

# **IMPROVING RURAL ACCESSIBILITY IN INDONESIA: FUEL SUBSIDY VERSUS INFRASTRUCTURE DEVELOPMENT**

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# INTRODUCTION

## Motivation

- ▶ Indonesia has been subsidizing fuel for a long time, but high fuel prices in rural areas was observed in the last decade.
- ▶ Linking underdeveloped regions to growth centers is a challenge.
- ▶ One Price Fuel program started in 2016 to guarantee the availability of subsidized fuel at the same price control.
- ▶ Political economy perspective of infrastructure development vs. fossil fuel subsidy (Ichsan, Lockwood, and Ramadhani 2022).



## Research Question

- ▶ Does the fuel policy improve accessibility in rural areas?
- ▶ Which policy option is more efficient?



# INSTITUTIONAL CONTEXT AND CONCEPTUAL FRAMEWORK

## ACCESSIBILITY IN RURAL AREA

### Transportation Cost

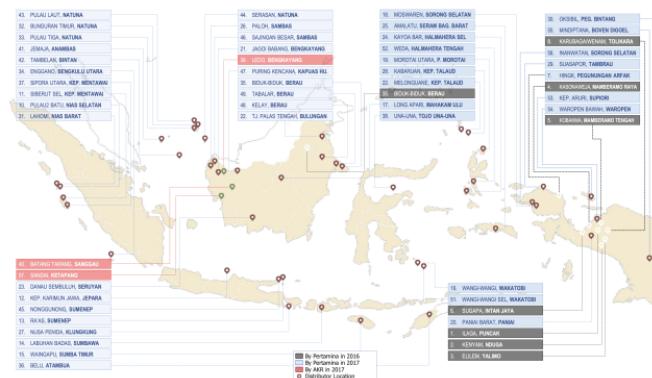
- ▶ Transportation spending **dominates energy spending** (Sambodo and Novandra 2019)
- ▶ The **lack of adequate and reliable infrastructure** drives up the transportation cost (Sandee 2016).

# INSTITUTIONAL CONTEXT AND CONCEPTUAL FRAMEWORK

## FOSSIL FUEL SUBSIDY REGIME



**Figure 1.** New Distributor's Village Location of the Fuel Program



**Figure 2.** New Distributor's Village Location of the Fuel Program

# INSTITUTIONAL CONTEXT AND CONCEPTUAL FRAMEWORK

## DECENTRALIZATION OF DEVELOPMENT

- ▶ Developing countries believe **decentralization and local government reform** are **more efficient** in bringing local development (Martinez-Vazquez, Lago-Peñas, and Sacchi 2017) and **providing public goods better** than central government (Arends 2020).
- ▶

