Appendix for

Religious Festivals and Economic Development: Evidence from Catholic Saint-Day Celebrations in Mexico

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Appendix A. Data Appendix

A.1. Patron Saint and Festival Date Data

As discussed in the main text, in our empirical analyses we assign patron saint celebration dates as prescribed by the Vatican (or, in a minority of cases, official religious sources outside of Mexico) so as to reduce concerns about the endogeneity of festival dates. In this section, we describe the sources we used to determine: 1) official patron saint celebration dates, and 2) the patron saint celebrated by each municipality.

A.1.1. Official Patron Saint Celebration Dates

1. a. We use three main sources to determine official patron saint celebration dates. 94.83% of municipalities have saints that are sourced using one of these three sources (in order of the frequency with which we used the source):
   i. The General Roman Calendar (Calendarium Romanum) (Catholic Church, 1969):
      - Catholic Church (1969). *Calendarium Romanum (1969)*
   ii. The Roman Martyrology (Martirologio Romano) (Catholic Church, 1956):
      - Catholic Church (1956). *Martirologio Romano (1956)*
   iii. The Book of Saints (Watkins, 2015):
      - Watkins, Basil. *The Book of Saints: A Comprehensive Biographical Dictionary*, Bloomsbury Publishing Plc (2015)

   b. In a small number of cases an official patron saint celebration date was not found in the sources above. In these cases, we use a variety of online religious sources cited below. We ensured that we had least two online sources per saint. Only 3.44% of municipalities have saints that are sourced using online sources.

A.1.2. Determining Patron Saints for Municipalities in Mexico:

1. We use three primary sources to identify the patron saint of each municipality:

   a. **Encyclopedia:** We use the online Encyclopedia of Municipalities (INAFED, 1988, available at http://www.inafed.gob.mx/work/enciclopedia/) to determine the patron saint for approximately 1,900 of the municipalities in Mexico.

   b. **Direct Phone Calls to Municipalities:** We called approximately 300 municipalities to determine their patron saint. When calling municipalities, we first attempted to contact municipality government offices, followed by local churches and schools. To verify the accuracy of the information given to use over the phone, we also provide additional sources in the form of online links for over half of the "called" municipalities.

   c. **Additional Online Sources:** In cases where we could not contact anyone with phone calls, and we did not find any information in the Encyclopedia, we used online sources such as news articles and government websites. We required at least two web sources before determining the saint. We use websites as sources for 180 municipalities.

A.1.3. Coding Patron Saint Dates

We used the following guidelines when coding patron saint dates:

i. We use a missing value code, 98, to indicate that the festival is a "moving festival", one for which the official date differs from year to year. 4.19% of municipalities in Mexico have moving festivals, and are considered missing from our dataset for analysis.

ii. In cases where the festival is not moving but spans a few days we use the first date of the festival. For example, "Día de los Muertos" is a two-day festival from November 1-2. We use November 1st as the official date. We assume that any diversion of resources, time, etc. due to a festival would have already happened by the first date of the range.

iii. In some cases, our research indicates that a municipality celebrates a particular Vatican-recognized saint, but has renamed it for the purpose of calling this saint their patron saint. In these cases, we consider the original Vatican-recognized saint as the municipality's saint, and use the Vatican-prescribe official celebration date (as usual). We detail these cases and the sources used to determine these "renamed" saints below in Section A.1.4.

iv. In some cases, municipalities in Mexico celebrate a "local" saint: a saint that is not recognized or celebrated outside of that municipality in Mexico. Because these saints might be endogenously selected, we provide a variable that codes whether or not a saint is a "local saint". The variable "local_saint" has three possible values: 0,1,2. A saint is coded as "0" if the official celebration date of a saint is set outside of Mexico. A saint is coded as "1" if the saint is found to be specific to Mexico, and thus not have an official celebration date that is set outside of Mexico (1.67% of municipalities in Mexico). A "2" indicates the saint has indeterminate origins (1.71% of municipalities in Mexico). (Our main analyses do not include municipalities with "local" saints, but we show robustness of our results to including them. When we include municipalities with local saints in our robustness analyses, we use celebration dates actually used by municipalities, since "official" Vatican-prescribed celebration dates do not exist for such saints.)

v. We use another missing value code, 99, to indicate a municipality where a saint was found in the encyclopedia or via phone calls but we were unable to find credible sources corroborating an official date or saint. This occurred in four municipalities across all of Mexico.

vi. We also use the missing value code 99 to represent municipalities for which we were unable to determine any Saint. In one municipality, this was because the municipality does not celebrate a patron saint. For the remaining 20 missing saint days, we were unable to determine a patron with credible online sources or phone calls.

A.1.4. Information on "Renamed" Patron Saints

Below, we detail the specific "renamed" saints that our research indicates are simply venerations of another official Vatican-recognized saint, the municipality code where they occur, and the sources used to determine this.

- Acatlan in Veracruz de Ignacio de la Llave (clave: 30002) celebrates la Virgen de los Remedios which is the same saint as la Natividad de Maria (Díaz 2018), (VistasGallery, n.d), (Sistema de Información Cultura 2021).
- Agualeguas in Nuevo Leon celebrates la Virgen de Agualeguas (clave: 19002) which is the same saint as la Virgen de la Concepcion (Nuevo Leon, n.d), (Nuevo Leon Turismo, n.d)
- Apizaco in Tlaxcala (clave: 29005) celebrates la Virgen de la Misericordia which is the same saint as la Virgen de las Mercedes (ACI Prensa 2020), (Aleteia 2019).

- Atlacomulco in Mexico (clave: 15014) celebrates el Senor del Huerto which is the same saint as Lunes Santo (Turismo Ejea, n.d).
- Atlamajalcingo del Monte in Guerrero (clave: 12009) celebrates la Virgen de Misericordia which is the same saint as la Virgen de las Mercedes (ACI Prensa 2020), (Aleteia 2019).
- Bustamante in Nuevo Leon (clave: 19008) celebrates Santo Cristo (el Senor de Tlaxcala) which is the same saint as el Transfiguracion del Senor (Lemus 2016), (Pueblos Mágicos, n.d), (Villarreal 2006).
- Canitas de Felipe Pescador in Zacatecas (clave: 32006) celebrates la Virgen de San Juan which is the same saint as la Asuncion de Maria (Holy Family Catholic Church, n.d), (Library of Congress, n.d), (IMER 1970).
- Charcas in San Luis Potosi (clave: 24015) celebrates la Virgen de las Charcas which is the same saint as Natividad de Maria (Eichmann-Oehrli 2004), (De la Rosa, 2020).
- Compostela in Nayarit (clave: 18004) celebrates la Virgen de la Misericordia which is the same saint as la Virgen de las Mercedes (ACI Prensa 2020), (Aleteia 2019).
- Cunduacan in Tabasco (clave: 27006) celebrates el Senor de la Salud which is the same saint as Cristo de la Salud (Valdemoro Turismo 2020).
- Emiliano Zapata in Hidalgo (clave: 13021) celebrates la Virgen de San Juan de los Lagos which is the same saint as la Asuncion de Maria (Holy Family Catholic Church, n.d), (Library of Congress, n.d), (IMER 1970).
- Espita in Yucatan (clave: 31032) celebrates el Nino Jesus which is the same saint as Nino de Atocha (Rodriguez 2018), (Sistema de Información Cultural de Costa Rica 2021), (Divino Nino Jesus Catholic Mission 2021)
- Huamantla in Tlaxcala (clave: 29013) celebrates la Virgen de la Caridad which is the same saint as Natividad de Maria (ZENIT 2014), (Ruiz Scaperlanda, 2007), (Lamas 2004).
- Huatlatlauca in Puebla (clave: 21070) celebrates Nuestra Senora de los Reyes which is the same saint as Asuncion de Maria (Catedral de Sevilla 2020), (Real Hermandad de Nuestra Senora de los Reyes, n.d), (Catedral de Sevilla 2020), (A.VRyS, n.d).
- Huiramba in Michoacan de Ocampo (clave: 16039) celebrates el Nino Jesus which is the same saint as Nino de Atocha (Rodriguez 2018), (Sistema de Información Cultural de Costa Rica 2021), (Divino Nino Jesus Catholic Mission 2021).
- Izamal in Yucatan (clave: 31040) celebrates la Virgen de Izamal which is the same saint as Virgen de la Concepcion (SSVM, n.d), (Yucatan Today 2019), (Pueblos Mágicos, n.d).
- Jonuta in Tabasco (clave: 27011) celebrates el Senor de la Salud which is the same saint as Cristo de la Salud (Valdemoro Turismo 2020).
- La Concordia in Chiapas (clave: 7020) celebrates la Virgen de la Misericordia which is the same saint as la Virgen de las Mercedes (ACI Prensa 2020), (Aleteia 2019).
- Los Reyes de Juarez in Puebla (clave: 21118) celebrates Nuestra Senora de los Reyes which is the same saint as Asuncion de Maria (Catedral de Sevilla 2020), (Real Hermandad de Nuestra Senora de los Reyes, n.d), (Catedral de Sevilla 2020), (A.VRyS, n.d).
- Monterrey in Nuevo Leon (clave: 19039) celebrates la Virgen del Roble which is the same saint as la Virgen de la Esperanza (Díaz 2017), (de Cos 2018).

