Does Education Foster Electoral Turnout? Evidence from Indonesia

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Abstract

This study shows that nine years of compulsory education in Indonesia does not foster electoral turnout, especially during the simultaneous elections (district, presidential, and gubernatorial) in the first decade of direct elections (2004-2014). Gender, marital status, and Islam (the largest religion in Indonesia) also do not have a significant effect on electoral turnout. However, a factor that determinant to induces electoral turnout is ethnicity; the ethnic Javanese/Balinese, as the largest ethnic group in Indonesia, are more likely to participate in direct district, presidential, and gubernatorial elections than other ethnic groups. Although education does not foster electoral turnout, nine years of compulsory education does significantly affect the younger cohort, who go on to seek higher education.

Keywords: Indonesia, electoral turnout, education, compulsory

Introduction

What is the link between education and electoral turnout in Indonesia? The link between these elements is important to consider given Indonesia's status as a constitutional democracy that guarantees all Indonesians the right to an education. Elections, moreover, are foundational to the Indonesian people's ability to exercise their sovereignty.

All Indonesian citizens have the right to an education. Consequently, on 2 May 1984, the Indonesian government mandated that all Indonesian citizens attend six years of compulsory education. This law remained on the books through 1994, when nine years of compulsory education were required.

Education and elections are inexorable parts of citizenship. Stokke (2017) mentions that modern citizenship could be understood as consisting of four interconnected dimensions: membership, legal status, rights, and participation. Stokke (2017) understands membership and legal status as the cultural and judicial inclusion of citizens in communities. Right and participation, meanwhile, refer to the entitlements and responsibilities that follow from such inclusion. Stokke's explanation shows that education is included in the dimension of rights and that

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elections embody membership and legal status.

Different systems govern the education and election systems in Indonesia. The education system stipulates the length of education, the age at which education begins, etc., while the electoral system determines how people vote. Indonesia has held numerous elections since 1955, under different election systems and regimes. The election of 1955, held under the Old Order, shortly preceded the Guided Democracy era. The elections of 1971, 1977, 1982, 1987, 1992, and 1997 were held under the authoritarian New Order, which identified itself as following the ideology of Pancasila Democracy. Uhlin (1997) identified several structures that support authoritarianism, namely the state apparatus (particularly the military) that controls and dominates Indonesian society and class structures; the gender structure, which leads to the subordination of women and supports patriarchal and authoritarian forms of rule; and ethnic and religious cleavages in this large multi-ethnic state. Finally, the elections of 2004, 2009, 2014, and 2019 were held under the *Reformasi* Order.

This research focuses on the direct elections that were held between 2004 and 2014, under the *Reformasi* Order. Why have these elections been chosen for this research? The answer is that elections are a form of democracy. Moreover, there is a relationship between education and democracy. According to Dahl (2015), democratic countries develop knowledge for their citizens, and educated workers are beneficial for innovation and economic growth. Dahl (1989) wrote that democracy means rule by the people. To rule, according to Dahl, the people must have

some way of ruling, i.e., a command process. Dahl mentioned democratic government processes as embodying distinctive assumptions: political order, a democratic political order, and criteria for democratic processes. Dahl (2015) also mentioned the logic of equality in democratic participation. Electoral turnout is one measure of political participation in democratic countries such as Indonesia.

Other factors that we must consider in the context of education and elections in Indonesian demography, especially ethnicity and religion. Bauman (2004) writes that it is not easy to define ethnicity, as ethnicity and the creation of ethnic groups have not been defined. Ethnicity is not culture but related to a specific identity (imposed or otherwise). It is the result of self- and group identity, created within extrinsic contexts and through social interactions. Indonesia is a multi-ethnic country, with many ethnic groups being associated with specific territories and provinces. According to Bulmer (1996), an ethnic group is a collective within a larger population with common ancestry, shared past, and culture that defines the group's identity, such as kinship, religion, language, territory, nationality, or physical appearance. Members of ethnic groups are conscious of belonging to the group (Ananta et al., 2015).

