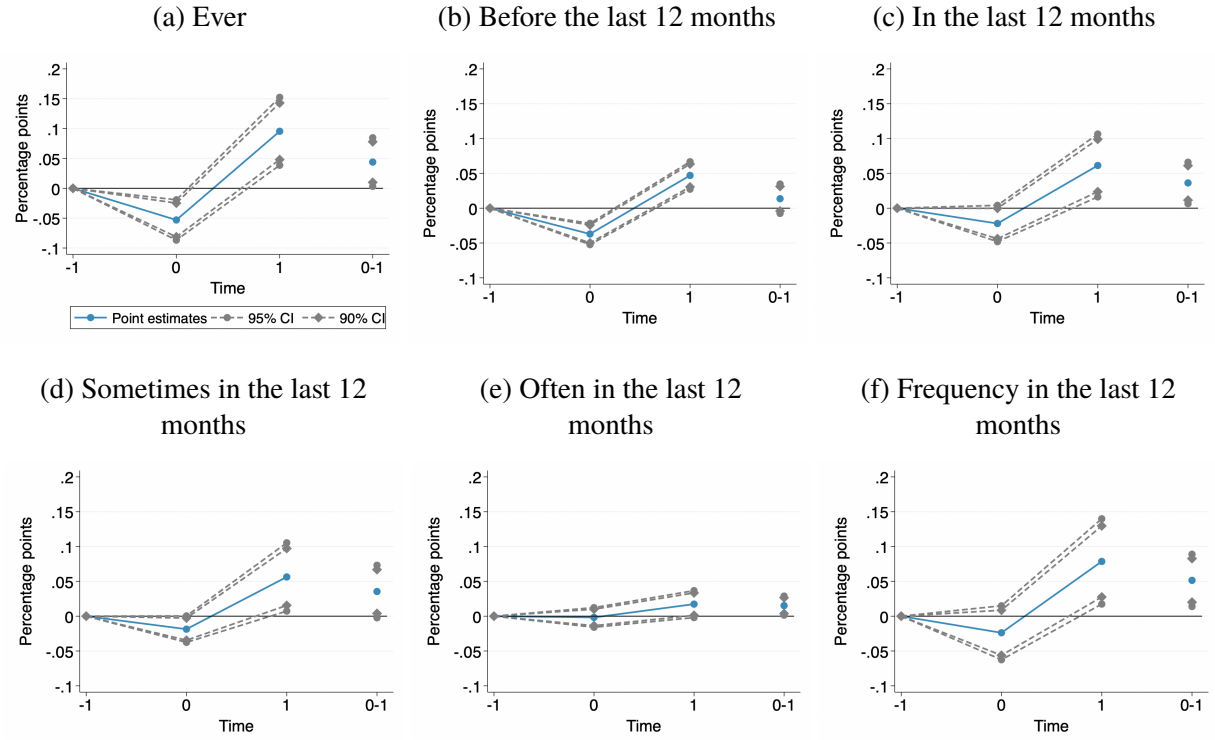
Notes: Panel (a) presents the OLS estimates on the short-run effect of Kerala's temporary partial liquor ban on physical intimate partner violence using equation (5). The dependent variable is stated on the horizontal axis: (i) a dummy indicating whether a woman ever experienced a physical violence, (ii) a dummy indicating whether a woman ever experienced a physical violence before the past 12 months, (iii) a dummy indicating whether a woman ever experienced a physical violence in the past 12 months, (iv) a dummy indicating whether a woman experienced a physical violence sometimes in the past 12 months, (v) a dummy indicating whether a woman experienced a physical violence often in the past 12 months, and (vi) a categorical variable for frequencies of physical violence in the past 12 months. *The key explanatory variable in panel (a) is our alternative measure of district-level treatment intensity based on the average consumption of hard liquor per 1000 population in 2012.* Panel (b) presents the OLS estimates on the short-run effect of the ban on physical violence heterogeneous by household wealth. The dependent variables are the same as those in panel (a). The key explanatory variable in panel (b) is the key explanatory variable in panel (a) interacted with the household wealth index. The sample in both panels includes a repeated cross-section of women from a balanced district-level panel of 14 treatment districts in Kerala and 61 control districts in Karnataka and Tamil Nadu across two DHS rounds (1999 and 2015-2016). All regressions include a constant, district, year (round), and state-by-year fixed effects, district-specific (log) annual real GDP per capita (net of depreciation), and demographic characteristics. Demographic controls include individual characteristics: age, age squared, education, working status, a dummy indicating whether the woman has a male child, the age difference between the woman and her partner/husband, and dummies for religion, including Muslim, Christian, and others; and household characteristics: place of residence, household wealth index, household size, and caste status. In panel (b), all individual and other interaction terms are included in addition to the full set of controls. 95% and 90% confidence intervals are presented, and standard errors are clustered at the district level (75 clusters).

Figure F.2: Short- and Long-Run Effects on Physical Violence
(Treatment intensity = Number of bars closed down)



Notes: The figure presents the OLS estimates on the short- and long-run effects of Kerala's temporary partial liquor ban on physical intimate partner violence. The key explanatory variable is the number of bars closed down due to the policy at the district level.

