Supporting Information

A Better Life for All?

Democratization and Electrification in Post-Apartheid South Africa

Verena Kroth, Valentino Larcinese, and Joachim Wehner

London School of Economics and Political Science

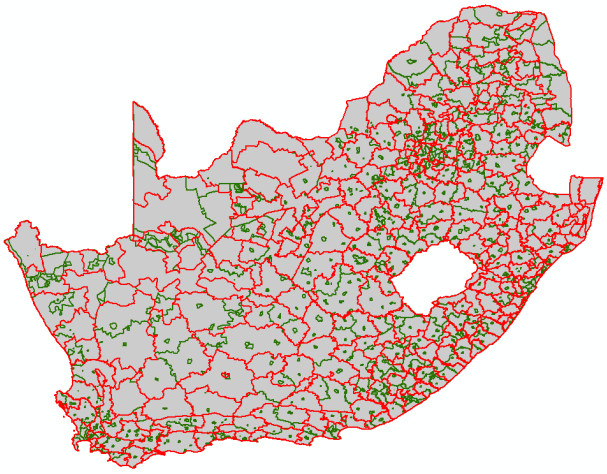
December 2015

A. Data Appendix

1. Generating a single dataset with 1995/6 election, 1996 and 2001 census data

Comparability problem: Although census data for 1996 and 2001 are readily available, comparisons over time have been rare. The main reason for this is that the overhaul of local government during the 1990s fundamentally changed the geographical hierarchies relevant for the censuses. For example, the 12852 so-called placenames (PNs) in the 1996 census were regrouped into 21243 subplaces (SPs) in the 2001 census. [1] Moreover, the 813 transitional local authorities[2] that applied to the 1996 census were demarcated into 262 municipalities prior to the 2001 census. In this process, boundaries were redrawn and areas were renamed. Figure A1 below shows an overlay of 1996 and 2001 boundaries to visualize the change in boundaries over time. As a consequence, the comparisons of 1996 and 2001 census data that do exist are mostly limited to the provincial or national levels.

Figure A1: Municipal demarcation (green lines indicate 1996 and red lines 2001 boundaries)



Overview of census data: The census data comes from the 1996 and 2001 Community Profile and GIS databases purchased from Statistics South Africa. Census 1996 variables were obtained on the municipal level, our main level of analysis, using 1996 boundaries. Census 2001 variables were obtained on the SP level and then aggregated up to the 1996 municipal level boundaries as explained below. Table A1 provides details on the geographical hierarchies available for 1996 and 2001 census data.

[1] The number of magisterial districts stayed constant (354), but some of the boundaries were redrawn.

[2] Under apartheid, municipal structures were referred to as local government. In the transition period subsequent to democratization, they were termed transitional local authorities. Since early 2000 they are referred to as municipalities. We use the three terms (local government, transitional authorities, and municipalities) interchangeably to refer to local government entities.

Table A1: Geographical hierarchies in the 1996 and 2001 censuses

1996		*2001*	
Hierarchy	***Number of entities***	***Hierarchy***	***Number of entities***
Provinces	9	Provinces	9
District councils	45	District councils	60
Magisterial districts	354	Magisterial districts	354
Transitional local Authorities	813[3]	Municipalities	262
Placenames	12851	Main places	3109
		Subplaces	21243

Generating 2001 census data for 1996 boundaries: In order to obtain 2001 census data on the 1996 municipal level, we carried out the following steps. First, we extracted all variables based on the smallest geographical hierarchy in the 2001 census, i.e., 21243 SP units. Second, we merged this data file with the corresponding SP shape file in ArcGIS based on the numerical code that uniquely identifies each SP in both the shape file and the data file. Third, we assigned each 2001 SP to a 1996 municipality (799 polygons, also obtained from the StatsSA GIS database). Fourth, we used ArcMap's spatial join analysis tool (using the option "intersect") to assign a polygon from the lower geographical hierarchy to the higher level, if there is an intersection between the two. This method works best when the lower level geographical units are perfectly contained within the higher-level geographical units. In the case of the South African census, most SP polygons are smaller than the municipality polygons and are often fully contained within a higher-level polygon, as shown in Figure A2, Example 1. However, there are also several cases in which 2001 SPs cross the border of a 1996 municipality, as shown in Figure A2, Example 2. This introduces a double counting problem because the spatial join / intersect method adds the attributes of the overlapping subplace to every municipality with which the subplace intersects. The following explains how we address this.

[3] The number of municipalities in the original shape file is 813. To see why we use 799 municipalities in our analysis, please refer to the discussion on "Number of municipalities in 1996" below.