According to Ananta et al. (2015), the fifteen largest ethnic groups in Indonesia are the Javanese, Sundanese, Malay, Batak, Madurese, Betawi, Minangkabau, Buginese, Bantenese, Banjarese, Balinese, Acehnese, Dayak, Sasak, and Chinese; there are also hundreds of other smaller ones. This research will divide ethnic groups into five categories, based on their territory of origin. Another variable that we will include in this

research is religion. In 1965, the Indonesian government gave Indonesian citizens the freedom to choose from one of five officially recognised religions: Islam, Protestantism, Catholicism, Hinduism, and Buddhism. A sixth, Confucianism, was recognised in 2004.

According to data from the 2010 census,[2] Indonesia's religious composition is as follows: Islam (87.18%), Protestantism (6.96%), Catholicism (2.91%), Hinduism (1.69%), Buddhism (0.72%), Confucianism (0.05%), and Other (0.13%). Based on this information, Indonesia is a Muslim majority country.

Given those theories and findings, we seek to determine whether education fosters electoral turnout within the context of Indonesia? Answering this question will be the focus of our research.

Literature Review

Several theories or concepts are related to this research, as follows:

Theory and Concept of Democracy in Indonesia

The definition of democracy encompasses both normative and empirical theories. Normative theories treat democracy as a goal, whereas empirical theories are concerned with existing political systems. Scholars have diverse definitions of democracy. According to Uhlin (1997), democracy is not only a Western idea, nor is the Western model of liberal democracy the only possible form of democracy. He notes that

many Indonesian pro-democracy activists are inspired not only by Western liberal thought, but also by Marx, the Qur'an, and traditional Indonesian values. Cultural objectivism, therefore, should be rejected.

Beetham (1993) offers a definition of democracy that covers both normative and empirical theory. He defines democracy as a decision-making model for collectively binding rules and policies over which people exercise control. Based on this definition, Uhlin (1997) mentions democratisation as the extension of people's rule to an increasing number of institutions, issues, and people not previously governed by these democratic principles. According to Uhlin (1997), democracy is not limited to a narrowly defined political sphere but includes the possible democratisation of social and economic ones.

In recent research, discussion of democratisation tends to focus on regime transition. Uhlin (1997) mentioned that the authoritarian New Order regime was not as stable as it seemed and that the prospects for at least limited democratisation were not as bad as often conceived. Rather, "Indonesia is in what I call a pre-transition phase" (Uhlin, 1997). Indonesia is no longer in the same position. Rather, it has successfully passed through the pre-transition phase from the authoritarian New Order regime to the *Reformasi* Order.

Citizen Effectiveness and Politics of Citizenship in Indonesia

Dahl and Tufte (1973) mention that citizen effectiveness depends on different

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[2] Religious data is taken from Sensus Penduduk 2010 - Penduduk Menurut Wilayah dan Agama

yang Dianut | Indonesia (bps.go.id)

techniques in the politics of homogeneity (in small systems) and the politics of diversity (in extensive systems). In small democratic systems, citizens' chances to be influential are enhanced by the lower costs of direct communication with representatives/other officials and by greater homogeneity, which means that, even without communication, representatives are more likely to hold views like those of their constituents. The extensive democratic system loses these advantages, depending more on indirect communication chains and overt competition among organised political forces—particularly among parties. No single method for maximising citizen effectiveness within each of these units is best. In some, direct participation is best; in others, more indirect methods are used, including the delegation of authority to officials appointed by the national government (Dahl & Tufte, 1973).

Hiariej and Törnquist (2017) identified six regimes in Indonesia: (i) the colonial regime, which lasted until the mid-1940s; (ii) the rise and fall of citizenship, popular organisations, and democracy, until 1957; (iii) the 'Guided Democracy' regime, until 1965; (iv) the New Order regime, until mid-1998; (v) elitist democracy and decentralisation, until the late 2000s, and (vi) populist transactionalism, in the current period.