- Nacajuca in Tabasco (clave: 27013) celebrates la Virgen de los Remedios which is the same saint as la Natividad de Maria (Díaz 2018), (VistasGallery, n.d), (Sistema de Información Cultura 2021).
- Naucalpan de Juarez in Mexico (clave: 15057) celebrates la Virgen de los Remedios which is the same saint as La Natividad de Maria (Díaz 2018), (VistasGallery, n.d), (Sistema de Información Cultura 2021).
- Ocotlan in Jalisco (clave: 14063) celebrates la Virgen de la Misericordia which is the same saint as la Virgen de las Mercedes (ACI Prensa 2020), (Aleteia 2019).
- Oteapan in Veracruz de Ignacio de la Llave (clave: 30120) celebrates el Senor de la Salud which is the same saint as Cristo de la Salud (Valdemoro Turismo 2020).
- Patzcuaro in Michoacan de Ocampo (clave: 16066) celebrates la Virgen de la Salud which is the same saint as Virgen de la Concepcion (Roman Catholic Diocese of Chalan Kanoa 2018), (Pátzcuaro Info 2020).
- Reyes Etla in Oaxaca (clave: 20077) celebrates Nuestra Senora de los Reyes which is the same saint as la Asuncion de Maria (Catedral de Sevilla 2020), (Real Hermandad de Nuestra Senora de los Reyes, n.d), (Catedral de Sevilla 2020), (A.VRyS, n.d).
- Sabanilla in Chiapas (clave: 7076) celebrates la Virgen de la Misericordia which is the same saint as la Virgen de las Mercedes (ACI Prensa 2020), (Aleteia 2019).
- San Juan Juquila Mixes in Oaxaca (clave: 20200) celebrates la Virgen de Juquila which is the same saint as la Virgen de la Concepcion (St. Mary Parish 2018), (Ramirez 2019), (Jiménez 2020).
- San Juan del Rio in Durango (clave: 10028) celebrates la Virgen de los Remedios which is the same saint as la Natividad de Maria (Díaz 2018), (VistasGallery, n.d), (Sistema de Información Cultura 2021).
- San Pedro Cholula in Puebla (clave: 21140) celebrates la Virgen de los Remedios which is the same saint as la Natividad de Maria (Díaz 2018), (VistasGallery, n.d), (Sistema de Información Cultura 2021).
- Soyalo in Chiapas (clave: 7085) celebrates la Virgen de la Caridad which is the same saint as la Natividad de Maria (ZENIT 2014), (Ruiz Scaperlanda, 2007), (Lamas 2004).
- Tamazula de Gordiano in Jalisco (clave: 14085) celebrates la Virgen del Sagrario which is the same saint as la Asuncion de Maria (Revista Catedral 1970), (Catedral Primada, n.d).
- Tamiahua in Veracruz de Ignacio de la Llave (clave: 30151) celebrates La Virgen de la Misericordia which is the same saint as la Virgen de las Mercedes (ACI Prensa 2020), (Aleteia 2019).
- Tepatitlan de Morelos in Jalisco (clave: 14093) celebrates la Virgen de la Misericordia which is the same saint as la Virgen de las Mercedes (ACI Prensa 2020), (Aleteia 2019).
- Tepic in Nayarit (clave: 18017) celebrates la Virgen en su Santuario which is the same saint as la Virgen de Guadalupe (Nayarit en Linea 2013) , (Shrine of Our Lady of Guadalupe, 2021), (Nayarit Enamora, n.d) (NNC 2016), (Presa 2019).
- Tlalnepantla de Baz in Mexico (clave: 15104) celebrates la Virgen de la Misericordia which is the same saint as la Virgen de las Mercedes (ACI Prensa 2020), (Aleteia 2019).
- Tonanitla in Mexico (clave: 15125) celebrates la Virgen de los Remedios which is the same saint as la Natividad de Maria (Díaz 2018), (VistasGallery, n.d), (Sistema de Información Cultura 2021).

- Tototlan in Jalisco (clave: 14105) celebrates el Senor de la Salud which is the same saint as Cristo de la Salud (Valdemoro Turismo 2020).
- Union de San Antonio in Jalisco (clave: 14109) celebrates la Virgen de la Misericordia which is the same saint as la Virgen de las Mercedes (ACI Prensa 2020), (Aleteia 2019).
- Villa Union in Coahuila de Zaragoza (clave: 5037) celebrates el Nino de los Peyotes which is the same saint as Dulce Nombre de Jesus (Telepaisa, n.d), (ACI Prensa 2021).
- Zacatecas in Zacatecas (clave: 32056) celebrates la Virgen del Patrocinio which is the same saint as la Natividad de Maria (EcuRed, n.d), (Manresa Ignacio Abadal 1800).
- Zihuateutla in Puebla (clave: 21213) celebrates Manuelito which is the same saint as Corpus Cristi (El Caminante 2019), (Presidencia Municipal de Zihuateutla, n.d).

A.2. Geographic Data and Variables

- **Precipitation and Temperature:** Precipitation and temperature data are provided by the Global Climate Database created by Hijmans et al. (2005) and available at http://www.worldclim.org/. These data provide monthly average rainfall in millimeters. We calculate the average rainfall for each month in each municipality and average this over the twelve months to obtain our yearly precipitation measure in millimeters of rainfall per year. Similarly, we calculate the average temperature for each month in each municipality and average this over the twelve months to obtain our yearly temperature measure in centigrades.

- **Land Suitability:** Land suitability is the soil component of the land quality index created by the Atlas of the Biosphere available at http://www.sage.wisc.edu/iamdata/ used in Michalopoulos (2012) and Ramankutty et al. (2002). These data use soil characteristics (namely soil carbon density and the acidity or alkalinity of soil) and combines them using the best functional form to match known actual cropland area and interpolates this measure to be available for most of the world at the 0.5 degree in latitude by longitude level. This measure is normalized to be between 0 and 1, where higher values indicate higher soil suitability for agriculture.

- **Elevation and Slope:** The elevation and slope data are provided by the Global Climate Database created by Hijmans et al. (2005) and available at http://www.worldclim.org/. These data provide elevation information in meters at the 30 arc-second resolution (approximately at the 1 km^2 level near the equator). The elevation measure is constructed using NASAs SRTM satellite images (http://www2.jpl.nasa.gov/srtm/).

A.3. Mexico Census Data and Indexes

- **Population Census:** We use municipality-level data from the 2010 *Censo de Población y Vivienda* produced by the National Institute of Statistics and Geography (INEGI) of Mexico. For more information on this census, see INEGI documentation at https://www.inegi.org.mx/programas/ccpv/2010/. This census interviewed over 106 million households across Mexico about their economic well-being, labor supply, asset ownership, and education. We construct an index of economic development using all questions in the census related to economic development within a municipality. We construct the index as the first principal component of these measures of development. Figure 8 presents the components of this index. The index includes all questions on educational attainment, workforce participation, literacy, asset and ownership. We list each index component and its definition below:

- **Log Population:** This measures the log of the number of inhabitants for each municipality in 2010.
- **Log Household Income:** To construct a measure of household income, we use the IPUMS 10% sample and take the log of each adult respondent's household income.[54] We then construct the average for each municipality.
- **% Economically Active:** Share of a municipality's population that is "economically active", defined by INEGI as: in a given reference week (e.g. previous week), an individual over 12 years of age performed any work (including informal work), had a job but did not work, or were actively looking for work.
- **% Economically Active - Men:** Share of a municipality's population of men over 12 years of age that is economically active.
- **% Economically Active - Women:** Share of a municipality's population of women over 12 years of age that is economically active.
- **% Employed:** Share of a municipality's population that is "economically occupied", defined by INEGI as: in a given reference week, an individual over 12 years of age performed any work (including informal work) or had a job but did not work.
- **% Literate - Aged 8-14:** Share of a municipality's population of individuals aged between 8 and 14 years that know how to read and write.
- **% Literate - Aged over 14 Years:** Share of a municipality's population of individuals aged over 14 years that know how to read and write.
- **Average Years of Education - All:** Average years of education for a municipality's population aged over 15 years.
- **Average Years of Education - Men:** Average years of education for a municipality's population of men aged over 15 years.
- **Average Years of Education - Women:** Average years of education for a municipality's population of women aged over 15 years.
- **% in School - Aged 3-5:** Share of a municipality's population of children between the ages of 3 and 5 that attend at least some school in a year.
- **% in School - Aged 6-11:** Share of a municipality's population of children between the ages of 6 and 11 that attend at least some school in a year.
- **% in School - Aged 12-14:** Share of a municipality's population of individuals between the ages of 12 and 14 that attend at least some school in a year.
- **% in School - Aged 15-17:** Share of a municipality's population of individuals between the ages of 15 and 17 that attend at least some school in a year.
- **% in School - Aged 18-24:** Share of a municipality's population of individuals between the ages of 18 and 24 that attend at least some school in a year.
- **% with Some Schooling:** Share of a municipality's population over 15 years of age that has attended at least some schooling in their lifetime.
- **% Completed Primary Education:** Share of a municipality's population over 15 years of age that has completed primary education (6 years).
- **% Completed Secondary Education:** Share of a municipality's population over 15 years of age that has completed secondary education. (3 additional years)

[54] The INEGI municipality-level extract does not include this, but we were able to construct this using the IPUMS extract.

- **% Completed College:** Share of a municipality's population over 18 years of age that has completed any form of post-secondary schooling.
- **% with At Least Some Primary Education:** Share of a municipality's population over 15 years of age that has at least attended and completed some primary education (>0 years of schooling).
- **% with At Least Some Secondary Education:** Share of a municipality's population over 15 years of age that has at least attended and completed some secondary education (>6 years of schooling).
- **% Own Radio(s):** Share of a municipality's households that own at least one radio.
- **% Own Television(s):** Share of a municipality's households that own at least one television.
- **% Own Refrigerator(s):** Share of a municipality's households that own at least one refrigerator.
- **% Own Washing Machine(s):** Share of a municipality's households that own at least one washing machine.
- **% Own Car(s):** Share of a municipality's households that own at least one car.
- **% Own Computer(s):** Share of a municipality's households that own at least one computer.
- **% Own Telephone(s):** Share of a municipality's households that own at least one telephone (landline).
- **% Own Cellphone(s):** Share of a municipality's households that own at least one cellphone.
- **% with Paved Floor:** Share of a municipality's households that have non-dirt floors in their households (e.g. cement, wood, tiled, or other).
- **% with Electricity:** Share of a municipality's households that have access to electric-powered light at their home.
- **% with Plumbing:** Share of a municipality's households that have water accessed through plumbing from the government ("public network") in their home.
- **% with Toilets:** Share of a municipality's households that have toilets at their home.
- **% with Internet:** Share of a municipality's households that have access to the internet at their home.

A.4. Americasbarometer (LAPOP) Data and Indexes

- **Data:** we use survey data from the Americasbarometer from 2004 to 2018. To examine differences in religiosity, we construct an index from three questions related to religiosity: the importance of religion to an individual, church attendance, and religious group attendance. We construct our index as the first principal component of these questions; we describe each question/component below.

  - **Importance of Religion:** is a 1-4 categorical variable that measures how important religion is to a respondent, ranging from 1="Not Important at All" to 4="Very Important".
  - **Church Attendance:** is a 1-4 categorical variable that measures how frequently an individual goes to church, where 1="Never", 2="Once or Twice a Year", 3="Once or Twice a Month", and 4="Once a Week".

– **Religious Group Attendance:** is a 1-4 categorical variable that measures how frequently an individual participates in religious group meetings, ranging from 1="Never" to 4="Once a Week".

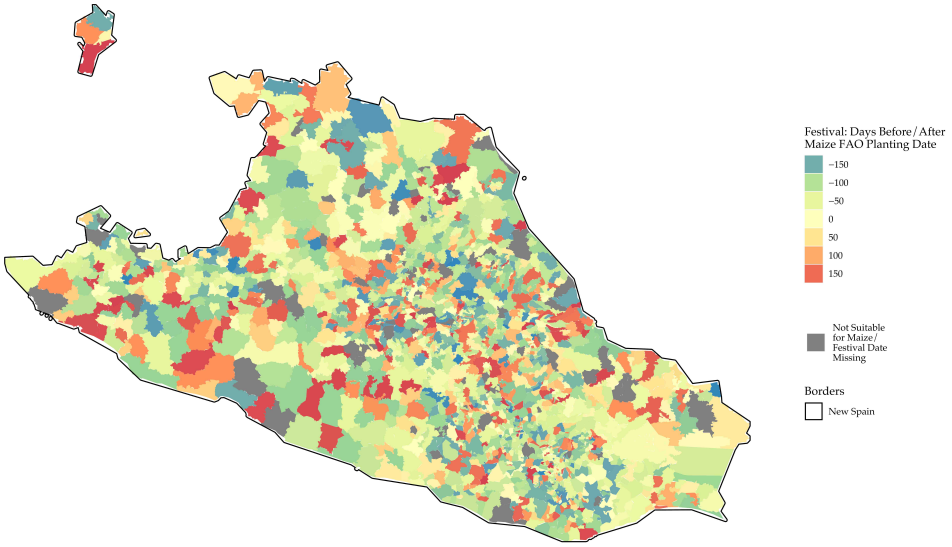
To examine differences in social capital, we construct an index using questions related to the frequency of attending various group meetings. We include questions on the following groups: community improvement groups, parent associations, municipal meetings, or political associations.[55] Each group meeting question is a 1-4 categorical variable that measures how frequently an individual goes to meetings for each group – where 1="Never", 2="Once or Twice a Year", 3="Once or Twice a Month", and 4="Once a Week" – except for municipal meetings, which is an indicator variable equal to 1 if the respondent attends municipal meetings. We construct our index as the first principal component of these questions.