Figure A2: Overlay of geographical hierarchies (grey lines indicate 1996 municipalities and red lines 2001 subplaces)

Example 1: 2001 SPs (red) perfectly contained within 1996 municipality (grey)

Example 2: 2001 SP (red) overlaps with two 1996 municipalities (grey)

Adjusting for overlapping SPs: In order to take overlapping or cross-border SPs into account (in Figure A2, Example 2), we calculated a weight based on the area size of the SP that is covered by a municipality. For example, if an SP has 100 individuals and 10% of the SP area falls within municipality A and 90% falls within municipality B (i.e., the municipal boundary cuts through the SP area), then 10 individuals will be allocated to municipality A by assigning a weight of 0.1 and 90 to municipality B by assigning a weight of 0.9. The key underlying assumption of this method is that the population is evenly spread throughout the SP. Dinkelman (2011) makes the same assumption in her work on the effects of rural electrification on employment in KwaZulu-Natal.

Election data: Municipal election results come from the Elections Task Group (ETG), which administered the 1995/6 local government elections.[4] The ETG report is not available electronically, so we digitized it using photocopies from an original version held in the University of Cape Town Library. We then geocoded the data in ArcGIS by using the municipalities provided in the 1996 census shape file as a geo-locator. Roughly 80 per cent of municipalities were perfectly matched based on the names provided in the election report and those provided in the census shape file. The remaining 20 per cent were matched manually.[5] The names in the shape file were adjusted in correspondence with the names in the electoral report in order to

[4] Subsequent elections have been managed by the Independent Electoral Commission, which was established as a permanent, independent institution by the 1996 constitution.

[5] The two main reasons for the absence of a perfect match between the names provided in the electoral report and the shape file are spelling discrepancies and duplications. For example, the electoral report provides abbreviated versions of long names, which do not match perfectly with the complete spelling embedded in the list of municipalities in the shape file. Another inconsistency between the two lists was that sometimes the word "rural" forms part of the name of a transitional council and sometimes not. Duplicates included Middelberg Transitional Rural Council and Middelberg Transitional Local Council, which are municipalities in Mpumalanga and the Eastern Cape. Richmond Transitional Local Council is the name of a municipality in the Northern Cape as well as in KwaZulu-Natal.

avoid duplication during the merger. Finally, we assigned the electoral results to the 799 municipality polygons in the 1996 census shape file.

Number of municipalities in 1996: The number of municipalities in our analysis is 799. In 1993, the Local Government Transition Act created 843 interim local government structures. Each of these belonged to one of three municipal categories: metropolitan, local, or district council. However, in terms of both geography and local government representation these structures were not uniquely identified. For example, a district council generally included more than one municipality. Our analysis focuses on municipalities that are uniquely identified in terms of both geography and representation. Our dataset contains 14 municipalities less than the original shape file obtained from StatsSA, which shows 813 municipalities. This small discrepancy has various reasons. For instance, one municipality (Doringberg TRC) appears twice in the census shape file, i.e., it has mistakenly been assigned to the same polygon twice, and some entities (e.g., Renovaal TLC, Vierfontein TLC) do not appear as separate entries in the election results (Elections Task Group 1996).

2. Description of variables

Dependent variables:

Electricity. This variable is defined as the percentage share of households with access to electricity in a given municipality, based on the answer "electricity" to the census question: "What type of energy/fuel does this household MAINLY use for lighting?" (as per section B, 2.1 and H-28 in the 1996 and 2001 census household questionnaires respectively). We also have data on the type of energy used for cooking and heating, but these are inferior proxies for electricity access (Statistics South Africa 2005: 144): "In the case of heating and cooking, use may be limited for reasons of expense, both of the electricity itself and of appliances, so no conclusions can be drawn about access to electricity. The use of electricity for lighting, however, can be taken as a proxy for access to at least some level of electricity." As non-technical losses such as theft or illegal connections were widespread, it is important to note that our dependent variable captures actual electricity use, not just connections and official users (Statistics South Africa 2005: 144). Illegal connections might make it difficult to attribute electrification to Eskom or municipalities. Only the 1996 census distinguishes municipal and Eskom connections from other connections. Less than 2% of households indicated they get electricity from the latter in the 1996 census, and the "other connections" category was dropped from the 2001 census. This suggests that changes in household access to electricity between 1996 and 2001, as captured by our key dependent variable, are overwhelmingly attributable to Eskom and municipalities, either through new connections or, less likely, newly used old connections.
Source: Statistics South Africa, 1996 and 2001 Community Profiles and GIS databases.

Nightlight. We define Nightlight as the percentage share of lit pixels in a municipality. Lit pixels are identified using satellite images of the earth at night collected with the Defense Meteorological Satellite Program's Operational Linescan System (DMSP-OLS) and released by the National Geophysical Data Center (NGDC) for the years from 1992. We use the annual composites of cloud-free, visible, stable lights that are cleaned up to filter out fires and background noise to calculate Nightlight for the years 1992, 1996, and 2001. The calculations include the following steps, which we apply to the raw nighttime lights rasters for the years 1992, 1996, and 2001:[6] First, we convert the stable lights image into a binary grid, where 1 represents pixels in which light is detected and 0 where no light is detected. This has the key advantage that instead of interpreting the brightness of a pixel as light intensity, we use a binary variable that focuses on the

[6] In 2001 two satellites recorded nighttime lights (F14 and F15), and in this case we use the average of the two images.

