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Supplementary Information for

From Recognition to Integration: Indigenous Autonomy, State Authority, and National Identity in the Philippines

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1 Statistics for Observational Analysis

Table A.1 compares *barangays* titled as of 2018 to those that are untitled but are part of the eligible universe designated by the National Commission on Indigenous Peoples (NCIP). The list of "identified" areas with no approved CADT or on-process application was compiled manually by the author based on submissions from each NCIP regional office. Table A.2 shows pre-treatment balance between *barangays* titled prior to 2010 (column 1) and three reference groups: *barangays* in the eligible subset that were not titled prior to 2010 (column 2), *barangays* titled after 2010, and *barangays* in the matched control group.

Table A.3 presents summary statistics for the two outcome variables and titling status for the universe of *barangays* included in the study. This includes all rural *barangays* except for those in the Cordillera Administrative Region, which was granted a degree of autonomy as a majority indigenous region.

Table A.1: Pre-Treatment Covariate Balance Among Eligible Barangays (Titled in 2018 vs. Untitled in 2018)

| | Mean Titled | Mean Untitled | T p-val |
|------------------------------------|-------------|---------------|---------|
| Indigenous Prop. 2000 | 0.342 | 0.167 | 0.000 |
| Birth Registration 2000 | 0.775 | 0.854 | 0.000 |
| Ethnic Frac. 2000 | 0.601 | 0.739 | 0.000 |
| Area (sq. km) | 31.127 | 11.550 | 0.000 |
| Elevation Mean | 113.883 | 133.724 | 0.000 |
| Elevation St. Dev | 28.190 | 40.685 | 0.000 |
| Slope Mean | 3.672 | 4.880 | 0.000 |
| Soil Quality Index | 2.080 | 2.123 | 0.000 |
| Mineral Deposits | 0.015 | 0.007 | 0.012 |
| Log. NCIP Dist. | 10.469 | 10.400 | 0.280 |
| Log. Coast Dist. | 9.581 | 8.871 | 0.000 |
| Log. Road Dist. | 3.986 | 3.469 | 0.000 |
| Catholic Prop. 2000 | 0.632 | 0.745 | 0.000 |
| Street Pattern 2000 | 0.351 | 0.381 | 0.030 |
| Highway Access 2000 | 0.684 | 0.739 | 0.000 |
| Church 2000 | 0.906 | 0.888 | 0.033 |
| Market 2000 | 0.242 | 0.247 | 0.688 |
| Elementary 2000 | 0.894 | 0.798 | 0.000 |
| Bgy. Health Ctr 2000 | 0.723 | 0.652 | 0.000 |
| Water System 2000 | 0.492 | 0.501 | 0.531 |
| Legibility Δ 1990-2000 | -2.462 | -2.827 | 0.640 |
| HS Grad. Δ 1990-2000 | 0.040 | 0.065 | 0.000 |
| Elem Grad. Δ 1990-2000 | -0.143 | -0.128 | 0.000 |
| Log Pop Δ 1990-2000 | 0.184 | 0.177 | 0.609 |
| Housing Quality Δ 1990-2000 | 0.234 | 0.328 | 0.000 |

| | Titled pre | Eligible | Titled post | Matched | T p-val: | T p-val: | T p-val: |
|------------------------------------|------------|----------|-------------|----------|-------------|-------------|----------|
| | 2010 | Untitled | 2010 | Controls | Titled pre | Titled post | Titled |
| | | pre 2010 | | | vs Eligible | vs Titled | pre vs. |
| | | | | | | pre | Matched |
| Indigenous Prop. 2000 | 0.335 | 0.178 | 0.360 | 0.344 | 0.000 | 0.263 | 0.577 |
| Birth Registration 2000 | 0.786 | 0.847 | 0.740 | 0.781 | 0.000 | 0.004 | 0.604 |
| Ethnic Frac. 2000 | 0.598 | 0.731 | 0.610 | 0.596 | 0.000 | 0.394 | 0.867 |
| Area (sq. km) | 32.916 | 12.414 | 25.951 | 29.610 | 0.000 | 0.004 | 0.134 |
| Elevation Mean | 118.694 | 131.670 | 99.460 | 116.561 | 0.033 | 0.027 | 0.781 |
| Elevation St. Dev | 29.060 | 39.775 | 25.563 | 28.958 | 0.000 | 0.220 | 0.964 |
| Slope Mean | 3.759 | 4.791 | 3.407 | 3.818 | 0.000 | 0.163 | 0.755 |
| Soil Quality Index | 2.066 | 2.123 | 2.121 | 2.062 | 0.000 | 0.003 | 0.775 |
| Mineral Deposits | 0.015 | 0.007 | 0.016 | 0.020 | 0.049 | 0.843 | 0.407 |
| Log. NCIP Dist. | 10.426 | 10.412 | 10.593 | 10.451 | 0.833 | 0.234 | 0.801 |
| Log. Coast Dist. | 9.557 | 8.918 | 9.654 | 9.552 | 0.000 | 0.190 | 0.919 |
| Log. Road Dist. | 3.991 | 3.499 | 3.961 | 4.035 | 0.000 | 0.901 | 0.795 |
| Catholic Prop. 2000 | 0.631 | 0.739 | 0.637 | 0.627 | 0.000 | 0.706 | 0.764 |
| Street Pattern 2000 | 0.351 | 0.379 | 0.349 | 0.352 | 0.072 | 0.948 | 0.964 |
| Highway Access 2000 | 0.678 | 0.737 | 0.698 | 0.669 | 0.000 | 0.485 | 0.645 |
| Church 2000 | 0.903 | 0.889 | 0.918 | 0.897 | 0.183 | 0.383 | 0.666 |
| Market 2000 | 0.238 | 0.247 | 0.253 | 0.248 | 0.501 | 0.564 | 0.579 |
| Elementary 2000 | 0.900 | 0.803 | 0.876 | 0.901 | 0.000 | 0.230 | 0.942 |
| Bgy. Health Ctr 2000 | 0.720 | 0.657 | 0.728 | 0.717 | 0.000 | 0.776 | 0.885 |
| Water System 2000 | 0.490 | 0.501 | 0.495 | 0.485 | 0.531 | 0.887 | 0.795 |
| Legibility Δ 1990-2000 | -2.800 | -2.745 | -1.173 | -2.806 | 0.951 | 0.316 | 0.996 |
| HS Grad. Δ 1990-2000 | 0.039 | 0.063 | 0.043 | 0.044 | 0.000 | 0.405 | 0.117 |
| Elem Grad. Δ 1990-2000 | -0.151 | -0.128 | -0.118 | -0.154 | 0.000 | 0.000 | 0.591 |
| Log Pop Δ 1990-2000 | 0.189 | 0.176 | 0.168 | 0.198 | 0.467 | 0.445 | 0.662 |
| Housing Quality Δ 1990-2000 | 0.227 | 0.324 | 0.257 | 0.234 | 0.000 | 0.102 | 0.613 |

Table A.2: Pre-Treatment Covariate Balance Among Barangays Titled pre-2010 and Comparison Groups

| | Num. Vals | Num. NA | Min | Max | Median | Mean | Std. Dev |
|-------------------------|-----------|---------|-----|-----|--------|------|----------|
| Titled Proportion 2010 | 34312 | 0 | 0 | 1 | 0.00 | 0.03 | 0.14 |
| Titled Binary 2010 | 34312 | 0 | 0 | 1 | 0.00 | 0.03 | 0.17 |
| Titled Binary 2018 | 34312 | 0 | 0 | 1 | 0.00 | 0.04 | 0.19 |
| Eligible Universe | 34312 | 0 | 0 | 1 | 0.00 | 0.21 | 0.40 |
| Indigenous Pop. 2000 | 34272 | 40 | 0 | 1 | 0.00 | 0.08 | 0.23 |
| Indigenous Pop. 2010 | 34309 | 3 | 0 | 1 | 0.00 | 0.11 | 0.26 |
| Birth Registration 2000 | 34272 | 40 | 0 | 1 | 0.95 | 0.83 | 0.27 |
| Birth Registration 2007 | 34227 | 85 | 0 | 1 | 0.98 | 0.88 | 0.22 |
| Birth Registration 2010 | 34309 | 3 | 0 | 1 | 0.99 | 0.89 | 0.22 |
| Birth Registration 2015 | 34307 | 5 | 0 | 1 | 0.98 | 0.92 | 0.17 |

Table A.3: Summary Statistics (Study Barangays)

2 Identity Robustness Checks

This section presents robustness checks for the indigenous identity results, presented in Table 1 in the main manuscript. Table A.6 replicates the main analyses using the binary land titling measure. Figure A.1 shows results from a bandwidth analysis, repeating the main two-way fixed effects specification (Equation 1 in the manuscript) and successively restricting the analysis to include subsets of eventually titled *barangays* that received titles within shorter windows around the 2010 census, ranging from 2 to 8 years. Within shorter periods of time around the census, the timing of titling is more plausibly independent of community characteristics. The point estimates remain positive and mostly stable across this range, providing support for the idea that there is a causal effect of titling on indigenous self-identification, and that the estimated effects in the main analysis do not simply reflect differences in the timing of when communities applied.

