Online Appendix

This version: January 5, 2024

A Structural Equation Model with Latent Variables

Let UXO_v and Development_v be the current unobserved levels of UXO contamination and aggregate economic development in village v. And define $\boldsymbol{C_v}$ as a vector of variables proxying for UXO contamination including the extensive and the intensive margin of agricultural land affected by UXOs, the number of UXO accidents, and the percentage of households with disabilities in village v. Similarly, let $\boldsymbol{D_v}$ be a vector of variables proxying for economic development at the village level including, luminosity in 1993, 2003, and 2013, expenditure per capita, and the percentage of households in poverty in village v in 2005. Based on these, we estimate the following system of twelve interdependent equations,

Structural

$$\log(1 + \text{Bombs 1964-1973})_v = \alpha_0 + \boldsymbol{X_v'\Omega} + \xi_v^1 \quad (6)$$

$$\text{UXO}_v = \beta_0 + \beta_1 \cdot \log(1 + \text{Bombs 1964-1973})_v + \boldsymbol{X_v'\Pi} + \xi_v^2 \quad (7)$$

$$\text{Development}_v = \gamma_0 + \gamma_1 \cdot \log(1 + \text{Bombs 1964-1973})_v + \gamma_2 \cdot \text{UXO}_v + \boldsymbol{X_v'\Lambda} + \xi_v^3 \quad (8)$$

Measurement

$$C_v^i = \lambda_0^i + \lambda_1^i \cdot \text{UXO}_v + \varepsilon_v^i \quad \forall\, C_v^i \in \boldsymbol{C_v} \quad (9)$$

$$D_v^j = \delta_0^j + \delta_1^j \cdot \text{Development}_v + \epsilon_v^j \quad \forall\, D_v^j \in \boldsymbol{D_v} \quad (10)$$

where $\boldsymbol{X_v}$ is the vector of exogenous geographical and location controls defined in Section 4. Exogenous and endogenous variables are assumed to follow a multivariate normal distribution with mean $\boldsymbol{\mu}$ and variance matrix $\boldsymbol{\Sigma}$.

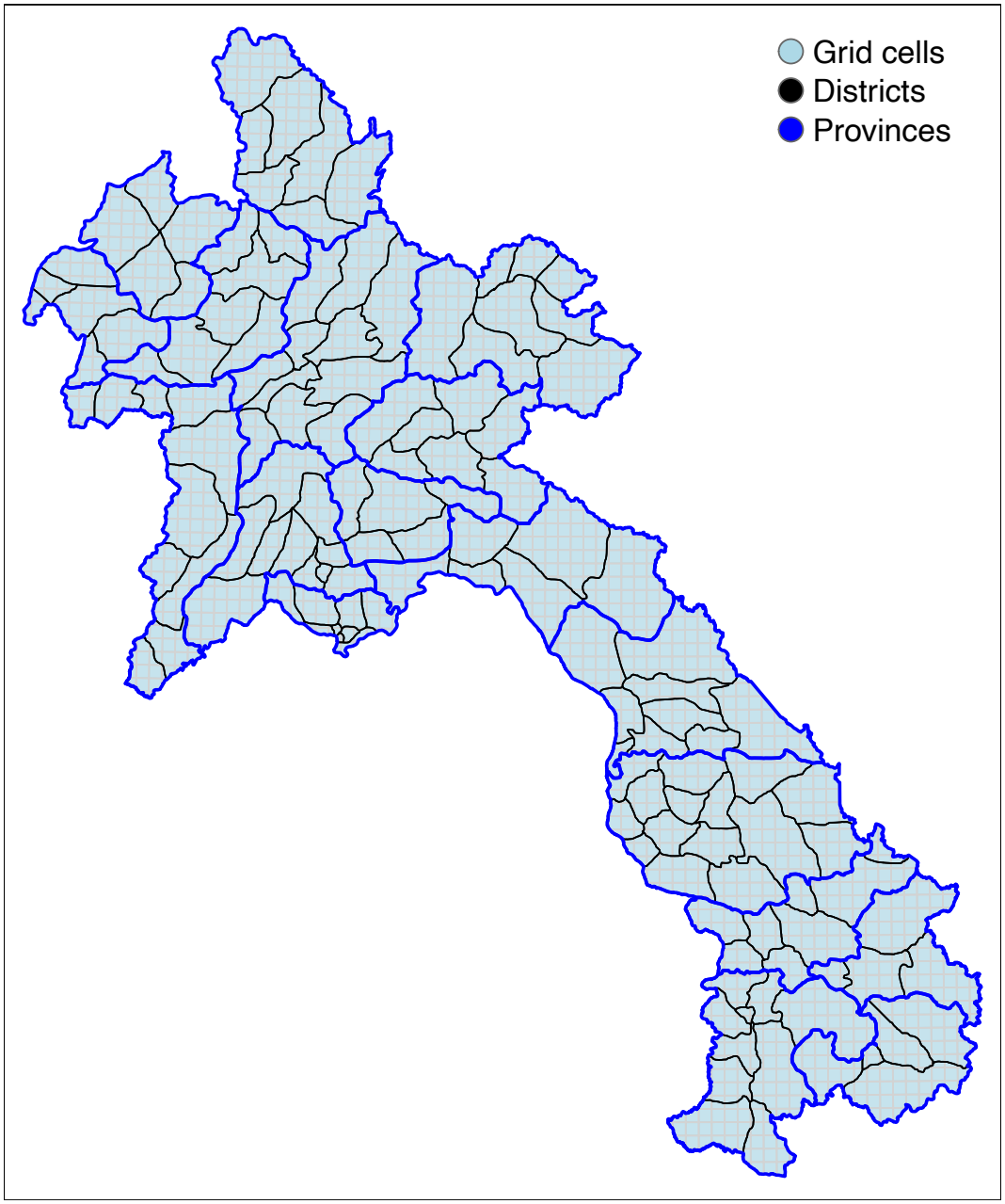
We assume all errors have mean zero and the covariance of exogenous variables and those errors is zero. Importantly, for identification, we scale the model such that $\lambda_0^1 = 1$, $\delta_0^1 = 1$, $\beta_0 = 0$, and $\gamma_0 = 0$ (i.e., the coefficients of the measurement equations are scaled based on the first proxy variable, and latent variables means are equal to zero). Finally, we allow for any potential correlation between exogenous variables to be estimated.

The structure of the model is summarised in Figure 8 using path diagram notation.

Online Appendix: Figures

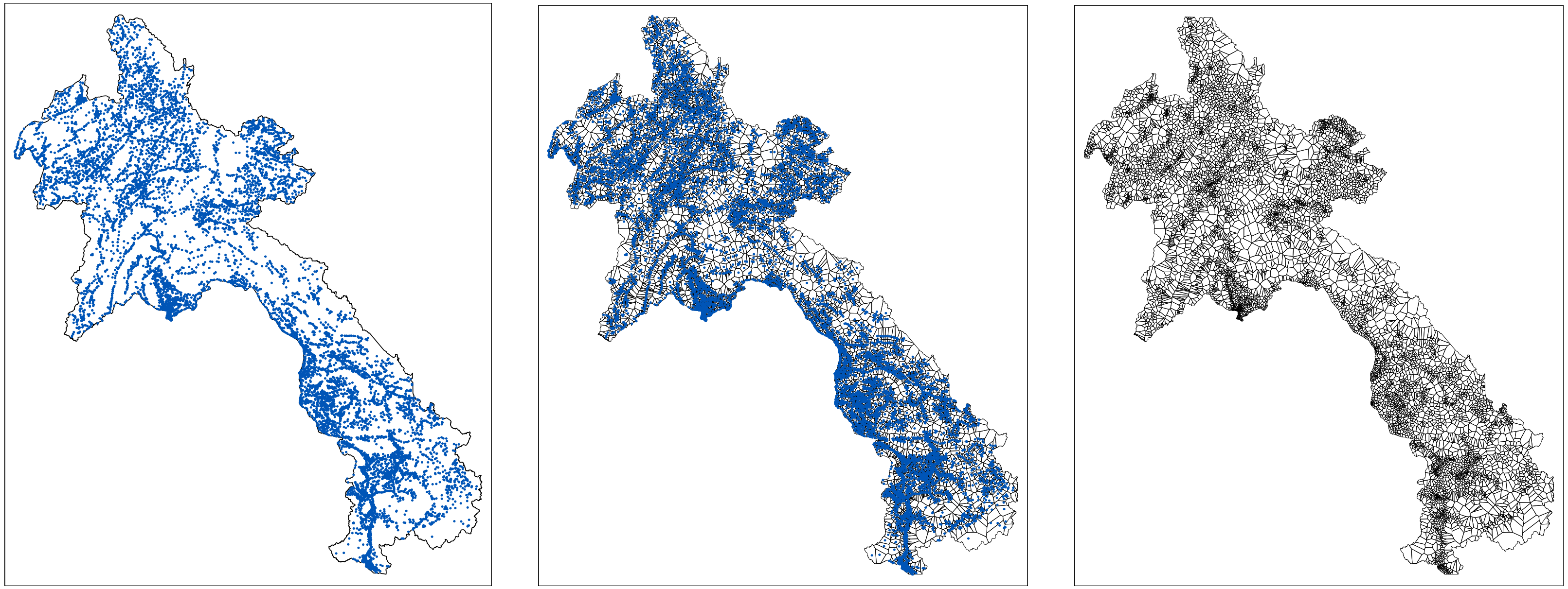
Online Appendix: Tables

Figure A-1: *Grid cell Level Analysis: Grid cells of 0.1°×0.1° for Laos*



Notes: This figure depicts the first two administrative divisions in Laos and the 2,216 synthetic grid cells used in the empirical analysis. Dark blue and black polygons represent provinces and districts, respectively. Grid cells are represented in light blue.

Figure A-2: *Village Level Boundary Construction*

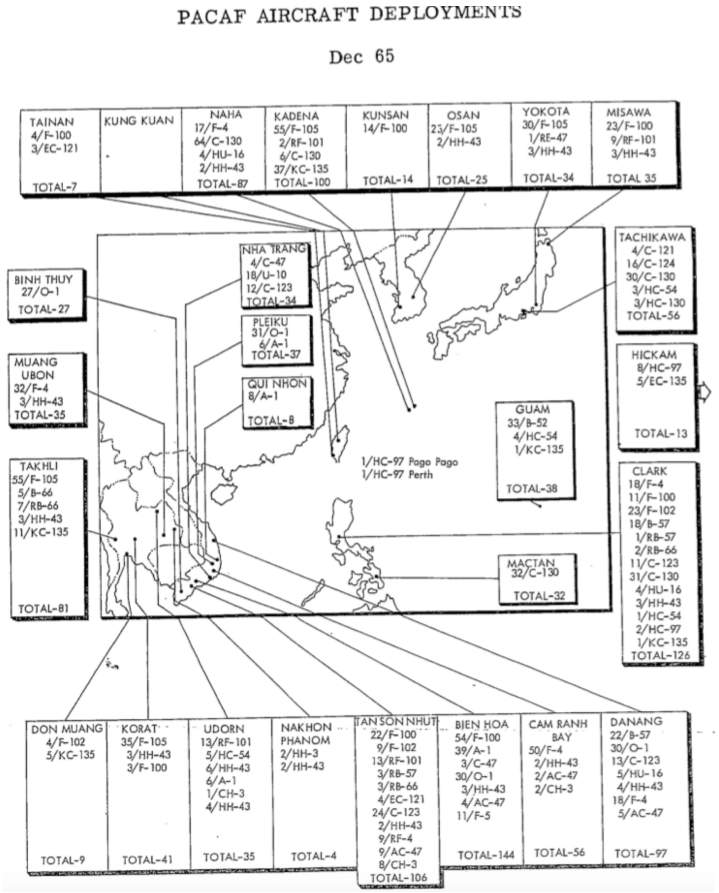


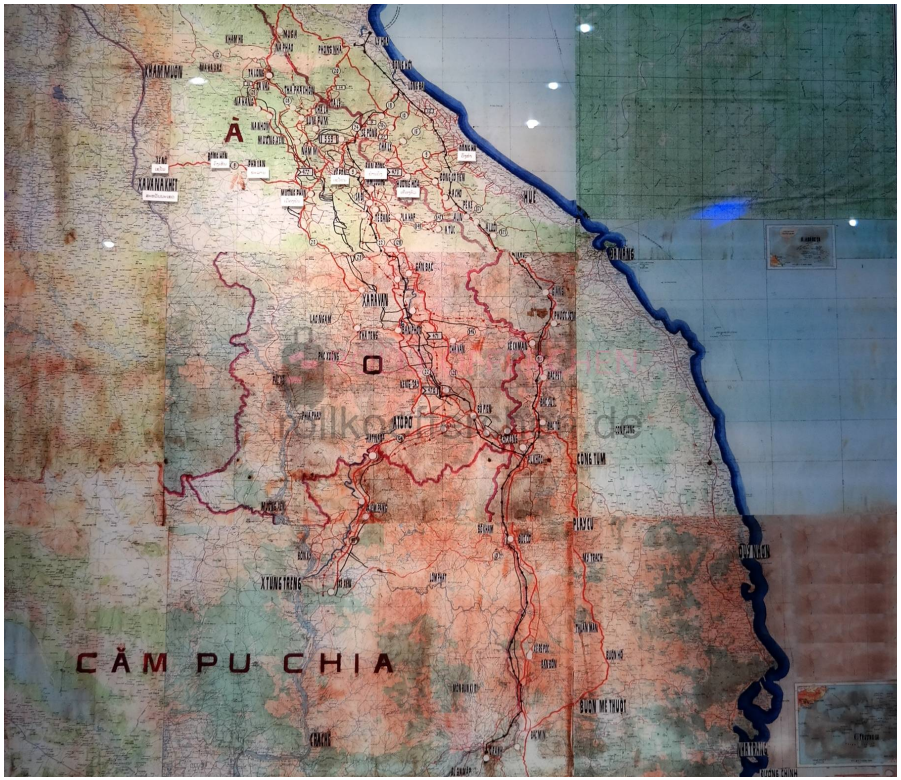
Panel A: Spatial location of villages in the census.