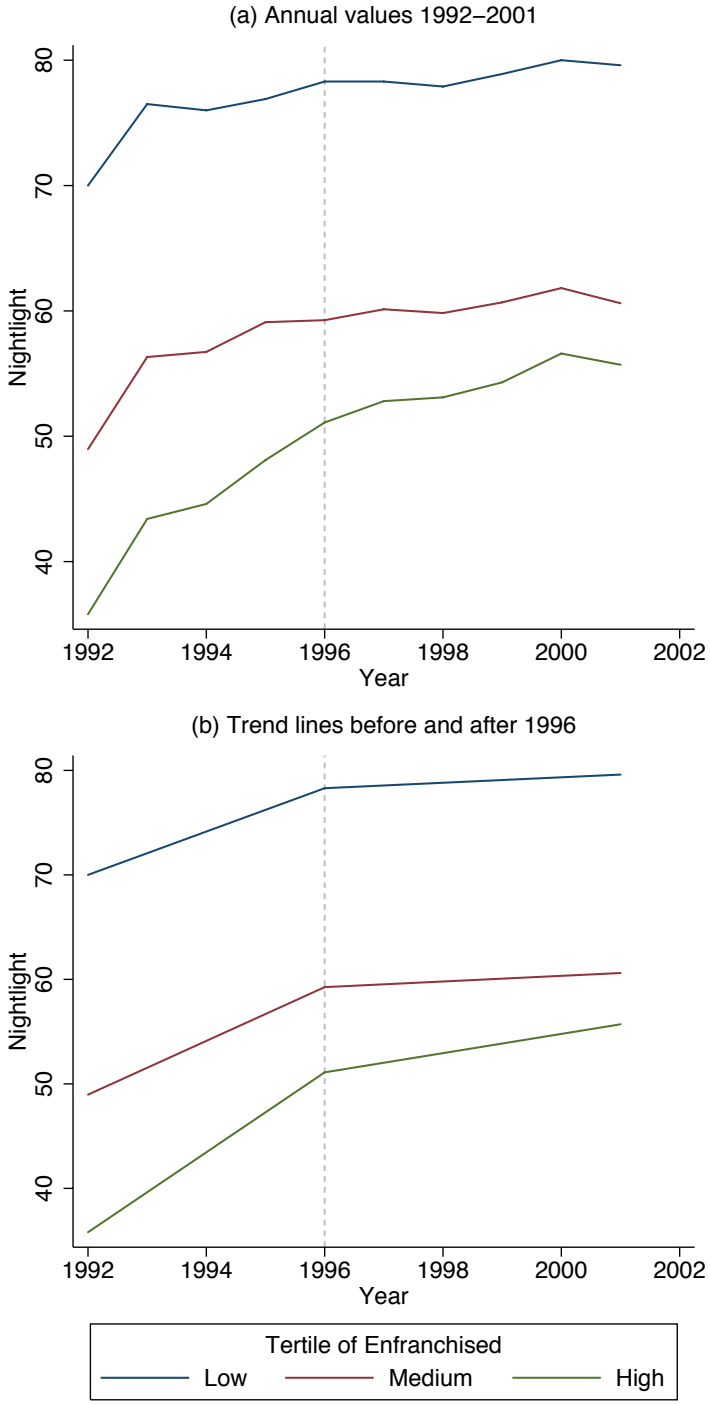
presence or absence of light. This is important when comparing images over time as the use of different satellites and thus sensors to obtain nighttime light images, raises concerns about their comparability over time. Indeed, "satellites differ in their optical quality and may degrade over time" (Chen and Nordhaus 2010: 12) and there is no in-flight calibration of the visible band on the OLS (Elvidge et al. 2013: 3). We perform the binary conversion by using the ArcGIS reclassify tool. Note that there were no pixels with missing values in any of the years in South Africa. The resulting raster image is depicted in Map 2 in Figure 2 of the manuscript. Second, we calculate zonal statistics using the municipal boundaries shape file. This produces a table in which the variable "count" represents the number of pixels in a given municipality and the variable "sum" represents the sum of lit pixels in a given municipality. The ratio of the two is therefore the share of lit pixels in a municipality, which yields our variable nightlight (see Map 3 in Figure 2 of the manuscript).
Source: http://www.ngdc.noaa.gov/dmsp/global_composites_v2.html

An alternative method is to combine nighttime lights with population rasters to calculate the share of the population in lit pixels (see Elvidge et al. 2010). While this variable is conceptually closer to our census-based measure, it relies on the accuracy of population rasters. Main sources for population rasters are the US Department of Energy's Landscan data and gridded population datasets from the Center for International Earth Science Information Network (CIESIN). The former are based on daytime population counts using daily averages that capture populations on roads and other public areas. They are available to us only from 2002 onwards. The latter have a resolution of 2.5' and are thus less fine-grained than the nighttime lights data. In our case, these data are unsuitable. In the South African context, daytime population counts at the local level differ substantially from census data due the legacy of the Group Areas Act, which under apartheid forced non-whites to live in designated areas often requiring long commutes to work (Christopher 1994). Moreover, we lack such data for the time period examined here. For these reasons, we prefer to use only the nighttime images.