Table A.4 shows results from an alternative design more directly analogous to a regression discontinuity design using the timing of titling relative to the post-treatment census as the the running variable. Specifically, I estimate the following specification:

$$Y_{\Delta i} = \alpha + \tau Titled_i + \gamma CensusDistance_i + \lambda Titled_i * CensusDistance_i + \epsilon_i \tag{1}$$

where $Y_{\Delta i}$ is the change between the pre- and post-periods in the outcome variable for barangay *i* (in this case, the proportion of the population identifying as indigenous), *Titled_i* is a binary indicator denoting whether barangay *i* received a title prior to the post-treatment census, and *CensusDistance_i* is the running variable, constructed by subtracting the post-period census year from the titled year (for example, if barangay *i* was titled in 2012, its value for *CensusDistance* is 2 when the 2010 census is used as the post-period). The estimand in this specification (τ) is the effect of receiving a title in the same year as the census (i.e. when *CensusDistance_i* = 0) on the change from 2000 in either indigenous identification or birth registration.¹ Columns 1 and 2 show results using two different bandwidths for *CensusDistance*: 4 years and 8 years. For the identity outcome, which is observed only in 2000 and 2010, the estimated coefficients on the *Titled* indicator are positive for both bandwidths, although only statistically significant at the $\alpha = 0.05$ level using the 8-year bandwidth.

In Table A.5, I directly incorporate data on the date of CADT application filing, within the subset of CADTs for which this information is available. Of the 202 CADTs represented in the analysis (excluding CADTs in the CAR region from the total 223) approximately 21% (42 CADTs) are missing filing dates. Unfortunately, data on application filing dates are only available for CADTs that were approved as of 2018 (i.e. successful CADT applications). Within this subset, I estimate first-difference models, regressing change in indigenous self-identification between 2000 and 2010 on titling status in 2010 and controlling for the filing year, both as a continuous variable and as a factor variable (the latter restricting comparisons to CADTs filed within the same year). The results are consistent with the main findings in the paper, with point estimates similar to those in the titled subset.

Tables A.7 and A.8 show results for models estimating the effect of land titling on two different placebo outcomes: total (logged) population and migration (operationalized using the percentage of individuals in a *barangay* who have resided in the same municipality for the past five years). These analyses are meant to address the concern that the change in indigenous identity is due to changes in population composition. While titling does appear to have significant effects in some subsets of the data, they do not point in a consistent direction, suggesting they are unlikely to fully explain the main effects. Table A.9 shows estimates from first-differences specifications including province (columns 1-4) and region (columns 5-8) fixed effects.

Table A.10 replicates the analysis using Conley-type Heteroskedasticity-Autocorrelation-Robust (HAC) standard errors that account for spatial and temporal autocorrelation. With the exception of the titled subset, all coefficients remain statistically significant. Table A.11 restricts the analysis to *barangays* for which there is agreement between two data sources on titling: a map and a list both provided by the National Commission on Indigenous Peoples (NCIP). Within the eligible universe and the titled subset, I include only *barangays* that are considered untitled according to both sources (i.e. that have zero overlap on the map and do not appear on the list) and *barangays* that are coded as titled. In columns 1, 2, 4, and 5,

¹Note that this estimand may not capture the effects of titling if these effects take time to kick in. In addition, the measurement of the running variable is course relative to the typical study employing a regression discontinuity design (I cannot tell, for example, whether *barangays* titled in 2010 received their title before or after census data were collected).



Figure A.1: Land titling and indigenous identification, bandwidth analysis. Figure shows estimated effects of titling on indigenous self-identification within a range of bandwidths around 2010, when the census was conducted. Coefficients come from a two-way fixed effects model, regressing indigenous self-identification on land titling (operationalized as the percentage of a *barangay* covered by a CADT in a given year) with period and unit (*barangay*) fixed effects. Line segments depict 95% confidence intervals with standard errors clustered at the *barangay* level. The bottom axis indicates the number of observations included for each bandwidth.

| | Depend | ent variable: |
|--------------------------|---------------|-------------------------|
| | Indigenous P | rop. Δ 2000-2010 |
| | (1) | (2) |
| Titled | 0.219* | 0.089** |
| | (0.121) | (0.043) |
| Census Distance | 0.065^{*} | 0.013^{*} |
| | (0.035) | (0.007) |
| Census Distance x Titled | -0.082^{**} | -0.018^{**} |
| | (0.036) | (0.008) |
| Constant | -0.150 | 0.0002 |
| | (0.121) | (0.042) |
| Bandwidth | 4 | 8 |
| Observations | 925 | 1,525 |
| \mathbb{R}^2 | 0.015 | 0.009 |
| Adjusted R ² | 0.012 | 0.007 |
| Note: | *p<0.1; **p | o<0.05; ***p<0.01 |

Table A.4: Land Titling and Indigenous Identity (Quasi-RDD)

Table A.5: Land Titling and Indigenous Identification (First-difference with filing year)

| | | Dependent variable: | | | | | | |
|--|------------------------------|---|---|------------------------------|--|--|--|--|
| | Ind | Indigenous Prop. Δ 2000-2010 | | | | | | |
| | (1) | (2) | (3) | (4) | | | | |
| Titled Prop. | 0.025^{**} (0.012) | $\begin{array}{c} 0.019 \\ (0.013) \end{array}$ | | | | | | |
| Titled (Binary) | | | $\begin{array}{c} 0.036^{***} \\ (0.012) \end{array}$ | 0.028^{**} (0.013) | | | | |
| Filed Year | -0.003 (0.002) | | -0.002 (0.002) | | | | | |
| Filed Year FE Observations R^2 Adjusted R^2 | N 1,442 0.006 0.004 | Y 1,442 0.034 0.022 | N 1,442 0.009 0.007 | Y 1,442 0.036 0.024 | | | | |
| Note: | | *p<0.1; | **p<0.05; * | ***p<0.01 | | | | |

I code titled *barangays* as those that have more than 50% overlap on the map and that appear on the list. Columns 3 and 6 drop partially titled *barangays* and only include as "treated" *barangays* that have 100% overlap and appear on the list. The results remain similar using these subsets. Finally, Table A.12 shows the main results excluding *barangays* in the former Autonomous Region of Muslim Mindanao (ARMM). The results remain similar to the main results in the paper.

| | | | | Dependent | variable: | | | | |
|--------------------------------------|---------------------------|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|
| | Indigenous Prop. | | | | | | | | |
| | All Rural | All Rural | Eligible | Eligible | Matched | Matched | Titled | Titled | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | |
| Titled (Binary) | 0.080^{***} (0.006) | 0.079^{***} (0.006) | 0.040^{***} (0.006) | 0.040^{***} (0.006) | 0.047^{***} (0.008) | 0.047^{***} (0.008) | 0.031^{***} (0.011) | 0.030^{***} (0.012) | |
| Same Municipality | | -0.003 (0.013) | | -0.049 (0.042) | | -0.001 (0.091) | | -0.055 (0.063) | |
| Log. Population | | $\begin{array}{c} 0.013^{***} \\ (0.004) \end{array}$ | | $0.001 \\ (0.010)$ | | $0.004 \\ (0.021)$ | | -0.001 (0.023) | |
| Mean Age | | 0.003^{***} (0.0005) | | 0.003^{*} (0.001) | | -0.001 (0.004) | | -0.007^{*} (0.004) | |
| Mean HH Size | | -0.001^{**} (0.001) | | 0.007 (0.004) | | 0.003 (0.011) | | -0.011 (0.012) | |
| Observations R^2 Adjusted R^2 | $34269 \\ 0.914 \\ 0.829$ | $34269 \\ 0.914 \\ 0.829$ | $8022 \\ 0.905 \\ 0.809$ | 8022 0.905 0.809 | $2138 \\ 0.924 \\ 0.849$ | $2138 \\ 0.924 \\ 0.848$ | $1526 \\ 0.926 \\ 0.852$ | $1526 \\ 0.926 \\ 0.852$ | |

