

Disappearing dissent?
Repression and state consolidation in Mexico
Online Appendix

Osorio, Schubiger, Weintraub

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Appendix I

In the article we briefly mention the results of an exercise to evaluate differing levels of trust in state institutions and political organization capacity between individuals who live in municipalities where during the Dirty War the Mexican state forcibly disappeared citizens and those municipalities where the state did not engage in such abuses.

Table A1 shows the regression results of disappearances on different types of trust and political participation. The unit of analysis is the individual survey respondent, and the database includes variables at the individual and municipality level. The survey data come from the latest version of the *Encuesta Nacional sobre Cultura Política y Prácticas Ciudadanas*, ENCUP (de Gobernación, 2012), a nationally representative public opinion survey conducted by the Mexican Government to assess different characteristics of political culture. Data at the municipal level are drawn from the same sources as discussed in the main paper.

The dependent variables in this survey analysis consist of different measures of trust in the president, police, army, military, and political parties, as well as an index of political participation and membership in organizations, and a measure of how easily can citizens organize. The key independent variable of interest is *disappearances*, and the main control variable is *armed groups*, as measured at the municipal level and discussed in the "Forced Disappearances" section in the manuscript. The analysis also considers a set of additional controls at the individual and municipal levels.¹ Individual variables come from the ENCUP survey and include the level of *education*, a dummy variable for *young* people (ages 18-35), a dummy for individuals living in *rural* areas, the level of *socioeconomic* status (as calculated by ENCUP), and *unemployment*. In addition, we include a variety of pre-disappearances controls at the municipal level considering the same variables of geography, insurgencies, infrastructure, demographics, and GDP, as indicated in the main article. Considering historical variables at the municipal level addresses problems of omitted variable bias by accounting

¹For a similar approach, see Nunn & Wantchekon (2011).

Table A1: Relationship between forced disappearances and political attitudes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	President	Police	Trust in Army	Military	Parties	Participate in orgs.	Member of orgs.	Easy to organize
Disappearances [†]	-0.23*	-0.41***	-0.11	-0.14	-0.44***	0.00	-0.04	-0.97**
	(0.13)	(0.14)	(0.11)	(0.12)	(0.16)	(0.09)	(0.12)	(0.45)
Armed groups [†]	0.03	0.18***	0.08**	0.05	0.13***	-0.03	-0.03	0.09
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.02)	(0.03)	(0.12)
Young [‡]	-0.10	-0.03	-0.06	-0.10	0.12	-0.48***	-0.38***	-0.01
	(0.09)	(0.10)	(0.09)	(0.09)	(0.10)	(0.06)	(0.07)	(0.33)
Rural [‡]	0.15	-0.17	0.01	0.03	-0.04	0.36***	0.04	0.83
	(0.18)	(0.19)	(0.18)	(0.18)	(0.19)	(0.11)	(0.13)	(0.88)
Education [‡]	-0.06***	-0.03	-0.02	-0.01	-0.06***	0.03**	0.11***	-0.17**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.08)
Socioeconomic [‡]	0.01	-0.06	-0.03	-0.06	-0.00	0.13**	0.34***	-0.24
	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)	(0.06)	(0.07)	(0.28)
Unemployment [‡]	0.08	0.14	0.19	0.25	0.27	0.12	0.08	0.74
	(0.23)	(0.23)	(0.22)	(0.21)	(0.24)	(0.16)	(0.16)	(1.20)
Municipal controls								
Geographic [†]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Insurgencies [†]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Infrastructure [†]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographics 1960 [†]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GDP 1970 [†]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.05	0.04	0.05	0.07	0.05	0.10	0.10	0.02
N	3716	3721	3709	3708	3655	3740	3740	3740

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Bold indicates robustness to Bonferroni correction.

[†] refers to variables at the municipal level.

[‡] refers to variables at the individual level.

The controls include the following sets of variables:

Geographic: elevation, distance to the center, Northwest, Northeast, West, East, Southcentral, Southwest, and Southeast regional dummies.

Insurgencies: Hidalgo & Allende (1810-1811), Morelos (1810-1815), Mina (1817), Guerrero (1816-1821), and the French intervention (1862-1867).

Infrastructure: telegraphs in 1919, railways in 1919, road density in 1972.

