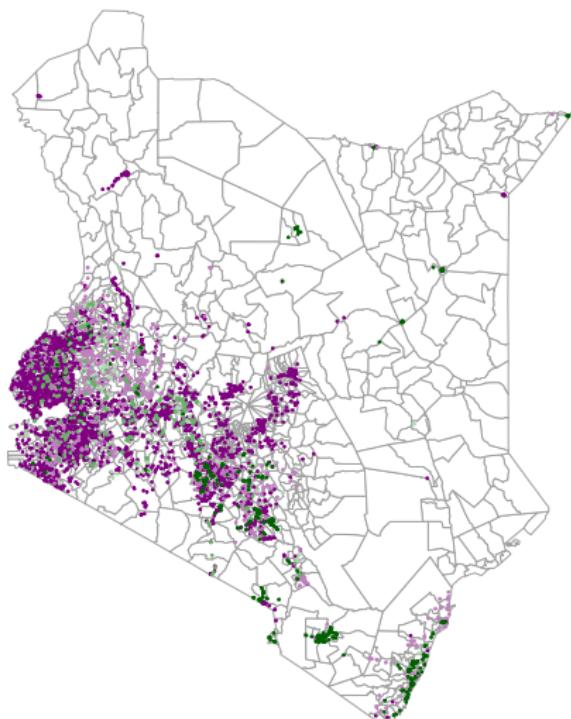


# Data Analysis: The geographic distribution of the LMCP roll-out

January 2024

# Construction status at LMCP sites as of May 2017

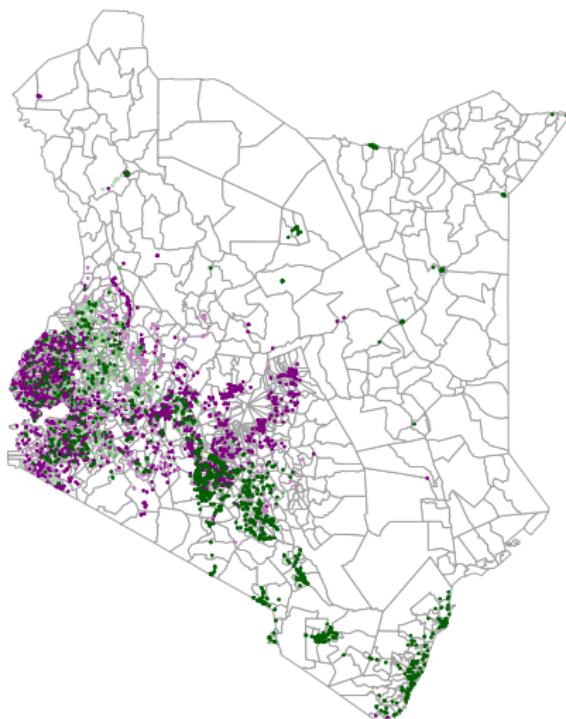
Data from AfDB/WB Phase I, Lots 1-10



- No Construction
- Designs Approved
- Poles Erected
- Stringing Completed
- Metering in Progress
- Metering Complete

# Construction status at LMCP sites as of May 2018

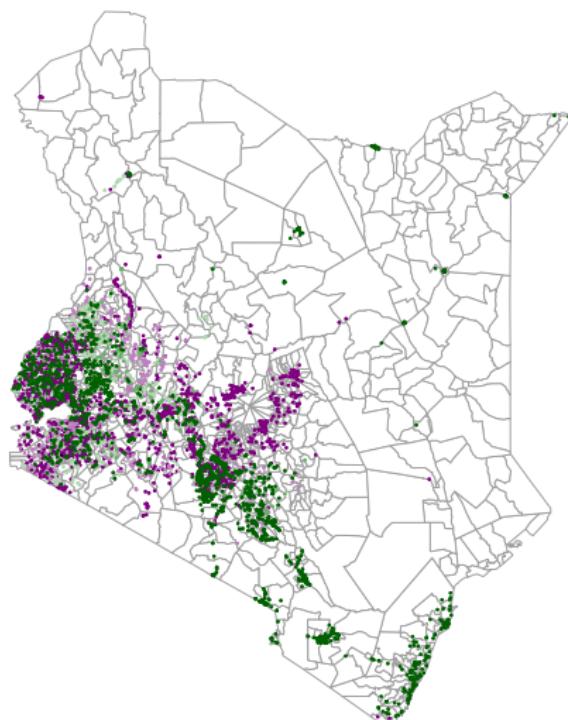
Data from AfDB/WB Phase I, Lots 1-10



- No Construction
- Designs Approved
- Poles Erected
- Stringing Completed
- Metering in Progress
- Metering Complete