Table A.6: Land Titling (Binary) and Indigenous Identification

CRSE at bgy level

*p<0.1; **p<0.05; ***p<0.01

| | | Dependent variable: Logged Population | | | | | | |
|-------------------------|--------------------------|--|-------------------|---------------------------|--|--|--|--|
| | | | | | | | | |
| | All Rural | Eligible | Matched | Titled | | | | |
| | (1) | (2) | (3) | (4) | | | | |
| Titled Prop. | 0.027^{***} (0.009) | 0.021^{**} (0.010) | -0.005 (0.013) | -0.065^{***} (0.016) | | | | |
| Observations | 34269 | 8022 | 2138 | 1526 | | | | |
| \mathbb{R}^2 | 0.980 | 0.984 | 0.981 | 0.979 | | | | |
| Adjusted R ² | 0.959 | 0.968 | 0.962 | 0.957 | | | | |
| | | | | | | | | |

Table A.7: Land Titling and Population

CRSE at bgy level

| | | Dependent variable: | | | | | | |
|--------------------------------|------------------|--|-------------------|--------------------------|--|--|--|--|
| | All Rural | Same Municipality All Burgl Eligible Matched Titled | | | | | | |
| | (1) | (2) | (3) | (4) | | | | |
| Titled Prop. | 0.002 (0.002) | -0.001 (0.002) | -0.004 (0.003) | -0.008^{**} (0.004) | | | | |
| Observations R ² | $34269 \\ 0.575$ | $8022 \\ 0.590$ | $2138 \\ 0.602$ | $1526 \\ 0.593$ | | | | |
| Adjusted R ² | 0.150 | 0.180 | 0.204 | 0.186 | | | | |
| CRSE at bgy level | | *p<0 | 0.1; **p<0.05 | ; ***p<0.01 | | | | |

Table A.8: Land Titling and Recent Migration

Table A.9: Land Titling and Indigenous Identification (First-difference with Province and Region Fixed Effects)

| | | Dependent variable: | | | | | | | | |
|--|---|--------------------------|---|------------------|--------------------------|--------------------------|---|------------------|--|--|
| | | | Ind | igenous Pro | p. Δ 2000-201 | 0 | | | | |
| | All Rural | Eligible | Matched | Titled | All Rural | Eligible | Matched | Titled | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | | |
| Titled Prop. | $\begin{array}{c} 0.085^{***} \\ (0.006) \end{array}$ | 0.065^{***} (0.009) | $\begin{array}{c} 0.053^{***} \\ (0.011) \end{array}$ | 0.014 (0.012) | 0.065^{***} (0.006) | 0.057^{***} (0.008) | $\begin{array}{c} 0.052^{***} \\ (0.010) \end{array}$ | 0.013 (0.012) | | |
| Prov FE Bog FE | Y | Y | Y | Y | N V | N V | N V | N V | | |
| $\begin{array}{c} \text{Adjusted } \mathbf{R}^2 \end{array}$ | 34,269 0.154 | 8,022 0.197 | 2,138 0.208 | 1,526 0.293 | 34,269 0.051 | 8,022 0.099 | 2,138 0.107 | $1,526 \\ 0.124$ | | |

Note:

| | | Dependent variable: | | | | | | |
|-----------------------------------|---|--|---|--------------------|--|--|--|--|
| | All Rural | Indigenous Prop. All Rural Eligible Matched Title | | | | | | |
| | (1) | (2) | (3) | (4) | | | | |
| Titled Prop. | $\begin{array}{c} 0.097^{***} \\ (0.017) \end{array}$ | 0.050^{***} (0.010) | $\begin{array}{c} 0.048^{***} \\ (0.010) \end{array}$ | $0.028 \\ (0.019)$ | | | | |
| $\frac{\text{Observations}}{R^2}$ | $34269 \\ 0.914$ | $8022 \\ 0.905$ | $2138 \\ 0.924$ | $1526 \\ 0.926$ | | | | |
| Note: | | *p<0.1 | ; **p<0.05; * | **p<0.01 | | | | |

Table A.10: Land Titling and Indigenous Identification (Conley SE)

| | | Dependent variable: | | | | | | |
|---------------------------|---|---|-------------------------|---|-------------------------|---|--|--|
| | | Indigenous Prop. | | | | | | |
| | Eligible | Eligible | Eligible | Titled | Titled | Titled | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | | |
| Titled (Prop.) | $\begin{array}{c} 0.051^{***} \\ (0.009) \end{array}$ | | | $\begin{array}{c} 0.047^{***} \\ (0.015) \end{array}$ | | | | |
| Titled (Binary) | | $\begin{array}{c} 0.042^{***} \\ (0.007) \end{array}$ | 0.026^{**} (0.010) | | 0.031^{**} (0.014) | $\begin{array}{c} 0.012 \\ (0.018) \end{array}$ | | |
| Observations | 7086 | 7086 | 6484 | 1019 | 1019 | 417 | | |
| Excludes partially titled | Ν | Ν | Υ | Ν | Ν | Υ | | |
| \mathbb{R}^2 | 0.903 | 0.903 | 0.900 | 0.931 | 0.930 | 0.948 | | |
| Adjusted R ² | 0.807 | 0.807 | 0.799 | 0.861 | 0.861 | 0.896 | | |

| Table A.11: | Land | Titling | and | Indigenous | Identificati | on - | Source | Agreem | ent |
|-------------|------|---------|-----|------------|--------------|------|--------|--------|-----|
| | | | | | | | | | |

CRSE at bgy level

p < 0.1; p < 0.05; p < 0.05; p < 0.01

Table A.12: Land Titling and Indigenous Identification - Excluding ARMM

| | | | | Depender | nt variable: | | | | | |
|---------------------------------------|--------------------------|--------------------------|--------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|--|
| | | Indigenous Prop. | | | | | | | | |
| | All Rural | Eligible | Matched | Titled | All Rural | Eligible | Matched | Titled | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | | |
| Titled (Prop.) | 0.095^{***} (0.008) | 0.045^{***} (0.008) | 0.048^{***} (0.011) | 0.028^{**} (0.012) | | | | | | |
| Titled (Binary) | | | | | 0.078^{***} (0.006) | 0.036^{***} (0.006) | 0.047^{***} (0.008) | 0.031^{***} (0.011) | | |
| Observations | 31889 | 7501 | 2138 | 1522 | 31889 | 7501 | 2138 | 1522 | | |
| \mathbb{R}^2 | 0.910 | 0.902 | 0.924 | 0.926 | 0.910 | 0.902 | 0.924 | 0.926 | | |
| Adjusted R ² | 0.821 | 0.803 | 0.848 | 0.852 | 0.821 | 0.803 | 0.849 | 0.852 | | |
| · · · · · · · · · · · · · · · · · · · | | | | | | | | | | |

CRSE at bgy level

3 Birth Registration Robustness Checks

This section presents robustness checks and additional analyses for the birth registration results, presented in Table 2 in the main manuscript. Table A.13 implements the main results using the binary land titling indicator. While the coefficient remains positive, it shrinks in size and drops below statistical significance in the matched and titled subsets. This may be due in part to the fact that birth registration is measured as an aggregate outcome at the *barangay* level. If increases in birth registration are driven by changes in behavior among indigenous residents living in an Ancestral Domain, effects may not be as apparent in areas where the Ancestral Domain covers a relatively small part of the *barangay*. Another possibility is ceiling effects, given that birth registration cannot increase beyond 100% and is high at baseline in many areas. I replicate the main analyses eliminating all *barangays* with baseline birth registration levels greater than 90%. As shown in Table A.14, the coefficients on the binary version of the titling indicator become significant in the matched and titled subsets when *barangays* with greater than 90% registration at baseline are excluded.