Parallel trends. As explained in the manuscript, one reason to proxy electrification with satellite images is that, in the absence of comparable census data, they allow us to explore pre-existing trends. Here we report a preliminary graphical inspection of the Nightlight variable. In panel (a) of Figure A3 we divide South African municipalities by tertiles of Enfranchised and plot the share of lit pixels for each tertile during the period 1992-2001. The vertical dotted line indicates the year 1996. Panel (b) shows separate trend lines for the periods before and after 1996. For all tertiles, the increase in the share of lit pixels is steeper before 1996. The third tertile (high non-white population) grows slightly more than the other two but overall trends appear very similar. After 1996, however, growth continues for the third tertile but much less so for the first and the

second. Only regression analysis can take into account confounding factors and properly assess the impact of pre-existing trends on our results. This analysis is carried out in the main empirical section and reported in Table 2 of the paper.

Figure A3: Share of lit pixels by tertiles of newly enfranchised voters



Independent variables:

Enfranchised. This variable is defined as the percentage share of newly enfranchised (i.e., non-white) citizens of voting age (18 or above) in the municipal electorate in 1996. It is derived from a cross-tabulation of population group and age from the 1996 census. The variables *Enfranchised black*, *Enfranchised coloured*, and *Enfranchised Indian* are subsets of Enfranchised that capture, respectively, the percentage share of black, coloured, and Indian or Asian citizens of voting age. For the corresponding census questions see section A, 5 and P-06 in the census household questionnaires used in 1996 and 2001 respectively.
Source: Statistics South Africa, 1996 and 2001 Community Profiles and GIS databases.

ANC seat share. This variable is defined as the percentage share of total seats on a given local council that were won by the African National Congress in the 1995/6 elections. The related variables *NP seat share* and *IFP seat share* are defined as the percentage share of total seats won by the National Party and the Inkatha Freedom Party respectively.
Source: Elections Task Group (1996).

Geographic controls:

Elevation. We calculate various descriptive statistics (mean, median, max, min, standard deviation, range) to determine the elevation of a given municipality. We do so by using the zonal statistics tool in ArcGIS and obtain elevation indicators in meters above sea level. To obtain these measures, we use the projected coordinate system "WGS 1984 UTM Zone 35S". In our analysis, the variable elevation is the average municipal elevation in meters above sea level.
Source: USGS (2004). Shuttle Radar Topography Mission, 1 ArcSecond scene SRTM_u03_n008e004, Unfilled Unfinished 2.0, Global Land Cover Facility, University of Maryland, College Park, Maryland, February 2000.

Slope. In order to calculate the slope of a given municipality, we perform a surface analysis in ArcGIS and generate a new raster layer. We apply the zonal statistics tool to this raster, using the municipality shape file and thus calculate various descriptive statistics (mean, median, max, min, standard deviation, range) of slope in percent rise. These calculations are performed using the projected coordinate system "WGS 1984 UTM Zone 35S".

Source: USGS (2004). Shuttle Radar Topography Mission, 1 ArcSecond scene SRTM_u03_n008e004, Unfilled Unfinished 2.0, Global Land Cover Facility, University of Maryland, College Park, Maryland, February 2000.

Distance from electricity grid. This variable measures the shortest distance in kilometers between the centroid of a municipality and the South African high-voltage power grid in 1996. This measure is calculated using the proximity tool in ArcGIS 10 using the municipality shape file and power grid shape file, containing the geo-referenced high-voltage Eskom power lines in South Africa in 1996.
Source: Eskom (1997). Annual Report 1996. Johannesburg, Eskom.

Distance from main road. This variable measures the shortest distance in kilometers between the centroid of a municipality and the closest main road in 1996. This measure is calculated using the proximity tool in ArcGIS 10 using the municipality shape file and the shape file of main roads in 1996 included in the 1996 GIS database.
Source: Statistics South Africa, 1996 GIS databases.

Population controls:

Population density. We calculate this variable by dividing the total population in a given municipality, using 1996 and 2001 census data, by the area of that municipality measured in square kilometers. The area is calculated using the area tool in ArcGIS 10 using the 1996 municipality shape file.
Source: Statistics South Africa, 1996 and 2001 Community Profiles and GIS databases.

Number of households. This variable is the number of households living in a given municipality in 1996.
Source: Statistics South Africa, 1996 Community Profile.