Demographics in 1960: population size (log), youth (age 18 - 35), rural, illiterate, and unemployed. GDP in 1970

for subnational variation in pre-disappearances characteristics.

As the results of Table A1 indicate, individuals who live in municipalities that suffered forced disappearances during the repressive spell of the Dirty War show lower levels of trust in the president (Model 1), police (Model 2), and in political parties (Model 5) than individuals living in locations that did not experience disappearances. There does not seem to be a relationship between living in areas that suffered from forced disappearances and levels of trust in the army or the military (Models 3 and 4). In a similar way, the analysis does not find an effect on the levels of participation in a variety of social activities (Model 6) nor membership in political organizations (Model 7) in municipalities affected by forced disappearances when compared to those that did not suffer this type of state repression. In contrast, individuals who live in municipalities affected by forced disappearances seem to perceive that it is more difficult for citizens to organize themselves to work for a common cause when compared to people who do not live in such municipalities areas (Model 8). The direction of the coefficients and the levels of statistical significance align with the theoretical expectations and suggest an association between the legacy of disappearances and levels of political trust and social capacity.

The following list reproduces the wording of the ENCUP questions used in the survey analysis. The original is in Spanish, the translation here is our own.

- **Trust in the President**

- Spanish: *¿Qué tanto confía en el Presidente?*
- English: To what extent do you trust the police?

- **Trust in Police**

- Spanish: *¿Qué tanto confía en la Policía?*
- English: To what extent do you trust the police?

- **Trust in Army**

- Spanish: *¿Qué tanto confía en el Ejército?*
- English: To what extent do you trust the army?

- **Trust in Military**

- Spanish: *¿Qué tanto confía en los Militares?*
- English: To what extent do you trust the military?

- **Trust in Parties**

- Spanish: *¿Qué tanto confía en los Partidos Políticos?*
- English: To what extent do you trust political parties?

- **Participation in Organizations**

This question is the sum of all positive answers to 9 different questions about political participation.

- Spanish: *Durante el último año, ¿asistió a alguna reunión de las siguientes organizaciones?*

- * *Juntas de vecinos*
- * *Junta de colonos*
- * *Reunión de condóminos*
- * *Agrupación u organización de ciudadanos*
- * *Asambleas de la comunidad*
- * *Asociación de padres de familia*
- * *Algún partido o agrupación política*
- * *Sindicato*
- * *De cooperativas o asamblea ejidal*

- English: During the past year, how many meetings organized by the following entities did you attend?

- * Block group

- * Neighborhood community group
- * Condo board
- * Citizens' organization
- * Community assemblies
- * Parents' group
- * Political party or group
- * Union
- * Land cooperative

● **Membership in Organizations**

This question is the sum of all positive answers to 16 different questions about participating in political organizations.

- Spanish: *Usted es o ha sido miembro de alguna de las siguientes organizaciones que le voy a mencionar:*

- * *Organización estudiantil*
- * *Voluntariado o beneficencia*
- * *Asociación de padres de familia*
- * *Sindicato*
- * *Partido político*
- * *Agrupación profesional*
- * *Agrupación política*
- * *Agrupación religiosa*
- * *Organización de ciudadanos*
- * *Asociación de la industria del comercio o similar*
- * *De vecinos, colonos, condóminos*
- * *De pensionados y jubilados*
- * *De arte y cultura*
- * *Deportiva*
- * *De defensa del medio ambiente*
- * *Otro grupo organizado*

- English: Are you or have you been a member of any of the following organizations that I will now mention?

- * Student organization

- * Volunteer organization or charity
- * Parents' association
- * Union
- * Political party
- * Professional association or guild
- * Political group
- * Religious group
- * Citizens' group
- * Business association
- * Organization of neighborhood, community, or condo
- * Retiree association
- * Arts or cultural organization
- * Sports association
- * Environmental group
- * Other organized group

- **Easy to Organize**

- Spanish: ¿Qué tan fácil o difícil cree usted que es organizarse con otros ciudadanos para trabajar en una causa común?
- English: How difficult or easy do you think it is for citizens to organize themselves to work on a common cause?