Table A.15 estimates the effects of titling on birth registration in the previous period. This tests whether titling in one period predicts birth registration rates in the previous period, which would suggest a violation of the parallel trends assumption. While I do observe a lagged effect in the full rural sample, I do not see any such effect in the other three subsets. Figure A.2 shows results from the same bandwidth analysis conducted for the indigenous identification variable, comparing change over time in birth registration between 2000 and 2007 for *barangays* that received titles within different bandwidths around the 2007 census (left-hand panel) and change over time between the 2000 and 2010 census for *barangays* titled within different bandwidths around the 2010 census (right-hand panel).² While the coefficients fall below statistical significance for some bandwidths using 2010, they remain consistently positive and similar in size.

Table A.16 shows results from the same quasi-regression discontinuity analysis used for the indigenous identity variable, using the timing of titling relative to the post-period census as the running variable. I estimate the RDD specification using both 2007 (column 1) and 2010 (columns 2 and 3) as the post-period census. For the specification using 2010 as the post-period I show results using two different bandwidths for *CensusDistance*: 4 years and 8 years. The coefficients on the titling indicator are statistically significant for both census years using the 4-year bandwidth, although only at the $\alpha = 0.1$ level when 2010 is used as the post-period. However, the coefficient using the 8-year bandwidth is small and statistically indistinguishable from zero. Overall upward trends in birth registration, combined with ceiling effects, may make it difficult

²Recall that birth registration is measured in four census years -2000, 2007, 2010, and 2015 —which ethnic identification is only measured in 2000 and 2010. Note also that the first CADTs were issued in 2002, 5 years prior to the 2007. This is the reason the bandwidth range is restricted to 5 years in the analysis using 2007 as the post-period (the left-hand panel).

to detect the effects of titling over a longer period of time (indeed, the coefficient using the 8-year bandwidth is substantially larger when *barangays* with baseline registration rates above 90% are excluded ($\hat{\tau} = 0.049$), although it is not statistically significant, possibly due in part to the resulting decrease in sample size).

Table A.17 shows results from a first-differences specification using change between 2000 and 2010 and controlling for filing year, among the subset of CADTs for which filing year is available. Table A.18 shows estimates from first-difference specifications, regressing change in birth registration between 2000 and 2010 on titling status including province and region fixed effects.

As with the identity results, I re-estimate the effects of titling on birth registration using Conley HAC standard errors. As shown in table A.19, results for all four subsets of the data remain statistically significant. I additionally generate standard errors clustering on both the time and unit dimensions. While Bertrand, Duflo and Mullainathan (2004) generally recommend clustering at the unit level to account for serial correlation in both outcomes and treatment over time, Cameron, Gelbach and Miller (2011) note that when there is geographic-based correlation, within-year cross-unit errors may also be correlated (even when accounting for common-year shocks with year fixed effects), warranting clustering on both time and unit dimensions. Given the small number of years in the dataset, I use a wild cluster bootstrap, following the procedure recommended by MacKinnon, Nielsen and Webb (2019) for the two-dimensional clustering case. Bootstrapped p-values are obtained by comparing a test statistic with (two-way) cluster-robust standard errors to a distribution of test statistics generated by re-sampling from a data generating process imposing the null hypothesis, where the re-sampling maintains the correlation structure in two dimensions. Table A.20 compares p-values obtained using this procedure to p-values from the original analysis for each of the four subsets (these correspond to columns 1, 3, 5, and 7 in Table 2). With the exception of the rural subset, all p-values remain below 0.05.

Finally, Table A.21 shows results restricting the analysis to *barangays* for which there is agreement between the two NCIP data sources and Table A.22 shows the birth registration results excluding *barangays* in the former ARMM. The results are similar to those in the main analysis.

4 Pre-treatment Parallel Trends

Tables A.24, A.25, and A.26 show results from an analysis of differential pre-treatment trends on a number of demographic measures constructed from data collected in the 1990 census: legibility (Whipple Index capturing age heaping), logged population, land tenure status (the percentage of residents in a *barangay*

| | | | | Dependent | wariable: | | | |
|---|---------------------------|---------------------------|---|---------------------------|--------------------------|---|--------------------------|---------------------------|
| | | | | Dependent Dirth Dori | atuation | | | |
| | All Rural | All Rural | Eligible | Eligible | Matched | Matched | Titled | Titled |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Titled (Binary) | 0.023^{***} (0.004) | 0.023^{***} (0.004) | $\begin{array}{c} 0.017^{***} \\ (0.004) \end{array}$ | 0.017^{***} (0.004) | 0.007 (0.005) | $0.006 \\ (0.005)$ | $0.004 \\ (0.005)$ | 0.003 (0.006) |
| Bgy. Health Center | | 0.003^{**} (0.001) | | 0.007^{***} (0.002) | | $\begin{array}{c} 0.017^{***} \\ (0.005) \end{array}$ | | 0.021^{***} (0.006) |
| Street Pattern | | -0.003^{***} (0.001) | | 0.005^{**} (0.002) | | $0.003 \\ (0.003)$ | | -0.001 (0.004) |
| Highway Access | | 0.004^{***} (0.001) | | 0.001 (0.002) | | 0.013^{***} (0.004) | | $0.008 \\ (0.005)$ |
| Log Population | | 0.008^{**} (0.004) | | -0.001 (0.008) | | -0.015 (0.015) | | -0.010 (0.017) |
| Mean Age | | -0.008^{***} (0.001) | | -0.005^{***} (0.001) | | -0.003 (0.002) | | -0.007^{***} (0.003) |
| Mean HH Size | | -0.002^{*} (0.001) | | 0.013^{***} (0.002) | | $0.006 \\ (0.004)$ | | 0.003 (0.004) |
| Observations R ² Adjusted R ² | $34182 \\ 0.824 \\ 0.765$ | $33581 \\ 0.825 \\ 0.767$ | 7838 0.818 0.758 | 7756 0.820 0.760 | $2083 \\ 0.764 \\ 0.685$ | $2083 \\ 0.766 \\ 0.687$ | $1496 \\ 0.765 \\ 0.686$ | $1474 \\ 0.765 \\ 0.686$ |

Table A.13: Land Titling (Binary) and Birth Registration (Two-Way FE)

CRSE at bgy level

*p<0.1; **p<0.05; ***p<0.01

Table A.14: Land Titling and Birth Registration (Two-Way FE) - Excluding 90% Baseline

| | | Dependent variable: | | | | | | | | |
|-------------------------|-------------------|--------------------------|---|--------------------------|-------------------|-------------------------|-------------------------|------------------------|--|--|
| | | Birth Registration | | | | | | | | |
| | All Rural | Eligible | Matched | Titled | All Rural | Eligible | Matched | Titled | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | | |
| Titled (Prop.) | -0.002 (0.007) | 0.026^{***} (0.007) | $\begin{array}{c} 0.031^{***} \\ (0.009) \end{array}$ | 0.029^{***} (0.010) | | | | | | |
| Titled (Binary) | | | | | -0.004 (0.006) | 0.011^{**} (0.005) | 0.017^{**} (0.007) | 0.015^{*} (0.008) | | |
| Observations | 11375 | 3563 | 1118 | 824 | 11375 | 3563 | 1118 | 824 | | |
| \mathbb{R}^2 | 0.806 | 0.814 | 0.770 | 0.774 | 0.806 | 0.814 | 0.769 | 0.774 | | |
| Adjusted R ² | 0.741 | 0.752 | 0.693 | 0.698 | 0.741 | 0.752 | 0.692 | 0.698 | | |