Ethnicity in Indonesia

In this research, we include ethnicity as the control variable. As such, it is essential to know about ethnicity in Indonesia. Ethnicity is not culture but a particular kind of identity, imposed or otherwise, that results from the creation of self- and group identity within extrinsic contexts and social interactions (Ananta et al., 2015).

We use the classification system compiled by Ananta et al. (2015) based on statistics from the 2010 census. This new classification of ethnic groups, according to Ananta et al. (2015), was expected to capture the rich ethnic diversity of Indonesia and its provinces, particularly the many small ethnic groups in the country's eastern provinces.

This new classification is designed to be statistically robust, coded based on 1,331 ethnic categories. It also incorporates anthropological, sociological, and demographic literature and local expertise (Ananta et al., 2015). For this research, we chose a user-friendly classification based on six main islands/regions: Sumatra, Java and Bali, Nusa Tenggara, Kalimantan, Sulawesi, and Papua. Ananta et al. (2015) also included a category for Indonesians of "foreign origin" (referring to Indonesian citizens of foreign descent).

We consider ethnicity an important control variable in this research. Ananta et al. (2015) mentioned that ethnicity may also be related to occupation. According to Ananta et al. (2015), people of different ethnic groups traditionally tend to specialise in certain occupations. However, these occupational differences may have disappeared as Indonesia has experienced economic integration and urbanisation. Indonesia's economy has shifted away from the primary sector and towards the industrial and service sectors. Therefore, ethnic-based occupations may have disappeared and been replaced by new ones (Ananta et al., 2015).

Institutional and Policy Background

Compulsory Education in Indonesia

The preamble of the 1945 Constitution includes multiple mandates to enrich the life of a nation. Specifically, Article 31 of the 1945 constitution stipulates that all Indonesian citizens have the right to an education. Therefore, on 2 May 1984, the Indonesian government passed a law requiring all Indonesian citizens to attend six years of compulsory schooling. This policy remained in effect until 1994.

Following the success of this program, the Indonesian government passed Law No. 2/1989 on National Education System. Article 14 of this law stipulates that all citizens who have reached the age of seven must receive primary education (six years in elementary school and three years in junior high school). Therefore, based on this law, compulsory education was extended from six years to nine years, beginning with the implementation of this law in 1994 through Presidential Instruction No. 1/1994 on the Implementation of Compulsory Education. Based on this law, all Indonesian citizens must attend elementary school (or an equivalent) between the ages of 7 and 13 and junior high school (or an equivalent) between the ages of 13 to 15. The provision of this education was the responsibility of the Minister of Education and Culture.

Higher Education, education in Indonesia is divided as follows (Table 1):

Table 1. Levels of Education in Indonesia

Primary Education	Years of Education
Elementary School, *Madrasah Ibtidaiah* (MI), or another equivalent form[3]	6
Junior High School, *Madrasah Tsanawiyah* (MTs), or another equivalent form[4]	3
Secondary Education	**Years of Education**
Senior High School, Madrasah Aliyah, Vocational High School, Vocational Madrasah Aliyah, or other equivalent form[5]	3
Tertiary Education	**Years of Education[6]**
D1	2
D2	3
D3	5

[3] Paket A.
[4] Paket B.
[5] Paket C.
[6] Full-year education for higher education, per Regulation of the Minister of Research and Technology No. 44/2015 on National Standards for Higher Education.

DIV, Undergraduate (S1)	7
Professional education *(Profesi)*[7]	3 (after finishing D4/Undergraduate)
Magister (postgraduate), Applied Magister, Specialist-1	4 (after finishing D4/Undergraduate)
S3, Applied-S3, Specialist-2	4–7

Parinduri (2019) notes that Indonesia's school year starts in July and ends in June of the following year. Previously, Indonesia's school year began in January and ended in December of the same year; this change was made to synchronise the school year with the government's fiscal year.