Appendix II

One concern with the results reported in the paper is confounding. We address this by conducting Rosenbaum sensitivity analysis (Rosenbaum, 2002; Keele, 2010) based on 1:1 genetic matching without replacement, using the same covariates as in the main analysis (Sekhon, 2011; Diamond & Sekhon, 2013).² The results of both the genetic matching and the sensitivity analysis can be found in Table A2. Intuitively, we can think of Γ as the extent of departure from random assignment (Keele, 2010; Rosenbaum, 2002), where $\Gamma = 1$ implies that the treatment and control observations have the same probability of being assigned to the treatment. Sensitivity analysis allows us to assess the impact an excellent unobserved predictor of the dependent variables would need to have on the odds of a unit being assigned to forced disappearances in order to explain away our results in terms of statistical significance. What degree of unobserved confounding, Γ , could our results handle? For observational studies in the social sciences, the expected answer is a Γ between 1 and 2 (Keele, 2010). We report Γ values for those matching estimates (ATT) that are statistically significant at conventional levels ($p < 0.05$). Shown in bold are those results that remain significant once Bonferroni adjustments for multiple testing within each state capacity type are applied. While we keep the $p < 0.05$ threshold for the Wilcoxon Signed Rank test in the Rosenbaum sensitivity analysis, the reported Γ levels remain quite similar if p-values adjusted for multiple testing are considered.

The matching estimates of the average treatment effect on the treated (ATT) for the Myers (column 1) and welfare scores (column 2), our first two measures of collective state capacity are negative but not statistically significant (mirroring the findings of the main regression analysis). The ATT estimate for the welfare program PROGRESA in column 3 is negative and significant, again as in the main analysis, and remains robust once the Bonferroni correction is applied. Moreover, the Wilcoxon Signed Rank p-value is still below

²We use the R packages Matching (Mebane & Sekhon, 2011; Sekhon, 2011; Diamond & Sekhon, 2013) and rbounds (Keele, 2010).

0.05 at a Γ of 2.8, indicating a level of robustness that surpasses standard values in the social sciences.

Turning to the legal measures, while the matching estimate for municipal regulations is as expected – positive, significant, and robust (column 4, $\Gamma = 3.8$) – the one for strategic planning is not (column 5). As in the main regression analysis, we find a positive effect of forced disappearances on contemporary taxation, with a Wilcoxon Signed Rank p-value below 0.05 at a Γ of 4.7 (column 6), indicating a high level of robustness to hidden bias.

When it comes to our measures of territorial state capacity (columns 7-9), the matching estimates again mirror our main regression results, in that we find no effect of disappearances on road density, while the ATT estimates for the Federal and Municipal offices variables are positive and significant (and remain so with Bonferroni adjustment). The ATT estimates are also exceptionally robust, with the Rosenbaum sensitivity tests indicating very high levels of robustness to unobserved confounding (Γ values of 12.6 and 10.2).

Finally, turning to the security measures, we find again that disappearances have a negative effect on the presence of police forces (column 10), yet are not significantly related to contemporary human rights violations (column 11). The ATT estimate is positive for the drug trafficking organizations (DTO) (column 12) and homicide outcomes (columns 13). While for the DTO estimate we find very high levels of robustness to hidden bias ($\Gamma = 9.0$), the findings are at more conventional levels when it comes to the police and homicide outcomes (Γ values of 2.1 and 2.9).

Table A2: Genetic matching and sensitivity analysis

	Collective		Legal		Fiscal		Territorial			Security			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Myers	Welfare	Progresa	Reg.	Plans	Taxes	Roads	Fed. O.	Mun. O.	Police	HR	DTOs	Homic.	
ATT	-0.14	-0.05	-0.11	18.98	5.19	0.03	0.03	9.64	20.42	-0.00	0.00	1.18	14.44
SE	0.10	0.04	0.03	4.5	4.06	0.01	0.02	3.17	3.75	0.00	0.00	0.27	6.37
p-val	0.185	0.198	0.002	0.000	0.201	0.000	0.097	0.002	0.000	0.003	0.812	0.000	0.024
Γ	-	-	2.8	3.8	-	4.7	-	12.6	10.2	2.1	-	9.0	2.9
N total	2456												
N treated	68												
Replace.	No												

* p<0.05, ** p<0.01, *** p<0.001. ATT estimates that remain significant with Bonferroni correction in bold. Impact of disappearances on state capacity measures. ATT and Abadie-Imbens Standard Errors. Population size = 1000. Matching is performed on the full set of covariates with no replacement. Γ refers to the highest value at which the Wilcoxon Signed Rank test still turns significant (p < 0.05).