# Construction status at LMCP sites as of May 2019

Data from AfDB/WB Phase I, Lots 1-10

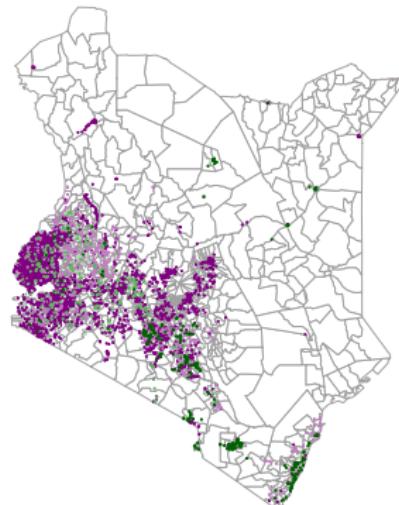


- No Construction
- Designs Approved
- Poles Erected
- Stringing Completed
- Metering in Progress
- Metering Complete

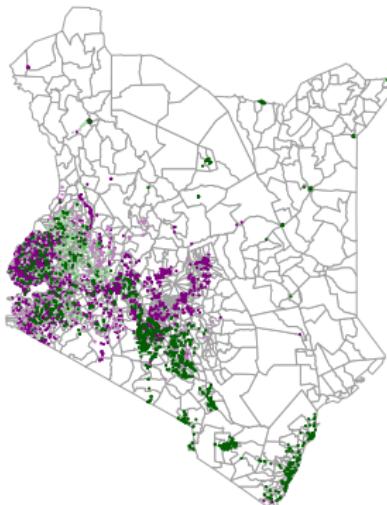
# LMCP construction progress over time:

Data from AfDB Phase I, Lots 1-10

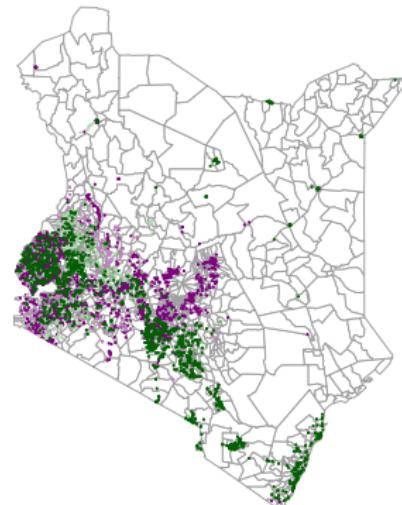
May 2017



May 2018



May 2019

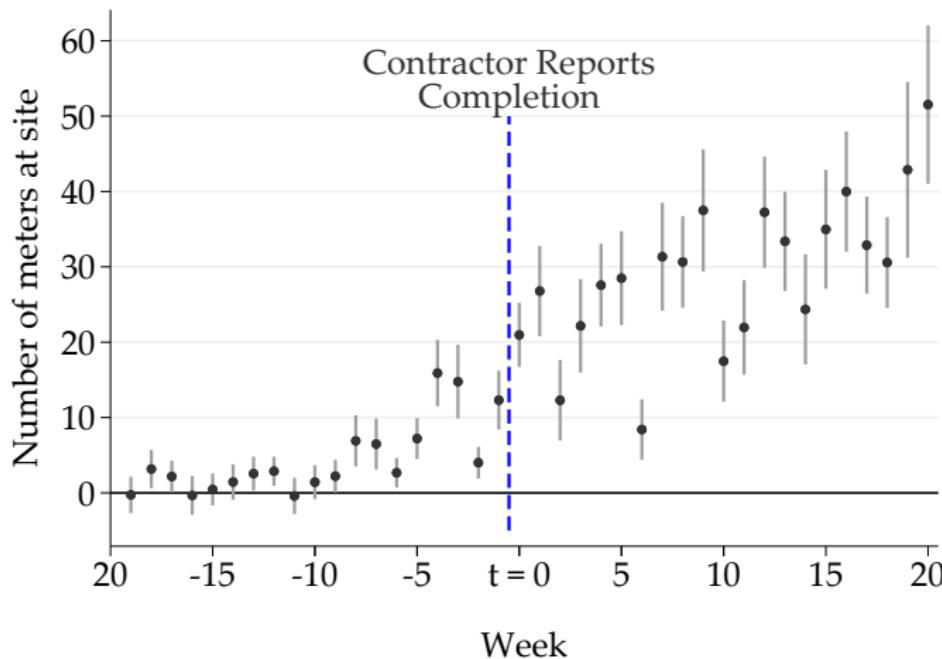


- No Construction
- Designs Approved
- Poles Erected

- Stringing Completed
- Metering in Progress
- Metering Complete

## Different data sources show similar timing

Meter activation date from Kenya Power database shows 30-50 new meters activated in the 4–16 weeks after the contractor reports completing a site

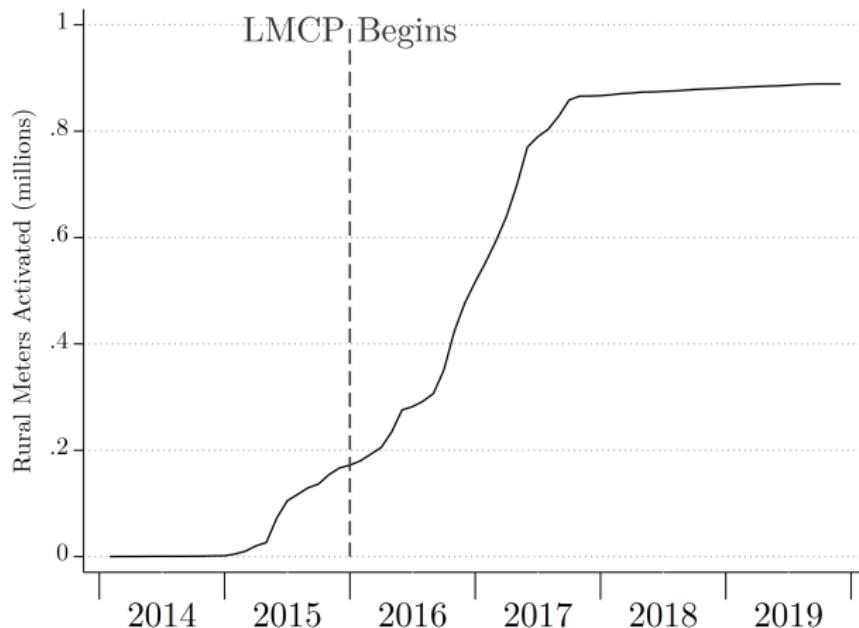


## What is an 'LMCP meter'?

- ▶ Activation date January 1, 2016 or later
- ▶ GPS coordinates are outside any urban areas
- ▶ Tariff value "P0 - PREPAYMENT DOMESTIC" or reference code cites funding from GPOBA, GOK, AfDB, WB, REA, KPLC, or LMCP
  - ▶ Only ~ 300,000 meters are marked with LMCP, AfDB, or WB in our data, so we include these other funding sources as well.
  - ▶ It is our understanding that all LMCP meters are prepaid, so we exclude meters marked "A0 - DOMESTIC", as this may indicate postpaid meters.
- ▶ We are considering excluding the 10% least densely populated constituencies, as these are likely targeted by other programs
  - ▶ North Horr, Fafi, Laisamis, Isiolo North/South, Voi, Bura, Samburu North/East, Galole, Wajir North/South/West, Garsen, Lamu East, Turkana North/East/West, Dadaab, Moyale, Lagdera, Tarbaj, Ijara, Loima, Kitui South, Eldas, Kajiado West, Laikipia North, Taveta