Through Presidential Instruction No.1/1994, the Indonesian government stipulates that the funding of primary education is the government's responsibility; as such, students must not be obliged to bear the associated costs.

Nevertheless, the government has faced several challenges. According to Darmadi (2019), these challenges include: (1) when the government announced its nine years of mandatory schooling programme, only half of Indonesians between the ages of 13 and 15 were in school; (2) the government lacked the capacity (funds, facilities, and staff) to implement the nine-year compulsory education programme, which was more burdensome than the implementation of the six-year compulsory education programme; (3) many facilities, costs, and staff were necessary to accommodate Indonesia's 6.2 million children of junior high school age.

On 29 May 1996, the President of the Republic of Indonesia launched the National Movement for Foster Parents (GNOTA)[8] to support the nine years of compulsory education. In 2005, the Indonesian government also launched the school operational aid (BOS)[9] programme, through which special funds were taken from the state budget to assist schools and *madrasah* throughout Indonesia.

The Election System in Indonesia

Indonesia has held general elections in different periods with different election systems. These may be divided as follows: (i) the 1955 election; (ii) the 1975–1982 elections; (iii) the 1987–1997 elections; (iv) the 1994–2014 elections; and (v) the 2019 election. Each of these periods was marked by different regimes and different electoral systems. These election periods and their election systems can be seen in Table 2.

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[7] *Profesi*, according to the Elucidation of Law No. 20/2003, refers to professional education/higher education after an undergraduate programme that prepares students to take jobs with special skill requirements.
[8] For further information, see http://www.gn-ota.or.id/en/.
[9] For further information, see https://jendela.kemdikbud.go.id/v2/opini/detail/sejarah-dan-peran-bos-bagi-pendidikan-indonesia.

Table 2. The Election System in Indonesia

No	Election period	Election System
1	1955	Using the Proportional System to choose members of the People's Representative Council (DPR) and Constituency Council.
2	1971–1982	A combined district and proportional system for electing members of DPR, DPRD level I, and DPRD level II.
3	1987–1997	A combined district and proportional system for electing members of DPR and MPR.
4	1999–2014	✓ An open proportional system for electing DPR members. ✓ A District System for electing DPD members. ✓ An Absolut Voting System for electing the President and Vice President (2004–2014).
5	2019	Using an electoral system similar to the 1999–2014 period; for DPR members, however, a limited open proportional system was used.

Direct Elections for Regional Heads in Indonesia

Indonesia has several kinds of elections: presidential elections, regional head elections, House of Representatives (DPR) elections, Local Representative Council (DPD) elections, and Regional People's Representative Council (DPRD) elections. Indonesian citizens voted directly for the president and vice president for the first time in 2004. Following the success of this direct presidential election, the Indonesian government implemented direct elections for regional heads throughout Indonesia in 2005—as allowed through Law No.32/2004.

In 2015, the Indonesian government issued Law No. 1/2015 on the Passage of Government Regulation No. 1/2014 on the Election of Governors, Regents, and Mayors. Based on this law, Indonesians were able to exercise their sovereignty at the local level to elect governors, regents, and mayors directly and democratically. Therefore, political parties were required to submit their preferred gubernatorial, regent, and mayoral candidates to local election commissions. These elections are held democratically on the principles of directness, openness, freedom, confidentiality, honesty, and fairness. Direct regional elections are held simultaneously, throughout Indonesia, every five years.

Before Indonesia's first direct elections for regional heads, the Indonesian government issued Government Regulation

No. 6/2005, specifying the means through which regional heads and their deputies are appointed. This regulation also provided stipulations for voters. If voters have more than one residence, they must choose one place of residence based, as noted on their identity card, then vote if their name is on the voters' list. If the voter's name is not on the list, they can provide updated data so they can be included on the additional voter list.