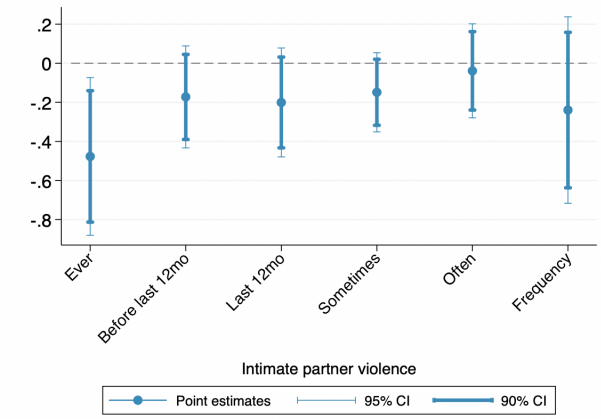
Figure F.3: Heterogeneous Effects on Physical Violence by Household Wealth
(Treatment intensity = Number of bars closed down)



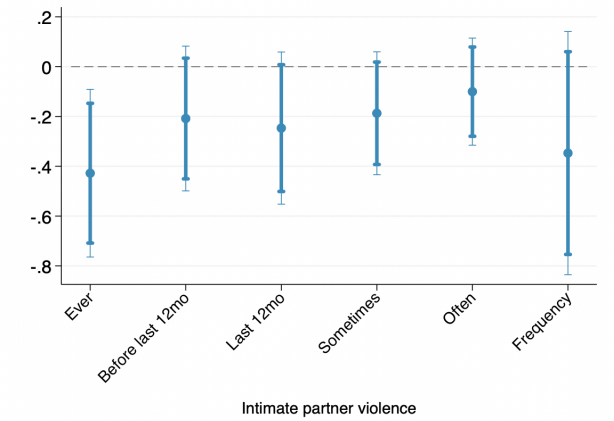
Notes: The figure presents the OLS estimates on the short- and long-run effects of Kerala's temporary partial liquor ban on physical intimate partner violence heterogeneous by household wealth. The key explanatory variable is the district-specific number of bars closed down interacted with the household wealth index.

Figure F.4: Short-Run Effect on Physical Violence (Control group = Karnataka)