Panel B: Thiessen polygons.

Panel C: Implied village's boundaries.

Figure A-3: *Air Bases from the Pacific Air Forces in 1965 and The Ho Chi Minh Trail*





Panel A: Declassified document from the US Side

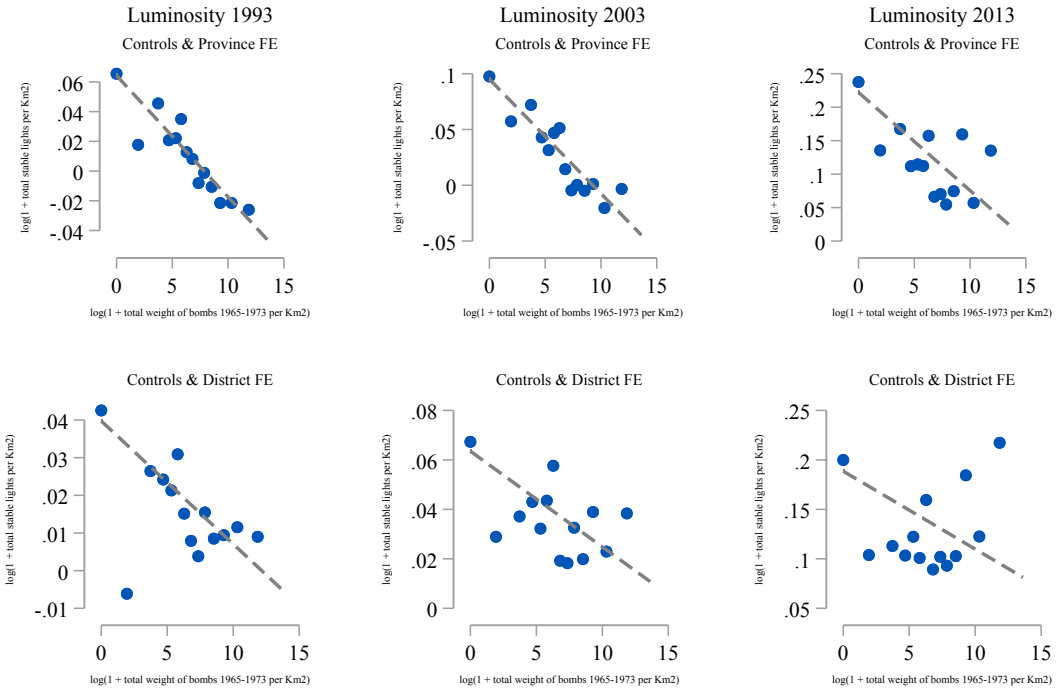
Panel B: Example of the map of supply routes from the Laotian side

Sources: Panel A comes from p. 81 of the report "USAF Plans and Operations in Southeast Asia 1965" by the USAF Historical Division Liaison Office in 1966. Declassified document since the 05/16/2006. Panel B comes from a map of the Ho Chi Minh Trail in the "Museum of Lao-Vietnam Legacy of Joined Victory Battle on the Road 9 Area."

Figure A-4: *Transportation Network circa 1970*

Notes: This figure depicts the administrative divisions in Laos and the transportation network circa 1970. It includes roads, railroads and trails. Source: Perry Castaneda Library Map Collection, University of Texas, Austin. Available at: `https://legacy.lib.utexas.edu/maps/indochina_atlas/`

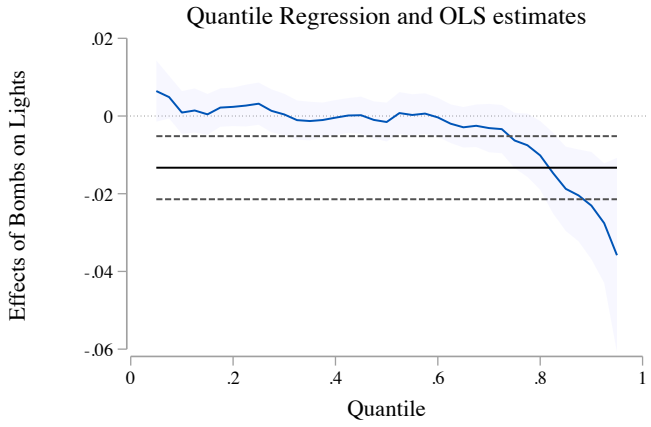
Figure A-5: *Bin-scatters of Lights on Bombs at the Grid Cell Level by Year*



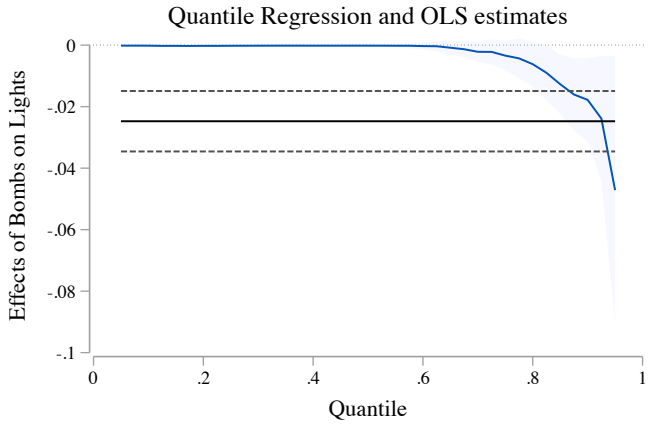
Notes: This figure depicts the relationship between Bombs and Luminosity using satellite data for each year separately. All panels are bin-scatters with overlapping quadratic fits of the underlying data. All figures control for location and geographical covariates. The first row includes province fixed effects, while the second row employs district fixed effects.

Figure A-6: *OLS and Quantile Regression Coefficients by Year*

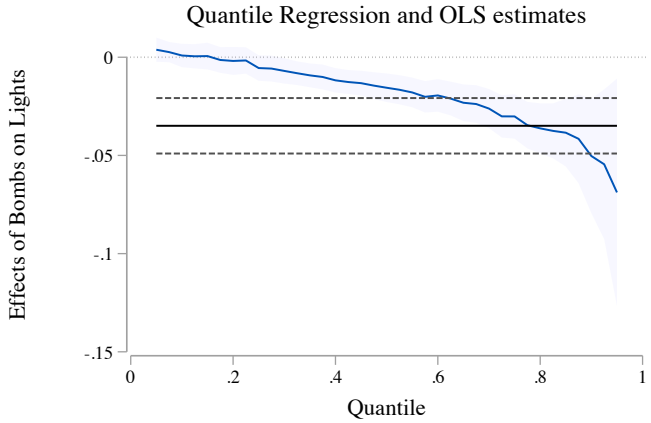
Panel A: Lights in 1993



Panel B: Lights in 2003



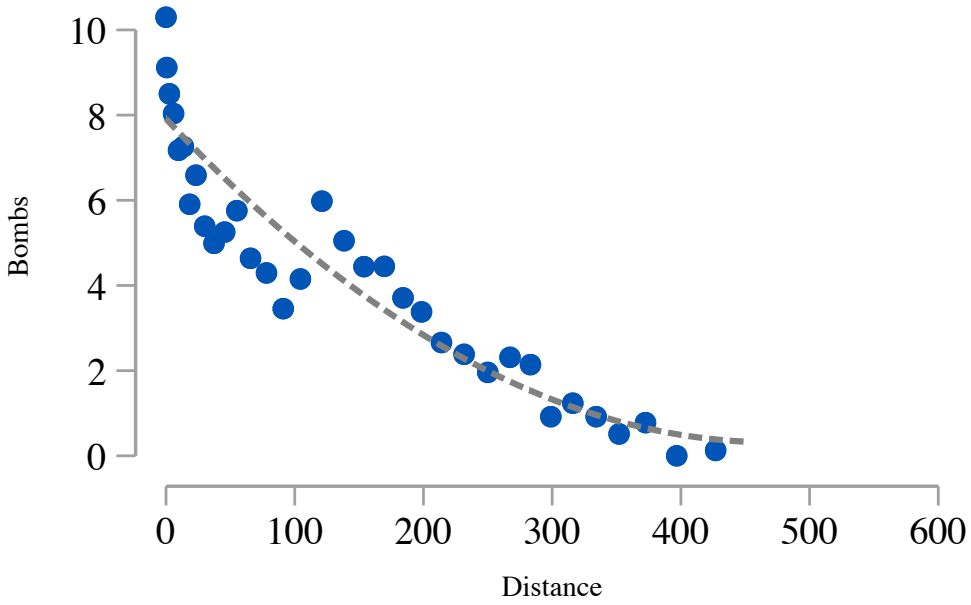
Panel C: Lights in 2013



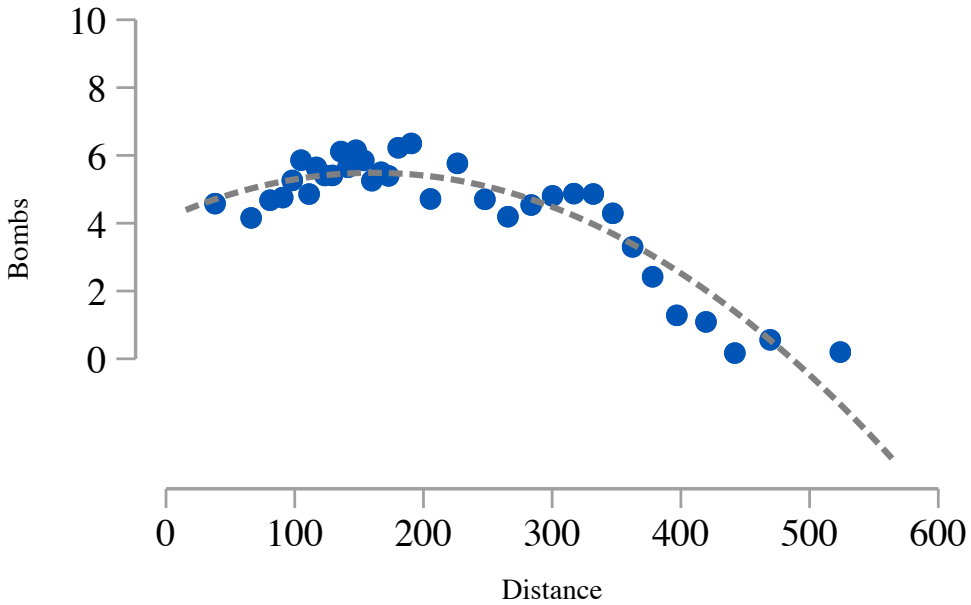
Notes: Quantile regression coefficients for the visible luminosity quantiles specified in the x-axis are reported in blue with 95% confidence intervals based on robust standard errors. OLS coefficients of the baseline specification in Equation (1) are reported as dashed black lines with dashed 95% confidence intervals.

Figure A-7: *Bin-scatters for the First Stages*

Panel A Distance to Ho Chi Minh Trail

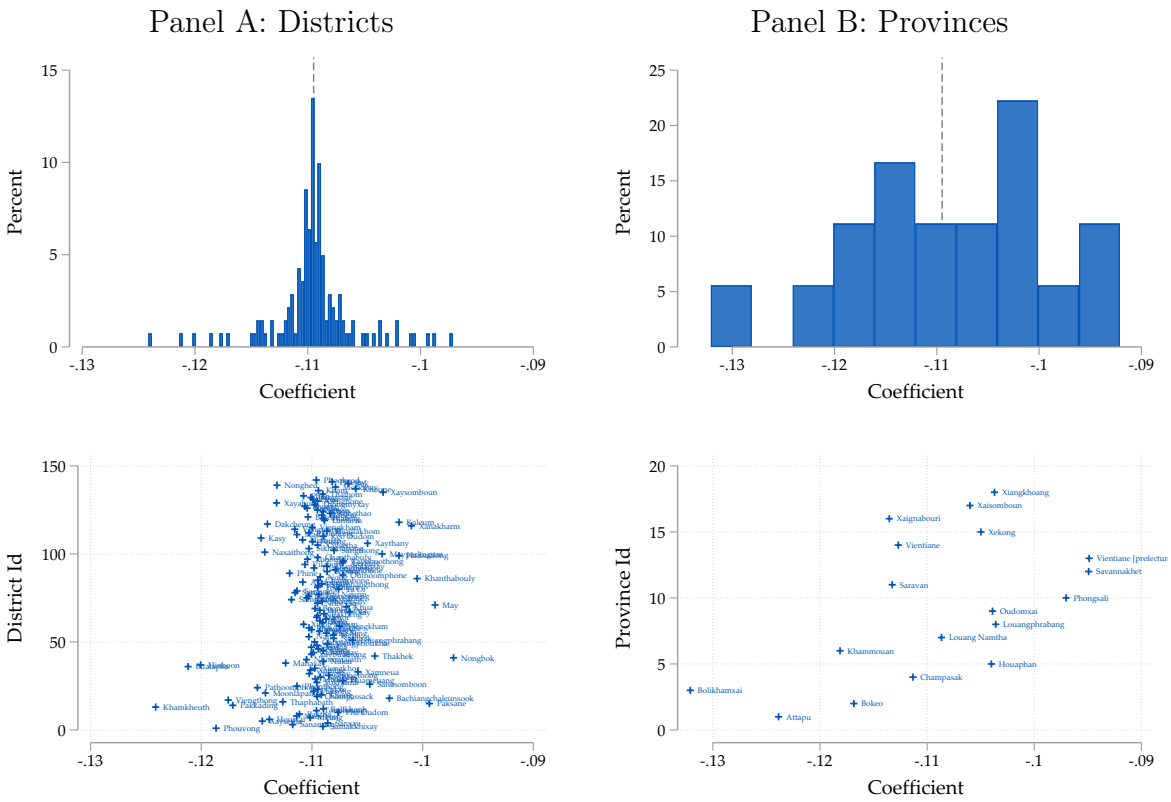


Panel B Distance to Closest US Air Base



Notes: This figure depicts the relationship between Bombs and the euclidean distance specified in each panel. Both panels are bin-scatters with overlapping quadratic fits of the underlying data.