Number of non-electrified households. This variable is defined as the number of households without access to electricity in a given municipality. It counts the number of households in a municipality that do not answer "electricity" to the census question "What type of energy/fuel does this household MAINLY use for lighting?" (see section B, 2.1 in the 1996 census household questionnaire).
Source: Statistics South Africa, 1996 Community Profile.

Socioeconomic controls:

Share of population with no schooling. This variable is the number of people aged five years or more with no schooling as a percentage of the total population aged five years or more in a given municipality. For the census questions corresponding to schooling see section A, 16.1 and P-17 in the census household questionnaires in 1996 and 2001 respectively.
Source: Statistics South Africa, 1996 and 2001 Community Profiles.

Median income. This is the median household income in South African Rand (ZAR) in 1996 (nominal) and 2001 (real). Figures for the two years were made comparable by inflation-adjusting the 2001 data using the Consumer Price Index (CPI). CPI base 2008 (i.e., equal to 100 in 2008) is 48.6 in 1996 and 66.1 in 2001, so we deflate 2001 income by dividing by 1.36. For the census questions corresponding to income see section A, 20 and P-22 in the census household questionnaires in 1996 and 2001 respectively.
Source: Statistics South Africa, 1996 and 2001 Community Profiles.

Share of labor force with low income. This variable is the share of individuals in the labor force earning less than 500 ZAR in 1996. Since data is grouped in earning ranges and the two census rounds use different groupings, it was not possible to match 1996 and 2001 figures. Hence, we can use the 1996 level variable in our regressions, but not the 1996-2001 difference. For the census questions corresponding to income see section A, 20 and P-22 in the census household questionnaires in 1996 and 2001 respectively.
Source: Statistics South Africa, 1996 Community Profiles.

3. Distinguishing Eskom and municipal electricity distribution areas

According to the Department of Minerals and Energy (2001: 5), "there were approximately 450 municipalities distributing electricity in 1991, but the number has reduced to fewer than 250 as a result of the rationalisation of local authorities after 1994." In 1995, the National Electricity Regulator (NER 2000: 93) granted temporary distribution licenses to 362 municipalities. About a quarter of these made losses from their distribution of electricity and lacked the means for large-scale electrification (Department of Minerals and Energy 1998: 43). To identify areas in which Eskom would be likely to directly carry out electrification projects, we obtained the 1996 membership list from the Association of Municipal Electricity Undertakings (AMEU). For each member, the list provides the address and name of the head of the electricity department of a municipality. We use this information to approximate a split into municipal and Eskom distribution areas. Where the AMEU list indicates that a city or town had its own electricity department, we code the relevant Metropolitan Local Council (MLC) or Transitional Local Council (TLC) as having municipal distribution. In addition, we code any Transitional Rural Council (TRC) with the same name as a TLC identified from the AMEU list as having municipal distribution, since "many [municipal distributors] also distribute electricity in adjacent rural areas" (Department of Minerals and Energy 2001: 5), which makes them less likely to have to rely on Eskom. For instance, Stellenbosch is on the AMEU list, so in our dataset both Stellenbosch TLC and Stellenbosch TRC are coded as having municipal distribution. We also make a small number of municipality-specific coding decisions. The Lowveld and Escarpment Regional Services Council (later District Council) is on the AMEU list. It provided services including electricity to and on behalf of a number of municipalities, several of which have separate entries on the AMEU list. We code all municipalities that fall under it as having municipal distribution, as they did not have to rely on Eskom for electrification. Uitenhage, too, is on the AMEU list, and we code it as part of the municipal distribution sample. Here, Eskom was involved in electrification, but through a joint venture with the local authority (Qase et al. 2001). These choices are based on our best judgment about the degree of municipal accountability for electrification. The pattern of results that we report does not change when we code these observations differently, or drop them from the analysis. Our estimate is that municipal distributors were responsible for electrification in 260 municipalities in our dataset.