Further simultaneous elections were held in 2015, 2017, and 2018.[10] In 2018, about 171 electoral areas held simultaneous local elections.

Table 3. Direct Elections in Indonesia

Type of Direct Election	Years	Laws[11]	Election Organiser
Presidential	2004 2009 2014 2019	• Law No.23/2003 on Presidential and Vice-Presidential Elections • Law No. 42/2008 on Presidential and Vice-Presidential Elections • Law No.15/2011 on Election Management Bodies • Law No. 7/2017 on General Elections	General Election Commission (KPU)
Direct elections for regional head (*Pilkada*)	2005 2006	Law No. 32/2004 on Local Government	Part of regional autonomy
General elections for regional heads (*Pemilukada*).	2007 2008 2009 2010 2011 2012 2013	• Law No. 22/2007 on Election Management Bodies • Law No.15/2011 on Election Management Bodies	Under the coordination of the General Election Commission (KPU)

On 24 September 2014, the Plenary Session of DPRI RI decided that the DPRD would re-appoint regional heads[12]

| Simultaneous regional elections (*pilkada serentak*) | 2015, 2017, 2018 | • Law No. 1/2015 on the Passage of Government Regulation No. 1/2014 on the Election of Governors, Regents, and Mayors

• Law No. 8/2015 on the Amendment to Law No. 1/2015 concerning the Stipulation of Government Regulations in lieu of Law No. 1/2014 concerning the Election of Governors, Regents, and Mayors into Law | Under the coordination of the general election commission (KPU). |

Methodology and data

Empirical Strategy

This study aims to determine how education affects electoral turnout. It offers a linear probability model as follows:

$$y_i = \beta_0 + \beta_1 YearEdu + \beta_2 gender + \beta_3 stat + \beta_4 islm + + \beta_5 javbEthn + \beta_6 sumEthn + \beta_7 klmEthn + \beta_8 sulEthn + \beta_9 nstEthn + \beta_{10} birth\_year + u_i \quad (1)$$

The education variable is correlated with omitted variables bias. To cope with this problem, Wooldridge (2015) offers three options. First, to ignore the problem and suffer the consequences of biased and inconsistent estimators. Second, to find and use a suitable proxy for unobserved variables. Third, to assume that the omitted variable bias does not change over time and use the fixed-effects or first-differencing methods. In this study, we use the proxy of nine years of compulsory education to deal with the endogeneity of education.

Another explanatory variable in this research is gender. Gender=1 is used to indicate female and gender=0 for male. The last of the explanatory variables is

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[12] See also http://ham.go.id/2014/10/07/diskursus-pemilu-kepala-daerah/.

$birth\_year$. With reference to Indonesia's nine years of compulsory education, we divided voters into cohorts based on year of birth, with the cut-off date being 1987. From this $birth\_year$ variable, we created $young\_cohort$ as an instrumental variable (IV) to overcome the education variable's endogeneity problem. Two assumptions were used for IV: $Cov(z, u) = 0$ and $Cov(z, x) \neq 0$.

IV's two assumptions are explained below. First, education policy is assumed to be an exogenous instrument, meaning that education policy (nine years of compulsory education) will affect the model examined. Members of the young cohort, i.e., persons born after the passage of laws mandating nine years of compulsory education, were required to continue from elementary school to junior high school. In the exogenous assumption, there exists an exclusion restriction: compulsory education cannot directly affect the outcome. Instead, it affects the outcome through $YearEdu$. When the government-mandated nine years of compulsory education, $YearEdu$ increased from six years to nine years for members of the young cohort. Second, a relevant condition, $young\_cohort$, is related to the endogenous value of $YearEdu$. It means that members of the young cohort (i.e., those born after the cut-off) will receive more education due to the new education policy (see also the first-stage regression result from the appendix).

We divided *cohort* into two groups, based on year of birth. The old cohort consisted of those born before the cut-off date (1987). The young cohort, meanwhile, consisted of those born after the cut-off date

(1987).