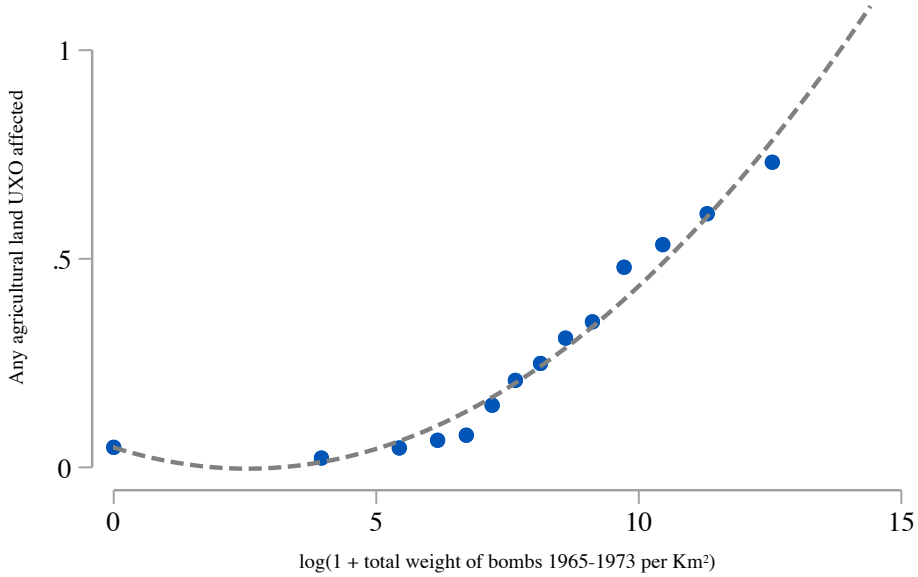
Figure A-8: *Distribution of Coefficients Dropping Districts and Provinces one at a time*



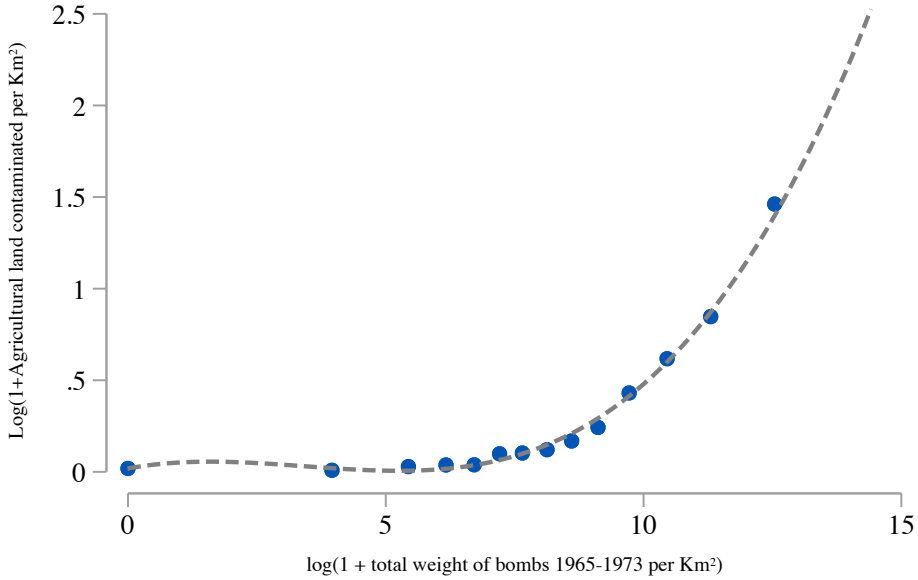
Notes: Distribution of the effect of Bombs on Luminosity when dropping one of the 141 districts (Panel A) and one of the 18 provinces (Panel B) at a time. The dashed line represents the IV estimate of the pooled sample.

Figure A-9: *Agricultural Census 2011: Intensive and Extensive Margin of UXO Contamination*

Panel A: Bin-scatter and linear fit Bombs and presence of UXO contamination



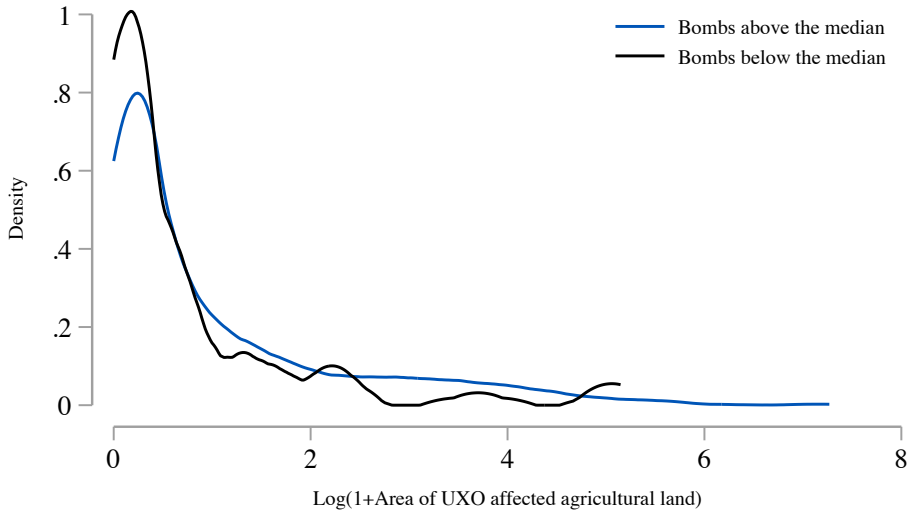
Panel B: Bin-scatter and linear fit Bombs and intensity of UXO contamination



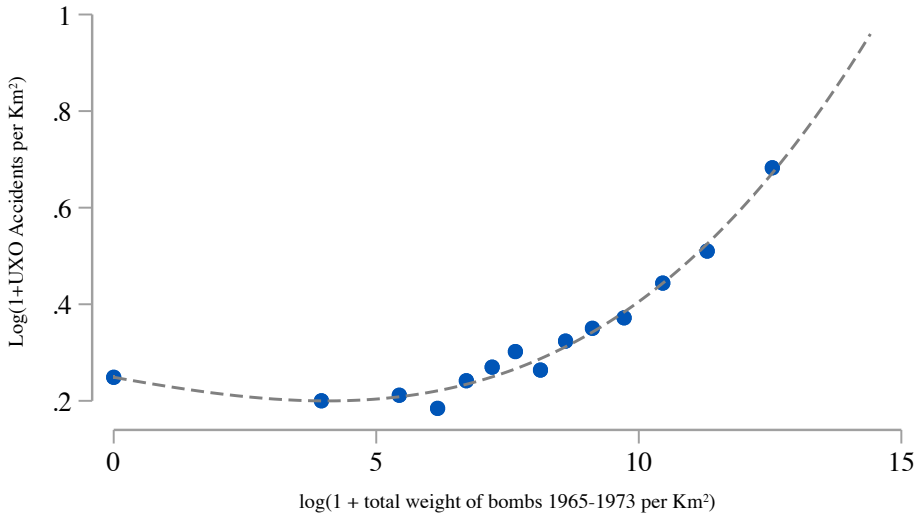
Notes: This figure presents the relationship between the intensive and the extensive margin of UXO contamination and the intensity of bombing. Both panels show bin-scatters with polynomial fits at the village level.

Figure A-10: *Contamination of Agricultural Land UXO Victims, and Bombing Intensity*

Panel A: Contamination of Agricultural Land



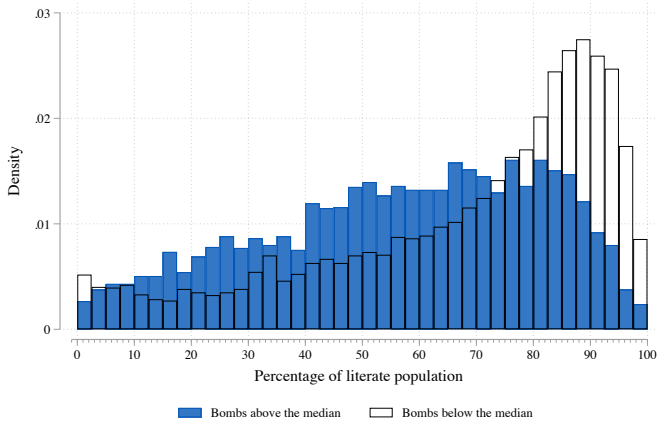
Panel B: UXO accidents and Bombing Intensity



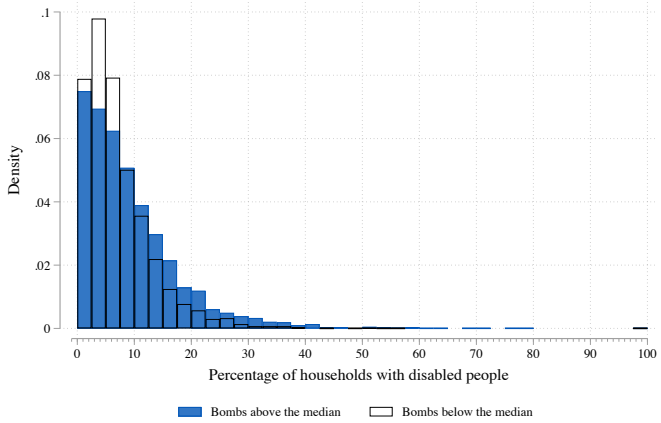
Notes: Panel A presents the relationship between UXO victims (accidents with people killed or injured by unexploited ordinance from 1950 to 2010) and bombing intensity from 1964 to 1973. It uses panel data on UXO accidents and data on the bombing at the village level. Panel B presents the distribution of the agricultural land in the villages contaminated by UXOs above and below the median of bombing intensity.