Appendix III

In the body of the manuscript we did not have space to provide complete details regarding how our dependent and control variables are coded. We use this appendix to do so.

Dependent variables

The dependent variables in the empirical examination are grouped in five main categories of state capabilities:

Collective capacity

- *Myers*: following Lee & Zhang (2013), we rely on an indicator of state capacity based on the prevalence of incorrect age reporting (Myers, 1940), using population data from the 2010 census at the municipal level (INEGI, INEGI). The Myers score indicates deviations from the naturally occurring smooth age distribution, which are detectable in data clustering ages that end with the digits 0 and 5. The assumption is that these digit preferences arise from a lack of knowledge about one's true age, indicative of poor public goods provision, in particular of schooling (Lee & Zhang, 2013). Deviations from the natural smooth age distribution indicate that government authorities do not have the ability to measure the population's age accurately. A high Myers score indicates low collective state capacity, as in Santiago Tepetlapa, Oaxaca, while a low Myers score suggests strong collective state capacity, as in Sabinas Hidalgo, Nuevo León. Note that while we follow Lee & Zhang (2013) in proxying state capacity through age heaping, we do not eliminate the wealth component from the Myers' index, as they do. The Myers' blended index measures the deviation from a smooth age distribution by taking into account mortality, which – due to its increase with age – leads to an overstatement of certain digit preferences if not taken into account (Myers, 1940). Our calculations are

based on code by Christian Mueller (2015).

- *Welfare*: an indicator of collective capacity that measures the percentage of the population living in poverty in each municipality who receive any welfare assistance from the federal government, with data taken from Mexico's Development Ministry, *Secretaría de Desarrollo Social* (SEDESOL 2016) and measured in 2015-2016. This measure comprises 18 different welfare programs including PROSPERA, PROSPERA-EASC, LICONSA, PAM, PDZP, PEI-MPT, PEI-Resp, Mig 3x1, PET, PAJA, FONART, POP, SEVJF, COMEDORES, INAPAM, IMJUVE 1, IMJUVE 2, and FES. The data do not allow identification of beneficiaries of more than one welfare program and, as such, there may be instances of over-counting. For specific information about temporal coverage of each program, see SEDESOL (2016). A high value on *Welfare* indicates strong state capacity to deliver welfare goods, as in Coyotepec, Puebla, while a low value indicates feeble capacity, as in Buenaventura, Chihuahua.
- *PROSPERA*: a measure of municipal coverage of Mexico's prime conditional cash transfer program. This program was previously known as *Oportunidades* (Levy, 2006). The variable measures the percentage of a municipal population living in poverty that benefits from this cash transfer program. Similar to *Welfare*, high values of PROSPERA are indicative of high state capacity as government authorities are able to deliver benefits to vulnerable sectors of the population, as in Eloxochitlán, Puebla, while low *PROSPERA* values reflect poor collective state capacity, as in Azcapotzalco, Mexico City.

Legal capacity

- *Regulation*: captures the extent of development of local legal frameworks. These data come from a study conducted in 2012 by the Mexican Ministry of the Interior, *Secretaría de Gobernación* (SEGOB 2014) measuring how many of the 17 different regulations mandated by the Mexican Constitution each municipality has in place. Article