[55]These are the groups listed in each wave of the data.

Appendix B. Additional Maps

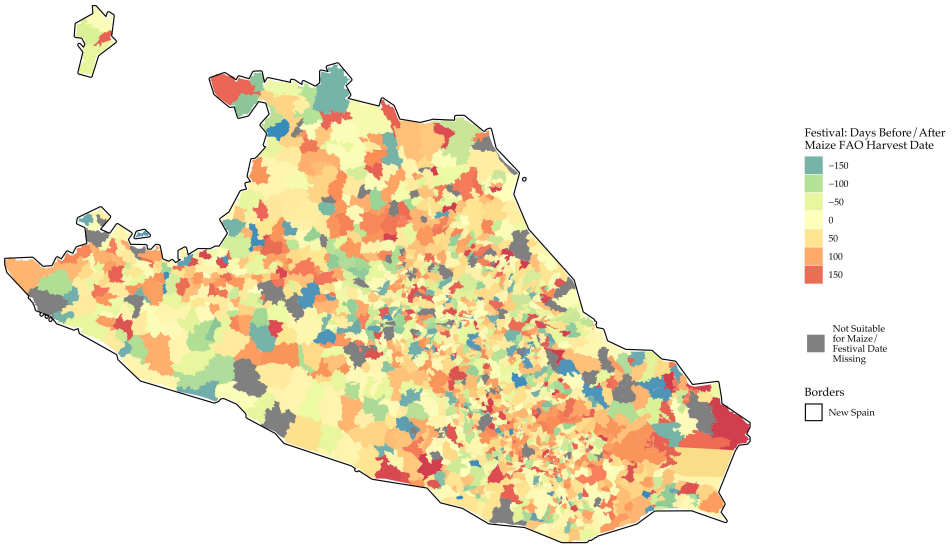
B.1. Additional Maps – New Spain

Figure A1: Days Between Festival and Optimal Planting Date - *New Spain* Region of Mexico



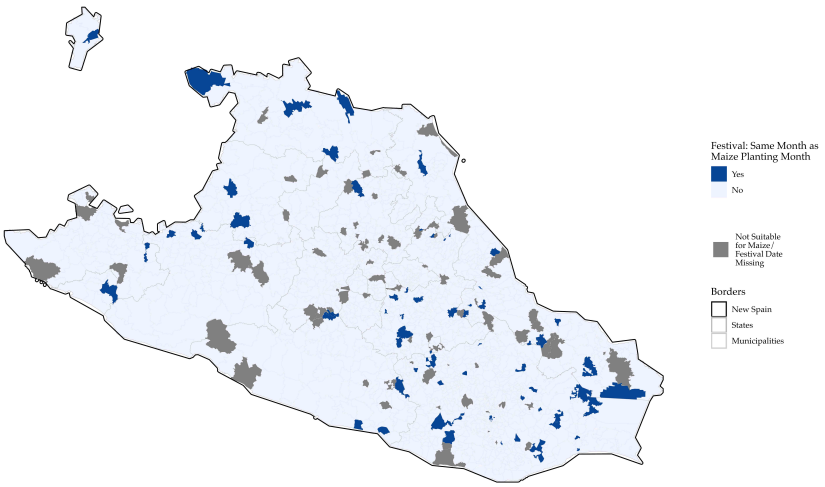
Notes: Difference (in days) between the patron saint day festival date and the optimal maize planting date (from FAO GAEZ data) for each municipality in the New Spain region of Mexico. (Negative values correspond to festivals that occur before planting; positive values correspond to festivals that occur after planting.) Municipalities where we were unable to determine the festival date are shaded in dark grey.

Figure A2: Days Between Festival and Optimal Harvest Date - *New Spain* Region of Mexico



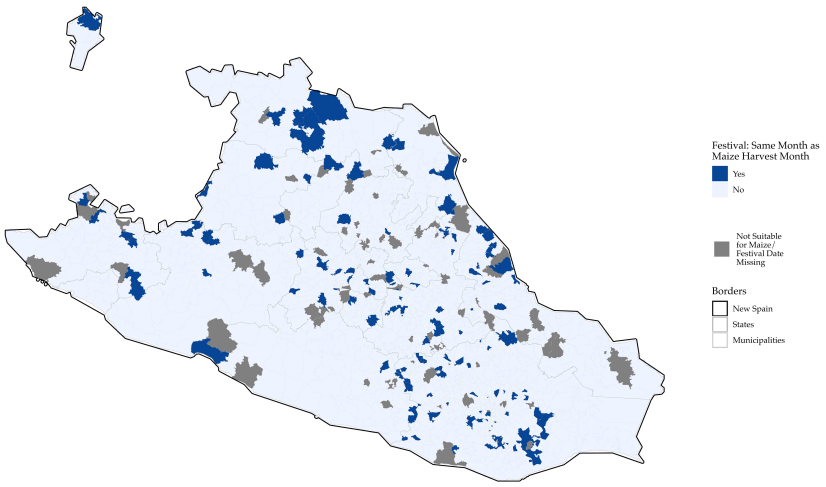
Notes: Difference (in days) between the patron saint day festival date and the optimal maize harvest date (from FAO GAEZ data) for each municipality in the New Spain region of Mexico. (Negative values correspond to festivals that occur before harvest; positive values correspond to festivals that occur after harvest.) Municipalities where we were unable to determine the festival date are shaded in dark grey.

Figure A3: Coincidence of Festivals and Optimal Planting Month
New Spain Region of Mexico



Notes: The map presents whether the month that each municipality in the *New Spain* region of Mexico celebrates its respective patron saint day festival falls 0-30 days prior to the optimal maize planting date according to FAO GAEZ data. Municipalities where we were unable to determine the festival date are shaded in dark grey.

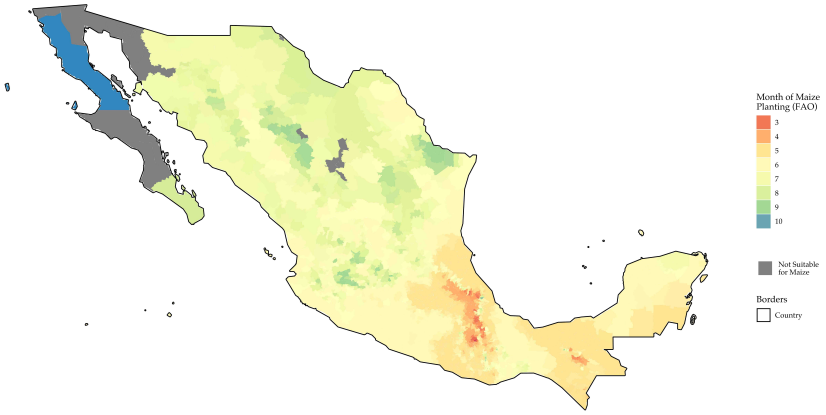
Figure A4: Coincidence of Festivals and Optimal Harvest Month
New Spain Region of Mexico



Notes: The map presents whether the month that each municipality in the *New Spain* region of Mexico celebrates its respective patron saint day festival falls 0-30 days after the optimal maize harvest date according to FAO GAEZ data. Municipalities where we were unable to determine the festival date are shaded in dark grey.

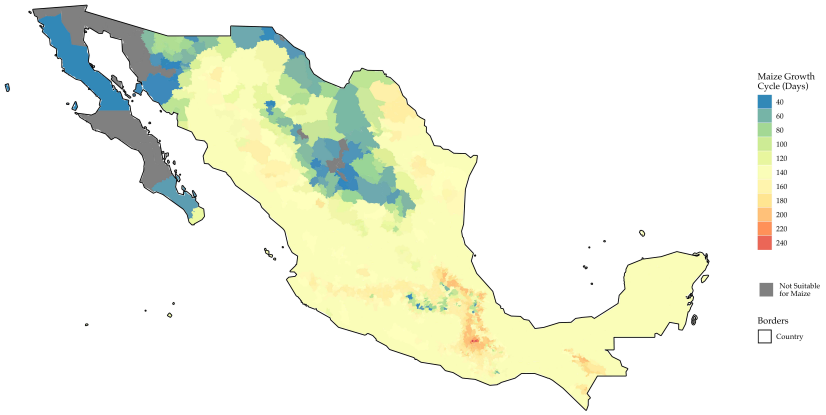
B.2. Additional Maps – All of Mexico

Figure A5: Optimal Maize Planting Date (FAO data)



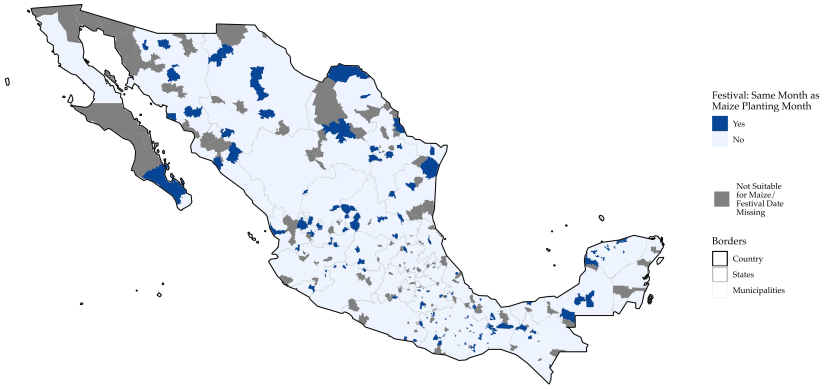
Notes: Optimal maize planting month according to FAO GAEZ data for each municipality in Mexico.

Figure A6: Maize Growth Cycle Date (FAO data)



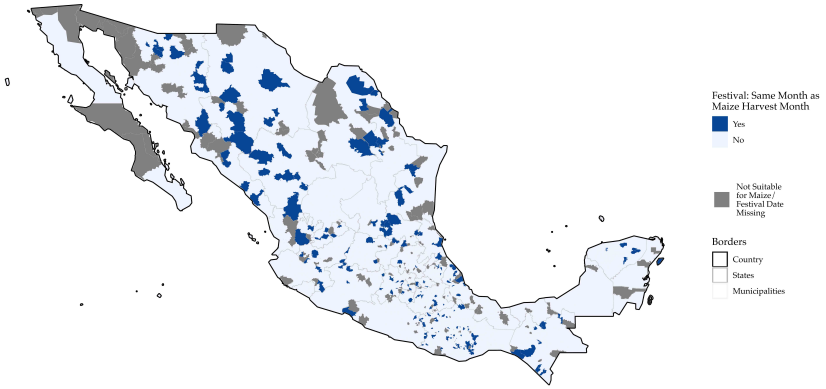
Notes: Length (in days) of the optimal maize growth cycle according to FAO GAEZ data for each municipality in Mexico.