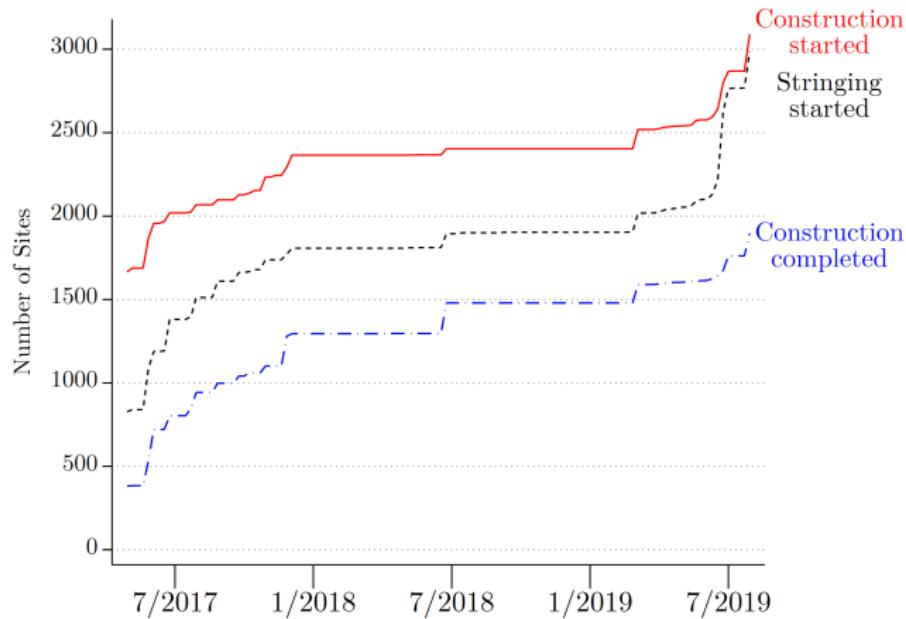
## The timing of construction

Data from Kenya Power database, using meter activation dates of household prepaid meters in rural areas:



# The timing of construction

Week-by-week construction data from contractor progress reports  
for AfDB/WB Phase I, Lots 1-10

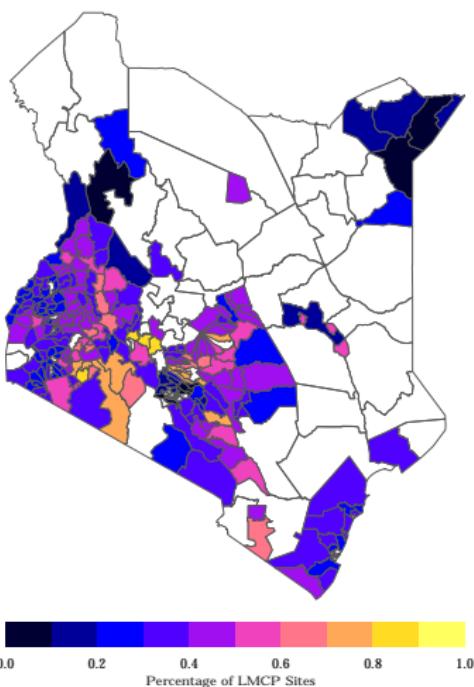


# Research question: How do governments choose **where** to build public works?

Governments across the world fund billions of USD in public infrastructure construction each year:

- ▶ Constraints on political favoritism in public goods provision may help long-term economic development
  - Evidence from USA, EU, Brazil, elsewhere: Easterly and Levine 1997; Posner 2005; Michalopoulos and Papaioannou 2016; Ferraz and Finan 2008; Hodler and Raschky 2014; Burgess et al 2015; World Bank 2007; Opalo 2020; Harris and Posner 2019; Nordhaus 1975; Alesina and Roubini 1992; Baskaran, Min, and Uppal 2015; Marx 2018
- ▶ Decentralization Evidence from China, Latin America, USA, elsewhere:  
Landry 2008; O'Neill 2005; Gibson 2010; Mickey 2015; Dickvick 2011; Green 2010; Keller 2002; Franck and Rainer 2012
- ▶ Favoritism in electricity sector
  - Evidence from India, Ghana, elsewhere: Min 2019; Mahadevan 2024; Briggs 2021; MacLean et al 2016