CRSE at bgy level

| | | Dependent variable: | | | | | |
|-------------------------|--------------------------|---------------------------|-------------------|-------------------|--|--|--|
| | L | Lagged Birth Registration | | | | | |
| | All Rural | Eligible | Matched | Titled | | | |
| | (1) | (2) | (3) | (4) | | | |
| Titled Prop. | 0.025^{***} (0.007) | $0.008 \\ (0.007)$ | -0.006 (0.009) | -0.010 (0.009) | | | |
| Observations | 34186 | 7838 | 2083 | 1496 | | | |
| \mathbb{R}^2 | 0.862 | 0.853 | 0.795 | 0.805 | | | |
| Adjusted \mathbb{R}^2 | 0.793 | 0.780 | 0.693 | 0.707 | | | |

Table A.15: Land Titling (Continuous) and Lagged Birth Registration (Two-Way FE)

CRSE at bgy level p<0.1; **p<0.05; ***p<0.01



Figure A.2: Land titling and birth registration, bandwidth analysis. The left-hand panel shows estimated effects of titling on indigenous self-identification within a range of bandwidths around 2007, when the first post-treatment census was conducted. The right-hand panel shows results from the same analysis using the 2010 census as the post-treatment period. Coefficients come from a two-way fixed effects model, regressing birth registration on land titling (operationalized as the percentage of a *barangay* covered by a CADT in a given year) with period and unit (*barangay*) fixed effects. Line segments depict 95% confidence intervals with standard errors clustered at the *barangay* level. The bottom axis indicates the number of observations included for each bandwidth.

| | Dependen | t variable: | |
|------------------------------|-------------------------------------|--------------|--------------------------|
| | Prop. Registered Δ 2000-2007 | Prop. Regist | tered Δ 2000-2010 |
| | (1) | (2) | (3) |
| Titled (2007) | 0.049* | | |
| | (0.026) | | |
| Census Distance (2007) | 0.004 | | |
| | (0.009) | | |
| Titled x Census Dist. (2007) | -0.001 | | |
| | (0.011) | | |
| Titled (2010) | | 0.172^{*} | 0.004 |
| | | (0.101) | (0.035) |
| Census Distance (2010) | | 0.048^{*} | 0.007 |
| | | (0.029) | (0.006) |
| Titled x Census Dist. (2010) | | -0.048 | -0.013^{**} |
| | | (0.029) | (0.006) |
| Constant | 0.063^{***} | -0.093 | 0.064^{*} |
| | (0.017) | (0.100) | (0.034) |
| Bandwidth | 4 | 4 | 8 |
| Observations | 1,114 | 925 | 1,525 |
| \mathbb{R}^2 | 0.008 | 0.003 | 0.008 |
| Adjusted R ² | 0.005 | -0.0001 | 0.006 |
| Note: | | *p<0.1; **] | p<0.05; ***p<0.01 |

| Table A.16: | Land | Titling | and | Birth | Registration | (Quasi-RDD) | |
|-------------|------|---------|-----|-------|--------------|-------------|--|
| | | | | | | | |

| | | Dependent | variable: | | | | | |
|-------------------------|---|---|---------------------------|-------------------------|--|--|--|--|
| | Reg | Registered Prop. Δ 2000-2010 | | | | | | |
| | (1) | (2) | (3) | (4) | | | | |
| Titled Prop. | $\begin{array}{c} 0.039^{***} \\ (0.009) \end{array}$ | $\begin{array}{c} 0.039^{***} \\ (0.010) \end{array}$ | | | | | | |
| Titled (Binary) | | | 0.019^{**} (0.009) | 0.020^{**} (0.010) | | | | |
| Filed Year | -0.003^{***} (0.001) | | -0.003^{***} (0.001) | | | | | |
| Filed Year FE | Ν | Y | Ν | Y | | | | |
| Observations | $1,\!442$ | 1,442 | 1,442 | 1,442 | | | | |
| \mathbb{R}^2 | 0.020 | 0.081 | 0.011 | 0.073 | | | | |
| Adjusted R ² | 0.018 | 0.070 | 0.010 | 0.062 | | | | |
| Note: | | *p<0. | 1; **p<0.05; * | ***p<0.01 | | | | |

Table A.17: Land Titling and Birth Registration (First-difference with filing year)

Table A.18: Land Titling and Birth Registration (First-difference with Province and Region Fixed Effects)

| | | | | Depender | nt variable: | | | | | | |
|-------------------------|---|---|-------------------------|------------------------|--------------------------|--------------------------|---|--------------------------|--|--|--|
| | | Birth Reg. Δ 2000-2010 | | | | | | | | | |
| | All Rural | Eligible | Matched | Titled | All Rural | Eligible | Matched | Titled | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | | | |
| Titled Prop. | $\begin{array}{c} 0.047^{***} \\ (0.006) \end{array}$ | $\begin{array}{c} 0.041^{***} \\ (0.007) \end{array}$ | 0.024^{**} (0.010) | 0.020^{*} (0.011) | 0.048^{***} (0.006) | 0.040^{***} (0.007) | $\begin{array}{c} 0.026^{***} \\ (0.009) \end{array}$ | 0.027^{***} (0.010) | | | |
| Prov FE | Y | Y | Y | Y | Ν | Ν | Ν | Ν | | | |
| Reg FE | Ν | Ν | Ν | Ν | Y | Y | Y | Y | | | |
| Observations | 34,269 | 8,022 | 2,138 | 1,526 | 34,269 | 8,022 | 2,138 | 1,526 | | | |
| Adjusted R ² | 0.106 | 0.062 | 0.077 | 0.126 | 0.055 | 0.026 | 0.037 | 0.042 | | | |

Note:

Table A.19: Land Titling and Birth Registration (Conley SE)

| | | Dependent variable: | | | | | | | |
|-------------------------|-------------------------|---|-------------------------|-------------------------|--|--|--|--|--|
| | | Birth Registration | | | | | | | |
| | All Rural | Eligible | Matched | Titled | | | | | |
| | (1) | (2) | (3) | (4) | | | | | |
| Titled Prop. | 0.034^{**} (0.015) | $\begin{array}{c} 0.034^{***} \\ (0.011) \end{array}$ | 0.023^{**} (0.010) | 0.021^{**} (0.009) | | | | | |
| Observations | 34182 | 7838 | 2083 | 1496 | | | | | |
| R^2 | 0.824 | 0.818 | 0.765 | 0.765 | | | | | |
| Adjusted R ² | 0.765 | 0.758 | 0.686 | 0.687 | | | | | |
| Note: | | *p<0. | 1; **p<0.05; ' | ****p<0.01 | | | | | |

| | Two-Way Clustering (Bootstrapped) | One-Way Clustering |
|-----------|-----------------------------------|--------------------|
| All Rural | 0.0910 | 0.0000 |
| Eligible | 0.0000 | 0.0000 |
| Matched | 0.0110 | 0.0002 |
| Titled | 0.0010 | 0.0017 |

Table A.20: P-Values for Birth Registration Analysis

Table A.21: Land Titling and Birth Registration - Source Agreement

| | | | Dependent | variable: | | | | |
|---------------------------|--------------------------|---|--------------------------|-------------------------|--------------------|--------------------|--|--|
| | Eligible | Birth Registration Eligible Eligible Titled Titled | | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | | |
| Titled (Prop.) | 0.033^{***} (0.005) | | | 0.017^{**} (0.008) | | | | |
| Titled (Binary) | | 0.028^{***} (0.005) | 0.036^{***} (0.008) | | $0.011 \\ (0.007)$ | $0.010 \\ (0.011)$ | | |
| Observations | 6937 | 6937 | 6352 | 1001 | 1001 | 416 | | |
| Excludes partially titled | Ν | Ν | Υ | Ν | Ν | Y | | |
| \mathbb{R}^2 | 0.823 | 0.823 | 0.828 | 0.762 | 0.762 | 0.767 | | |
| Adjusted \mathbb{R}^2 | 0.764 | 0.764 | 0.770 | 0.682 | 0.682 | 0.688 | | |