Figure A7: Coincidence of Festivals and Optimal Planting Month



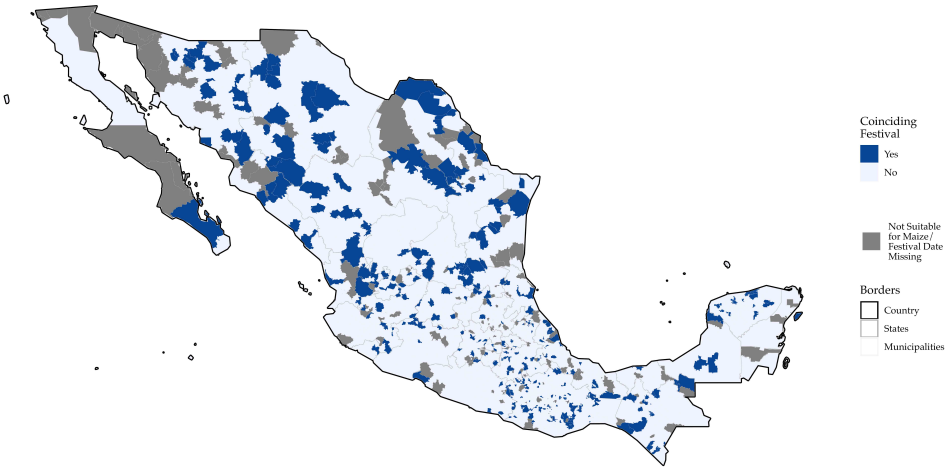
Notes: The map presents whether the date that each municipality in Mexico celebrates its respective patron saint day festival falls 0-30 days prior to the optimal maize planting date according to FAO GAEZ data. Municipalities where we were unable to determine the festival date or are unsuitable for maize are shaded in dark grey.

Figure A8: Coincidence of Festivals and Optimal Harvest Month



Notes: The map presents whether the date that each municipality in Mexico celebrates its respective patron saint day festival falls 0-30 days after the optimal maize harvest date according to FAO GAEZ data. Municipalities where we were unable to determine the festival date or are unsuitable for maize are shaded in dark grey.

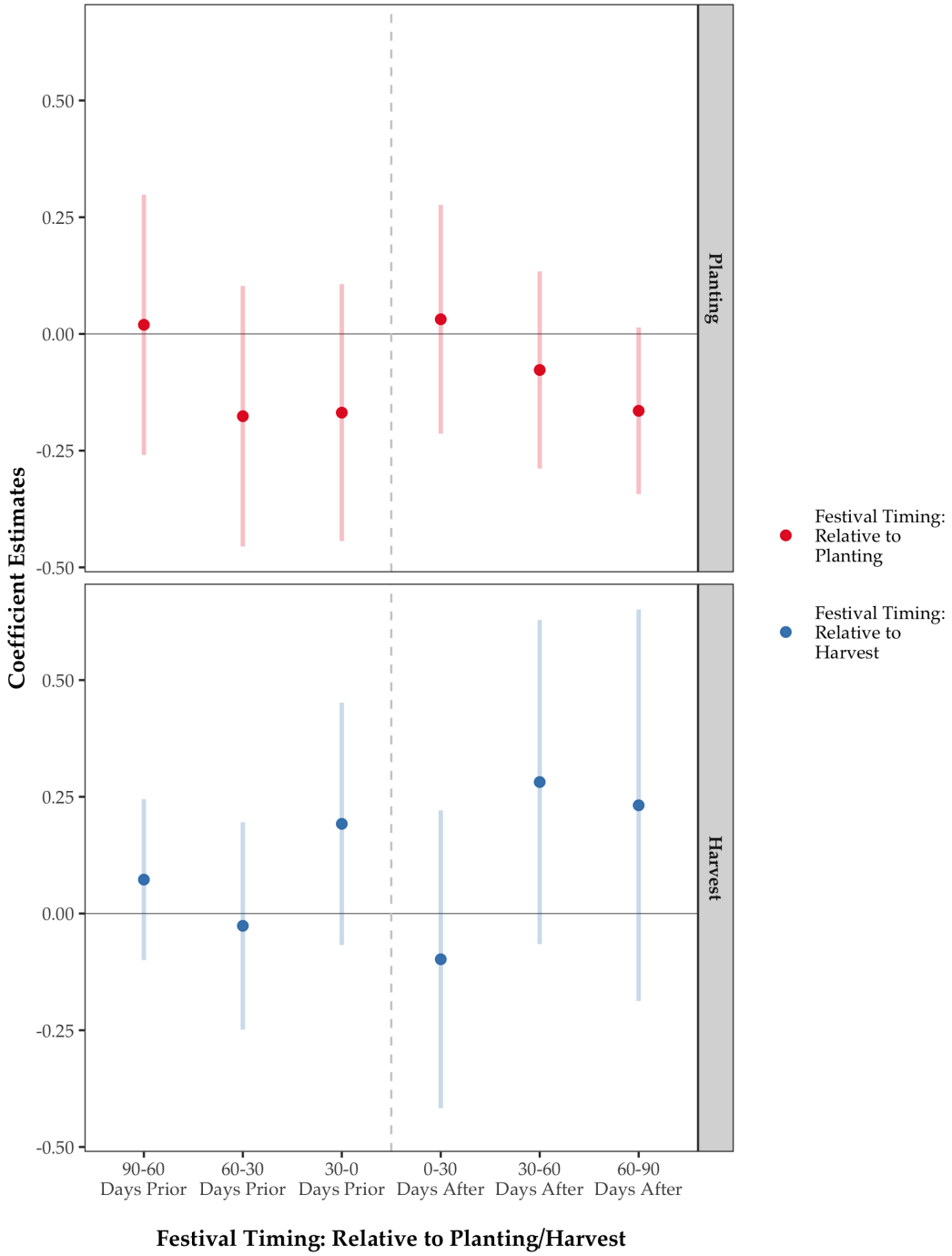
Figure A9: Agriculturally-Coinciding Festivals



Notes: Coinciding Festival is equal to "Yes" if the saint day festival in a municipality occurs either 0 to 30 days prior to the optimal maize planting date or 0 to 30 days after the optimal maize harvest date for a municipality using FAO GAEZ data and "No" otherwise for each municipality in Mexico. Municipalities where we were unable to determine the festival date or are unsuitable for maize are shaded in dark grey.

Appendix C. Additional Figures

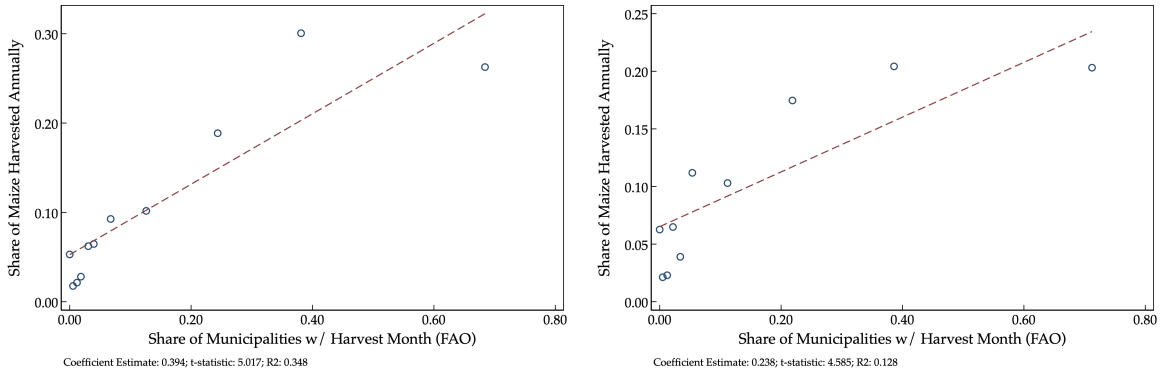
Figure A10: Impacts of Festival Coincidence with Other Months Relative to Planting and Harvest: Using the Maximum CSI Crop



Notes: Data are from the 2010 Mexico Population Census for the *New Spain* region of Mexico. The figure presents the estimated β_i and γ_j coefficients and respective 95% confidence intervals from estimating equation (3). The outcome variable is *Log Household Income*. *Festival Timing: Relative to Planting/Harvest* is defined as the number of months before/after a municipality celebrates its festival relative to planting (top panel) and harvest (bottom panel) according to FAO GAEZ data for the maximum CSI crop in each municipality. The regressions control for the full-set of controls: *State Fixed Effects*, *Geography Controls*, *Colonial Controls*, and *Festival, Planting, & Harvest Month Fixed Effects*.

Figure A11: Validating FAO Maize Crop Calendar Data:

Relationship Between FAO Predicted Maize Harvest Timing and Actual Maize Harvest

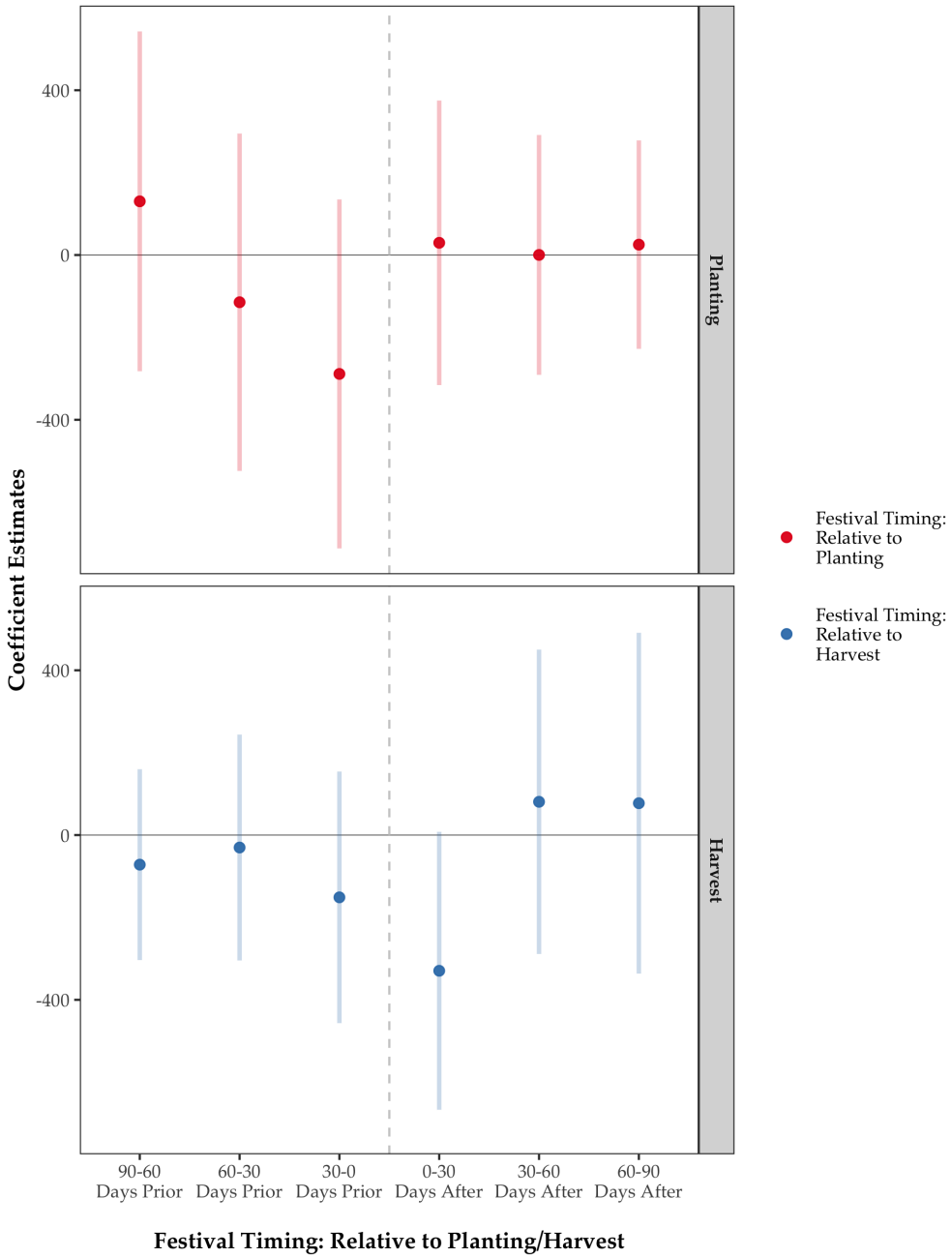


a. *New Spain* Region

b. All of Mexico

Notes: The figure presents binscatters between the share of a state's total maize harvest that occurs on a given month and the share of municipalities in a state that have their maize harvest on a given month according to the FAO GAEZ data. The unit of observation is a state-month pair. State harvest Data are from the *Servicio de Información Agroalimentaria y Pesquera (SIAP)* for 2015. The bottom-right of each figure presents the estimated bivariate coefficient, t-statistic, and R^2. Standard errors are clustered at the state level.

Figure A12: Impacts on Inequality For Festival Coincidence by Months Relative to Planting and Harvest



Notes: Data are from the 2010 Mexico Population Censuses from IPUMS for the *New Spain* region of Mexico. The figure presents the estimated β_i and γ_j coefficients and respective 95% confidence intervals from estimating equation (3). The outcome variable is the *IQR of Earned Incomes* – the inter-quartile range of individuals' total income from their labor (from wages, a business, or a farm) in the previous month for individuals residing in a given municipality. *Festival Timing: Relative to Planting/Harvest* is defined as the number of months before/after a municipality celebrates its festival relative to planting (top panel) and harvest (bottom panel) according to FAO GAEZ data. The regressions control for the full-set of controls: *State Fixed Effects*, *Geography Controls*, *Colonial Controls*, and *Festival, Planting, & Harvest Month Fixed Effects*.

Sensitivity to 30-Day Window Used to Define Coinciding with Planting or Harvest Months

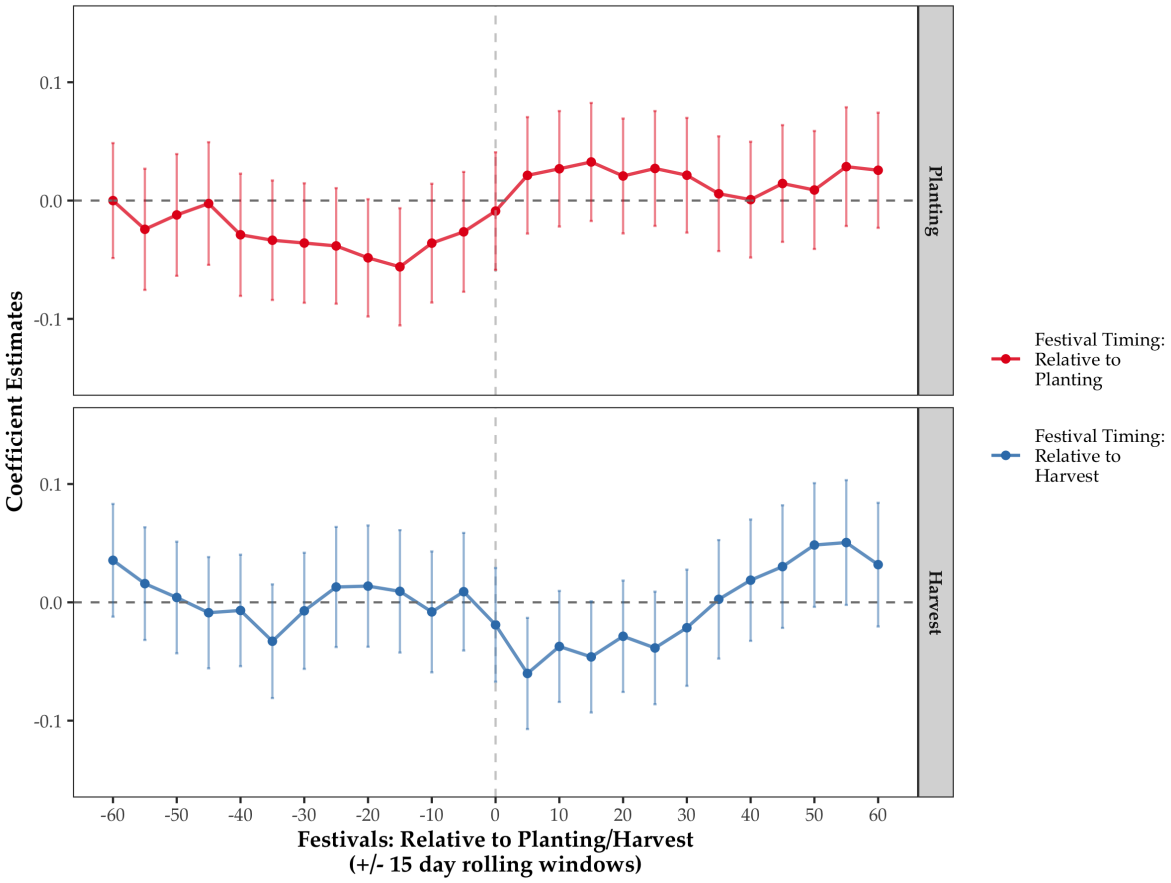
We vary the 30-day window (relative to planting and harvest) used to estimate our main specification and examine when the negative impacts of festivals seem to arise. Specifically, in equation (1), we focus on the periods when having a festival coincide with planting/harvest may lead to lower long-run development: periods when festival expenditures crowding out of investments during low liquidity times. We defined these periods are being 0-30 day prior to planting and 0-30 after harvest. However, there are many other 30-day windows one could use to define these overlap periods. Thus, we conduct an exercise to explore the timing of the main impacts by varying the 30-day window across time and estimating our main impacts. To conduct this exercise we estimate the following specification:

$$y_m = \alpha_{s(m)} + \beta_i \textit{ Festival: } i \pm 15 \textit{ days from Planting}_m + \gamma_i \textit{ Festival: } i \pm 15 \textit{ from Harvest}_m + \mathbf{X_m'B} + \epsilon_m \tag{A1}$$

where our coefficients of interest are β_i and γ_j, the effect of festivals occurring $i \pm 15$ days from planting or harvest for various values of i; and other variables are defined as before in equation (1). In other words, equation (A1) estimates our main specification but instead uses various rolling 30-day windows relative to planting and harvest.

Figure A13 presents the coefficient plot for the estimates of interest from estimating equation (A1) on the index of economic development used in Table 2. The estimates suggest an interesting time dimension to the impacts of festivals on development. First, the negative estimated effects of festivals coinciding with planting appear for various rolling windows prior to planting but converge toward zero following planting. Second, we observe the opposite timing for harvest festivals: the negative estimated effects of festivals coinciding with harvest only begin to appear following harvest (and are statistically insignificant and close to zero prior to harvest). Additionally, the estimates show that the main results are not particularly sensitive to the specific 30-day window we consider. These results are consistent with the hypotheses that the timing of festivals is important for understanding their development consequences, and that festivals can crowd out investments and decrease development when they occur in times of when time-sensitive investment opportunities exist.

Figure A13: Impacts of Festival Timing Relative to Planting and Harvest Dates



Notes: Data are from the 2010 Mexico Population Census for the *New Spain* region of Mexico. The figure presents the estimated β_i (top panel) and γ_i (bottom panel) coefficients and respective 95% confidence intervals from estimating equation (A1) for $i \in -60{,}60$ days. The outcome variable is *Log Household Income*. *Festival : $i \pm 15$ days from Planting* (top panel) is an indicator variable equal to 1 if the festival occurs $i \pm 15$ from the optimal planting date according to FAO GAEZ data (where negative values of i means that the festival occurs prior to planting); *Festival : $i \pm 15$ days from Harvest* (bottom panel) is an indicator variable equal to 1 if the festival occurs $i \pm 15$ from the optimal harvest date according to FAO GAEZ data (where negative values of i means that the festival occurs prior to harvest). The regressions control for the full-set of controls: *State Fixed Effects*, *Geography Controls*, *Colonial Controls*, and *Festival, Planting, & Harvest Month Fixed Effects*.

Appendix D. Additional Tables

Table A1: Municipality Characteristics and Coinciding Festivals

	Non-Coinciding Festival			*Coinciding Festival*			Regression Estimates: *Coinciding Festival*	
	Obs.	Mean	SE	Obs.	Mean	SE	Coef.	SE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Geographic Characteristics:								
Precipitation	1385	95.43	(1.23)	184	98.06	(3.66)	-3.19	(3.39)
Temperature	1385	19.07	(0.11)	184	19.67	(0.27)	-0.16	(0.18)
Land Suitability	1385	86.40	(0.34)	184	84.48	(1.28)	-0.95	(0.92)
Maize Suitability	1385	34.10	(0.58)	184	34.59	(1.64)	2.67	(1.53)*
Area	1385	328.32	(13.35)	184	341.79	(40.68)	-8.53	(35.02)
Longitude	1385	-98.28	(0.05)	184	-98.19	(0.15)	-0.06	(0.06)
Latitude	1385	18.64	(0.04)	184	18.78	(0.13)	0.06	(0.05)
Log(Dist. to Mexico City)	1385	5.45	(0.02)	184	5.54	(0.04)	-0.03	(0.02)
Slope	1385	10.41	(0.17)	184	9.58	(0.47)	-0.64	(0.45)
Elevation	1385	1569	(21.00)	184	1459.18	(57.58)	51.57	(36.29)
Colonial Characteristics:								
Has Colonial Characteristics (%)	1385	86.28	(0.92)	184	82.61	(2.80)	0.53	(2.83)
Drought in 1545 (%)	1195	99.67	(0.17)	152	98.03	(1.13)	-1.23	(0.85)
Log(Pop. Density in 1570)	1195	0.53	(0.03)	152	0.40	(0.08)	0.06	(0.06)