## How many LMCP sites were allocated to constituencies?



Note: Topcoded above 1%, removed top+bottom 10% densest populated constituencies

# How were transformers selected for LMCP (2015-2016)?

From the Kenya Power website:

The screenshot shows a web browser window with the URL [kplc.co.ke/content/item/1694/last-mile-connectivity-program-q---a](http://kplc.co.ke/content/item/1694/last-mile-connectivity-program-q---a). The navigation bar includes a yellow home icon, links for Kenya Power, Customer Service, Investor Relations, and Public Information, and standard back, forward, and refresh buttons. Below the navigation bar is a breadcrumb trail: Home > Media Center > Press Releases > Last Mile Connectivity Program Q & A.

## Last Mile Connectivity Program Q & A

### Q: What criteria was used to choose transformers?

A: The selection of the 5320 distribution transformers for the first phase was done using the CDF distribution formula and hence a few in each constituencies were selected. This was done in spirit of “equitable distribution of resources”. This has also been applied to the subsequent phases.

## How was transformer construction allocated (2008-2015)?

**From records of Kenyan parliamentary debates:**

Member of Parliament:

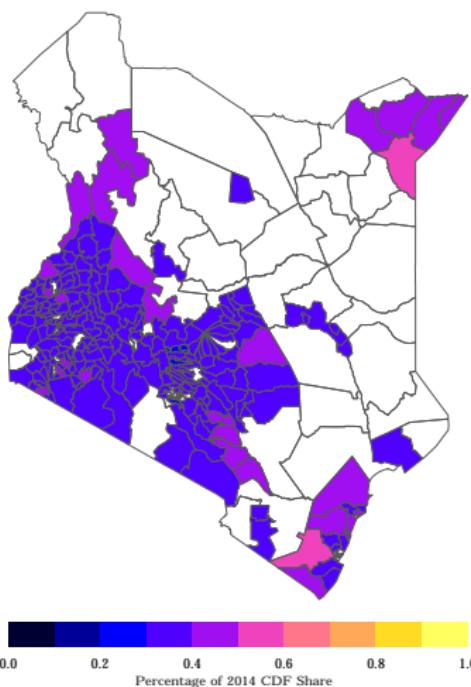
"Mr. Speaker, Sir, how many projects is the Ministry supposed to do in every constituency per year? For the last eight years, they have done only 11 projects."

Charles Keter, Assistant Minister for Energy and Petroleum:

"Currently, we are using the CDF formula. The hon. Member will realise that in this financial year, he will get over Kshs15 million and we are doing about five projects. In the last financial year, he also got the same amount of money, that is, Kshs15 million which did three projects. Right now, the Ministry of Energy allocates funds using the CDF formula."

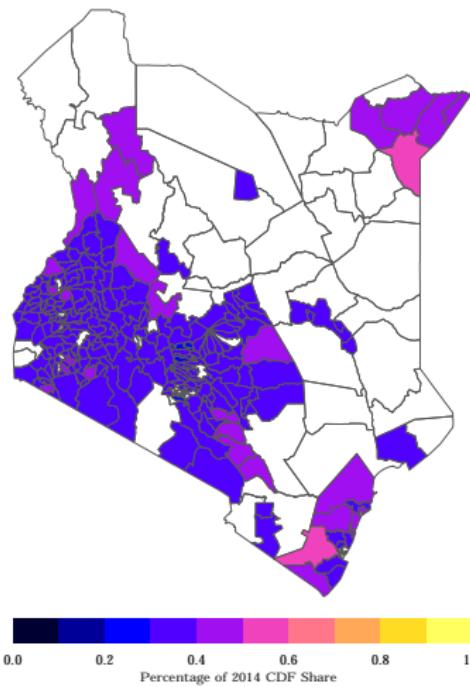
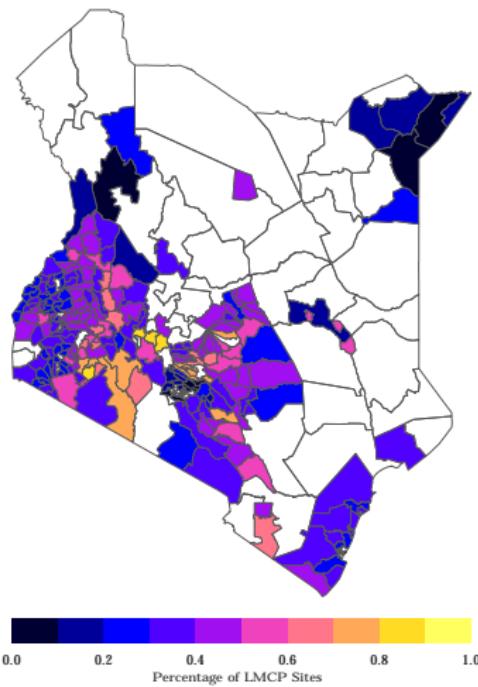
Nairobi, 25 March 2010