(a) Baseline



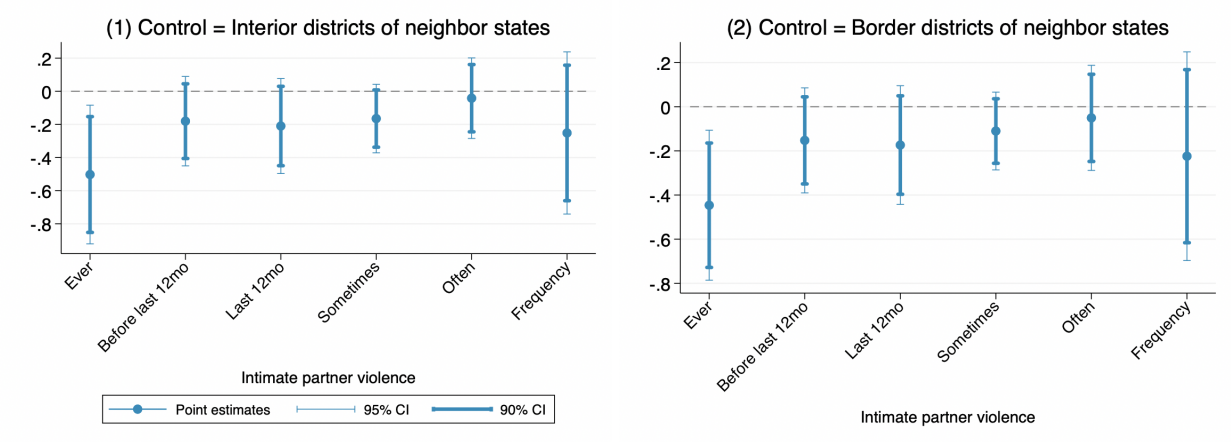
(b) Wealth Heterogeneity



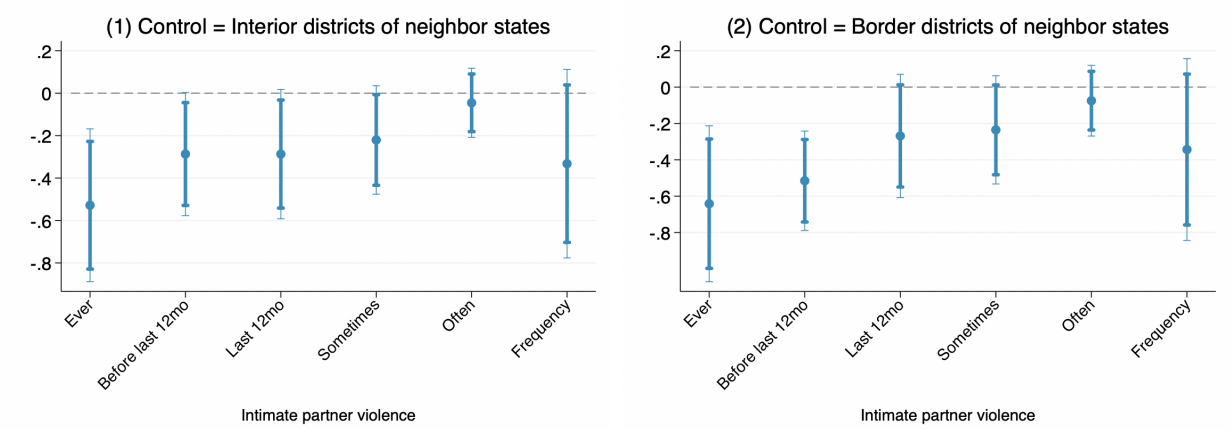
Notes: Panel (a) presents the OLS estimates on the short-run effect of Kerala's temporary partial liquor ban on physical intimate partner violence using equation (5). The key explanatory variable in panel (a) is our baseline measure of treatment intensity at the district level. Panel (b) presents the OLS estimates on the short-run effect of the ban on physical violence heterogeneous by household wealth. The key explanatory variable in panel (b) is the key explanatory variable in panel (a) interacted with the household wealth index. In each panel, the dependent variable is stated on the horizontal axis: (i) a dummy indicating whether a woman ever experienced a physical violence, (ii) a dummy indicating whether a woman ever experienced a physical violence before the past 12 months, (iii) a dummy indicating whether a woman ever experienced a physical violence in the past 12 months, (iv) a dummy indicating whether a woman experienced a physical violence sometimes in the past 12 months, (v) a dummy indicating whether a woman experienced a physical violence often in the past 12 months, and (vi) a categorical variable for frequencies of physical violence in the past 12 months. The sample in both panels includes a repeated cross-section of women from a balanced district-level panel of 14 treatment districts in Kerala and *30 control districts in Karnataka* across two DHS rounds (1999 and 2015-2016). All regressions include a constant, district, year (round), and state-by-year fixed effects, district-specific (log) annual real GDP per capita (net of depreciation), and demographic characteristics. Demographic controls include individual characteristics: age, age squared, education, working status, a dummy indicating whether the woman has a male child, the age difference between the woman and her partner/husband, and dummies for religion, including Muslim, Christian, and others; and household characteristics: place of residence, household wealth index, household size, and caste status. In panel (b), all individual and other interaction terms are included in addition to the full set of controls. 95% and 90% confidence intervals are presented, and standard errors are clustered at the district level (44 clusters). Wild cluster bootstrap, following Roodman et al. (2019), with 999 replications, suggests that the baseline effects in panel (a) are not statistically significant. The wild cluster bootstrapping indicates that the heterogeneous impact on intimate partner violence ever experienced in panel (b) is statistically significant at the 10% level.

Figure F.5: Short-Run Effect on Physical Violence
(Control group = Interior/Border Districts of Neighbor States)