Notes: Observations are municipalities in the *New Spain* region of Mexico. *Coinciding Festival* is an indicator variable equal to 1 if the saint day festival in a municipality occurs either within 0-30 days prior to the optimal maize planting date or 0-30 days after the optimal maize harvest date for a municipality using FAO GAEZ data, and 0 otherwise. The value displayed for regression estimates is the coefficient estimate for *Coinciding Festival*, conditional on state fixed effects, planting-month and harvest-month fixed effects, and festival month fixed effects. Robust standard errors are presented in parentheses. See Data Appendix for more information on variables. Note that we do not have colonial characteristics for all observations in our sample; therefore, we also show results for *Has Colonial Characteristics*, an indicator equal to 1 if a municipality is not missing colonial characteristics. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A2: Municipality Characteristics and Coinciding Festivals:
All of Mexico

	Non-Coinciding Festival			*Coinciding Festival*			Regression Estimates: *Coinciding Festival*	
	Obs.	Mean	SE	Obs.	Mean	SE	Coef.	SE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Geographic Characteristics:								
Precipitation	1746	89.55	(1.08)	273	85.85	(2.87)	-3.99	(2.47)
Temperature	1746	19.58	(0.10)	273	20.23	(0.22)	-0.21	(0.16)
Land Suitability	1746	81.04	(0.55)	273	75.25	(1.74)	0.01	(0.86)
Maize Suitability	1746	32.24	(0.50)	273	30.99	(1.24)	1.82	(1.11)
Area	1746	620.73	(31.81)	273	973.90	(114.66)	64.88	(89.12)
Longitude	1746	-98.58	(0.09)	273	-99.22	(0.29)	-0.06	(0.05)
Latitude	1746	19.60	(0.06)	273	20.59	(0.22)	0.10	(0.05)*
Log(Dist. to Mexico City)	1746	5.71	(0.02)	273	5.96	(0.05)	-0.02	(0.02)
Slope	1746	9.33	(0.16)	273	8.28	(0.38)	-0.69	(0.35)**
Elevation	1746	1429.96	(20.10)	273	1258.70	(50.72)	53.22	(32.30)*
Colonial Characteristics:								
Has Colonial Characteristics (%)	1746	78.47	(0.98)	273	73.26	(2.68)	0.01	(2.09)
Drought in 1545 (%)	1370	98.18	(0.36)	200	97.50	(1.11)	0.45	(1.07)
Log(Pop. Density in 1570)	1370	0.32	(0.03)	200	0.02	(0.08)	0.06	(0.05)

Notes: Observations are municipalities in the *New Spain* region of Mexico. *Coinciding Festival* is an indicator variable equal to 1 if the saint day festival in a municipality occurs either within 0-30 days prior to the optimal maize planting date or 0-30 days after the optimal maize harvest date for a municipality using FAO GAEZ data, and 0 otherwise. The value displayed for regressions estimates is the coefficient estimate for *Coinciding Festival*, conditional on state fixed effects, planting-month and harvest-month fixed effects, and festival month fixed effects. Robust standard errors are presented in parentheses. Robust standard errors are presented in parentheses. See Data Appendix for more information on variables. *Festival: Coincides* is an indicator variable equal to 1 if the saint day festival in a municipality occurs either within 0-30 days prior to the optimal maize planting date or 0-30 days after the optimal maize harvest date for a municipality using FAO GAEZ data, and 0 otherwise. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A3: Relationship Between Festival, Maize Planting, and Maize Harvest Months
All of Mexico

	Dependent Variable: *Festival Date*			
	(1)	(2)	(3)	(4)
	Panel A: Planting or Harvest			
Maize Planting or Harvest Month	-0.049^{***}	0.002	0.002	0.005
	(0.014)	(0.015)	(0.015)	(0.016)
Calendar Date Fixed Effects	N	Y	Y	N
State Fixed Effects	N	N	Y	N
Date by State Fixed Effects	N	N	N	Y
Observations	831,105	831,105	831,105	831,105
Clusters	2,277	2,277	2,277	2,277
Mean Dep. Var.	0.274	0.274	0.274	0.274
	Panel B: Planting and Harvest Separately			
Maize Planting Month	-0.090^{***}	0.007	0.007	0.021
	(0.018)	(0.019)	(0.019)	(0.021)
Maize Harvest Month	-0.007	-0.004	-0.004	-0.011
	(0.021)	(0.023)	(0.023)	(0.025)
Calendar Date Fixed Effects	N	Y	Y	N
State Fixed Effects	N	N	Y	N
Date by State Fixed Effects	N	N	N	Y
Observations	831,105	831,105	831,105	831,105
Clusters	2,277	2,277	2,277	2,277
Mean Dep. Var.	0.274	0.274	0.274	0.274

Notes: Observations are at the municipality-month level for municipalities in Mexico for which we have festival data. Standard errors are clustered at the municipality level. *Festival Date* is an indicator variable equal to 1 if the festival for a municipality occurs on that date. For ease of interpretation, all coefficients are multiplied by 100. *Maize Planting or Harvest Month* is an indicator variable equal to 1 if a date falls within 0 to 30 days prior to the optimal maize planting date or 0 to 30 days after the optimal maize harvest date for a municipality using FAO GAEZ data.*Maize Planting Month* is an indicator variable equal to 1 if a date falls within 0 to 30 days prior to the optimal maize planting date for a municipality using FAO GAEZ data. *Maize Harvest Month* is an indicator variable equal to 1 if a date falls within 0 to 30 days after the optimal maize harvest date for a municipality using FAO GAEZ data. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A4: Development Outcomes and Planting- and Harvest-Coinciding Festivals

	Dependent Variable:				
	Panel A: *Log HH Income*				
	(1)	(2)	(3)	(4)	(5)
Festival: 0-30 Days Prior to Maize Planting	−0.368**	−0.152	−0.268**	−0.291***	−0.255**
	(0.149)	(0.126)	(0.112)	(0.110)	(0.125)
Festival: 0-30 Days After Maize Harvest	−0.217*	−0.237**	−0.241***	−0.233***	−0.194**
	(0.125)	(0.097)	(0.086)	(0.086)	(0.093)
State Fixed Effects	N	Y	Y	Y	Y
Geography Controls	N	N	Y	Y	Y
Colonial Controls	N	N	N	Y	Y
Planting-Month Fixed Effects	N	N	N	N	Y
Harvest-Month Fixed Effects	N	N	N	N	Y
Festival-Month Fixed Effects	N	N	N	N	Y
Observations	1,593	1,593	1,593	1,593	1,593
Adjusted R2	0.004	0.347	0.537	0.543	0.562
Mean Dep. Var.	3.234	3.234	3.234	3.234	3.234
SD Dep. Var.	1.330	1.330	1.330	1.330	1.330
P-Value: Difference	0.422	0.577	0.844	0.666	0.694

	Dependent Variable:				
	Panel B: *Index of Economic Development*				
	(1)	(2)	(3)	(4)	(5)
Festival: 0-30 Days Prior to Maize Planting	−0.775*	−0.035	−0.361	−0.443	−0.535
	(0.459)	(0.391)	(0.356)	(0.353)	(0.380)
Festival: 0-30 Days After Maize Harvest	−0.645*	−0.663**	−0.737***	−0.718***	−0.634**
	(0.376)	(0.284)	(0.243)	(0.244)	(0.268)
State Fixed Effects	N	Y	Y	Y	Y
Geography Controls	N	N	Y	Y	Y
Colonial Controls	N	N	N	Y	Y
Planting-Month Fixed Effects	N	N	N	N	Y
Harvest-Month Fixed Effects	N	N	N	N	Y
Festival-Month Fixed Effects	N	N	N	N	Y
Observations	1,593	1,593	1,593	1,593	1,593
Adjusted R2	0.002	0.348	0.566	0.571	0.592
Mean Dep. Var.	-0.589	-0.589	-0.589	-0.589	-0.589
SD Dep. Var.	4.039	4.039	4.039	4.039	4.039
P-Value: Difference	0.820	0.177	0.370	0.511	0.830

Notes: Data is from the 2010 Mexico Population Census. Observations are municipalities in the *New Spain* region of Mexico. Robust standard errors are presented in parentheses. *Index of Economic Development* is the first principal component index for a number of development outcomes in the census for a municipality (see Data Appendix). *Festival Coincides with Maize Planting or Harvest* is an indicator variable equal to 1 if the saint day festival in a municipality occurs either 0 to 30 days prior to the optimal maize planting date or 0 to 30 days after the optimal maize harvest date for a municipality using FAO GAEZ data. *Geography Controls* includes mean temperature, mean precipitation, mean land suitability, the surface area, centroid latitude, centroid longitude, mean elevation, mean slope, log distance to Mexico City, and mean maize suitability for the municipality. *Colonial Controls* includes drought intensity in 1545 and log population density in 1570 using data from Sellers and Alix-Garcia (2018). For these colonial controls, values for municipalities with missing information are set to zero, and we control for an indicator variable equal to 1 if the municipality is not missing these colonial characteristics. *Planting & Harvest Month Fixed Effects* includes fixed effects for the optimal planting-month and harvest-month for maize for each municipality according to FAO GAEZ data. *Festival Month Fixed Effects* are fixed effects for the calendar month of the municipality's saint day festival. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5: Municipality Characteristics and Undetermined Festival Date

	Festival Date Determined			*Festival Date Undetermined*			Regression Estimates: *Festival Date Undetermined*	
	Obs.	Mean	SE	Obs.	Mean	SE	Coef.	SE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Geographic Characteristics:								
Precipitation	1569	95.74	(1.17)	46	101.68	(7.93)	-3.19	(3.39)
Temperature	1569	19.14	(0.10)	46	20.10	(0.61)	-0.16	(0.18)
Land Suitability	1569	86.17	(0.34)	46	80.83	(2.53)	-0.95	(0.92)
Maize Suitability	1569	34.16	(0.55)	46	36.85	(2.96)	2.67	(1.53)*
Area	1569	329.90	(12.71)	46	416.61	(81.26)	-8.53	(35.02)
Longitude	1569	-98.27	(0.05)	46	-98.10	(0.28)	-0.06	(0.06)
Latitude	1569	18.66	(0.04)	46	19.14	(0.23)	0.06	(0.05)
Log(Dist. to Mexico City)	1569	5.46	(0.02)	46	5.41	(0.10)	-0.03	(0.02)
Slope	1569	10.32	(0.16)	46	8.71	(1.00)	-0.64	(0.45)
Elevation	1569	1556.12	(19.74)	46	1314.65	(134.19)	51.57	(36.29)
Colonial Characteristics:								
Has Colonial Characteristics (%)	1569	85.85	(0.88)	46	82.61	(5.65)	0.53	(2.83)
Drought in 1545 (%)	1347	99.48	(0.20)	38	100	(0.00)	-1.23	(0.85)
Log(Pop. Density in 1570)	1347	0.52	(0.03)	38	0.53	(0.21)	0.06	(0.06)

Notes: Observations are municipalities in the *New Spain* region of Mexico. Robust standard errors are presented in parentheses. See Data Appendix for more information on variables. Sample is limited to the *New Spain* region of Mexico. *Festival Date Undetermined* is an indicator variable equal to 1 if we were unable to determine the patron saint day festival in a municipality, and 0 otherwise. The value displayed for regressions estimates is the coefficient estimate for *Festival Date Undetermined*, conditional on state fixed effects, planting-month and harvest-month fixed effects, and festival month fixed effects. Robust standard errors are presented in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Impact of Agriculturally-Coinciding Festivals on Development Outcomes: Using Maximum Caloric Suitability Crop Cycles