In the first stage, we estimated the $young\_cohort's\ effect$ as an instrumental variable in education attainment (years of education) using the following equation:

$$YearEdu = \pi_0 + \pi_1 young\_cohort + \pi_2 gender + \pi_3 stat + \pi_4 islm + + \pi_5 javbEthn + \pi_6 sumEthn + \pi_7 klmEthn + \pi_8 sulEthn + \pi_9 nstEthn + \pi_{10} birth\_year + v_i$$

(2)

In the least squares (2SLS) two stages, electoral turnout (y_i =district election, the presidential election, and gubernatorial election) using the estimated $\widehat{YearEdu}$, where $\widehat{YearEdu}$ is the estimator from the first-stage equation. The reduced form is as follows:

$$y_i = \beta_0 + \beta_1 \widehat{YearEdu} + \beta_2 gender + \beta_3 stat + \beta_4 islm + + \beta_5 javbEthn + \beta_6 sumEthn + \beta_7 klmEthn + \beta_8 sulEthn + \beta_9 nstEthn + \beta_{10} birth\_year + u_i \qquad \textbf{(3)}$$

Data

Data for this study were collected through the Indonesia Family Live Survey (IFLS), an ongoing longitudinal survey in Indonesia by RAND and Survey Meter.[13] This study uses data collected at the household level.

Table 3 provides definitions of the variables. The first outcome variable, district election ($districtE$), refers to the direct elections for regents and mayors between 2005−2015. It is a dummy variable indicating voting/not voting in district elections. The

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13. Data can be downloaded from https://www.rand.org/well-being/social-and-

behavioral-policy/data/FLS/IFLS/ifls5.html.

second outcome variable, presidential election ($pres\_election$), refers to the direct presidential elections held between 2004 and 2014. This is also a dummy variable, which indicates the decision to vote or not vote in the presidential election. The third outcome variable, direct gubernatorial election ($gov\_election$), refers to the direct gubernatorial elections conducted between 2005 and 2015. This is also a dummy variable.

The main variable of interest, years of education ($YearEdu$), refers to the years of completed education achieved by an individual. From the summary statistic in Table 4, we can see that individuals averaged twelve years of education. $YearEdu$ also describes how long (how many years) individuals took to complete their studies. After cleaning the data, the years of education received by individuals ranged from one to twenty-one. Values included 1, 6, 7, 9, 10, 12, 13, 14, 16, 17, 18, 19, 20, and 21 years of education.

$Gender$ is a dummy variable showing male or female, with most heads of households being male. $Stat$ is a dummy variable showing marital status, i.e., whether the head of household is married or single. $Islm$ is a dummy variable showing the religion of the head of household, whether Islam or another religion. $JavbEthn$ is a dummy variable showing Javanese/Balinese ethnicity or lack thereof. $SumEthn$ is a dummy variable showing Sumatra ethnicity or lack thereof. $KlmEthn$ is a dummy variable showing Kalimantan ethnicity or lack thereof. $SulEthn$ is a dummy variable showing Sulawesi ethnicity or lack thereof. Finally, $nstEth$ is a dummy variable showing Nusa Tenggara ethnicity or lack thereof.

Table 4 also summarises the IFLS Wave 5 statistics on education and electoral turnout, which consisted of a complete data set covering 36,391 respondents. After cleaning and sorting the data, we obtained a sample size of 14,428 observations for district and gubernatorial elections and 14,426 observations for presidential election.