Figure A-11: *Mechanisms of Transmission: Distributional Comparisons*

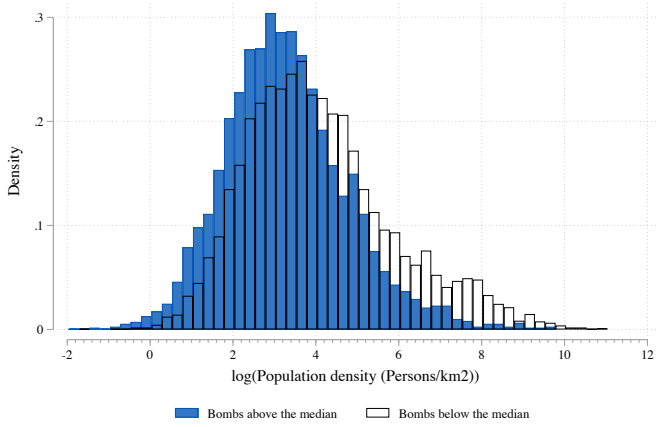
Panel A: Literacy



Panel B: Disability

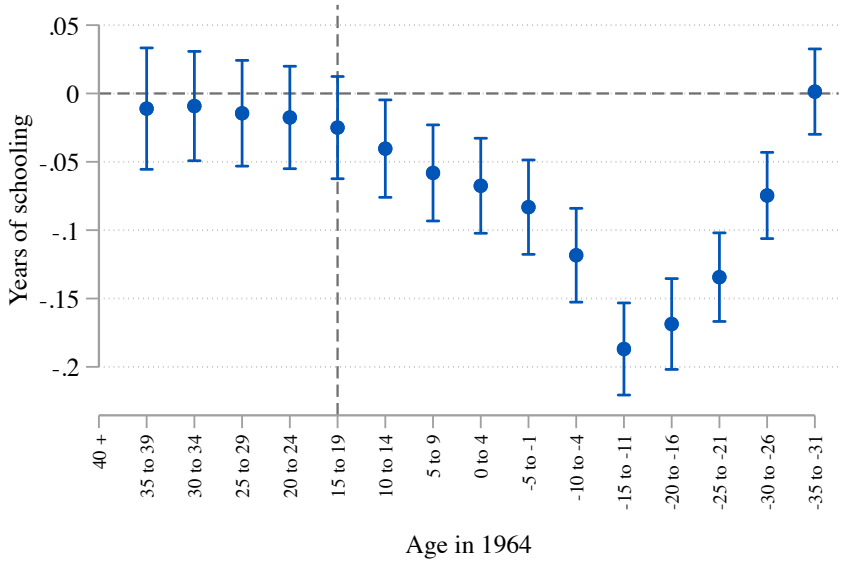


Panel C: Population Density



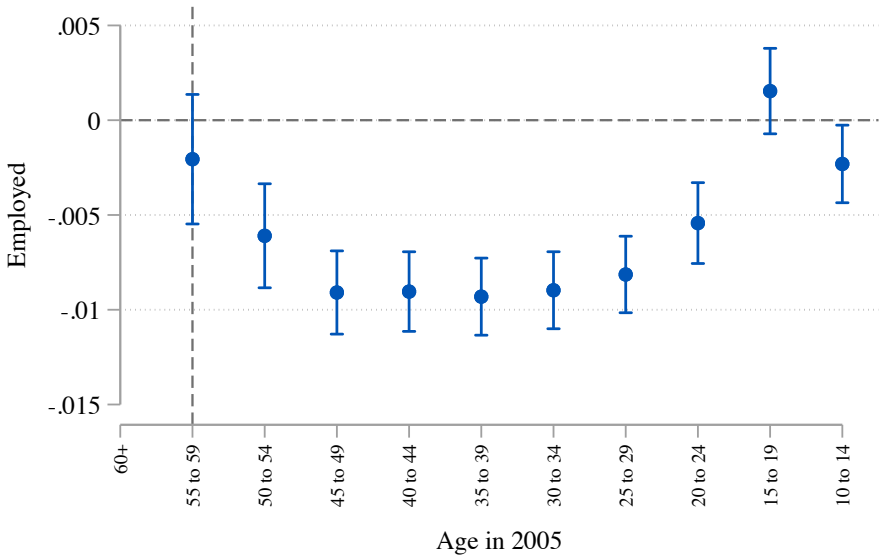
Notes: This figure presents the empirical distribution of the variables specified in each panel by the level of bombing intensity (above or below the median of bombs).

Figure A-12: *Impact of Bombing on Years of Schooling, using Micro-level Data from the Population Census of 2005 (Quinquennial)*



Notes: Point estimates and 95% confidence intervals corresponding to γ_k in Equation (4) when the outcome variable is years of schooling. The excluded cohort is composed by individuals with 40 years or more in 1964. The 15 to 19 years old cohort is marked with a vertical dashed line as reference point.

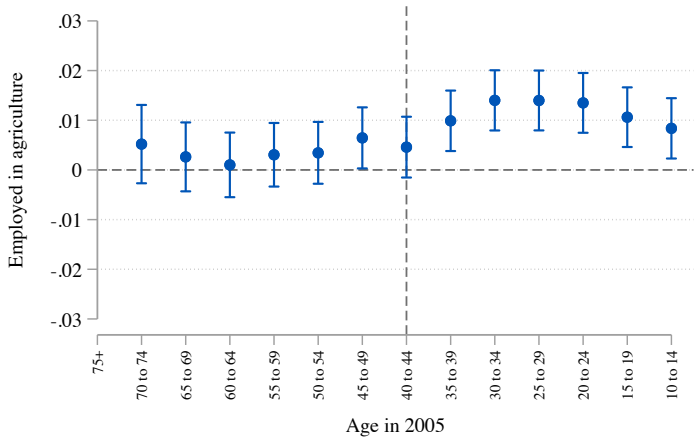
Figure A-13: *Impact of Bombing on the Probability of Employment, using Micro-level Data from the Population Census of 2005 (Quinquennial)*



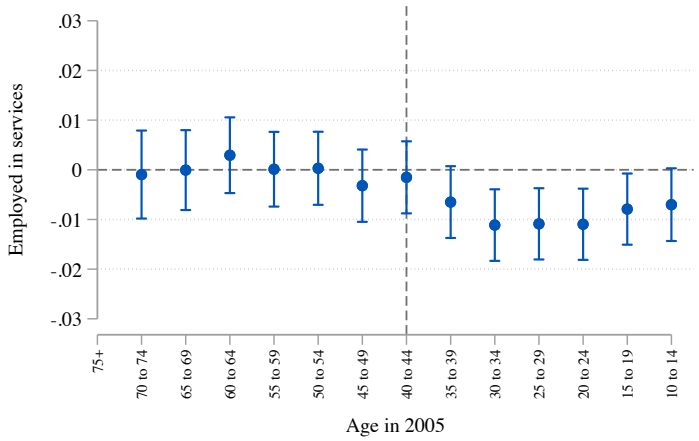
Notes: Figure reports point estimates and 95% confidence intervals of γ_k, from the specification in Equation (4) when the outcome variable is an indicator of being employed in each of the sectors specified in the panels. The excluded cohort is composed by individuals older than 60 in 2005.

Figure A-14: *Impact of Bombing on the Probability of Working in Different Sectors, using Micro-level Data from the Population Census of 2005 (Quinquennial)*

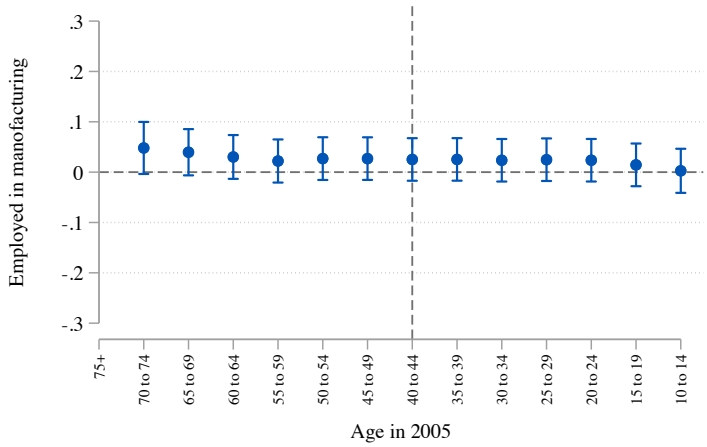
Panel A: Probability of Working in Agriculture



Panel B: Probability of Working in Services

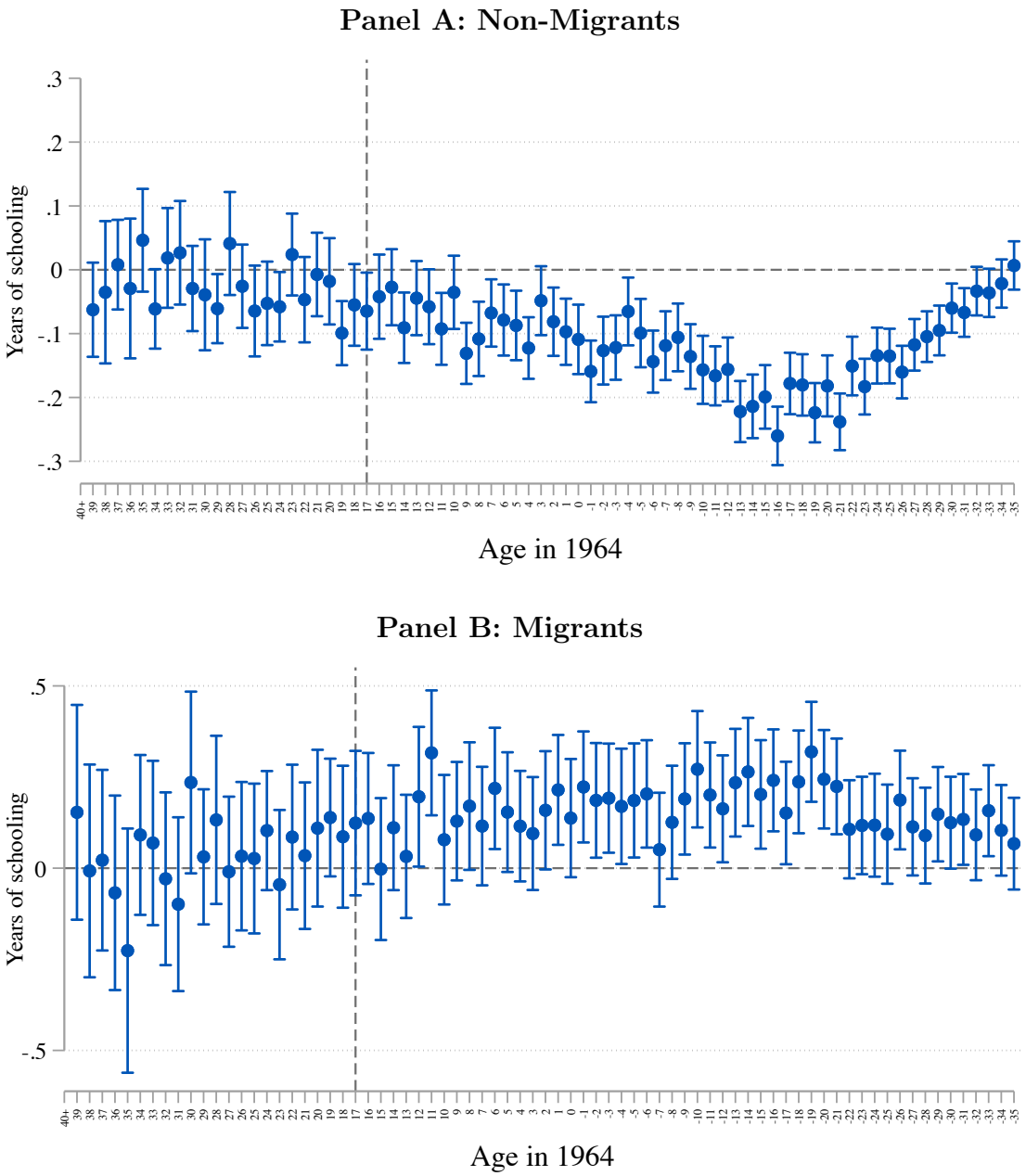


Panel C: Probability of Working in Manufacturing



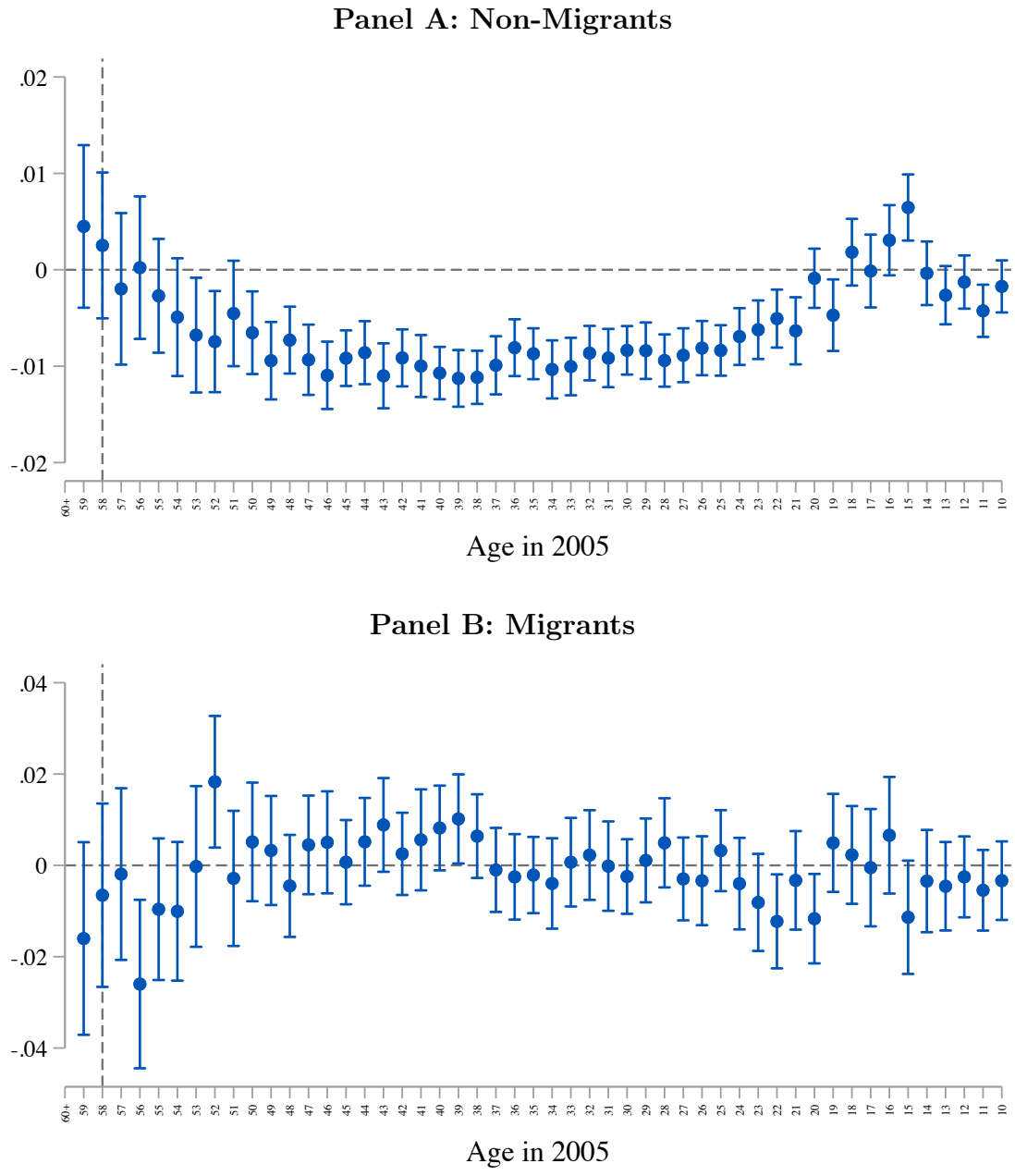
Notes: Panel A, B, and C report point estimates and 95% confidence intervals γ_k from the specification in Equation (4) when the outcome variable is an indicator of being employed in each of the sectors listed in the panels. The excluded cohort is composed of individuals with 75 years or more in 2005.