CRSE at bgy level

*p<0.1; **p<0.05; ***p<0.01

| Table A.22: | Land | Titling | and | Birth | Registration | _ | Excluding | ARMM |
|--------------|------|---------|-----|--------|--------------|---|-----------|------------|
| 10010 11.22. | Lana | TIONING | ana | DILOII | respondition | | Excluding | 1110101101 |

| | | Dependent variable: | | | | | | |
|-------------------------|--------------------------|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------|--------------------|
| | | | | Birth Reg | gistration | | | |
| | All Rural | Eligible | Matched | Titled | All Rural | Eligible | Matched | Titled |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Titled (Prop.) | 0.042^{***} (0.005) | $\begin{array}{c} 0.043^{***} \\ (0.005) \end{array}$ | 0.022^{***} (0.006) | 0.019^{***} (0.006) | | | | |
| Titled (Binary) | | | | | 0.030^{***} (0.004) | 0.025^{***} (0.004) | $0.007 \\ (0.005)$ | $0.001 \\ (0.005)$ |
| Observations | 31899.75 | 7477.75 | 2124.25 | 1518.25 | 31899.75 | 7477.75 | 2124.25 | 1518.25 |
| \mathbb{R}^2 | 0.760 | 0.755 | 0.765 | 0.765 | 0.759 | 0.754 | 0.764 | 0.764 |
| Adjusted \mathbb{R}^2 | 0.679 | 0.672 | 0.686 | 0.686 | 0.679 | 0.671 | 0.685 | 0.685 |

CRSE at bgy level

*p<0.1; **p<0.05; ***p<0.01

who own the lot they live on), high school graduation rates, and housing material quality (an additive index of the use of strong housing materials for the roof and walls of the house). For each variable, I regress change between 1990 and 2000 on an indicator for titling in 2010. Within the eligible universe, I do find some evidence of differential pre-trends in the quality of housing materials and high school graduation rates. However, I do not observe these differences in the matched or eligible subsets, for which the main results still hold. As another indirect test of the parallel trends assumption, I compare birth registration rates by age in 2000, prior to the issuance of any Ancestral Domain titles for various subsets of the data. If the practice of registering newborn births varied over time, this should be reflected in differential rates of registration by age. In the absence of data measured pre-treatment this provides a rough proxy for registration over time. For example, if an area was "integrating" more rapidly over time, we might expect to see a steeper slope in the relationship between age and registration in that area relative to others. I test for differential trends by regressing age-specific birth-registration rates (i.e. the proportion of individuals born in a particular year in a *barangay* whose births are registered) on age in 2000 and an interaction between age and *barangay* titling status in 2010. As shown in Table A.23, I do not observe significant interactions between age and 2010 titling status in the matched, eligible, or titled subsets.

| | De | nendent varia | hle | | | |
|--------------------------|---|---|----------------------------|--|--|--|
| | <i>De</i> | | 2000 | | | |
| | Eligible | Eligible Matched Titled | | | | |
| | (1) | (2) | (3) | | | |
| Age | -0.001^{***} (0.00004) | -0.001^{***} (0.0001) | -0.001^{***} (0.0002) | | | |
| Titled 2010 (Binary) | -0.031^{***} (0.008) | -0.002 (0.011) | 0.027^{*} (0.016) | | | |
| Age x Titled | -0.0001 (0.0001) | -0.0001 (0.0002) | 0.0003 (0.0002) | | | |
| Constant | $\begin{array}{c} 0.853^{***} \\ (0.003) \end{array}$ | $\begin{array}{c} 0.826^{***} \\ (0.007) \end{array}$ | 0.795^{***} (0.014) | | | |
| Observations (barangays) | 5859 | 1665 | 1186 | | | |
| CRSE at bgy level | *p< | <0.1; **p<0.0 | 5; ***p<0.01 | | | |

Table A.23: Pre-Treatment Birth Registration Rates by Age

5 Additional Alternative Explanations

Tables A.27 shows results from an analysis of heterogenous effects of titling by land value, proxied by the presence of mineral deposits (measured using data from the US Geological Survey) and soil quality. I do not find evidence that the effects of titling on indigenous identity are greater in areas with more valuable land, weighing against the idea that the increase in indigenous self-identification reflects individuals in titled areas

| | | Dependent variable: | | | | | | | |
|--------------------------------|---------------------------|---|--------------------------|---------------------------|---|--|--|--|--|
| | Legibility | Logged Pop. | Land Tenure | HS Grad | Housing Quality | | | | |
| | (1) | (2) | (3) | (4) | (5) | | | | |
| Titled in 2010 | -1.030 (0.925) | 0.0004 (0.012) | -0.005 (0.009) | -0.020^{***} (0.003) | -0.108^{***} (0.010) | | | | |
| Constant | -1.634^{***} (0.349) | $\begin{array}{c} 0.181^{***} \\ (0.005) \end{array}$ | 0.100^{***} (0.003) | 0.060^{***} (0.001) | $\begin{array}{c} 0.340^{***} \\ (0.004) \end{array}$ | | | | |
| Observations R ² | $7,963 \\ 0.0002$ | 7,963 0.00000 | 7,958 0.00004 | 7,962 0.007 | 7,958 0.014 | | | | |
| Adjusted R ² | 0.00003 | -0.0001 | -0.0001 | 0.007 | 0.014 | | | | |

Table A.24: Land Titling and 1990-2000 Demographic Trends (Eligible Universe)

Note:

*p<0.1; **p<0.05; ***p<0.01

| | | Dependent variable: | | | | | | | |
|---|---------------------------|---|----------------------------|--------------------------|---|--|--|--|--|
| | Legibility | Logged Pop. | Land Tenure | HS Grad | Housing Quality | | | | |
| | (1) | (2) | (3) | (4) | (5) | | | | |
| Titled in 2010 | $0.006 \\ (1.167)$ | -0.009 (0.020) | 0.013 (0.012) | -0.005 (0.003) | -0.007 (0.015) | | | | |
| Constant | -2.806^{***} (0.825) | $\begin{array}{c} 0.198^{***} \\ (0.014) \end{array}$ | 0.078^{***} (0.009) | 0.044^{***} (0.002) | $\begin{array}{c} 0.234^{***} \\ (0.010) \end{array}$ | | | | |
| Observations R ² Adjusted R ² | 2,138 0.000 -0.0005 | 2,138 0.0001 -0.0004 | 2,138 0.0005 0.00002 | 2,138 0.001 0.001 | 2,138 0.0001 -0.0003 | | | | |

Table A.25: Land Titling and 1990-2000 Demographic Trends (Matched)

Note:

| | | Dependent variable: | | | | | | | |
|-------------------------|------------|---------------------|-------------|------------|-------------------|--|--|--|--|
| | Legibility | Logged Pop. | Land Tenure | HS Grad | Housing Quality | | | | |
| | (1) | (2) | (3) | (4) | (5) | | | | |
| Titled in 2010 | -1.154 | 0.015 | -0.012 | -0.003 | -0.025 | | | | |
| | (1.624) | (0.031) | (0.017) | (0.004) | (0.020) | | | | |
| Constant | -1.510 | 0.167^{***} | 0.106*** | 0.044*** | 0.257*** | | | | |
| | (1.409) | (0.027) | (0.014) | (0.004) | (0.017) | | | | |
| Observations | 1,509 | 1.509 | 1.509 | 1,509 | 1,509 | | | | |
| \mathbb{R}^2 | 0.0003 | 0.0002 | 0.0003 | 0.0004 | 0.001 | | | | |
| Adjusted \mathbb{R}^2 | -0.0003 | -0.001 | -0.0003 | -0.0002 | 0.0004 | | | | |
| Note: | | | | *p<0.1; ** | p<0.05; ***p<0.01 | | | | |

Table A.26: Land Titling and 1990-2000 Demographic Trends (Titled)

identifying as indigenous for the purpose of obtaining private benefits associated with the communal title.