(a) Baseline



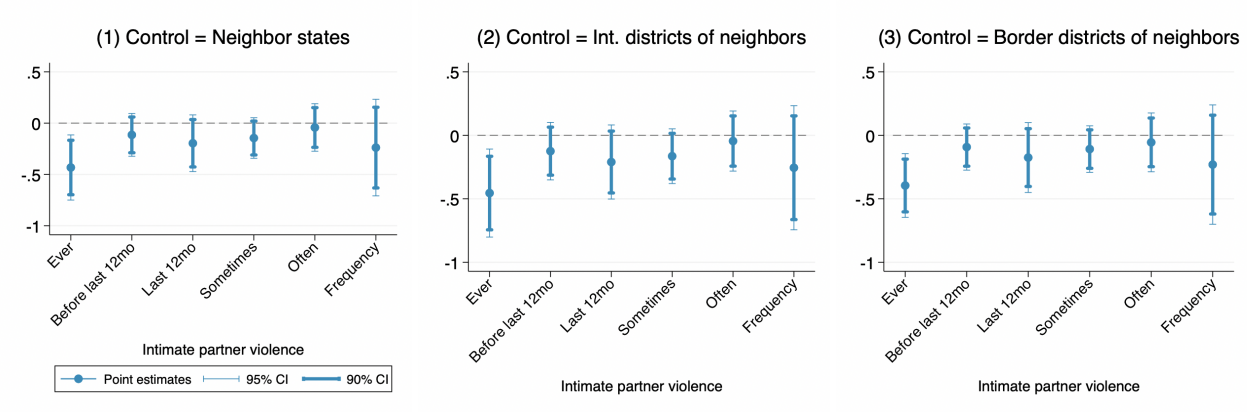
(b) Wealth Heterogeneity



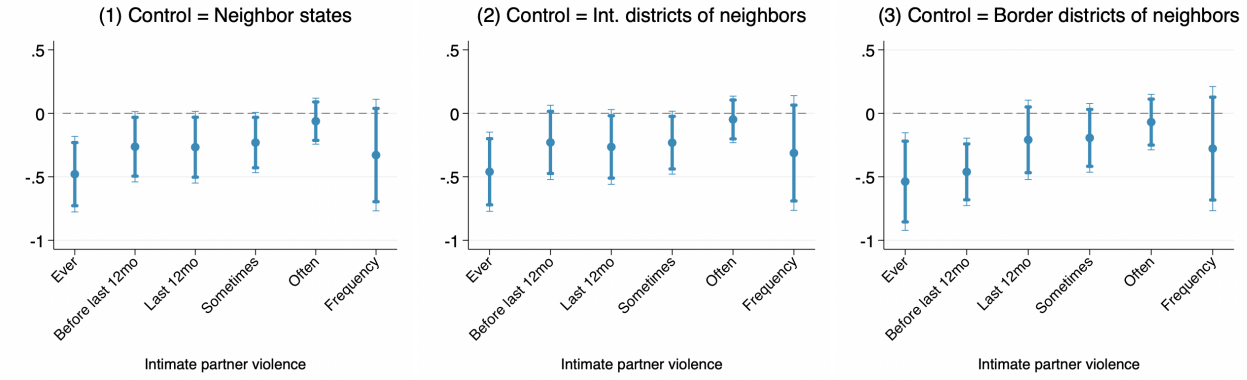
Notes: Panel (a) presents the OLS estimates on the short-run effect of Kerala's temporary partial liquor ban on physical intimate partner violence using equation (5). The key explanatory variable in panel (a) is our baseline measure of treatment intensity at the district level. Panel (b) presents the OLS estimates on the short-run effect of the ban on physical violence heterogeneous by household wealth. The key explanatory variable in panel (b) is the key explanatory variable in panel (a) interacted with the household wealth index. In each panel, the dependent variable is stated on the horizontal axis: (i) a dummy indicating whether a woman ever experienced a physical violence, (ii) a dummy indicating whether a woman ever experienced a physical violence before the past 12 months, (iii) a dummy indicating whether a woman ever experienced a physical violence in the past 12 months, (iv) a dummy indicating whether a woman experienced a physical violence sometimes in the past 12 months, (v) a dummy indicating whether a woman experienced a physical violence often in the past 12 months, and (vi) a categorical variable for frequencies of physical violence in the past 12 months. A repeated cross-section of women from a balanced district-level panel of 14 treatment districts in Kerala and *49 control districts (panel (1)) and 12 control districts (panel (2)) in Karnataka and Tamil Nadu* across two DHS rounds (1999 and 2015-2016). All regressions include a constant, district, year (round), and state-by-year fixed effects, district-specific (log) annual real GDP per capita (net of depreciation), and demographic characteristics. Demographic controls include individual characteristics: age, age squared, education, working status, a dummy indicating whether the woman has a male child, the age difference between the woman and her partner/husband, and dummies for religion, including Muslim, Christian, and others; and household characteristics: place of residence, household wealth index, household size, and caste status. In panel (b), all individual and other interaction terms are included in addition to the full set of controls. 95% and 90% confidence intervals are presented, and standard errors are clustered at the district level. Wild cluster bootstrap, following Roodman et al. (2019), with 999 replications, suggests that the baseline effects in panel (2) on the top are not statistically significant. The wild cluster bootstrapping gives qualitatively similar results on the effects heterogeneous by household wealth in panel (2) on the bottom.

Figure F.6: Short-Run Effect on Physical Violence
(Treatment group = Border districts of Kerala)