Figure A-15: *Impact of Bombing on Years of Schooling by Migration Status*



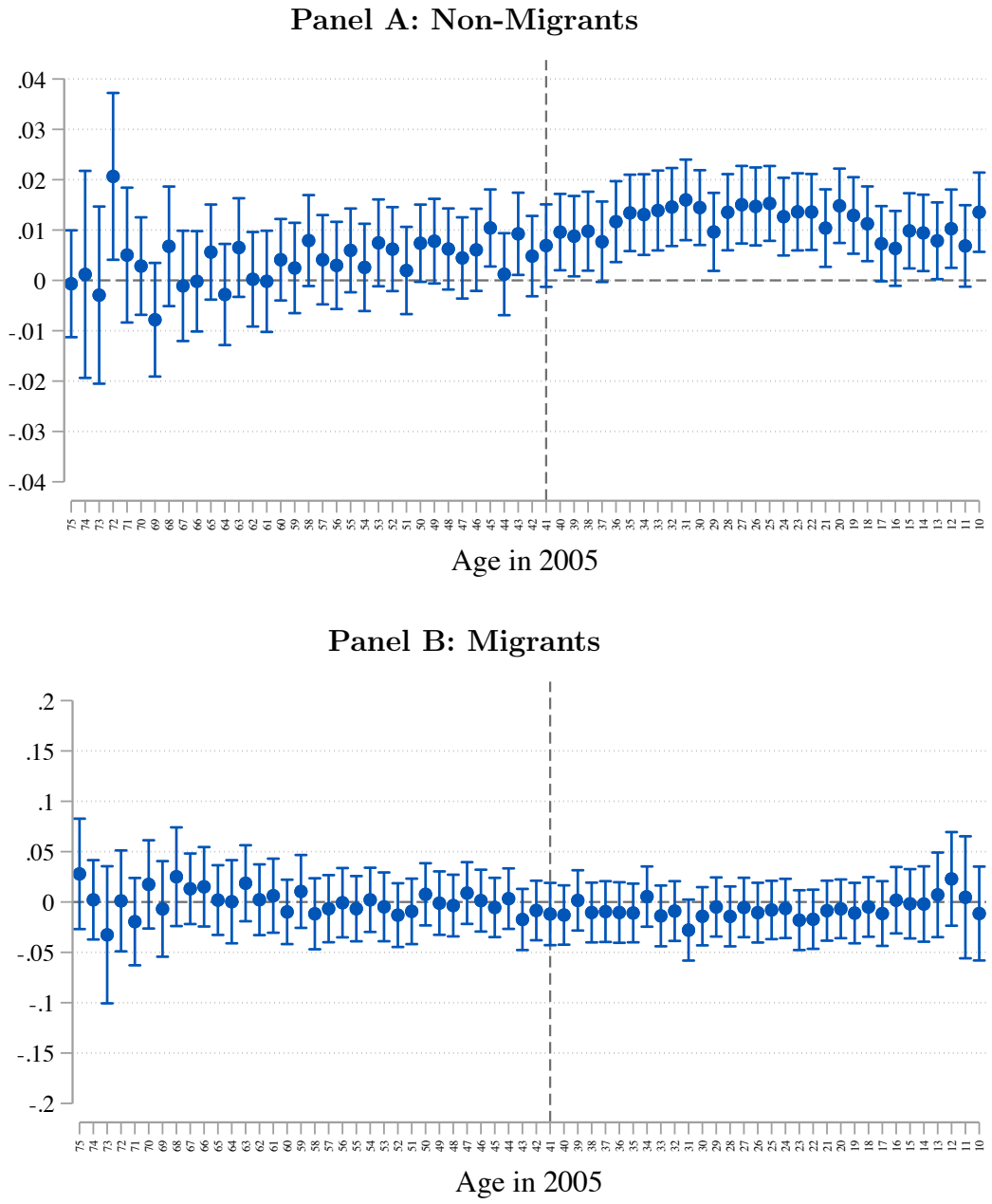
Notes: Panel A and B report the coefficients η_k and γ_k, respectively, from the specification in Equation (5) when the outcome variable is years of schooling. The excluded cohort is composed by individuals with 40 years or more in 1964. The 17 years old cohort is marked with a vertical line as a reference point.

Figure A-16: *Impact of Bombing on the Probability of Being Employed by Migration Status*



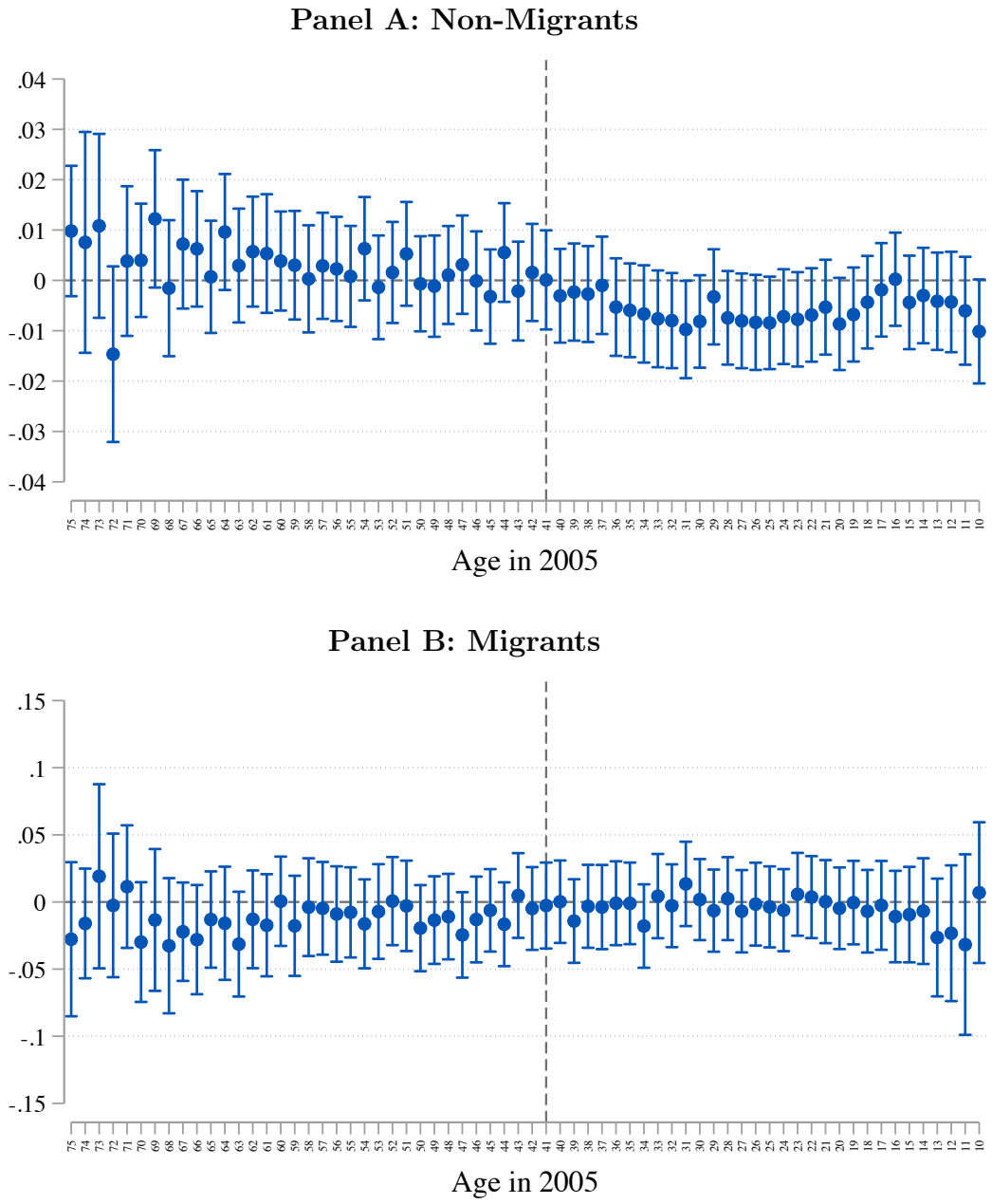
Notes: Panel A and Panel B report point estimates and 95% confidence intervals corresponding to η_k and γ_k, respectively, from the specification in Equation (5) when the outcome variable is an indicator of being employed. The excluded cohort is composed by individuals with 60 years or more in 2005. The 41 years old cohort is marked with a vertical line as a reference point since those are the individuals who were born in 1964.

Figure A-17: *Impact of Bombing on the Probability of Working in Agriculture by Migration Status (yearly)*



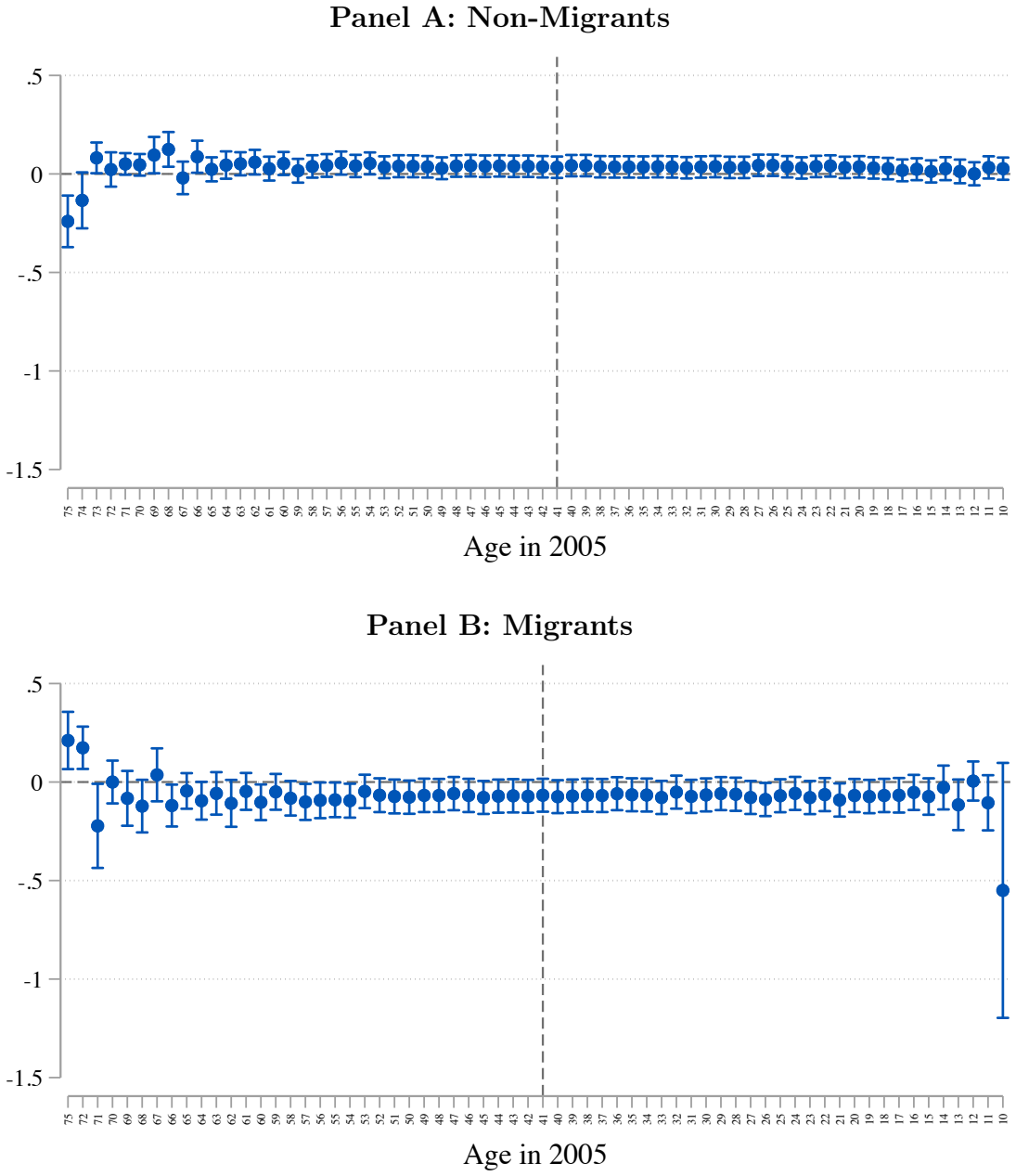
Notes: Panel A and B report the coefficients and 95% confidence intervals of η_k and γ_k, respectively, from the specification in Equation (5) when the outcome variable is an indicator of being employed in agriculture in 2005. The excluded cohort is composed by individuals with 76 years or more in 2005. The 41 years old cohort marked with a vertical line as reference point since those are the individuals who were born in 1964.