115 of the Constitution sketches the main functions of municipalities as political and administrative units. Municipalities are required to have a set of legal frameworks to regulate diverse activities such as governance mechanisms, internal operations, public administration, freedom of information, citizen participation, public works, street cleaning and waste disposal, public security and safety, street lighting, cemeteries, markets, slaughterhouses, roads and transportation, zoning and land use, environmental protections, and construction regulations. High values of regulation are indicative of a strong legal capacity of municipal institutions as in Cuahutémoc, Mexico City, a municipality that fulfills 100% of its constitutional regulatory obligations, in contrast to Ciudad del Carmen, Campeche, which meets only 10% of its requirements. The 17 different regulations mentioned in the Mexican Constitution used in this metric are: *Bando de policía y buen gobierno* (Art. 115 frac. II); *Reglamento interior del Ayuntamiento* (Art. 115 frac. II); *Administración pública municipal o delegacional* (Art. 115 frac. II); *Transparencia y acceso a la información* (Art. 6); *Participación ciudadana* (Art. 115 frac. II); *Reglamento de obras públicas* (Art. 115 frac. II); *Limpia y/o recolección de residuos sólidos urbanos* (Art. 115 frac. III par. c); *Seguridad pública* (Art. 115 frac. III par. h); *Reglamento de protección civil* (Art. 73 frac. XXIX-I); *Reglamento de alumbrado público* (Art. 115 frac. III par. b); *Reglamento de cementerios* (Art. 115 frac. III par. e); *Reglamento de Mercados* (Art. 115 frac. III par. d); *Reglamento de Rastro* (Art. 115 frac. III par. f); *Reglamento de Vialidad y transporte* (Art. 115 frac. V par. h); *Zonificación y uso de suelo* (Art. 115 frac. V par. a); *Ordenamiento ecológico* (Art. 115 frac. V par. g); *Reglamento de la construcción* (Art. 115 par. f).

- *Plans*: reflects the extent to which the municipal public administration operates according to strategic planning and evaluation elements as part of its regular activities. The data come from the National Census of Municipal and Delegation Governments created in 2012 by the Mexican census bureau (INEGI 2013). *Plans* is a weighted index of strategic planning that includes the following eight elements: mission, vision,

objectives and goals; strategic programs; performance and impact indicators; a control and performance dashboard for objectives, goals, indicators, and results; customer service and complaints system; mechanisms for measuring user satisfaction; manuals and quality standards for costumer service; and others. In the index of strategic planning, a municipality with a high score, such as San Nicolás de los Garza, Nuevo León, with more than 95% compliance, is indicative of strong planning capacity, in contrast to Yuriria, Guanajuato, which uses strategic planning in less than 10% of its regular governmental activities.

Fiscal capacity

- *Taxes*: measures tributary capabilities. Mexico has a highly centralized fiscal system in which a substantial source of tax income comes from oil revenues — about 29% of the national total income stemmed from oil in 2015 — that are collected at the national level and then redistributed to cover expenditures of federal, state, and municipal governments (Auditoría Superior de la Federación, 2016). Municipalities have very limited tax collection authority, which is mainly restricted to levying property taxes and charging for the provision of water. *Taxes* captures the percentage of total municipal income that comes from the sum of property and water taxes in 2014, using data from INEGI (2016). Municipalities with a high percentage of municipal tax collection indicate strong fiscal capacity, as is the case with Ramos Arizpe, Chihuahua, which collects 32% of its total municipal income from local taxes, while the municipality of Tila, Chiapas, collects less than 1% of its income from property and water taxes.

Territorial capacity

- *Roads*: indicates the density of the paved road network at the municipal level as kilometers per square kilometers of territory, measured in 2015. High values of road density indicate a location with strong state territorial capacity, such as Benito Juárez in

Mexico City, with 1.3 kilometers of roads per square kilometer of territory, in direct contrast with Topia, Durango, which has less than 0.1 kilometers of paved roads per square kilometers of territory. We consider two additional measures of state territorial capacity.

- *Federal Offices and Municipal Offices*: the number of buildings that host the office of a federal or municipal government agency, measured in 2014, using data from INEGI (2014). The catalog of federal and municipal government offices cover the full range of government activities, ranging from public theaters to fire stations to the National Archive building and military barracks. A high value on the government offices variables is indicative of strong territorial capacity, as in Toluca, Mexico, while a low score corresponds to low state territorial presence, as in Huamuxtitlán, Guerrero.