(a) Baseline



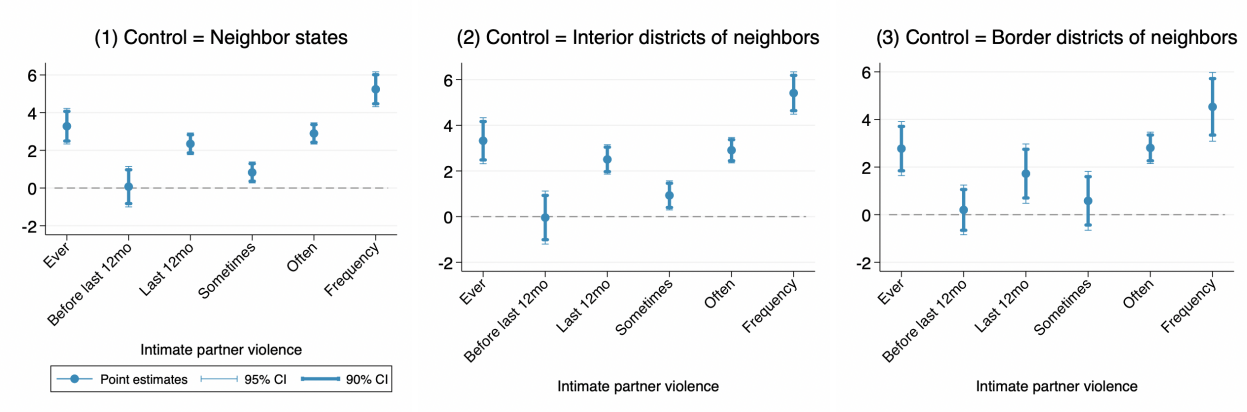
(b) Wealth Heterogeneity



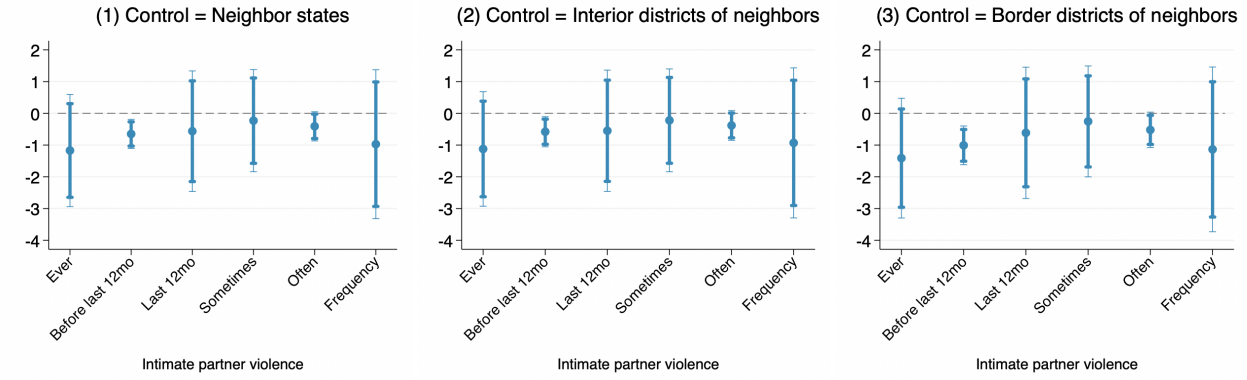
Notes: Panel (a) presents the OLS estimates on the short-run effect of Kerala's temporary partial liquor ban on physical intimate partner violence using equation (5). The key explanatory variable in panel (a) is our baseline measure of treatment intensity at the district level. Panel (b) presents the OLS estimates on the short-run effect of the ban on physical violence heterogeneous by household wealth. The key explanatory variable in panel (b) is the key explanatory variable in panel (a) interacted with the household wealth index. In each panel, the dependent variable is stated on the horizontal axis: (i) a dummy indicating whether a woman ever experienced a physical violence, (ii) a dummy indicating whether a woman ever experienced a physical violence before the past 12 months, (iii) a dummy indicating whether a woman ever experienced a physical violence in the past 12 months, (iv) a dummy indicating whether a woman experienced a physical violence sometimes in the past 12 months, (v) a dummy indicating whether a woman experienced a physical violence often in the past 12 months, and (vi) a categorical variable for frequencies of physical violence in the past 12 months. A repeated cross-section of women from a balanced district level panel of *11 border treatment districts in Kerala and 61 control districts (panel (1)), 49 control districts (panel (2)), and 12 control districts (panel (3)) in Karnataka and Tamil Nadu* across two DHS rounds (1999 and 2015-2016). All regressions include a constant, district, year (round), and state-by-year fixed effects, district-specific (log) annual real GDP per capita (net of depreciation), and demographic characteristics. Demographic controls include individual characteristics: age, age squared, education, working status, a dummy indicating whether the woman has a male child, the age difference between the woman and her partner/husband, and dummies for religion, including Muslim, Christian, and others; and household characteristics: place of residence, household wealth index, household size, and caste status. In panel (b), all individual and other interaction terms are included in addition to the full set of controls. 95% and 90% confidence intervals are presented, and standard errors are clustered at the district level. Wild cluster bootstrap, following Roodman et al. (2019), with 999 replications, suggests that the baseline effects in panel (3) on the top are not statistically significant. The wild cluster bootstrapping gives qualitatively similar results on the effects heterogeneous by household wealth in panel (3) on the bottom.

Figure F.7: Short-Run Effect on Physical Violence
(Treatment group = Interior districts of Kerala)