Figure A-18: *Impact of Bombing on the Probability of Working in Services by Migration Status*



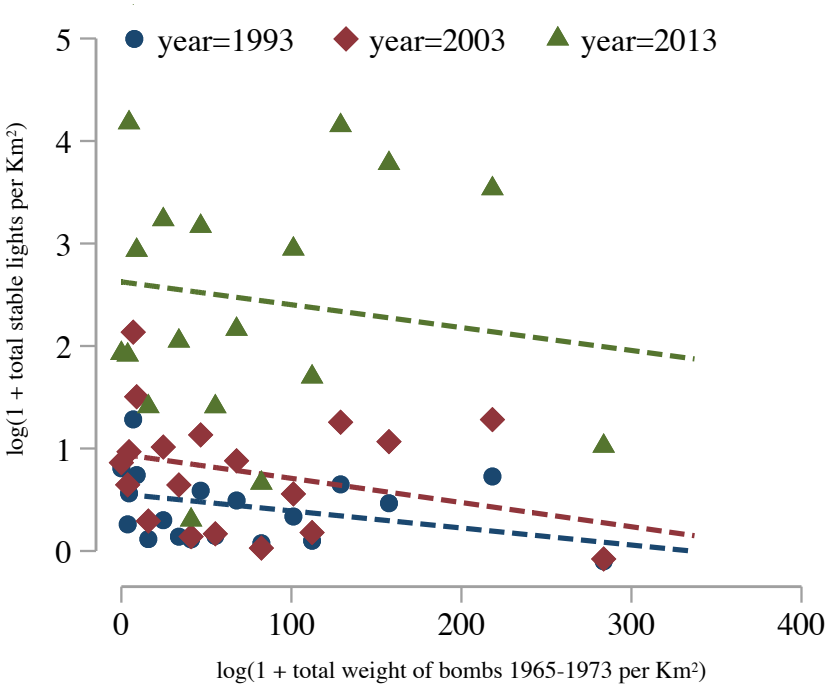
Notes: Panel A and B report the coefficients and 95% confidence intervals of η_k and γ_k, respectively, from the specification in Equation (5) when the outcome variable is an indicator of being employed in services in 2005. The excluded cohort is composed by individuals with 76 years or more in 2005. The 41 years old cohort is marked with a vertical line as a reference point since those are the individuals who were born in 1964.

Figure A-19: *Impact of Bombing on the Probability of Working in Manufacturing by Migration Status*



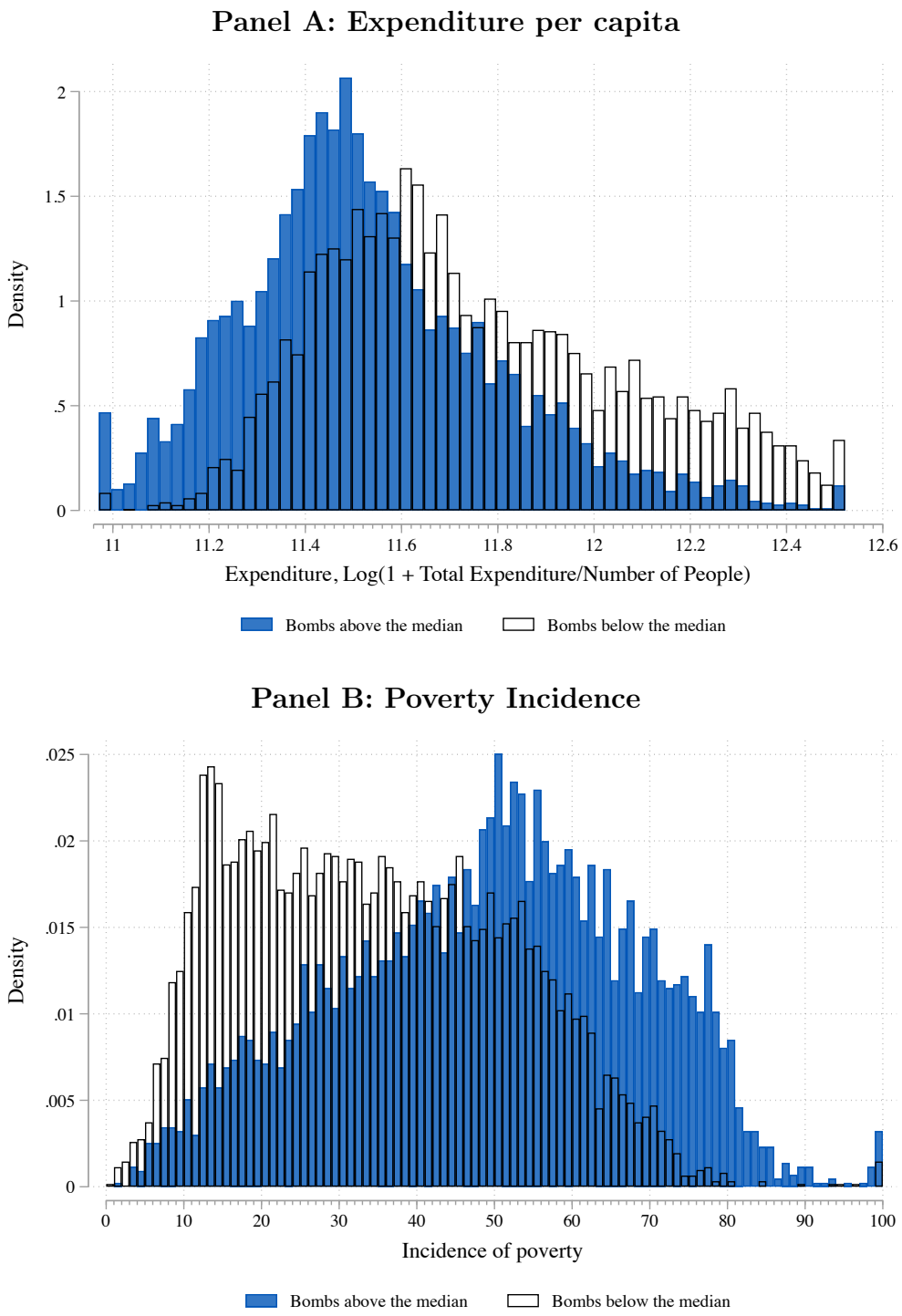
Notes: Panel A and B report the coefficients and 95% confidence intervals of η_k and γ_k, respectively, from the specification in Equation (5) when the outcome variable is an indicator of being employed in manufacturing in 2005. The excluded cohort is composed by individuals with 76 years or more in 2005. The 41 years old cohort marked with a vertical line as reference point since those are the individuals who were born in 1964.

Figure A-20: *Luminosity & Bombs: Bin-scatters at the District Level by Year*



Notes: Figure presents the linear relationship between luminosity and bombing intensity. Observations are at the district level. To approximate the main specification in Miguel and Roland (2011) all bin-scatters control for district area, province fixed effects, average rainfall, average temperature, latitude of the district centroid and absolute distance to the Demilitarised Zone (DMZ or 17th parallel)

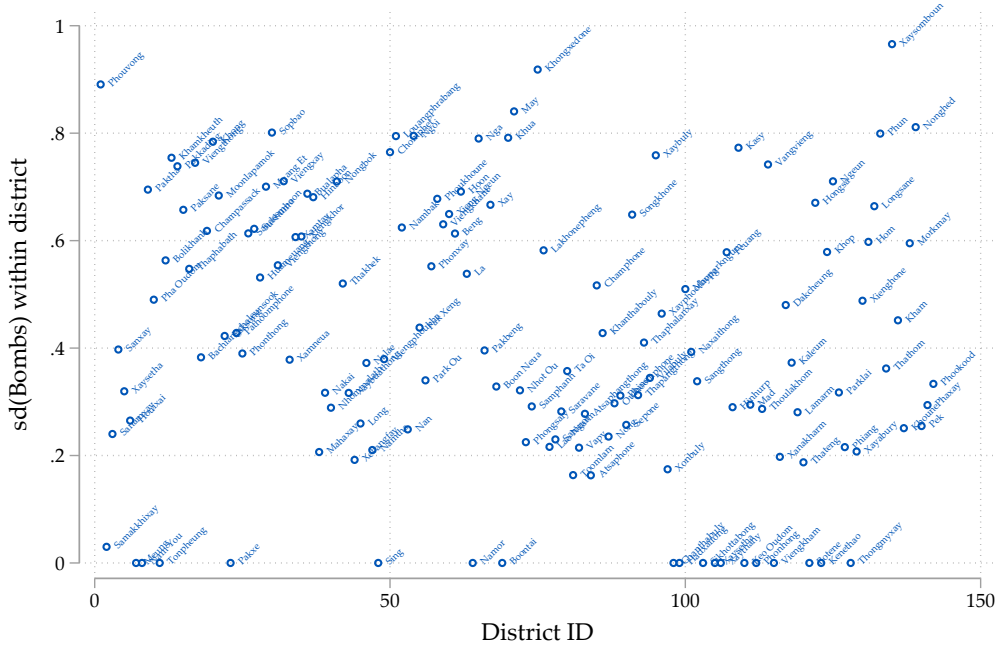
Figure A-21: *Comparing Distributions for Development Outcomes*



Notes: This figure presents the empirical distribution of the variables specified in each panel by the level of bombing intensity (above or below the median of bombs and UXO accidents at the village level).

Figure A-22: *Within-district and Within-province variation in bombing intensity*

Panel A: Within variation for each district



Panel B: Within variation for each province

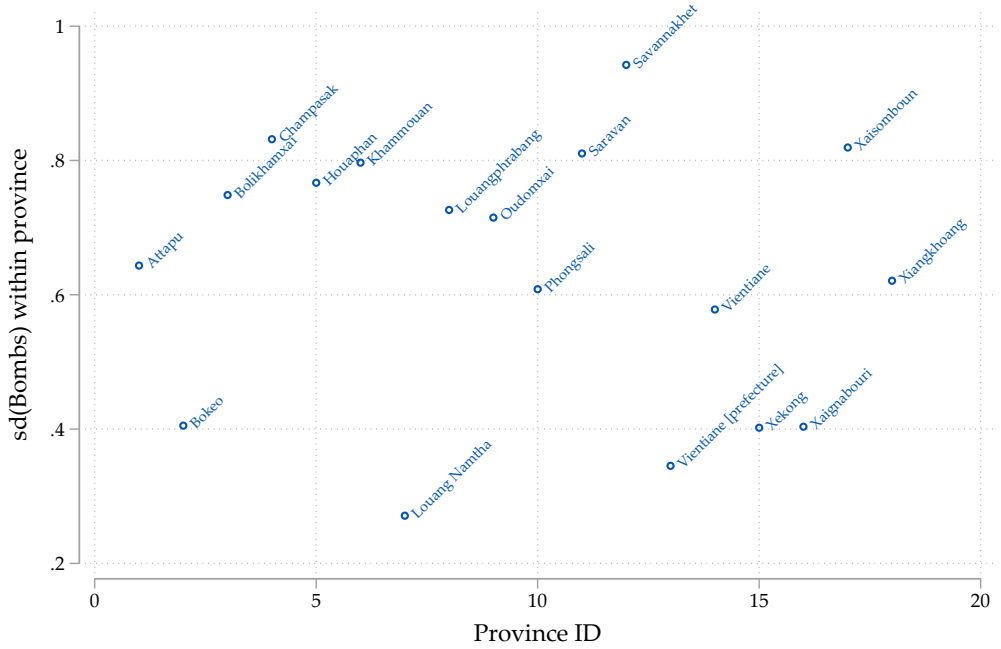


Table A-1: *Descriptive Statistics*

Variable	Mean	Std. Dev.	Min.	Max.
Panel A: Grid cell level data				
Luminosity 1993 (log(1 + Total stable lights in 1993 per Km2))	0.0281	0.212	0	3.593
Luminosity 2003 (log(1 + Total stable lights in 2003 per Km2))	0.0497	0.275	0	3.881
Luminosity 2013 (log(1 + Total stable lights in 2013 per Km2))	0.157	0.523	0	4.328
Luminosity Growth 1993-2003	0.0216	0.122	-0.421	1.551
Luminosity Growth 2003-2013	0.108	0.338	-0.860	2.979
Luminosity Growth 1993-2013	0.129	0.407	-0.421	3.445
Visible Luminosity 1993 (log(1 + Total visible lights in 1993 per Km2))	1.491	0.122	1.228	3.593
Visible Luminosity 2003 (log(1 + Total visible lights in 2003 per Km2))	1.272	0.135	1.199	3.881
Visible Luminosity 2013 (log(1 + Total visible lights in 2013 per Km2))	1.803	0.227	1.530	4.328
Bombs (log(1 + Total pounds of bombs jettisoned from 1965 to 1973 per Km2))	4.426	3.976	0	13.76
Number of UXO accidents	21.74	47.66	0	907
Panel B: Micro level data				
Migrant	0.114	0.318	0	1
Years of Schooling	4.319	3.927	0	13
Employed	0.663	0.473	0	1
Sector of employment reported	0.645	0.479	0	1
- Agriculture	0.815	0.388	0	1
- Manufacturing	0.0563	0.230	0	1
- Services	0.128	0.335	0	1
Panel C: Village level data				
Log(1+Area of UXO affected agricultural land)	0.152	0.612	0	7.269
Land is contaminated by UXO	0.156	0.363	0	1
Log(1+total expenditures/population)	11.66	0.354	8.500	20.86
Fraction of households in poverty	0.406	0.195	0.00770	1
Fraction of literate households	0.631	0.257	0	1
Fraction of households with disabled people	0.0792	0.0730	0	1
Log(inhabitants/Km^2)	3.757	1.724	-1.966	10.88
Village has electricity access	0.353	0.478	0	1
Village has with water supply access	0.0641	0.245	0	1
Village has a primary school	0.802	0.399	0	1

Notes: Grid cell level data refers to a synthetic grid cell of $0.1^\circ \times 0.1^\circ$ covering Laos.