## What do CDF allocations look like?



Note: Topcoded above 1%, removed top+bottom 10% densest populated constituencies

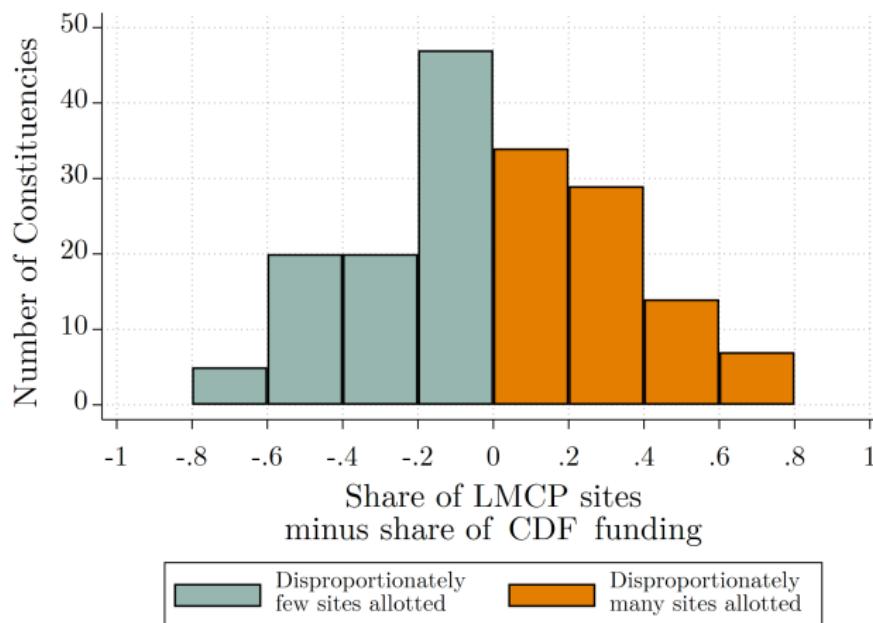
## LMCP and CDF allocations don't match perfectly



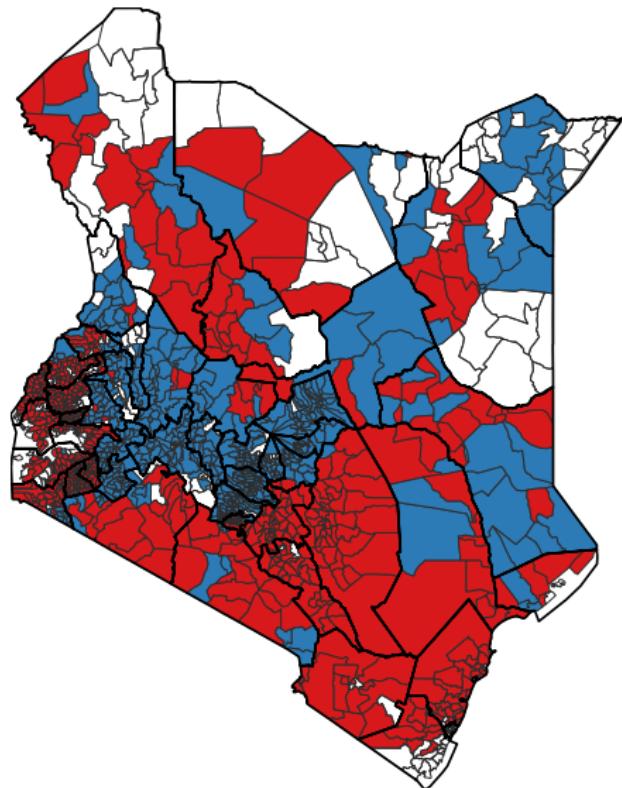
## LMCP sites allocated relative to CDF rule