(a) Baseline



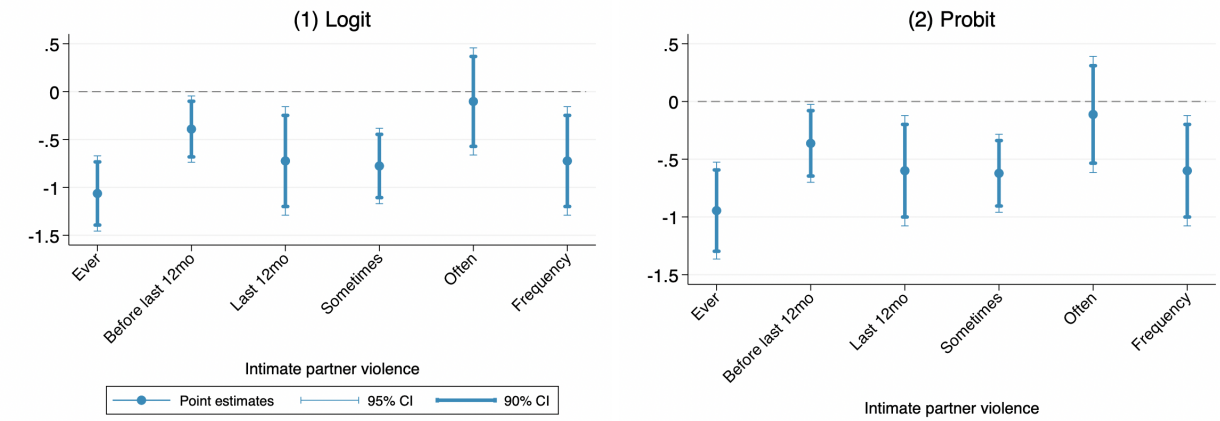
(b) Wealth Heterogeneity



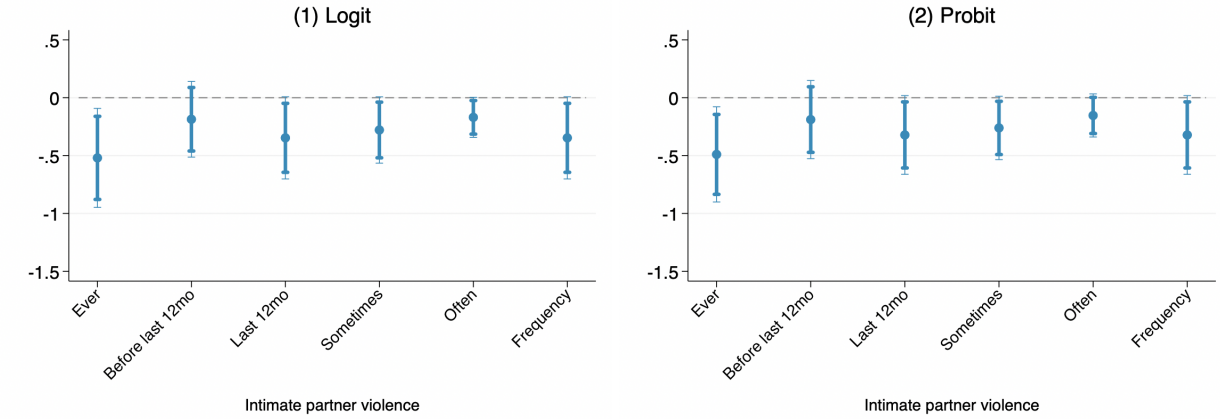
Notes: Panel (a) presents the OLS estimates on the short-run effect of Kerala's temporary partial liquor ban on physical intimate partner violence using equation (5). The key explanatory variable in panel (a) is our baseline measure of treatment intensity at the district level. Panel (b) presents the OLS estimates on the short-run effect of the ban on physical violence heterogeneous by household wealth. The key explanatory variable in panel (b) is the key explanatory variable in panel (a) interacted with the household wealth index. In each panel, the dependent variable is stated on the horizontal axis: (i) a dummy indicating whether a woman ever experienced a physical violence, (ii) a dummy indicating whether a woman ever experienced a physical violence before the past 12 months, (iii) a dummy indicating whether a woman ever experienced a physical violence in the past 12 months, (iv) a dummy indicating whether a woman experienced a physical violence sometimes in the past 12 months, (v) a dummy indicating whether a woman experienced a physical violence often in the past 12 months, and (vi) a categorical variable for frequencies of physical violence in the past 12 months. A repeated cross-section of women from a balanced district level panel of *3 interior treatment districts in Kerala and 61 control districts (panels (1)), 49 control districts (panels (2)), and 12 control districts (panels (3)) in Karnataka and Tamil Nadu* across two DHS rounds (1999 and 2015-2016). All regressions include a constant, district, year (round), and state-by-year fixed effects, district-specific (log) annual real GDP per capita (net of depreciation), and demographic characteristics. Demographic controls include individual characteristics: age, age squared, education, working status, a dummy indicating whether the woman has a male child, the age difference between the woman and her partner/husband, and dummies for religion, including Muslim, Christian, and others; and household characteristics: place of residence, household wealth index, household size, and caste status. In panel (b), all individual and other interaction terms are included in addition to the full set of controls. 95% and 90% confidence intervals are presented, and standard errors are clustered at the district level. Wild cluster bootstrap, following Roodman et al. (2019), with 999 replications, suggests that the baseline effects in panel (a) are not statistically significant. When we use wild cluster bootstrapping, the effects heterogeneous by household wealth in panel (b) are statistically insignificant.