Security capacity

- *Police*: reflects the number of municipal police officers per capita on active duty at the municipal level in 2012, drawn from INEGI (2013). We advise caution when interpreting the measure of police officers, as a large number of police officers need not mean high capacity of the state to provide security. This is the case in violence-ridden locations such as Acapulco, Guerrero or Ciudad Juárez, Chihuahua, both of which concentrate a large number of police officers without necessarily providing much security. For this reason, we interpret the number of officers simply as the capacity of municipal governments to engage in or threaten coercion. Note that this measure does not include federal or state police officers: Mexico has a highly decentralized security system, with hundreds of uncoordinated police forces that span across federal, state, and municipal levels.
- *Human rights violations*: captures alleged human rights violations per capita conducted by security forces — including the Army, Navy, Police, and Prosecutor’s Office — in

2015, with municipal data taken from the *Comisión Nacional de Derechos Humanos* (Mexican Human Rights Commission, in English) (CNDH 2016). High values indicate the state use of coercive violence in locations such as Reynosa, Tamaulipas, which experienced 34 human rights violations in 2015, while low values reflect the absence of such violence, as in Tlaola, Puebla.

- *DTOs*: the number of active drug trafficking organizations (DTOs) in the municipality in 2010, with data from Osorio (2015). We interpret this variable in a Weberian manner, as a failure to monopolize the use of legitimate violence. In other words, it reflects poor state capacity to provide security. High values on this metric are indicative of municipalities ravaged by multiple criminal groups, in places like Ciudad Juárez, Chihuahua, as opposed to Tixkokob, Yucatán, where there are no indications of DTO presence. The criminal organizations included in this measure are the Tijuana Cartel, Sinaloa Cartel, Juarez Cartel, Golfo Cartel, La Familia Michoacana, Los Zetas, Cartel de Jalisco Nueva Generación, La Barbie, Cartel de los Beltrán Leyva, Cartel del Milenio, Cartel de Jalisco, Nuevo Cartel de Acapulco, La Resistencia, Los Caballeros Templarios, Cartel de Colima, Cartel de Oaxaca, La Empresa, La Mano con Ojos, Limpia Mazateca, Los Cachines, and other minor criminal groups.
- *Homicides*: refers to the number of intentional homicides per 100,000 inhabitants at the municipal level, measured in 2013 using data from Mexico's *Sistema Nacional de Seguridad Pública* (SNSP 2015). We interpret this measure as a lack of security provision. High values on this variable refer to municipalities in which government authorities are not capable of providing public security, as in Acapulco, Guerrero, or Culiacán, Sinaloa.

Control variables

Armed groups

- This variable is a measure of armed leftist groups that were active prior to 1972. To code this variable we gathered the names of radical organizations mentioned in the Special Prosecutor’s report, then tracked their areas of operations and the period of activities from a variety of secondary sources. Because state repression may have been endogenous to the supply of local contestation by leftist groups — who were the principal challengers to state authority during this period — it is important to control for such activity. For some small groups active during this period details are spotty, likely resulting in undercounting; other smaller groups may be entirely absent from our coding. Because the state was likely to use forced disappearances where leftist groups were most pronounced, we anticipate limited bias for this measure.

In addition to the measure of armed groups, the empirical analysis considers a broader set of control variables grouped into five categories.

Geography

- *Northwest, Northeast, West, East, South Central, Southwest, and Southeast* regions: dummy variable for each, indicating whether a given municipality belongs to that region, with data from INEGI (2011).
- *Elevation*: meters above sea level for each municipality, with data from INEGI (2011).
- *Distance to Mexico City*: kilometers between each municipality’s center and Mexico City, with data from INEGI (2011).

Insurgencies

- *Hidalgo and Allende* (1810-1811), *Morelos* (1810-1815), *Mina* (1817), and *Guerrero* (1816-1821): code the principal independence campaigns of the early nineteenth century, drawn from maps in García de Miranda & Falcón de Gyves (1972), which we digitized and geo-referenced. We overlaid old maps onto municipal shapefiles and assigned a value of 1 to each municipal polygon overlapping with an area of armed activity indicated in the maps, and assigned a value of 0 otherwise.
- *French Intervention* (1862-1867): codes the operations of the French Army, the Imperialist Mexican Army, and the Republican Army during the War of the French Intervention, drawn from maps in García de Miranda & Falcón de Gyves (1972). We overlaid old maps onto municipal shapefiles and assigned a value of 1 to each municipal polygon overlapping with an area of armed activity indicated in the maps, and assigned a value of 0 otherwise.
- *Los Rurales*: reflects the presence of rural police forces in 1910, which we created from a map published in Vanderwood (1992: 123). This helps code incipient state capacity to repress, measured at the beginning of the Mexican Revolution. We overlaid old maps onto municipal shapefiles and assigned a value of 1 to each municipal polygon overlapping with an area of armed activity indicated in the maps, and assigned a value of 0 otherwise.