B. Appendix: Other Tables and Figures

Table B1: Descriptive statistics for municipality dataset

	a. All observations (N = 799)				*b. Enfranchised non-white < 86.65 (N = 399)*				*c. Enfranchised non-white ≥ 86.65 (N = 400)*			
Variable	Mean	Std. dev.	Min	Max	Mean	Std. dev.	Min	Max	Mean	Std. dev.	Min	Max
ΔElectricity	9.1	19.1	-54.1	95.5	3.7	14.7	-54.1	60.2	14.6	21.3	-42.8	95.5
ΔNightlight	2.4	12.1	-36.7	100.0	1.2	9.7	-30.0	100.0	3.6	14.0	-36.7	100.0
Electricity (1996)	63.1	27.0	0.0	100.0	74.0	19.8	6.2	100.0	52.3	28.8	0.0	100.0
Nightlight (1996)	62.9	39.2	0.0	100.0	71.5	38.3	0.0	100.0	54.4	38.4	0.0	100.0
Electricity (2001)	72.3	20.0	0.5	100.0	77.7	16.5	21.2	100.0	66.9	21.7	0.5	100.0
Nightlight (2001)	65.4	38.2	0.0	100.0	72.7	37.7	0.0	100.0	58.1	37.3	0.0	100.0
Enfranchised	82.2	18.5	0.0	100.0	69.8	18.8	0.0	86.6	94.6	4.8	86.7	100.0
Enfranchised black	57.2	36.3	0.0	100.0	40.5	30.7	0.0	86.0	73.9	33.6	0.0	100.0
Enfranchised coloured	22.9	31.5	0.0	99.2	26.8	30.1	0.0	84.2	19.0	32.4	0.0	99.2
Enfranchised Indian	1.4	6.5	0.0	87.6	1.6	5.8	0.0	53.9	1.1	7.1	0.0	87.6
ANC seat share	54.7	31.0	0.0	100.0	40.7	26.6	0.0	100.0	68.7	28.8	0.0	100.0
NP seat share	17.9	24.0	0.0	100.0	25.2	26.1	0.0	100.0	10.7	19.3	0.0	100.0
IFP seat share	1.5	8.6	0.0	100.0	1.5	7.5	0.0	71.4	1.5	9.7	0.0	100.0
Distance from electricity grid (1996)	49.2	46.5	0.1	266.7	39.7	33.5	0.1	211.5	58.8	54.9	0.4	266.7
Distance from main road (1996)	19.5	23.1	0.0	201.4	18.0	23.2	0.0	134.0	20.9	22.9	0.0	201.4
Slope	1.4	0.9	0.2	4.9	1.3	0.9	0.2	4.9	1.4	0.9	0.2	4.1
Elevation	970.8	530.4	5.2	2061.6	891.9	583.0	5.2	1899.0	1049.5	459.6	24.1	2061.6
Number of households (1996)	10367.2	26375.7	4.0	265111.0	10446.7	29086.4	4.0	239313.0	10287.8	23397.5	52.0	265111.0
Population density (1996)	3797.1	17951.4	0.3	233598.8	4730.9	19378.3	0.3	233598.8	2865.7	16376.4	3.4	226593.5
Share of population with no schooling (1996)	20.7	12.7	0.0	77.6	16.7	12.1	0.0	77.6	24.7	12.1	1.3	61.7
Low income (1996)	38.6	18.7	0.0	96.1	34.2	19.4	0.0	90.1	42.9	16.8	8.1	96.1
Median income (1996)	16340.0	28281.5	0.0	360000.0	24228.0	37846.7	2079.0	360000.0	8471.7	6827.7	0.0	41927.8
Households without electricity (1996)	4074.0	9136.6	0.0	72214.0	2325.8	5949.1	0.0	50579.0	5817.7	11204.8	0.0	72214.0
ΔNumber of households	3663.1	16286.2	-21450.7	267563.1	4029.7	19272.3	-21450.7	267563.1	3297.3	12638.0	-6731.8	127569.1
ΔPopulation density	2503.8	8862.0	-4700.5	88052.7	3005.0	9449.7	-4700.5	79469.7	2003.9	8215.6	-503.6	88052.7
ΔShare of population with no schooling	-2.0	6.2	-43.6	30.9	-2.0	6.3	-43.6	30.9	-1.9	6.1	-26.8	28.9
ΔMedian income	1001.3	25576.9	-355473.3	89634.6	-107.8	35689.1	-355473.3	89634.6	2107.6	5948.4	-23443.5	24200.7

Table B2: Descriptive statistics for contiguous census tracts dataset

Variable	Mean	Std. dev.	Min	Max
ΔElectricity	12.7	25.6	-87.7	99.9
Enfranchised	86.5	13.4	0.0	100.0
Enfranchised black	69.7	31.0	0.0	100.0
Enfranchised coloured	11.4	22.6	0.0	99.2
Enfranchised Indian	4.8	14.1	0.0	87.6
Distance from electricity grid (1996)	53.8	53.4	0.0	214.4
Distance from main road (1996)	16.6	18.5	0.0	134.0
Slope	1.7	1.1	0.1	5.9
Elevation	954.5	533.5	3.4	2209.5
Number of households (1996)	2155.2	4247.9	1.0	83051.0
Population density (1996)	6907.1	27722.4	0.0	571911.4
Share of population with no schooling (1996)	9.9	8.5	0.0	63.2
Low income (1996)	40.4	23.8	0.0	100.0
Median income (1996)	27365.5	53294.6	0.0	360000.0
Households without electricity (1996)	925.8	1729.8	0.0	29857.0
ΔNumber of households	1712.0	4354.2	-7203.9	38908.8
ΔPopulation density	27185.4	83197.2	-226811.2	1627336.0
ΔShare of population with no schooling	13.0	12.0	-29.6	76.1
ΔMedian income	-6729.9	49655.9	-360000.0	134198.3

Note: N = 7530.