Figure F.8: Short-Run Effect on Physical Violence (Logit/Probit)

(a) Baseline

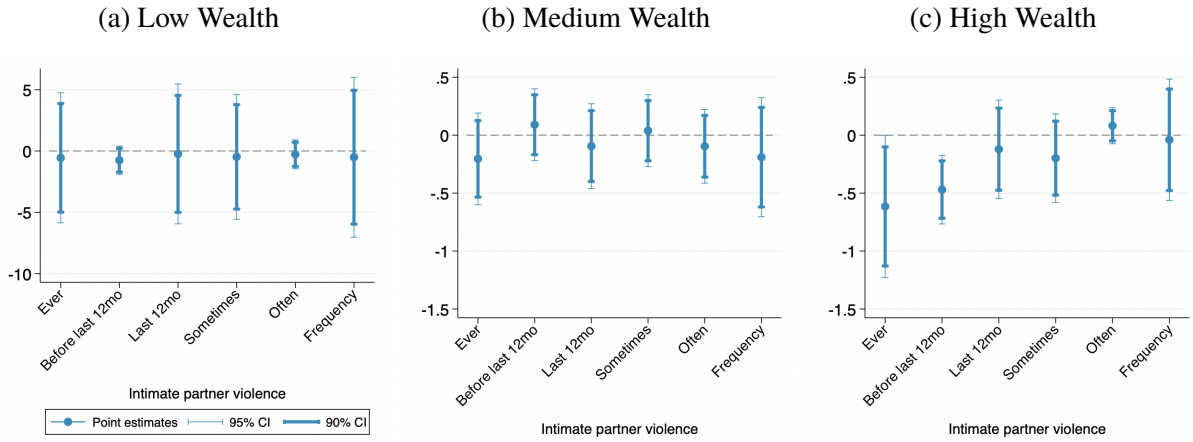


(b) Wealth Heterogeneity



Notes: Panel (a) presents average marginal effects (AMEs) from *logit and probit* regressions estimating the short-run impact of Kerala's temporary partial liquor ban on physical intimate partner violence using equation (5). The key explanatory variable in panel (a) is our baseline measure of treatment intensity at the district level. Panel (b) presents AMEs from *logit and probit* regressions estimating the short-run effect of the ban heterogeneous by household wealth. The key explanatory variable in panel (b) is the key explanatory variable in panel (a) interacted with the household wealth index. In each panel, the dependent variable is stated on the horizontal axis: (i) a dummy indicating whether a woman ever experienced a physical violence, (ii) a dummy indicating whether a woman ever experienced a physical violence before the past 12 months, (iii) a dummy indicating whether a woman ever experienced a physical violence in the past 12 months, (iv) a dummy indicating whether a woman experienced a physical violence sometimes in the past 12 months, (v) a dummy indicating whether a woman experienced a physical violence often in the past 12 months, and (vi) a categorical variable for frequencies of physical violence in the past 12 months. The sample in each panel includes a repeated cross-section of women from a balanced district-level panel of 14 treatment districts in Kerala and 61 control districts in Karnataka and Tamil Nadu across two DHS rounds (1999 and 2015-2016). All regressions include a constant, district, year (round), and state-by-year fixed effects, district-specific (log) annual real GDP per capita (net of depreciation), and demographic characteristics. Demographic controls include individual characteristics: age, age squared, education, working status, a dummy indicating whether the woman has a male child, the age difference between the woman and her partner/husband, and dummies for religion, including Muslim, Christian, and others; and household characteristics: place of residence, household wealth index, household size, and caste status. In panel (b), all individual and other interaction terms are included in addition to the full set of controls. 95% and 90% confidence intervals are presented, and standard errors are clustered at the district level.

Figure F.9: Short-Run Effect on Physical Violence (Sample Splitting)



Notes: The figure presents the OLS estimates on the short-run effect of Kerala's temporary partial liquor ban on physical intimate partner violence heterogeneous by household wealth using a sub-sampling method. The key explanatory variable is our baseline measure of treatment intensity at the district level. In each panel, the dependent variable is stated on the horizontal axis: (i) a dummy indicating whether a woman ever experienced a physical violence, (ii) a dummy indicating whether a woman ever experienced a physical violence before the past 12 months, (iii) a dummy indicating whether a woman ever experienced a physical violence in the past 12 months, (iv) a dummy indicating whether a woman experienced a physical violence sometimes in the past 12 months, (v) a dummy indicating whether a woman experienced a physical violence often in the past 12 months, and (vi) a categorical variable for frequencies of physical violence in the past 12 months. *Sample includes a repeated cross-section of women in low-wealth (panel (a)), medium-wealth (panel (b)), and high-wealth households (panel (c)) from a balanced district level panel of 14 treatment districts in Kerala and 61 control districts in Karnataka and Tamil Nadu across two DHS rounds (1999 and 2015-2016).* All regressions include a constant, district, year (round), and state-by-year fixed effects, district-specific (log) annual real GDP per capita (net of depreciation), and demographic characteristics. Demographic controls include individual characteristics: age, age squared, education, working status, a dummy indicating whether the woman has a male child, the age difference between the woman and her partner/husband, and dummies for religion, including Muslim, Christian, and others; and household characteristics: place of residence, household wealth index, household size, and caste status. 95% and 90% confidence intervals are presented, and standard errors are clustered at the district level.