# INSTITUTIONAL CONTEXT AND CONCEPTUAL FRAMEWORK

## DECENTRALIZATION OF DEVELOPMENT

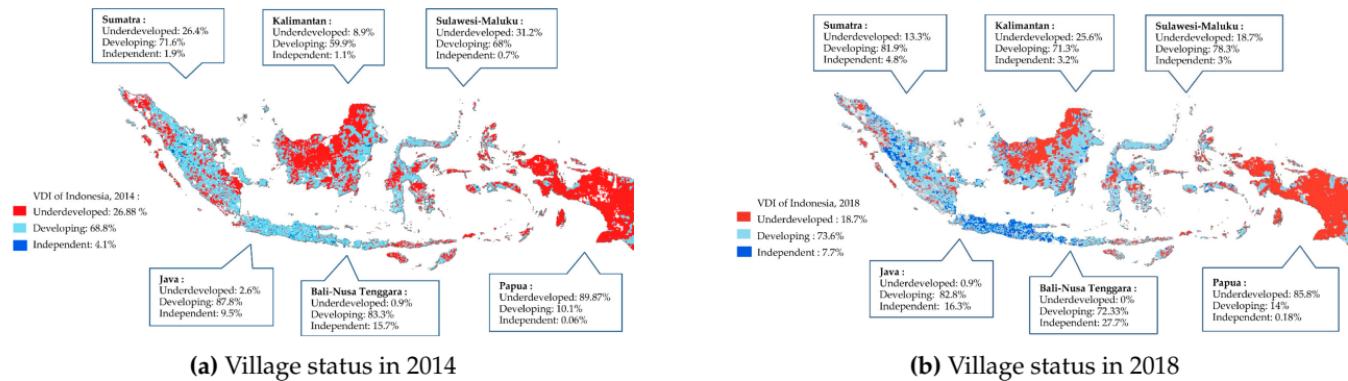


Figure 3. Indonesia's VDI's status

# DATA

## DATA DESCRIPTION

- ▶ I obtained the **Village Potential Statistics** data for the years 2014 and 2018 from Indonesia's Central Bureau of Statistics complemented with village fund transfer data from the Ministry of Village Development.
- ▶ I measure rural accessibility using the **log of unit transportation cost** (in Rp/km) of each individual village.<sup>1</sup>
- ▶ I obtain the list of 57 government-appointed new distributor's village locations from the NOC and then define all the villages that are in the same sub-district as the **treated** by the program, i.e.  $D_{it} = 1$ .
  - **For example**, suppose the government in 2016 gives the order for the NOC to build a new distribution point at village *A*. Village *A* is in the same sub-district as villages *B*, *C*, and *D*. Then all villages *A*, *B*, *C*, and *D* are treated.

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<sup>1</sup>I define unit transportation cost,  $y_{it}$ , as the **transportation cost** from the village office to the sub-district office (in thousands Rp),  $c_{it}$ , divided by the **distance** from the village office to the sub-district office (in km),  $d_{it}$ .

$$y_{it} = \frac{d_{it}}{c_{it}} \quad (1)$$

# DATA

## SUMMARY STATISTICS

**Table 1.** Summary statistics of main variables.

	2014					2018				
	Mean	S.D.	Min	Max	Obs.	Mean	S.D.	Min	Max	Obs.
<i>Transportation Cost</i>										
Unit transportation cost in 000s Rp./km	5.14	21.02	0.00	1000.00	3407	4.93	12.47	0.00	400.00	3411
<i>Natural Disaster</i>										
Landfall occurrence average per year	0.07	0.37	0.00	6.00	3407	0.10	0.49	0.00	9.00	3411
Earthquake occurrence average per year	0.04	0.35	0.00	7.00	3407	0.46	1.60	0.00	9.00	3411
<i>Infrastructure</i>										
Number of PLN electricity user household	366.92	610.20	0.00	6726.00	3407	422.79	651.77	0.00	6468.00	3411
Number of Junior High School	0.54	0.85	0.00	9.00	3407	0.61	0.89	0.00	12.00	3411
Number of Senior High School	0.27	0.66	0.00	7.00	3407	0.33	0.73	0.00	8.00	3411
<i>Inter-government Transfer</i>										
Revenue from village fund transfer	113.55	129.92	0.00	1253.00	3407	158.93	289.35	0.00	13662.00	3172

# EMPIRICAL STRATEGY

## IDENTIFICATION

### **Default**

Block content.

### **Alert**

Block content.

### **Example**

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# EMPIRICAL STRATEGY

## MODEL SPECIFICATION

$$\log(y_{it}) = \alpha_i + \delta_1 prog_{it} + \gamma_1 VF_{it} +$$

# RESULTS

## MAIN RESULTS

### Items

- ▶ Cats
  - British Shorthair
- ▶ Dogs
- ▶ Birds

### Enumerations

1. First
  - 1.1 First subpoint
2. Second
3. Last

### Descriptions

- Apples Yes  
Oranges No  
Grappes No

# RESULTS

## ROBUSTNESS

### Items

- ▶ Cats
  - British Shorthair
- ▶ Dogs
- ▶ Birds

### Enumerations

1. First
  - 1.1 First subpoint
2. Second
3. Last

### Descriptions

- Apples Yes  
Oranges No  
Grapes No

## CONCLUDING REMARKS

**Table 2.** Largest cities in the world (source: Wikipedia)

City	Population	City	Population
Mexico City	20,116,842	Mexico City	20,116,842
Shanghai	19,210,000	Shanghai	19,210,000
Peking	15,796,450	Peking	15,796,450
Istanbul	14,160,467	Istanbul	14,160,467

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