Table B3: Robustness to excluding municipalities with high levels of electrification in 1996

	(1)	(2)	(3)	(4)	(5)	(6)
a. Direct effects						
Enfranchised	0.375***	0.475***	0.522***	0.658***	0.905***	0.813***
	(0.063)	(0.093)	(0.110)	(0.132)	(0.233)	(0.278)
b. Conditional effects						
Enfranchised	0.130	0.239*	0.299*	0.474**	0.558	0.488
	(0.081)	(0.134)	(0.152)	(0.186)	(0.396)	(0.434)
ANC seat share	-0.535***	-0.370*	-0.376*	-0.118	-0.439	-0.435
	(0.142)	(0.214)	(0.219)	(0.280)	(0.485)	(0.589)
Enfranchised × ANC seat share	0.006***	0.005*	0.005*	0.002	0.005	0.005
	(0.002)	(0.002)	(0.002)	(0.003)	(0.005)	(0.006)
Including municipalities with 1996 levels of electrification <	90	80	70	60	50	40
Observations	667	517	405	308	237	181

Note: The dependent variable is the percentage share of households with electricity (difference 1996-2001) calculated from census data. All regressions include a constant, province fixed effects, geographic controls, population and socioeconomic controls (1996), and households without electricity (1996). Refer to Table 1 for a description of control variables, and the data appendix for full details. The pattern of results is not affected when we vary the combination of controls. OLS estimates with robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table B4: Robustness to excluding municipalities in individual provinces

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
a. Direct effects									
Enfranchised	0.160***	0.182***	0.177***	0.204***	0.208***	0.167***	0.180***	0. 184***	0.255***
	(0.044)	(0.042)	(0.040)	(0.043)	(0.039)	(0.043)	(0.043)	(0.042)	(0.048)
b. Conditional effects									
Enfranchised	0.084*	0.070	0.041	0.035	0.049	0.034	0.028	0.054	0.104*
	(0.050)	(0.044)	(0.043)	(0.044)	(0.043)	(0.045)	(0.048)	(0.045)	(0.058)
ANC seat share	-0.218**	-0.366***	-0.397***	-0.367***	-0.450***	-0.350***	-0.358***	-0.396***	-0.379***
	(0.088)	(0.091)	(0.086)	(0.090)	(0.097)	(0.089)	(0.089)	(0.098)	(0.100)
Enfranchised × ANC seat share	0.003**	0.004***	0.004***	0.004***	0.005***	0.004***	0.004***	0.005***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Sample excluding	EC	FS	GP	KZN	MP	NW	NC	NP	WC
Observations	623	704	754	732	722	746	693	747	671

Note: The dependent variable is the percentage share of households with electricity (difference 1996-2001) calculated from census data. Province abbreviations: EC = Eastern Cape, FS = Free State, GP = Gauteng Province, KZN = KwaZulu-Natal, MP = Mpumalanga, NW = North West, NC = Northern Cape, NP = Northern Province / Limpopo, WC = Western Cape. All regressions include a constant, province fixed effects, geographic controls, population and socioeconomic controls (1996), and households without electricity (1996). Refer to Table 1 for a description of control variables, and the data appendix for full details. The pattern of results is not affected when we vary the combination of controls. OLS estimates with robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Figure B1: Overview of South Africa's census geography in 1996