	Dependent Variable:				
	Panel A: *Log HH Income*				
	(1)	(2)	(3)	(4)	(5)
Festival Coincides with Max CSI Crop Planting or Harvest	-0.247^{**}	-0.156^{*}	-0.203^{***}	-0.210^{***}	-0.161^{**}
	(0.104)	(0.086)	(0.073)	(0.072)	(0.077)
State Fixed Effects	N	Y	Y	Y	Y
Geography Controls	N	N	Y	Y	Y
Colonial Controls	N	N	N	Y	Y
Planting-Month Fixed Effects	N	N	N	N	Y
Harvest-Month Fixed Effects	N	N	N	N	Y
Festival-Month Fixed Effects	N	N	N	N	Y
Observations	1,593	1,593	1,593	1,593	1,593
Adjusted R2	0.003	0.346	0.543	0.548	0.558
Mean Dep. Var.	3.234	3.234	3.234	3.234	3.234
SD Dep. Var.	1.330	1.330	1.330	1.330	1.330
	Dependent Variable:				
	Panel B: *Index of Economic Development*				
	(1)	(2)	(3)	(4)	(5)
Festival Coincides with Max CSI Crop Planting or Harvest	-0.497	-0.169	-0.341	-0.363^{*}	-0.256
	(0.312)	(0.258)	(0.217)	(0.214)	(0.226)
State Fixed Effects	N	Y	Y	Y	Y
Geography Controls	N	N	Y	Y	Y
Colonial Controls	N	N	N	Y	Y
Planting-Month Fixed Effects	N	N	N	N	Y
Harvest-Month Fixed Effects	N	N	N	N	Y
Festival-Month Fixed Effects	N	N	N	N	Y
Observations	1,593	1,593	1,593	1,593	1,593
Adjusted R2	0.001	0.347	0.567	0.572	0.589
Mean Dep. Var.	-0.589	-0.589	-0.589	-0.589	-0.589
SD Dep. Var.	4.039	4.039	4.039	4.039	4.039

Notes: Data are from the 2010 Mexico Population Census. Observations are municipalities in the *New Spain* region of Mexico. Robust standard errors are presented in parentheses. *Index of Economic Development* is the first principal component index for a number of development outcomes in the census for a municipality (see Data Appendix). *Festival Coincides with Max CSI Planting or Harvest* is an indicator variable equal to 1 if the saint day festival in a municipality occurs either 0 to 30 days prior to the optimal planting date or 0 to 30 days the optimal maize harvest date for the maximum caloric suitability crop for a municipality using FAO GAEZ data. *Geography Controls* includes mean temperature, mean precipitation, mean land suitability, the surface area, centroid latitude, centroid longitude, mean elevation, mean slope, log distance to Mexico City, mean max CSI crop suitability, and fixed effects for the max CSI suitability crop. *Colonial Controls* includes drought intensity in 1545 and log population density in 1570 using data from Sellers and Alix-Garcia (2018). For these colonial controls, values for municipalities with missing information are set to zero, and we control for an indicator variable equal to 1 if the municipality is not missing these colonial characteristics. *Planting & Harvest Month Fixed Effects* includes fixed effects for the optimal planting-month and harvest-month for the max CSI crop for each municipality according to FAO GAEZ data. *Festival Month Fixed Effects* are fixed effects for the calendar month of the municipality's saint day festival. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Municipality Characteristics and "Local" Patron Saints

	Official Patron Saint			*Local Patron Saint*			Regression Estimates: *Local Patron Saint*	
	Obs.	Mean	SE	Obs.	Mean	SE	Coef.	SE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Geographic Characteristics:								
Precipitation	1615	95.91	(1.16)	60	84.50	(4.18)	-2.81	(3.35)
Temperature	1615	19.17	(0.10)	60	18.69	(0.50)	-0.15	(0.18)
Land Suitability	1615	86.02	(0.33)	60	88.02	(1.75)	-1.05	(0.91)
Maize Suitability	1615	34.23	(0.54)	60	36.93	(2.59)	2.48	(1.51)
Area	1615	332.37	(12.57)	60	445.03	(70.19)	-12.74	(34.77)
Longitude	1615	-98.27	(0.05)	60	-99.55	(0.28)	-0.05	(0.06)
Latitude	1615	18.67	(0.04)	60	19.29	(0.17)	0.06	(0.05)
Log(Dist. to Mexico City)	1615	5.46	(0.02)	60	5.26	(0.10)	-0.03	(0.02)
Slope	1615	10.27	(0.16)	60	9.08	(0.63)	-0.66	(0.45)
Elevation	1615	1549.24	(19.57)	60	1692.05	(100.74)	47.46	(35.73)
Colonial Characteristics:								
Has Colonial Characteristics (%)	1615	85.76	(0.87)	60	95	(2.84)	0.23	(2.80)
Drought in 1545 (%)	1385	99.49	(0.19)	57	100	(0.00)	-1.24	(0.85)
Log(Pop. Density in 1570)	1385	0.52	(0.03)	57	0.42	(0.16)	0.06	(0.06)

Notes: Observations are municipalities in the *New Spain* region of Mexico. Robust standard errors are presented in parentheses. See Data Appendix for more information on variables. *Local Patron Saint* is an indicator variable equal to 1 if the patron saint in a municipality is not an official Vatican patron saint, and 0 otherwise. The value displayed for regressions estimates is the coefficient estimate for *Local Patron Saint*, conditional on state fixed effects, planting-month and harvest-month fixed effects, and festival month fixed effects. Robust standard errors are presented in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: Robustness to Missing Festival Dates: Development Outcomes
(Assuming All Municipalities with Missing Festival Dates Have Coinciding Festivals)

	Dependent Variable:				
	Panel A: *Log HH Income*				
	(1)	(2)	(3)	(4)	(5)
Festival Coincides with Maize Planting or Harvest	−0.191**	−0.173**	−0.220***	−0.219***	−0.192***
	(0.090)	(0.073)	(0.063)	(0.063)	(0.068)
State Fixed Effects	N	Y	Y	Y	Y
Geography Controls	N	N	Y	Y	Y
Colonial Controls	N	N	N	Y	Y
Planting-Month Fixed Effects	N	N	N	N	Y
Harvest-Month Fixed Effects	N	N	N	N	Y
Festival-Month Fixed Effects	N	N	N	N	Y
Observations	1,639	1,639	1,639	1,639	1,639
Adjusted R2	0.002	0.345	0.538	0.543	0.560
Mean Dep. Var.	3.239	3.239	3.239	3.239	3.239
SD Dep. Var.	1.328	1.328	1.328	1.328	1.328

	Dependent Variable:				
	Panel B: *Index of Economic Development*				
	(1)	(2)	(3)	(4)	(5)
Festival Coincides with Maize Planting or Harvest	−0.478*	−0.328	−0.485**	−0.492**	−0.518**
	(0.277)	(0.227)	(0.194)	(0.194)	(0.208)
State Fixed Effects	N	Y	Y	Y	Y
Geography Controls	N	N	Y	Y	Y
Colonial Controls	N	N	N	Y	Y
Planting-Month Fixed Effects	N	N	N	N	Y
Harvest-Month Fixed Effects	N	N	N	N	Y
Festival-Month Fixed Effects	N	N	N	N	Y
Observations	1,639	1,639	1,639	1,639	1,639
Adjusted R2	0.001	0.344	0.563	0.568	0.587
Mean Dep. Var.	-0.576	-0.576	-0.576	-0.576	-0.576
SD Dep. Var.	4.039	4.039	4.039	4.039	4.039

Notes: Regressions in this table are identical to those in Table 2, except that municipalities with missing festival dates (previously not included in sample) are now included in the sample, and we assume that their festivals *all* coincide with planting or harvest (for these observations, festival month randomly chosen between planting and harvest months for inclusion of festival-month fixed effects in column 5). Data is from the 2010 Mexico Population Census. Observations are municipalities in the *New Spain* region of Mexico. Robust standard errors are presented in parentheses. *Index of Economic Development* is the first principal component index for a number of development outcomes in the census for a municipality (see Data Appendix). *Festival Coincides with Maize Planting or Harvest* is an indicator variable equal to 1 if the saint day festival in a municipality occurs either 0 to 30 days prior to the optimal maize planting date or 0 to 30 days after the optimal maize harvest date for a municipality using FAO GAEZ data. For this table, we assume all undetermined festival dates are coinciding festivals. *Geography Controls* includes mean temperature, mean precipitation, mean land suitability, the surface area, centroid latitude, centroid longitude, mean elevation, mean slope, log distance to Mexico City, and mean maize suitability for the municipality. *Colonial Controls* includes drought intensity in 1545 and log population density in 1570 using data from Sellers and Alix-Garcia (2018). For these colonial controls, values for municipalities with missing information are set to zero, and we control for an indicator variable equal to 1 if the municipality is not missing these colonial characteristics. *Planting & Harvest Month Fixed Effects* includes fixed effects for the optimal planting-month and harvest-month for maize for each municipality according to FAO GAEZ data. *Festival Month Fixed Effects* are fixed effects for the calendar month of the municipality's saint day festival. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A9: Robustness to Missing Festival Dates: Development Outcomes
(Assuming No Municipalities with Missing Festival Dates Have Coinciding Festivals)

	Dependent Variable:				
	Panel A: *Log HH Income*				
	(1)	(2)	(3)	(4)	(5)
Festival Coincides with Maize Planting or Harvest	-0.280^{***}	-0.205^{***}	-0.249^{***}	-0.254^{***}	-0.221^{***}
	(0.099)	(0.079)	(0.070)	(0.070)	(0.075)
State Fixed Effects	N	Y	Y	Y	Y
Geography Controls	N	N	Y	Y	Y
Colonial Controls	N	N	N	Y	Y
Planting-Month Fixed Effects	N	N	N	N	Y
Harvest-Month Fixed Effects	N	N	N	N	Y
Festival-Month Fixed Effects	N	N	N	N	Y
Observations	1,639	1,639	1,639	1,639	1,639
Adjusted R2	0.004	0.345	0.538	0.543	0.561
Mean Dep. Var.	3.239	3.239	3.239	3.239	3.239
SD Dep. Var.	1.328	1.328	1.328	1.328	1.328
	Dependent Variable:				
	Panel B: *Index of Economic Development*				
	(1)	(2)	(3)	(4)	(5)
Festival Coincides with Maize Planting or Harvest	-0.708^{**}	-0.428^{*}	-0.592^{***}	-0.613^{***}	-0.617^{***}
	(0.300)	(0.239)	(0.208)	(0.207)	(0.223)
State Fixed Effects	N	Y	Y	Y	Y
Geography Controls	N	N	Y	Y	Y
Colonial Controls	N	N	N	Y	Y
Planting-Month Fixed Effects	N	N	N	N	Y
Harvest-Month Fixed Effects	N	N	N	N	Y
Festival-Month Fixed Effects	N	N	N	N	Y
Observations	1,639	1,639	1,639	1,639	1,639
Adjusted R2	0.002	0.344	0.564	0.569	0.589
Mean Dep. Var.	-0.576	-0.576	-0.576	-0.576	-0.576
SD Dep. Var.	4.039	4.039	4.039	4.039	4.039