We calculate the difference for each constituency.

If LMCP site share = CDF share, then the difference should be 0:



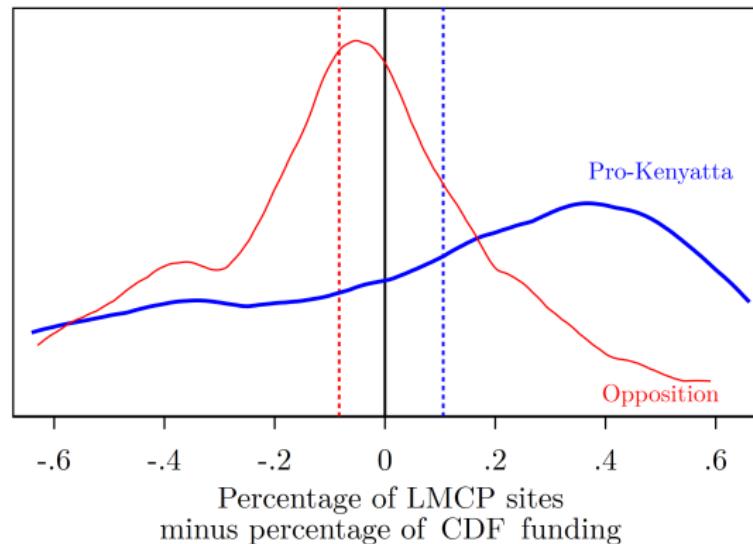
## Ward-level 2013 presidential election results



 Opposition  
Kenyatta

## Allocation of LMCP sites across constituencies

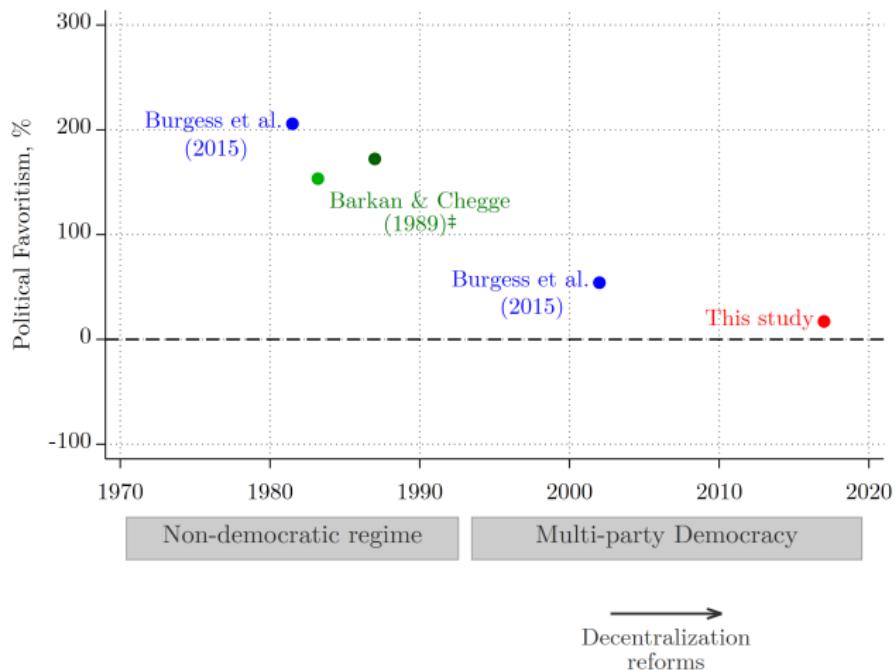
Wards that voted pro-Kenyatta in the 2013 election got more LMCP sites relative to their CDF allocation, whereas wards that did not got fewer sites relative to their CDF allocation:



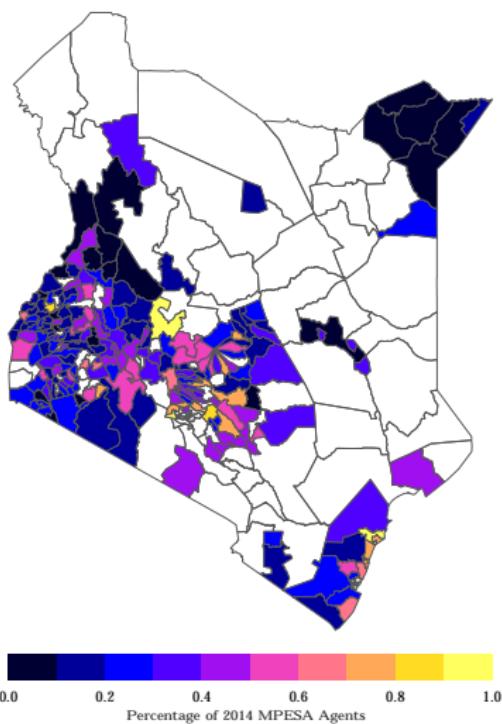
The dotted lines indicate the averages.

# Significantly less favoritism than in earlier decades

Historical estimates of political favoritism in Kenya:



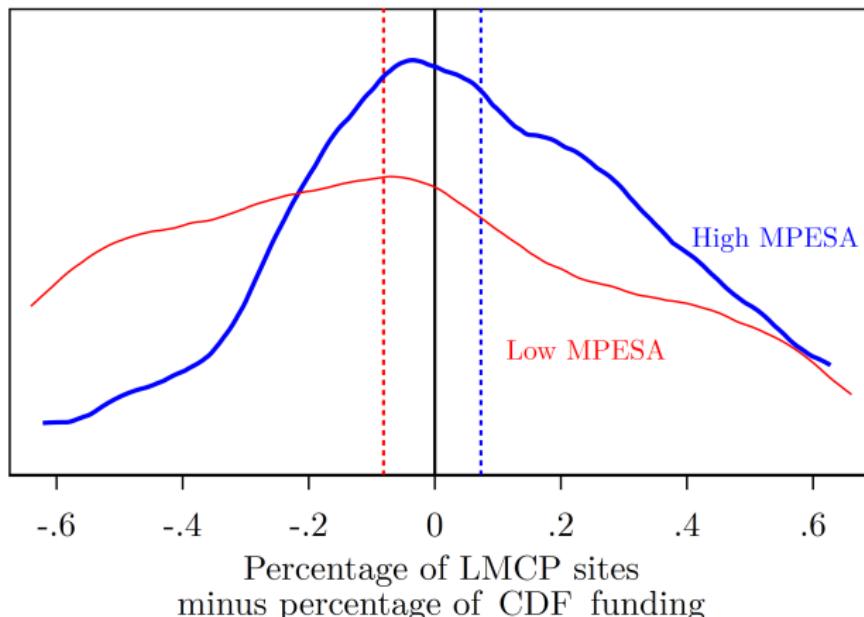
# Does LMCP allocation follow M-PESA roll-out?



Note: Topcoded above 1%, removed top+bottom 10% densest populated constituencies

## More LMCP sites allocated to constituencies with high mobile money penetration

LMCP may have targeted areas with potential for economic growth:



## Conclusions

- ▶ The LMCP achieved major advancements in the number of Kenyan households who are connected to the grid
- ▶ We calculate almost one million prepaid meters activated in rural areas between 2015 and 2019 (the latest year for which we have data)
- ▶ Per Kenya Power's website, LMCP sites were supposed to be allocated across constituencies according to the CDF allocations.
- ▶ This allocation seems to have largely been followed, although there were some minor deviations.