Map 1: South Africa's nine provinces

Map 2: Africa reference map

Map 3: Municipal boundaries in Gauteng

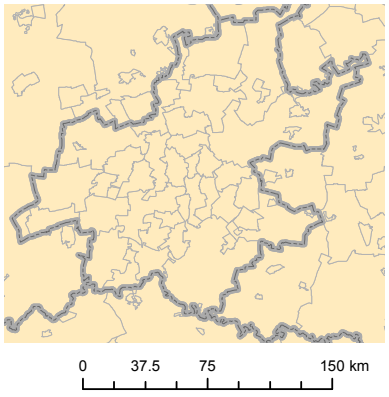
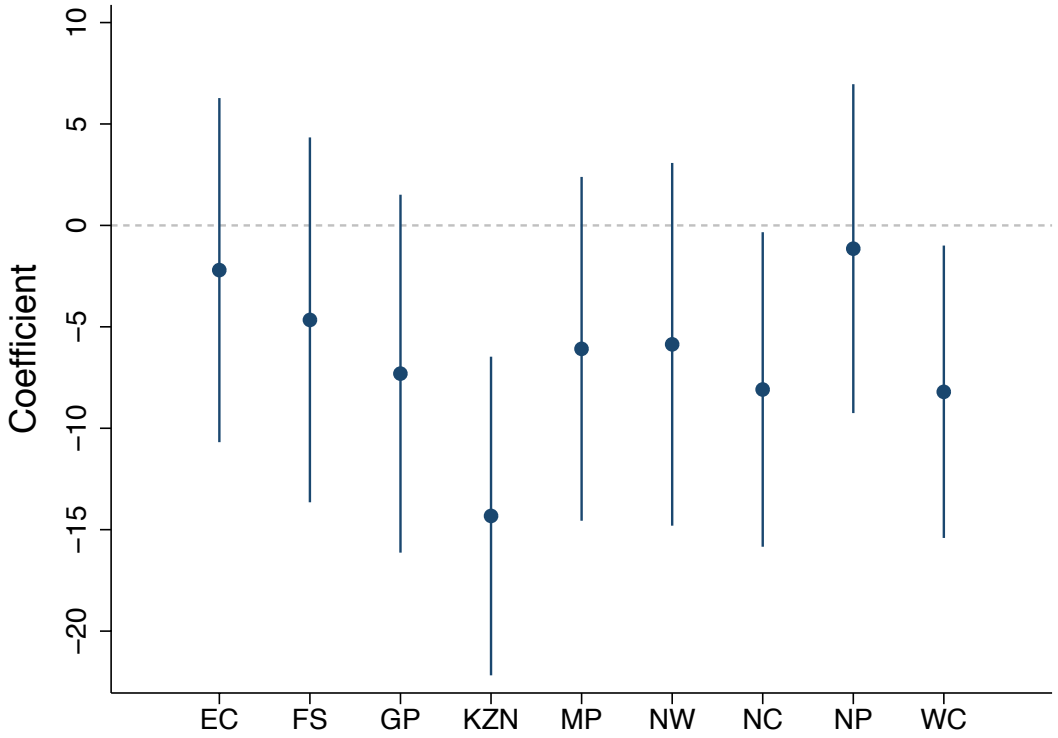
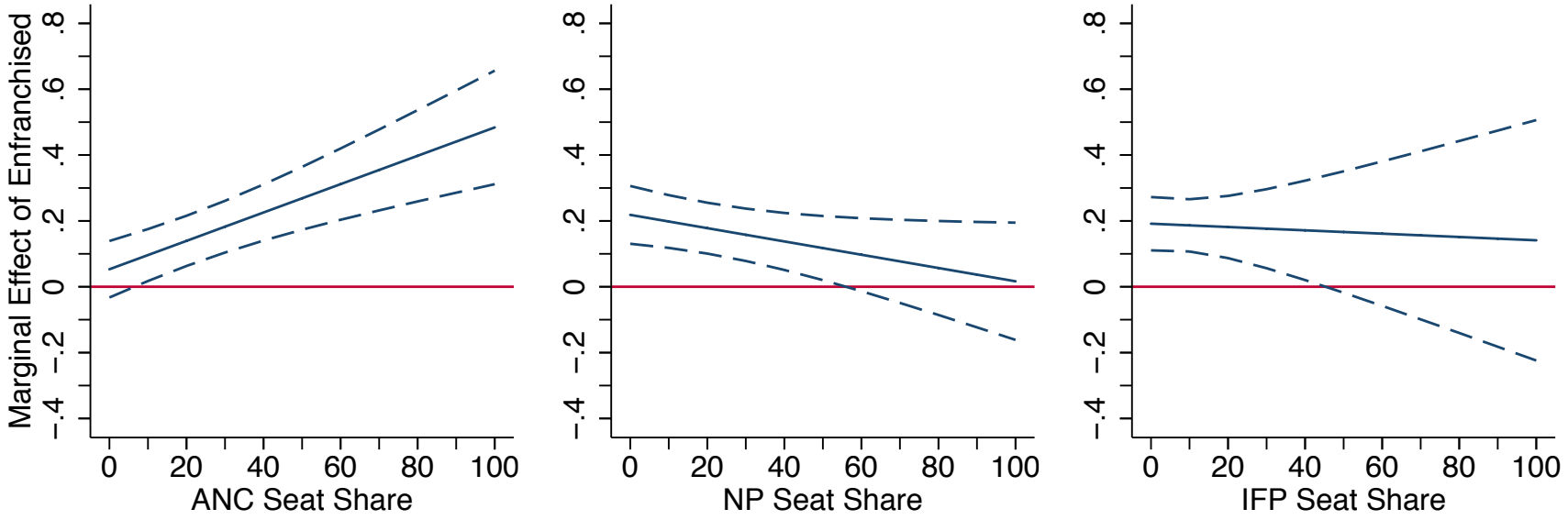


Figure B2: Coefficients on province fixed effects



Note: The graph complements the results in column (5) of Table 1 and reports the coefficient on each province fixed effect with 95% confidence intervals. EC = Eastern Cape, FS = Free State, GP = Gauteng Province, KZN = KwaZulu-Natal, MP = Mpumalanga, NW = North West, NC = Northern Cape, NP = Northern Province / Limpopo, WC = Western Cape.

Figure B3: Conditional effect with alternative measures of partisan representation



Note: The first graph is based on the results in column (5) of Table 4, plotted with 95% confidence intervals. The following two graphs show the results when we replace the ANC's seat share with that of the NP and the IFP, respectively, and run an otherwise identical model.