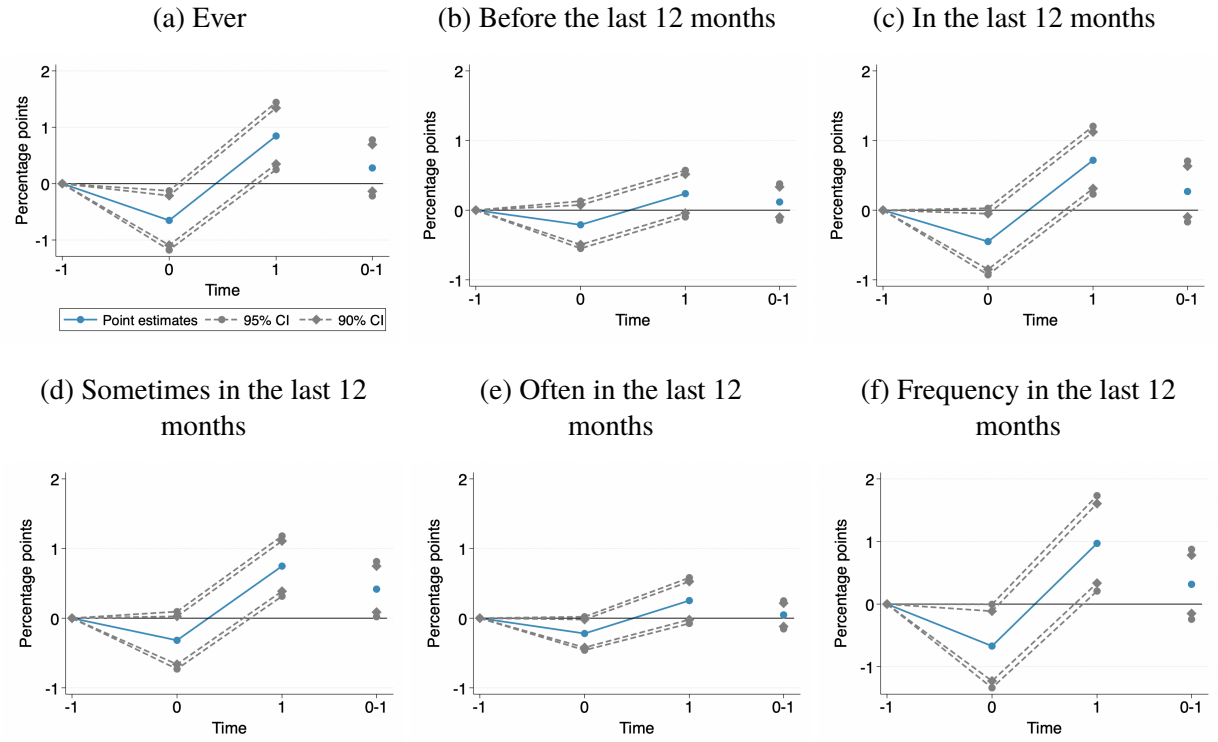
Table F.1: Short- and Long-Run Effects on District-Level Domestic Violence

	Dependent variable: $\log$(domestic violence per 1000 population)		
	Short-term policy impact	Impact of policy reversal	Long-term policy impact
Treatment intensity × Post	0.004	0.001	-0.006
	(0.006)	(0.016)	(0.012)
Treatment intensity	-27.817	-80.600*	-68.168*
	(27.170)	(46.805)	(40.306)
Post	-8.639***	0.189	2.070
	(2.379)	(0.589)	(1.821)
Observations	1110	258	658
R^2	0.89	0.95	0.92

Notes: The table presents the OLS results from estimating the short-term impact of Kerala's partial liquor ban (Column (1)), the impact of policy reversal (Column (2)), and the long-term impact of the ban (Column (3)) on district-level domestic violence using crime data from the National Crime Record Bureau (NCRB) for the years 2001-2019. The dependent variable in each column is the (log) number of domestic violence incidents (number of cruelty by husband or his relatives) per 1000 population. The treatment intensity variable is our baseline measure based on the district d's share of hard liquor consumption in the state's total consumption in 2012. An indicator variable for post period ("Post") equals one if $2014 \leq t \leq 2016$ and zero if $t < 2014$ in Column (1), one if $t > 2016$ and zero if $2014 \leq t \leq 2016$ in Column (2), and one if $t > 2016$ and zero if $t < 2014$ in Column (3). The control group in Column (1) consists of Karnataka and Tamil Nadu, while the control group in Columns (2)-(3) consists of Karnataka only. All specifications control for district and year fixed effects, state-by-year FEs, district-specific time trends, and a constant term. Standard errors, clustered by districts, are in parentheses. Significance: $*p < 0.10$, $**p < 0.05$, and $***p < 0.01$.

G Results on Mechanisms for Domestic Violence Effects

Figure G.1: Heterogeneous Effect on Physical Violence by Household Wealth
(Excluding Thiruvananthapuram from the Treatment Group)



Notes: The figure presents the OLS estimates on the short- and long-run effects of Kerala's temporary partial liquor ban on physical intimate partner violence heterogeneous by household wealth using specifications in which the capital of Kerala, Thiruvananthapuram, has been excluded from the treatment group. The key explanatory variable is our baseline measure of district-level treatment intensity interacted with the household wealth index.

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