Table A-2: *OLS Results: Different Transformations of the Dependent Variable*

	(1)	(2)	(3)
Panel A: Dependent Variable	$\log(1 + Lights/Km2)$		
Bombs	-0.050***	-0.044***	-0.020**
	(0.011)	(0.011)	(0.009)
R-squared	0.172	0.241	0.417
Panel B: Dependent Variable	$\log\left(Lights/Km2 + \sqrt{(Lights/Km2)^2 + 1}\right)$		
Bombs	-0.065***	-0.058***	-0.026**
	(0.014)	(0.014)	(0.013)
R-squared	0.181	0.247	0.414
Panel C: Dependent Variable	$\log(0.0001 + Lights/Km2)$		
Bombs	-0.322***	-0.286***	-0.088
	(0.065)	(0.069)	(0.070)
R-squared	0.199	0.240	0.363
Geographical Controls	Yes	Yes	Yes
Location Controls	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Province Fixed Effects		Yes	
Districts Fixed Effects			Yes
Number of Provinces		18	
Number of Districts			141
Observations	6,648	6,648	6,648

Notes: Observations are at the grid cell × year level. Lights represent the total number of stable nightlights within each grid cell. Variable Bombs represents the total weight in pounds jettisoned within the grid cell from 1965 to 1973 per square kilometre. Variable Bombs is standardised. Robust standard errors in parentheses clustered at the grid-cell level. *** p<0.01, ** p<0.05, * p<0.1

Table A-3: *Conley Standard Errors and Cluster Standard Errors: Pooled OLS of Luminosity on Bombs*

Dependent Variable	Luminosity								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Cluster								
Threshold of influence	Grid Cell	District	Province	$\leq 100km$	$\leq 200km$	$\leq 300km$	$\leq 500km$	$\leq 1000km$	$\leq 1500km$
	−0.020**	−0.020*	−0.020**	−0.020*	−0.020**	−0.020**	−0.020***	−0.020***	−0.020***
	(0.009)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.007)	(0.005)	(0.005)
Geographical Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Districts Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Districts	141	141	141	141	141	141	141	141	141
Observations	6,648	6,648	6,648	6,648	6,648	6,648	6,648	6,648	6,648
R-squared	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417

Notes: Observations are at the grid cell × year level. Variable Luminosity represents the log of one plus the total number of stable nightlights per square kilometre within each grid cell. Variable Bombs represents the total weight in pounds jettisoned within grid cell from 1965 to 1973 per square kilometre. Variable Bombs is standardised. Conley standard errors in parentheses for Columns 4 to 9 using the threshold reported in each column. Columns 1, 2 and 3 report cluster standard errors in parenthesis at the grid, district, and province level, respectively. *** p<0.01, ** p<0.05, * p<0.1

Table A-4: *Testing for Spillovers: A Spatial Auto-regressive Model*

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable:	Luminosity 1993		Luminosity 2003		Luminosity 2013	
	Coeff β_0	Spillover λ_0	Coeff β_0	Spillover λ_0	Coeff β_0	Spillover λ_0
Panel A: Spatial autoregressive model						
Bombs	−0.044***	0.011	−0.057***	0.015	−0.113***	0.089***
	(0.009)	(0.012)	(0.011)	(0.015)	(0.021)	(0.028)
Geographical Controls		Yes		Yes		Yes
Location Controls		Yes		Yes		Yes
Observations		2,216		2,216		2,216
Moran's test p-value (H_0 : iid errors)		0.000		0.000		0.000
Panel B: Average Impacts						
Direct effect of Bombs		−0.0444		−0.0569		−0.113
		0.00893		0.0113		0.0207
Indirect effect of neighbours' Bombs		0.0102		0.0134		0.0820
		0.0110		0.0140		0.0256
Total effect of Bombs		−0.0342		−0.0435		−0.0309
		0.00754		0.00958		0.0175

Notes: Observations are at the grid cell × year level. Variable Luminosity represents the log of one plus the total number of stable nightlights per square kilometre within each grid cell. Variable Bombs represents the total weight in pounds jettisoned within grid cell from 1965 to 1973 per square kilometre. Variable Bombs is standardised. This table presents the estimates of a spatial auto-regressive model to understand potential spillover effects beyond first neighbours and in terms of unobserved shocks. To do so, we estimate the following model for the main equation and the error term:

$$y_i = \beta_0 \cdot Bombs_i + \lambda_0 \cdot \boldsymbol{W^n} Bombs_i + \boldsymbol{X'\beta} + \hat{U}_i$$
$$\hat{U}_i = \sigma_e \cdot \boldsymbol{W^n} U_i + V_i,\ V_i \sim N(0,1)$$

Where $\boldsymbol{W^n}$ is an adjacency $n \times n$ matrix between grid cells whose entries are equal to $1/distance_{i,j}$ and zeros in the diagonal. Here (i,j) represents all pairs of grid cells. In Panel A: *** p<0.01, ** p<0.05, * p<0.1. Due to output formatting limitations Panel B omits stars of statistical significance but coefficients can be interpreted as usual.

Table A-5: *Controlling for Population Density at the District Level in 1960*

	(1)	(2)	(3)	(4)	(5)
Dependent variable: Luminosity					
Bombs	−0.032***	−0.045***	−0.052***	−0.027***	−0.017*
	(0.006)	(0.007)	(0.010)	(0.009)	(0.009)
Population Density in 1960	0.136***	0.124***	0.117***	0.117***	0.120***
	(0.016)	(0.018)	(0.017)	(0.017)	(0.013)
Geographical Controls		Yes		Yes	Yes
Location Controls			Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Province fixed effects					Yes
Observations	6,648	6,648	6,648	6,648	6,648
R-squared	0.171	0.196	0.216	0.250	0.319

Notes: Observations are at the grid cell × year level. Variable Luminosity represents the log of one plus the total number of stable nightlights per square kilometre within each grid cell. Variable Bombs represents the total weight in pounds jettisoned within grid cell from 1965 to 1973 per square kilometre. Variable Bombs and Population Density are standardised. Standard errors clustered at the grid-cell level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A-6: *Controlling for the Number of Roads in 1970*

	(1)	(2)	(3)	(4)	(5)
Dependent variable: Luminosity					
Bombs	−0.051***	−0.054***	−0.088***	−0.064***	−0.058***
	(0.008)	(0.008)	(0.012)	(0.011)	(0.011)
Number of Roads circa 1970	0.065***	0.049***	0.061***	0.049***	0.049***
	(0.011)	(0.011)	(0.010)	(0.010)	(0.009)
Geographical Controls		Yes		Yes	Yes
Location Controls			Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Province fixed effects					Yes
Number of Provinces			18		18
Observations	6,648	6,648	6,648	6,648	6,648
R-squared	0.064	0.113	0.157	0.187	0.256

Notes: Observations are at the grid cell × year level. Variable Luminosity represents the log of one plus the total number of stable nightlights per square kilometre within each grid cell. Variable Bombs represents the total weight in pounds jettisoned within grid cell from 1965 to 1973 per square kilometre. Variable Bombs and the Number of Roads are standardised. Standard errors clustered at the grid-cell level. *** p<0.01, ** p<0.05, * p<0.1

Table A-7: *Aggregating at the District Level and Excluding Observations in the Tails of the Distribution of Luminosity*

	(1)	(2)	(3)	(4)
	Luminosity	No Upper Tail Luminosity	No Lower Tail Luminosity	No Tails Luminosity
Panel A: Observations at the grid cell × year level				
Bombs	−0.049***	−0.024***	−0.194***	−0.112***
	(0.012)	(0.007)	(0.060)	(0.036)
Year FE	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes
Observations	6,648	6,582	616	435
R-squared	0.182	0.097	0.236	0.111
Mean Dep Var	0.0783	0.0505	0.845	0.695
Panel B: Observations at the district × year level				
Bombs	−0.167***	−0.143***	−0.301***	−0.370**
	(0.050)	(0.045)	(0.093)	(0.141)
Year FE	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes
Observations	423	418	198	110
R-squared	0.523	0.426	0.532	0.380
Mean Dep Var	0.230	0.189	0.492	0.660

Notes: Observations at the level indicated in each panel. Variable Luminosity represents the log of one plus the total number of stable nightlights per square kilometre within each grid cell. Variable Bombs represents the total weight in pounds jettisoned within the grid cell from 1965 to 1973 per square kilometre. Robust standard errors in parenthesis. Standard errors clustered at the grid-cell level in Panel A and at the district level in Panel B. Lower tail is defined by the lights below the 1st percentile. The lights above the 99th percentile determine the upper tail.

Table A-8: *Heterogeneous Results: Urban vs. Rural*

	(1)	(2)	(3)
Dependent variable: Luminosity			
	All	Urban	Rural
Bombs	−0.020**	0.008	−0.019***
	(0.009)	(0.055)	(0.007)
Geographical Controls	Yes	Yes	Yes
Location Controls	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	6,648	1,308	5,340
R-squared	0.417	0.568	0.272

Notes: Observations are at the grid cell × year level. Variable Luminosity represents the log of one plus the total number of stable nightlights per square kilometre within each grid cell. Variable Bombs represents the total weight in pounds jettisoned within grid cell from 1965 to 1973 per square kilometre. Variable Bombs is standardised. Standard Errors clustered at the grid-cell level. Rural grid cells are areas at 30km (or more) away from a population center.*** p<0.01, ** p<0.05, * p<0.1

Table A-9: *Instrumental Variables: First Stages*

Table A-9-A: *Instrument: Distance to the Ho Chi Minh Trail*

	(1)	(2)	(3)
Dependent Variable		Bombs	
Distance to Ho Chi Minh trail	-0.008***	-0.014***	-0.022***
	(0.001)	(0.004)	(0.003)
Distance to Ho Chi Minh trail^2	0.009***	0.022**	0.026***
	(0.001)	(0.009)	(0.007)
Altitude	1.571***	1.579***	1.709***
	(0.113)	(0.534)	(0.527)
Ruggedness	-0.027	-0.067	-0.037
	(0.021)	(0.052)	(0.030)
Temperature	1.698***	1.910***	2.096***
	(0.135)	(0.645)	(0.629)
Precipitation	-0.114***	0.057	-0.076
	(0.021)	(0.083)	(0.067)
Longitude	0.623***	0.637	0.189
	(0.118)	(0.607)	(0.905)
Latitude	0.803***	0.829	1.252*
	(0.117)	(0.492)	(0.732)
Distance to DMZ	-0.073**	-0.312**	-0.281
	(0.029)	(0.143)	(0.248)
Distance to Vietnam border	-0.158**	-0.308	-0.187
	(0.075)	(0.285)	(0.469)
Distance to Population centre	-0.060***	-0.022	-0.070
	(0.016)	(0.075)	(0.043)
Observations	2,216	2,216	2,216
R-squared	0.551	0.629	0.772
F	362.5	45.57	11.22
R-squared Adj	0.549	0.624	0.755
Number of Provinces		18	
Number of Districts			141

Table A-9-B: *Instrument: Distance to Closest Base*

	(1)	(2)	(3)
Dependent Variable		Bombs	
Distance to US air base	0.014***	0.014***	0.004
	(0.001)	(0.004)	(0.004)
Distance to US air base^2	-0.020***	-0.013**	-0.009
	(0.001)	(0.006)	(0.009)
Altitude	1.038***	1.546***	2.146***
	(0.112)	(0.523)	(0.590)
Ruggedness	-0.083***	-0.059	-0.048
	(0.021)	(0.052)	(0.037)
Temperature	1.179***	1.885***	2.679***
	(0.131)	(0.599)	(0.709)
Precipitation	0.079***	0.114	-0.027
	(0.023)	(0.069)	(0.086)
Longitude	0.080	0.420	0.139
	(0.117)	(0.699)	(0.764)
Latitude	-0.074	0.110	0.522
	(0.120)	(0.312)	(0.696)
Distance to DMZ	-0.538***	-0.831***	-0.560*
	(0.031)	(0.214)	(0.311)
Distance to Vietnam border	-0.780***	-0.591**	-0.845**
	(0.067)	(0.270)	(0.387)
Distance to Population centre	-0.110***	-0.032	-0.054
	(0.015)	(0.063)	(0.048)
Observations	2,216	2,216	2,216
R-squared	0.601	0.648	0.750
F	529.9	20.08	3.027
R-squared Adj	0.599	0.643	0.731
Number of Provinces		18	
Number of Districts			141