Figure A.3 shows estimated effects of titling on the presence of various *barangay*-level facilities measured in the census: barangay health centers, street patterns, highway access roads, elementary schools, water systems, and an index of these five facility types. Results from these analyses using the matched, eligible, and titled subsets are depicted in the plots in Figure A.3. While there do not appear to be any effects of the CADT on most of these, there is some evidence that receiving a CADT increases the probability of having a highway access road to the barangay and of having a barangay health center (note however that the effects are not statistically significant in the titled subset, for which the main results do hold). I conduct two additional analyses to understand the extent to which these increases drive the observed effects on birth registration. First, I examine the effects of titling on the registration of *new* births in a given year (Table A.28) to understand whether the effect can be explained by greater access to pre-natal or neonatal healthcare leading to more births in government hospitals. More specifically, I construct a "pseudo panel" from the 2015 census data, estimating the percentage of registered births among individuals born in a given year within a *barangay* as a function of the *barangay*'s titling status in that year. If the increase in birth registration is driven entirely by new births in newly-available health facilities (or births in other government-run health facilities following pre-natal care in newly-available local health facilities), we would expect a positive effect. I do not find evidence that titling is associated with a differential increase in birth registration among newborns, suggesting that this is not the case. Second, to understand whether the effect is driven by a simultaneous extension of the state into titled areas, I restrict the analysis to barangays that were fully serviced in terms of highway access and health services pre-treatment (Table A.29). The main results hold in this subset.

Table A.30 shows results from an analysis of the effects of titling on the influence of the New People's Army (NPA), the armed wing of the Communist Party of the Philippines. The NPA operates throughout the country, primarily in remote areas. Influence is measured using data from military intelligence reports produced by the Armed Forces of the Philippines (AFP) (Rubin 2020). This is a binary measure which takes a "1" if a *barangay* is considered to be "influenced" by the NPA, meaning that there is some degree of participation in organizations affiliated with the Communist Party of the Philippines (CPP) and the local NPA-affiliated militia is able to conduct planned attacks from the area. Data on this outcome is only available for four years (2011-2014), a period during which only 76 *barangays* changed titling status. The results should therefore be interpreted with caution. I do not find any evidence that titling leads to a reduction in NPA influence.

Table A.27: Land Titling (Continuous) and Indigenous Identification - Land Value Interactions

| | | Dependent variable: | | | | | | |
|-----------------------------|---------------------------|--------------------------|--------------------------|--------------------------|---|---|---|---|
| | All Rural | Eligible | Matched | Indigenov Titled | us Prop. All Rural | Eligible | Matched | Titled |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Titled Prop. x Mineral Dep | $0.012 \\ (0.075)$ | $0.005 \\ (0.062)$ | -0.017 (0.064) | $0.005 \\ (0.063)$ | | | | |
| Titled Prop. x Soil Quality | | | | | $\begin{array}{c} 0.021 \\ (0.033) \end{array}$ | $\begin{array}{c} 0.002 \\ (0.032) \end{array}$ | $\begin{array}{c} 0.017 \\ (0.034) \end{array}$ | $\begin{array}{c} 0.004 \\ (0.033) \end{array}$ |
| Titled Prop. | 0.099^{***} (0.008) | 0.051^{***} (0.009) | 0.048^{***} (0.011) | 0.032^{**} (0.013) | $0.056 \\ (0.068)$ | $0.047 \\ (0.068)$ | $0.014 \\ (0.071)$ | $\begin{array}{c} 0.025 \\ (0.070) \end{array}$ |
| | $32945 \\ 0.909 \\ 0.819$ | 7794 0.900 0.800 | $2138 \\ 0.924 \\ 0.848$ | $1497 \\ 0.925 \\ 0.850$ | $32945 \\ 0.909 \\ 0.819$ | 7794 0.900 0.800 | 2138 0.924 0.848 | $1497 \\ 0.925 \\ 0.850$ |

CRSE at bgy level

*p<0.1; **p<0.05; ***p<0.01

6 Legibility Outcome

Legibility is a measure of census data quality originally proposed by Lee and Zhang (2016). This measure builds explicitly on the insight of Scott (1998), that information gathering and the standardization of information about the population represent core activities of states. Specifically, it captures the accuracy of age reporting data and the extent of "heaping" around ages ending in 0 and 5. Since the actual distribution of ages in the population is unlikely to spike at these points, deviations from a smooth distribution can be



Figure A.3: Estimated effects of titling on *barangay*-level public facilities. Plots show coefficients from a two-way fixed effects model. Outcomes are binary indepators capturing the presence of a facility in a *barangay* and are measured for four census waves: 2000, 2007, 2010, and 2015. The upper left panel shows results using an equally-weighted mean index of the five facility types.

| | | Dependent variable: | | | | | | |
|-------------------------|---------------------------|---------------------------|-------------------|--------------------|--|--|--|--|
| | Bir | th Registration | ı by Birth Yea | ar | | | | |
| | All Rural | Eligible | Matched | Titled | | | | |
| | (1) | (2) | (3) | (4) | | | | |
| Titled (Prop.) | -0.020^{***} (0.002) | -0.009^{***} (0.002) | -0.002 (0.003) | -0.0004 (0.003) | | | | |
| | (1 - 1 -) | (1 1 1) | () | () | | | | |
| Observations | 33879 | 7953 | 2125 | 1521 | | | | |
| \mathbb{R}^2 | 0.875 | 0.864 | 0.814 | 0.809 | | | | |
| Adjusted R ² | 0.866 | 0.855 | 0.802 | 0.797 | | | | |
| CRSE at bgy level | | *p<0 | .1; **p<0.05; | ***p<0.01 | | | | |

Table A.28: Land Titling and Birth Registration by Birth Year (Pseudo-panel)

Table A.29: Land Titling and Birth Registration Among Accessible Barangays, 2007-2015

| | Depend | ent variable: | | | |
|--------------------|--------------------------|--------------------------|--|--|--|
| | Birth Registration | | | | |
| | (1) | (2) | | | |
| Titled (Prop.) | 0.030^{***} (0.009) | | | | |
| Titled (Binary) | | 0.019^{***} (0.006) | | | |
| Observations R^2 | 7,833 0.839 0.758 | 7,833 0.839 0.758 | | | |
| Note: | *p<0.1; **p | <0.05; ***p<0.01 | | | |

Table A.30: Land Titling and NPA Influence

| | | Dependent variable: | | | | | | | |
|-------------------------|--------------------|---------------------|------------------|-------------------------|--------------------|------------------|--------------------|--------------------|--|
| | | | | NPA In | fluence | | | | |
| | All Rural | Eligible | Matched | Titled | All Rural | Eligible | Matched | Titled | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | |
| Titled (Prop.) | $0.043 \\ (0.029)$ | $0.039 \\ (0.030)$ | 0.048 (0.032) | 0.041^{**} (0.019) | | | | | |
| Titled (Binary) | | | | | $0.015 \\ (0.028)$ | 0.003 (0.022) | $0.002 \\ (0.010)$ | $0.007 \\ (0.022)$ | |
| Observations | 34312 | 8051 | 2138 | 1531 | 34312 | 8051 | 2138 | 1531 | |
| \mathbb{R}^2 | 0.719 | 0.743 | 0.779 | 0.791 | 0.719 | 0.743 | 0.779 | 0.791 | |
| Adjusted R ² | 0.625 | 0.657 | 0.706 | 0.722 | 0.625 | 0.657 | 0.706 | 0.721 | |

CRSE at bgy level

interpreted as errors in data collection. This inaccuracy could occur for two reasons: 1) a lack of awareness among the population about their exact ages and 2) the inability of census enumerators to reach or gather data from the population. Both scenarios represent a lack of interaction between the state and society, and potentially a willingness to be measured and provide information to the state.³ I operationalize *legibility* at the *barangay* level using a Whipple Index, calculating the percentage of the population with recorded ages ending in 5 or 0 and determining how much this deviates from the expected 20%. The index ranges from 0, which represents no heaping, to 500, which means that all reported ages end in 5 or 0. I calculate this using data from five census waves: 1990, 2000, 2007, 2010, and 2015.

Table A.31 shows the results from this analysis using both CADT measures. The coefficients are negative and, with one exception, statistically significant, indicating that titling is associated with greater legibility (i.e. less distortion in census data). As shown in Tables A.24, A.25, and A.26 above, pre-treatment trends in legibility do not differ significantly between titled and untitled areas in the eligible, matched, or titled subsets.