Notes: Regressions in this table are identical to those in Table 2, except that municipalities with missing festival dates (previously not included in sample) are now included in the sample, and we assume that *none* of their festivals coincide with planting or harvest (for these observations, festival month randomly chosen among non-planting and non-harvest months for inclusion of festival-month fixed effects in column 5). Data is from the 2010 Mexico Population Census. Observations are municipalities in the *New Spain* region of Mexico. Robust standard errors are presented in parentheses. *Index of Economic Development* is the first principal component index for a number of development outcomes in the census for a municipality (see Data Appendix). *Festival Coincides with Maize Planting or Harvest* is an indicator variable equal to 1 if the saint day festival in a municipality occurs either 0 to 30 days prior to the optimal maize planting date or 0 to 30 days after the optimal maize harvest date for a municipality using FAO GAEZ data. For this table, we assume all undetermined festival dates are not coinciding festivals. *Geography Controls* includes mean temperature, mean precipitation, mean land suitability, the surface area, centroid latitude, centroid longitude, mean elevation, mean slope, log distance to Mexico City, and mean maize suitability for the municipality. *Colonial Controls* includes drought intensity in 1545 and log population density in 1570 using data from Sellers and Alix-Garcia (2018). For these colonial controls, values for municipalities with missing information are set to zero, and we control for an indicator variable equal to 1 if the municipality is not missing these colonial characteristics. *Planting & Harvest Month Fixed Effects* includes fixed effects for the optimal planting-month and harvest-month for maize for each municipality according to FAO GAEZ data. *Festival Month Fixed Effects* are fixed effects for the calendar month of the municipality's saint day festival. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A10: Robustness to Including "Local" Patron Saints: Development Outcomes

	Dependent Variable:				
	Panel A: *Log HH Income*				
	(1)	(2)	(3)	(4)	(5)
Festival Coincides with Maize Planting or Harvest	-0.261^{***}	-0.183^{**}	-0.234^{***}	-0.239^{***}	-0.209^{***}
	(0.099)	(0.080)	(0.070)	(0.070)	(0.075)
State Fixed Effects	N	Y	Y	Y	Y
Geography Controls	N	N	Y	Y	Y
Colonial Controls	N	N	N	Y	Y
Planting-Month Fixed Effects	N	N	N	N	Y
Harvest-Month Fixed Effects	N	N	N	N	Y
Festival-Month Fixed Effects	N	N	N	N	Y
Observations	1,625	1,625	1,625	1,625	1,625
Adjusted R2	0.003	0.347	0.537	0.543	0.561
Mean Dep. Var.	3.251	3.251	3.251	3.251	3.251
SD Dep. Var.	1.329	1.329	1.329	1.329	1.329
	Dependent Variable:				
	Panel B: *Index of Economic Development*				
	(1)	(2)	(3)	(4)	(5)
Festival Coincides with Maize Planting or Harvest	-0.661^{**}	-0.350	-0.539^{**}	-0.559^{***}	-0.569^{**}
	(0.301)	(0.243)	(0.211)	(0.210)	(0.223)
State Fixed Effects	N	Y	Y	Y	Y
Geography Controls	N	N	Y	Y	Y
Colonial Controls	N	N	N	Y	Y
Planting-Month Fixed Effects	N	N	N	N	Y
Harvest-Month Fixed Effects	N	N	N	N	Y
Festival-Month Fixed Effects	N	N	N	N	Y
Observations	1,625	1,625	1,625	1,625	1,625
Adjusted R2	0.002	0.349	0.565	0.570	0.590
Mean Dep. Var.	-0.528	-0.528	-0.528	-0.528	-0.528
SD Dep. Var.	4.048	4.048	4.048	4.048	4.048

Notes: Regressions in this table are identical to those in Table 2, except that municipalities celebrating "local" saints (those not appearing in official Roman Catholic records outside of Mexico, previously not included in sample) are now included in the sample, and we use their actual festival celebration dates to determine whether they coincide with planting or harvest. Data are from the 2010 Mexico Population Census. Observations are municipalities in the *New Spain* region of Mexico. Robust standard errors are presented in parentheses. *Index of Economic Development* is the first principal component index for a number of development outcomes in the census for a municipality (see Data Appendix). *Festival Coincides with Maize Planting or Harvest* is an indicator variable equal to 1 if the saint day festival in a municipality occurs either 0 to 30 days prior to the optimal maize planting date or 0 to 30 days after the optimal maize harvest date for a municipality using FAO GAEZ data. For this table, we assume all undetermined festival dates are not coinciding festivals. *Geography Controls* includes mean temperature, mean precipitation, mean land suitability, the surface area, centroid latitude, centroid longitude, mean elevation, mean slope, log distance to Mexico City, and mean maize suitability for the municipality. *Colonial Controls* includes drought intensity in 1545 and log population density in 1570 using data from Sellers and Alix-Garcia (2018). For these colonial controls, values for municipalities with missing information are set to zero, and we control for an indicator variable equal to 1 if the municipality is not missing these colonial characteristics. *Planting & Harvest Month Fixed Effects* includes fixed effects for the optimal planting-month and harvest-month for maize for each municipality according to FAO GAEZ data. *Festival Month Fixed Effects* are fixed effects for the calendar month of the municipality's saint day festival. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A11: Robustness to Spatial Autocorrelation:
Impact of Agriculturally-Coinciding Festivals on Development Outcomes

	Dependent Variable:				
	Panel A: *Log HH Income*				
	(1)	(2)	(3)	(4)	(5)
Festival Coincides with Maize Planting or Harvest	-0.275^{**}	-0.204^{**}	-0.251^{***}	-0.255^{***}	-0.216^{***}
	(0.107)	(0.080)	(0.082)	(0.079)	(0.081)
State Fixed Effects	N	Y	Y	Y	Y
Geography Controls	N	N	Y	Y	Y
Colonial Controls	N	N	N	Y	Y
Planting-Month Fixed Effects	N	N	N	N	Y
Harvest-Month Fixed Effects	N	N	N	N	Y
Festival-Month Fixed Effects	N	N	N	N	Y
Observations	1,593	1,593	1,593	1,593	1,593
Conley Window (kms)	100	100	100	100	100
Mean Dep. Var.	3.234	3.234	3.234	3.234	3.234
SD Dep. Var.	1.330	1.330	1.330	1.330	1.330

	Dependent Variable:				
	Panel B: *Index of Economic Development*				
	(1)	(2)	(3)	(4)	(5)
Festival Coincides with Maize Planting or Harvest	-0.695^{**}	-0.422^{*}	-0.593^{***}	-0.613^{***}	-0.598^{***}
	(0.342)	(0.252)	(0.226)	(0.220)	(0.212)
State Fixed Effects	N	Y	Y	Y	Y
Geography Controls	N	N	Y	Y	Y
Colonial Controls	N	N	N	Y	Y
Planting-Month Fixed Effects	N	N	N	N	Y
Harvest-Month Fixed Effects	N	N	N	N	Y
Festival-Month Fixed Effects	N	N	N	N	Y
Observations	1,593	1,593	1,593	1,593	1,593
Conley Window (kms)	100	100	100	100	100
Mean Dep. Var.	-0.589	-0.589	-0.589	-0.589	-0.589
SD Dep. Var.	4.039	4.039	4.039	4.039	4.039

Notes: Data are from the 2010 Mexico Population Census. Observations are municipalities in the *New Spain* region of Mexico. Conley (1999) standard errors are presented in parentheses with the cut-off window denoted as the *Conley Window* in kms. *Index of Economic Development* is the first principal component index for a number of development outcomes in the census for a municipality (see Data Appendix). *Festival Coincides with Maize Planting or Harvest* is an indicator variable equal to 1 if the saint day festival in a municipality occurs either 0 to 30 days prior to the optimal maize planting date or 0 to 30 days after the optimal maize harvest date for a municipality using FAO GAEZ data. For this table, we assume all undetermined festival dates are not coinciding festivals. *Geography Controls* includes mean temperature, mean precipitation, mean land suitability, the surface area, centroid latitude, centroid longitude, mean elevation, mean slope, log distance to Mexico City, and mean maize suitability for the municipality. *Colonial Controls* includes drought intensity in 1545 and log population density in 1570 using data from Sellers and Alix-Garcia (2018). For these colonial controls, values for municipalities with missing information are set to zero, and we control for an indicator variable equal to 1 if the municipality is not missing these colonial characteristics. *Planting & Harvest Month Fixed Effects* includes fixed effects for the optimal planting-month and harvest-month for maize for each municipality according to FAO GAEZ data. *Festival Month Fixed Effects* are fixed effects for the calendar month of the municipality's saint day festival. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A12: Municipality Characteristics and Coinciding Festivals
Using Maximum Caloric Suitability Crop Cycles

	Non-Coinciding Festival			*Coinciding Festival*			Regression Estimates: *Coinciding Festival*	
	Obs.	Mean	SE	Obs.	Mean	SE	Coef.	SE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Geographic Characteristics:								
Precipitation	1406	95.12	(1.21)	187	97.70	(3.61)	-4.62	(3.30)
Temperature	1406	19.06	(0.11)	187	19.64	(0.27)	-0.30	(0.20)
Land Suitability	1406	86.48	(0.33)	187	84.61	(1.26)	-0.94	(0.89)
Maize Suitability	1406	34.51	(0.58)	187	34.78	(1.62)	2.54	(1.48)*
Area	1406	328.13	(13.21)	187	341.75	(40.16)	-6.77	(34.21)
Longitude	1406	-98.32	(0.05)	187	-98.23	(0.15)	-0.05	(0.06)
Latitude	1406	18.65	(0.04)	187	18.79	(0.12)	0.04	(0.05)
Log(Dist. to Mexico City)	1210	5.40	(0.02)	155	5.48	(0.05)	-0.02	(0.03)
Slope	1406	10.35	(0.17)	187	9.54	(0.46)	-0.47	(0.44)
Elevation	1406	1572.20	(20.92)	187	1466.56	(57.63)	87.98	(38.12)**
Colonial Characteristics:								
Has Colonial Characteristics (%)	1406	86.06	(0.92)	187	82.89	(2.76)	-0.01	(2.87)
Drought in 1545 (%)	1210	99.67	(0.17)	155	98.06	(1.11)	-1.34	(0.85)
Log(Pop. Density in 1570)	1210	0.53	(0.03)	155	0.42	(0.08)	0.09	(0.05)*

Notes: Observations are municipalities in the *New Spain* region of Mexico. Robust standard errors are presented in parentheses. See Data Appendix for more information on variables. *Coinciding Festival* is an indicator variable equal to 1 if the saint day festival in a municipality occurs either 0 to 30 days prior to the optimal planting date or 0 to 30 days after the optimal harvest date for the maximum caloric suitability crop for a municipality using FAO GAEZ data, and 0 otherwise. The value displayed for regressions estimates is the coefficient estimate for *Coinciding Festival*, conditional on state fixed effects, planting-month and harvest-month fixed effects, and festival month fixed effects. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.