Notes: Observations at the grid-cell level. Variable Luminosity represents the log of one plus the total number of stable nightlights per square kilometre within each grid cell. Variable Bombs represents the total weight in pounds jettisoned within the grid cell from 1965 to 1973 per square kilometre. Distance to the Ho Chi Minh Trail refers to euclidean distance but uses the parts of the trails that were not entirely known by the US authorities. Distance to the closest US airbase refers to euclidean distance but is computed using US airbases founded before 1960 and located outside Laos. Robust standard errors in parentheses, if Province or District Fixed Effects are present standard errors clustered at that level. *** p<0.01, ** p<0.05, * p<0.1

Table A-10: *Reduced Form Estimates: Pooled IV of Luminosity on Bombs*

Table A-10-A Distance to the Ho Chi Minh Trail			
	(1)	(2)	(3)
Panel A: Dependent variable is luminosity, model:	RF	RF	RF
Distance to Ho Chi Minh trail	0.002***	0.002***	0.002***
	(0.000)	(0.001)	(0.001)
Distance to Ho Chi Minh trail^2	−0.003***	−0.002**	−0.001
	(0.001)	(0.001)	(0.001)
Controls that apply for all panels			
Geographical Controls	Yes	Yes	Yes
Location Controls	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Province Fixed Effects		Yes	
District Fixed Effects			Yes
Number of Provinces		18	
Number of Districts			141
Observations	6,648	6,648	6,648

Table A-10-B Distance to the Closest US Air Base			
	(1)	(2)	(3)
Panel B: Dependent variable is luminosity, model:	RF	RF	RF
Distance to US air base	−0.002***	−0.002***	−0.002***
	(0.000)	(0.000)	(0.001)
Distance to US air base^2	0.002***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)
Controls that apply for all panels			
Geographical Controls	Yes	Yes	Yes
Location Controls	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Province Fixed Effects		Yes	
District Fixed Effects			Yes
Number of Provinces		18	
Number of Districts			141
Observations	6,648	6,648	6,648

Notes: Observations are at the grid cell × year level. Variable Luminosity represents the log of one plus the total number of stable nightlights per square kilometre within each grid cell. Variable Bombs represents the total weight in pounds jettisoned within the grid cell from 1965 to 1973 per square kilometre. Distance to the Ho Chi Minh Trail refers to euclidian distance but uses the parts of the trails that were not entirely known by the US authorities. Distance to the closest US airbase refers to euclidean distance but is computed using US airbases founded before 1960 and located outside Laos. Robust standard errors in parentheses cluster at the grid-cell level. ***p<0.01, **p<0.05, *p<0.1

Table A-11: *Instrumental Variable Estimates (Yearly)*

Table A-11-A *Instrument: Distance to Ho Chi Minh Trail*

	(1)	(2)	(3)
Panel A: Dependent Variable Lights 1993			
Bombs	−0.128***	−0.092***	−0.056**
	(0.031)	(0.028)	(0.022)
Panel B: Dependent Variable Lights 2003			
Bombs	−0.169***	−0.134***	−0.081**
	(0.036)	(0.033)	(0.034)
Panel C: Dependent Variable Lights 2013			
Bombs	−0.199***	−0.171**	−0.179***
	(0.060)	(0.071)	(0.065)
Geographical Controls	Yes	Yes	Yes
Location Controls	Yes	Yes	Yes
Province Fixed Effects		Yes	
District Fixed Effects			Yes
Number of Provinces		18	
Number of Districts			141
Observations	2,216	2,216	2,216

Table A-11-B: *Instrument: Distance to Closest Base*

	(1)	(2)	(3)
Panel A: Dependent Variable Lights 1993			
Bombs	−0.114***	−0.096**	−0.227
	(0.025)	(0.041)	(0.221)
Panel B: Dependent Variable Lights 2003			
Bombs	−0.144***	−0.117**	−0.343
	(0.030)	(0.055)	(0.335)
Panel C: Dependent Variable Lights 2013			
Bombs	−0.178***	−0.169*	−0.994
	(0.046)	(0.092)	(0.889)
Geographical Controls	Yes	Yes	Yes
Location Controls	Yes	Yes	Yes
Province Fixed Effects		Yes	
District Fixed Effects			Yes
Number of Provinces		18	
Number of Districts			141
Observations	2,216	2,216	2,216

Notes: Variable Luminosity represents the log of one plus the total number of stable nightlights per square kilometre within each grid cell. Variable Bombs represents the total weight in pounds jettisoned within grid cell from 1965 to 1973 per square kilometre. Robust standard errors in parentheses cluster at the grid-cell level, if Fixed Effects are present standard errors clustered at the level of the FE.

Table A-12: *Instrumental Variables Estimates: Pooled IV of Luminosity on Bombs, Combining both Instruments (Controlling for Road Access)*

Dependent variable: Luminosity			
	(1)	(2)	(3)
Panel A: Instruments are distance to the Ho Chi Minh Trail and distance to the closest air base, ***linear form***			
Model:	2SLS	2SLS	2SLS
Bombs	−0.185***	−0.152***	−0.173***
	(0.031)	(0.025)	(0.035)
Hansen J statistic (over-identification test of all instruments)			0.529
Chi-sq(1) p-value			0.467
Panel B: Instruments are distance to the Ho Chi Minh Trail and distance to the closest air base, ***linear plus quadratic terms***			
Model:	2SLS	2SLS	2SLS
Bombs	−0.189***	−0.166***	−0.128***
	(0.032)	(0.028)	(0.029)
Controls that apply for all panels			
Road Access in 1970	Yes	Yes	Yes
Geographical Controls	Yes	Yes	Yes
Location Controls	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Province Fixed Effects		Yes	
District Fixed Effects			Yes
Number of Provinces		18	
Number of Districts			141
Observations	6,648	6,648	6,648

Notes: Observations are at the grid cell × year level. Variable Luminosity represents the log of one plus the total number of stable nightlights per square kilometre within each grid cell. Variable Bombs represents the total weight in pounds jettisoned within grid cell from 1965 to 1973 per square kilometre. Distance to the Ho Chi Minh Trail refers to such euclidian distance but using the parts of the trails that were not entirely known by the US authorities. Distance to the closest US airbase refers to such euclidean distance but computed using US airbases founded before 1960 and located outside Laos. Variable Bombs is standardised. Robust standard errors in parentheses cluster at the grid-cell level. *** p<0.01, ** p<0.05, * p<0.1

Table A-13: *IV Heterogeneous Results: North vs. South*

	(1)	(2)
Dependent variable: Luminosity		
Sample of grids:	North	South
Panel A: Using both instruments		
Bombs	−0.085**	−0.114**
	(0.034)	(0.048)
Panel B: Distance to Ho Chi Minh Trail as Instrument		
Bombs	−0.084**	−0.172***
	(0.036)	(0.056)
Panel C: Distance to Closest Base as Instrument		
Bombs	−0.391**	−0.122
	(0.197)	(0.186)
Geographical Controls	Yes	Yes
Location Controls	Yes	Yes
District Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	4,812	1,836

Notes: Observations are at the grid cell × year level. Variable Luminosity represents the log of one plus the total number of stable nightlights per square kilometre within each grid cell. Variable Bombs represents the total weight in pounds jettisoned within grid cell from 1965 to 1973 per square kilometre. Column 1 includes all the grids that are above the 17th parallel. Column 2 includes all the grids that are below the 17th parallel. Variable Bombs is standardised. Robust standard errors in parentheses clustered at the grid-cell level. *** p<0.01, ** p<0.05, * p<0.1

Table A-14: *Luminosity on Bombs and UXO Contamination (Village Level)*

Dependent variable:	Luminosity 1993		
	(1)	(2)	(3)
Bombs	-0.045***		-0.049***
	(0.004)		(0.005)
log(1+ agricultural area contaminated by UXO/Village area)		-0.013***	-0.001
		(0.003)	(0.003)
R-squared	0.380	0.398	0.401
Dependent variable:	Luminosity 2003		
	(1)	(2)	(3)
Bombs	-0.054***		-0.054***
	(0.006)		(0.007)
log(1+ agricultural area contaminated by UXO/Village area)		-0.006	0.007
		(0.008)	(0.008)
R-squared	0.392	0.414	0.416
Dependent variable:	Luminosity 2013		
	(1)	(2)	(3)
Bombs	-0.046***		-0.046***
	(0.010)		(0.012)
log(1+ agricultural area contaminated by UXO/Village area)		0.003	0.015
		(0.017)	(0.017)
R-squared	0.421	0.454	0.455
Province fixed effects	Yes	Yes	Yes
Geographical controls	Yes	Yes	Yes
Location controls	Yes	Yes	Yes
Observations	10,520	8,203	8,203

Notes: Observations are at the village level. Independent variables are standardised. Variable Luminosity represents the log of one plus the total number of stable nightlights per square kilometre within each grid cell. Bombs is the log of one plus the total weight in pounds jettisoned within the village from 1965 to 1973 normalised by the village area. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table A-15: *Agricultural Outcomes*

Panel A: Dependent variable:	Area potentially suitable for cultivation		
	(1)	(2)	(3)
Bombs	0.005		−0.052
	(0.035)		(0.036)
log(1+ agricultural area contaminated by UXO/Village area)		0.322***	0.335***
		(0.047)	(0.048)
R-squared	0.142	0.149	0.149
Panel B: Dependent variable:	Average farm size per household		
	(1)	(2)	(3)
Bombs	-0.196***		-0.220***
	(0.020)		(0.025)
log(1+ agricultural area contaminated by UXO/Village area)		-0.089***	-0.034
		(0.031)	(0.031)
R-squared	0.098	0.090	0.105
Province fixed effects	Yes	Yes	Yes
Geographical controls	Yes	Yes	Yes
Location controls	Yes	Yes	Yes
Observations	10,520	8,203	8,203

Notes: Observations are at the village level. Independent variables are standardised. Bombs is the log of one plus the total weight in pounds jettisoned within the village from 1965 to 1973 normalised by the village area. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table A-16: *Disability*

Dependent variable:	Average number of people with disabilities		
	(1)	(2)	(3)
Bombs	1.878***		1.513***
	(0.466)		(0.554)
log(1+ agricultural area contaminated by UXO/Village area)		3.263***	2.886***
		(1.042)	(1.063)
R-squared	0.083	0.086	0.086
Dependent variable:	Fraction of households with disabled people		
	(1)	(2)	(3)
Bombs	0.002		0.001
	(0.001)		(0.001)
log(1+ agricultural area contaminated by UXO/Village area)		0.005***	0.005***
		(0.002)	(0.002)
R-squared	0.129	0.142	0.142
Province fixed effects	Yes	Yes	Yes
Geographical controls	Yes	Yes	Yes
Location controls	Yes	Yes	Yes
Observations	10,520	8,203	8,203

Notes: Observations are at the village level. Independent variables are standardised. Bombs is the log of one plus the total weight in pounds jettisoned within the village from 1965 to 1973 normalised by the village area. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table A-17: *Roads*

Dependent variable:	Village has road access		
	(1)	(2)	(3)
Bombs	0.065***		0.060***
	(0.006)		(0.007)
log(1+ agricultural area contaminated by UXO/Village area)		0.023***	0.008
		(0.008)	(0.008)
R-squared	0.241	0.237	0.244
Province fixed effects	Yes	Yes	Yes
Geographical controls	Yes	Yes	Yes
Location controls	Yes	Yes	Yes
Observations	10,382	8,203	8,203

Notes: Observations are at the village level. Independent variables are standardised. Bombs is the log of one plus the total weight in pounds jettisoned within the village from 1965 to 1973 normalised by the village area. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table A-18: *Structural Equation Model to Estimate the Direct and Indirect effects of Bombing on Economic Development*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Structural			Measurement of Latent Variables								
				Agricultural land UXO affected				Nightlights				
Dependent variable	Bombs	UXO Contamination	Economic Development	Extensive Margin	Intensive Margin	UXO Accidents	% with Disability	Luminosity in 1993	Luminosity in 2003	Luminosity in 2013	Expenditures per capita	% in Poverty
Bombs		0.164***	−0.054***									
		(0.005)	(0.007)									
UXO Contamination			−0.102***	1.000	1.289***	8.669***	0.044***					
			(0.019)	–	(0.054)	(1.246)	(0.004)					
Economic Development								1.000	1.293***	1.627***	0.303***	−0.119***
								–	(0.015)	(0.030)	(0.007)	(0.003)
Estimate coefficients for												
Geographical controls	Yes	Yes	Yes	–	–	–	–	–	–	–	–	–
Location controls	Yes	Yes	Yes	–	–	–	–	–	–	–	–	–
Intercept	0.022***	0	0	0.158***	0.154***	4.959***	0.080***	0.163***	0.241***	0.483***	11.675***	0.398***
	(0.008)	–	–	(0.003)	(0.006)	(0.143)	(0.001)	(0.006)	(0.007)	(0.010)	(0.004)	(0.002)

Notes: This Table presents the maximum likelihood estimation of a Structural Equation Model with latent variables. The latent variables in the model are UXO contamination and Economic Development. The model assumes all variables included follow a multivariate normal distribution with means and variances to be estimated. The model consists of twelve equations presented across columns, and it is summarised in Figure 8 and explained in Section 6.1.1. For details on identification, see Appendix A. Beyond the presented parameters, the model includes estimates for i) the mean of geographical and location controls, ii) the coefficients on geographical and location controls in columns 1,2 and 3, iii) The covariance matrix between controls, iv) The variances for the error terms. Observations are at the village level, including data for 8,203 villages. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.