Infrastructure

- *Railways*: a dichotomous variable measuring municipalities crossed by railroads in 1919, drawn from Great Britain Naval Intelligence Division maps that we digitized and geo-referenced (Division, 1919). More specifically, we overlaid digitized maps with municipal shapefiles and marked as 1 each municipality that contained a line segment of railway.

It is possible that the map may be less accurate as one moves inland, although it is difficult to assess whether this is the case.

- *Telegraphs*: a dummy variable indicating municipalities that had telegraph lines in 1919, drawn from Great Britain Naval Intelligence Division maps that we digitized and geo-referenced (Division, 1919). More specifically, we overlaid digitized maps with municipal shapefiles and marked as 1 each municipality that contained a line segment of telegraph. Note that this variable excludes telegraph lines that are located along railway lines. It is possible that the map may be less accurate as one moves inland, although it is difficult to assess whether this is the case
- *Road Density in 1972*: measure of road density in each municipality in 1972, drawn from maps that we digitized and geo-referenced Research Bureau of Business (1975). To create these variables we overlaid digitized maps with municipal shapefiles and marked as 1 each municipality that contained a line segment of road networks. This provides another measure of the ability of the state to reach populations outside of state capitals.

Demographics in 1960

- *Population size*: measured at the municipal level in 1960, with data from the Mexican census bureau, *Instituto Nacional de Estadística y Geografía* (INEGI 1960).
- *Percentage of Youth* (ages 18-35): measured at the municipal level in 1960, with data from the Mexican census bureau, *Instituto Nacional de Estadística y Geografía* (INEGI 1960).
- *Percentage of Rural population*: measured at the municipal level in 1960, with data from the Mexican census bureau, *Instituto Nacional de Estadística y Geografía* (INEGI 1960).
- *Percentage of Illiteracy*: measured at the municipal level in 1960, with data from the Mexican census bureau, *Instituto Nacional de Estadística y Geografía* (INEGI 1960).

- *Unemployment* rates with data from the Mexican census bureau, *Instituto Nacional de Estadística y Geografía* (INEGI 1960).

Gross Domestic Product (GDP) in 1970

- *Gross Domestic Product (GDP)* represents the total domestic product of the country in 1970. This measure includes productivity in all main sectors of the economy at the time: agricultural, banking, commerce, electricity, finance, manufacturing, mining, services, transportation. Data comes from INEGI (2011).

Appendix IV

Table A3 shows the multicollinearity analysis using variance inflation factor (VIF) test. A VIF score larger than 10 suggests presence of multicollinearity. The average VIF is 4.15, thus indicating that the model does not suffer from severe problems of multicollinearity. As the results show, there seems to be collinearity between levels of literacy and rural population in 1960. However, we consider that these variables capture different characteristics of the population, so we decided to maintain them both. Most importantly, our main variable of interests, *Disappearances*, does not indicate problems of multicollinearity.

Table A3: Variance inflation factor

Variable	VIF	1/VIF
Illiterate 1960	12.99	0.077001
Rural 1960	9.88	0.101259
Center-south	7.22	0.138483
PIB 1970 (total)	7.08	0.141244
Southwest	6.8	0.14706
Northwest	6.36	0.157141
East	6.16	0.162226
Distance to the center	5.83	0.171548
Armed groups	5.51	0.18148
Southeast	4.88	0.204771
West	4.63	0.21598
Northeast	4.29	0.232879
Age 18-35 1960	4.06	0.24634
Population 1960	3.63	0.275655
Unemployment 1960	2.69	0.371717
Railways	1.29	0.775811
Elevation	1.27	0.788822
Road density 1972	1.22	0.822461
Morelos insurgency	1.2	0.831781
Telegraphs	1.17	0.856635
Guerrero insurgency	1.14	0.876063
Hidalgo and Allende indurgency	1.13	0.883629
Disappearances	1.09	0.913289
French Intervention	1.09	0.915274
Mina insurgency	1.08	0.92793
Mean VIF	4.15	

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