Table A.31: Land Titling and Legibility (Two-Way FE)

| | | Dependent variable: | | | | | | |
|--------------------------------|---------------------------|--|---------------------------|---------------------------|---------------------------|---------------------------|-------------------|--------------------------|
| | | | | Legibility (Wh | ipple Index) | | | |
| | All Rural | Eligible | Matched | Titled | All Rural | Eligible | Matched | Titled |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Titled (Prop.) | -6.609^{***} (0.664) | $ \begin{array}{c} -5.221^{***} \\ (0.714) \end{array} $ | -2.841^{***} (0.818) | -3.925^{***} (0.962) | | | | |
| Titled (Binary) | | | | | -4.649^{***} (0.542) | -2.918^{***} (0.525) | -0.874 (0.631) | -1.679^{**} (0.755) |
| Observations P ² | 33846 | 7779 | 2083 | 1479 | 33846 | 7779 | 2083 | 1479 |
| Adjusted R ² | 0.313 | 0.318 | 0.388 | 0.320 | 0.313 | 0.318 | 0.388 | 0.325 |

CRSE at bgy level

p<0.1; *p<0.05; ***p<0.01

7 Survey Information

7.1 Ethics approval and informed consent

The survey was conducted in partnership with Legal Network for Truthful Elections (LENTE), a Philippinesbased NGO, between March and October 2018. The study received exempt approval from the Committee on the Use of Humans as Experimental Subjects (COUHES) at the Massachusetts Institute of Technology

 $^{^{3}}$ Lee and Zhang (2016) demonstrate that this measure of accurately captures a state's "presence on the ground" and is associated with other measures of state capabilities, such as tax contributions and public goods provision.

under Protocol # 1709098195. In addition, the research team sought permission from the regional offices of the National Commission on Indigenous Peoples. At the community level, locally-recruited enumerators met with village leaders to seek permission to conduct the survey. Individual respondents were selected through a random-walk procedure in which enumerators began in a central location in the village and walked in different directions, skipping a specified number of houses. In order to be eligible for participation in the survey, respondents had to self-identify as a member of an indigenous community, be over the age of 18, and could not live in the same household as a member of tribal leadership (leaders were administered a separate survey).

Respondents were asked to give verbal consent after the enumerator read a prepared script and offered to answer questions. The decision to require verbal rather than written consent was made in consultation with LENTE and local community contacts. This was deemed to be necessary given the particular experience of indigenous communities in the Philippines. Past experiences with extractive corporations and other actors, in which community members have been asked to sign paperwork they did not fully understand and ended up signing over legal ownership of their land, have rightly made people in many indigenous communities suspicious of signing documents. In addition, a non-trivial number of subjects were illiterate or partially literate, which means they would have to trust that the enumerator is accurately conveying the information on the document they are being asked to sign. Requiring documentation of consent in this case will make it much more difficult for surveyors to enter communities and successfully administer the survey. This waiver of written consent was approved by MIT COUHES. Upon completion of the survey, enumerators left respondents with information about the study, written in Tagalog, including contact information should they have any questions. Respondents were paid 50 Philippine pesos (approximately 1 USD) as a token of their participation at the end of the survey. They then had the option to contribute a portion of these funds to a community-level public good, as part of another component of the study not included in this paper. Respondents were not informed ahead of time that they would be compensated, to avoid coercing participation. The compensation amount and decision not to inform respondents about compensation ahead of time were determined in consultation with LENTE and other local collaborators, and also approved by MIT COUHES. Surveys were conducted face-to-face on tablets using SurveyCTO software. To ensure confidentiality of subjects during survey data collection, names, phone numbers, and village names will be encrypted on the tablets, using the encryption capabilities of SurveyCTO's software.

7.2 Survey experiment details and additional results

Figure A.4 shows an English translation of the flyer used in the priming treatment. Figure A.5 shows the showcards used to measure the outcome variable in the survey experiment. Enumerators were instructed to place the four cards down in a randomly-assigned order and ask the respondent to rearrange them in order of importance to the respondent as parts of his or her personal identity.

Table A.32 shows results from a balance test, regressing an indicator for the priming treatment on several individual-level covariates. In addition, per Lin and Green (2016), I conduct a permutation test for covariate imbalance, comparing a heteroskedasticity-robust Wald statistic from this regression to a distribution generated through simulated re-assignment of treatment and fail to reject the null hypothesis of no covariate imbalance across treatment arms. Figure A.6 shows estimated effects of the priming treatment on a battery of questions about attitudes toward *barangay* and municipal government officials, as well as an index of these questions. Table A.33 shows heterogeneous effects of the priming treatment by actual titling status within the survey sample.

| | Dependent variable: |
|-------------------------|-----------------------------|
| | IPRA Prime |
| Female | 0.040 |
| | (0.048) |
| Completed Elementary | -0.066 |
| J | (0.056) |
| Completed HS | 0.056 |
| - | (0.075) |
| Catholic | -0.085 |
| | (0.053) |
| Evangelical | -0.125^{**} |
| - | (0.060) |
| Born in Bgy | -0.017 |
| | (0.055) |
| Age | -0.002 |
| 0 | (0.001) |
| Constant | 0.652^{***} |
| | (0.087) |
| Observations | 476 |
| \mathbb{R}^2 | 0.021 |
| Adjusted R ² | 0.006 |
| Note: | *p<0.1; **p<0.05; ***p<0.01 |

Table A.32: Priming Experiment Covariate Balance

THE IPRA LAW: RECOGNIZING THE RIGHTS OF INDIGENOUS PEOPLES TO PRESERVE THEIR DISTINCTIVE CULTURES

Republic Act No. 8371 or the Indigenous Peoples Rights Act (IPRA) of 1997 is a law enacted by the government of the Philippines to recognize, protect, and promote the rights of indigenous cultural communities/indigenous peoples (IPs/ICCs).

The IPRA Law recognizes several distinctive rights for IPs/ICCs, including:

- Cultural Integrity
- Rights to Ancestral Domains/Ancestral Land



The IPRA allows IPs/ICCs to apply for a title to their ancestral lands, known as a **Certificate of Ancestral Domain Title (CADT)**. Getting a CADT helps protect IP communities' rights to maintain their distinctive customs, cultural traditions, and identity without interference.



Ifugao people celebrating the end of the rice harvest

The IPRA law defines IPs/ICCs in part as groups of people who "...[share] common bonds of language, customs, traditions and other distinctive cultural traits or who have, through resistance to political, social and cultural inroads of colonization, non-indigenous religions and cultures, become historically differentiated from the majority of Filipinos "

Sec. 3(h) R.A. 8371



Indigenous youth from the B'laan tribe performing a traditional dance in Sarangi

Figure A.4: Recognition Prime (English translation). Flyers were introduced using the following language read by survey enumerators: "This is not just a survey, but we are also trying to education the community about the basic concepts of the IPRA law and the legal rights of IPs. Here is some information about the IPRA Law. I don't have enough printed flyers to leave one with everyone, but we hope you will share this information with others in the community. I am going to ask you a few questions about it later to make sure you remember the information, so please pay attention."



Figure A.5: Identity showcards. Showcards were introduced by enumerators as follows: "People may think of themselves as part of many different groups. Based on your answers you have given so far, here are some groups in which you might consider yourself to be a member." Then the groups were listed in the assigned order with reference to the respondent's previous answers. For example, if the respondent indicated earlier in the survey that they were a member of an Evangelical church, the enumerator would say "Your religion: Evangelical" while placing the religion card in front of the respondent. After placing all four cards, the enumerator asked "Of these four groups, which do your consider the most important to you? Which of these do you consider the second most important?," etc.





Figure A.6: Effects of priming on individual components of state attitudes index (intentions, capability, and trustworthiness of *barangay* and municipal government).

| | Dependent variable: | |
|-------------------------|-----------------------------|-----------------|
| | Tribe Top | Nationality Top |
| | (1) | (2) |
| IPRA Prime | -0.076 | 0.070 |
| | (0.056) | (0.056) |
| Titled (Binary) | 0.056 | -0.112 |
| | (0.068) | (0.068) |
| IPRA Prime x Titled | -0.014 | 0.063 |
| | (0.095) | (0.095) |
| Covariate Adjustment | Y | Y |
| Observations | 476 | 476 |
| \mathbb{R}^2 | 0.027 | 0.031 |
| Adjusted R ² | 0.008 | 0.013 |
| Note: | *p<0.1; **p<0.05; ***p<0.01 | |

Table A.33: Recognition Prime and Tribal and National Identity, by Titling Status

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