Table 4. Variable Definitions

Variables	Notation	Definition of variables
Outcome Variables:	y_i	
District election	$districtE$	District election refers to the direct election for regent and mayor (2005–2015)
Presidential Election	$pres\_election$	Direct presidential election (2004–2014)
Gubernatorial election	$gov\_election$	Direct gubernatorial election (2005–2015)
Explanatory Variables:		
Year of Education	$YearEdu$	Year of completed education of the individual

Gender	$gender$	Dummy variable; female=1, male=0
Status	$stat$	Marital status (being married or single): Married=1, single=0
Islam	$islm$	Islam as religion; Islam =1, non-Islam=0
Javanese/Balinese Ethnicity	$javbEthn$	Javanese/Balinese ethnicity; yes=1, no=0
Sumatran Ethnicity	$sumEthn$	Sumatran Ethnicity; yes=1, no=0
Kalimantan Ethnicity	$klmEthn$	Kalimantan Ethnicity; yes=1, no=0
Sulawesi Ethnicity	$sulEthn$	Sulawesi Ethnicity; yes=1, no=0
Nusa Tenggara Ethnicity	$nstEthn$	Nusa Tenggara Ethnicity; yes=1, no=0
Cohort birth year	$young\_cohort$	Dummy variable; young=1, old=0
Dummy birth year	$birth\_year$	Dummy variables; birth year

Table 5. Summary Statistics

Variable	Mean	Std. Dev	Min	Max	Observations
Outcome Variables:					
District election	.693	.461	0	1	14.428
Presidential election	.84	.366	0	1	14.426
Gubernatorial election	.708	.455	0	1	14.428
Explanatory Variables:					
Year of Education	11.92	4.797	1	21	14.428
Gender	.477	.499	0	1	14.428
Marital Status	.309	.462	0	1	14.428
Islam	.899	.301	0	1	14.428
Javanese/Balinese Ethnicity	.626	.484	0	1	14.428
Sumatran Ethnicity	.137	.344	0	1	14.428
Kalimantan Ethnicity	.039	.194	0	1	14.428
Sulawesi Ethnicity	.052	.222	0	1	14.428
Nusa Tenggara Ethnicity	.067	.25	0	1	14.428
Instrumental Variable:					
Young Cohort	.394	.489	0	1	14.428

Result and Discussion

District Elections

Our first analysis focused on elections at the district level. The results are presented in Table 6. Each additional year of education decreases the probability of voting by 0.3%, at a significance of 1%.

Table 6. Outcome of District Elections

Dependent Variable: District Election		
	(OLS)	**(IV)**
YearEdu	⁻0.003***	0.073
	(0.001)	(0.052)
gender	⁻0.004	⁻0.004
	(0.008)	(0.010)

stat	0.006	0.007
	(0.010)	(0.013)
islm	0.008	-0.010
	(0.016)	(0.024)
javbEthn	0.055***	0.081***
	(0.015)	(0.026)
sumEthn	0.110***	0.022
	(0.016)	(0.064)
klmEthn	0.052	-0.043
	(0.036)	(0.079)
sulEthn	-0.320***	-0.315***
	(0.062)	(0.077)
nstEthn	0.264	0.176
	(0.196)	(0.252)
IV Estimate		
young_cohort	-	0.334**
		(0.137)
constant	0.598***	-0.287
	(0.024)	(0.607)
dum_by	Yes	Yes
Observations	14.428	14.428

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are in parentheses.

Using the cohort birth year as an instrumental variable (IV) for the endogeneity of education, we can see that the IV results correct the OLS results. However, the P-value shows no indication that years of education will induce turnout during district elections. Discussion of the gender variable in OLS and IV shows that gender decreases electoral turnout insignificantly, by 0.4%. Marital status is likewise found to not affect electoral turnout. In IV, the Islam variable decreases electoral turnout insignificantly, by 1%. In both OLS and IV, the Javanese/Balinese ethnicity variable affects election turnout at the district level. In OLS, Javanese/Balinese ethnicity increases district election turnout by 5.5%, and thus significantly. In IV, Javanese/Balinese ethnicity increases district election turnout significantly by 8.1%. In OLS, the Sumatran ethnicity variable increases district election turnout significantly, by 11%, but in IV the coefficient estimates are corrected,

indicating that Sumatran ethnicity does not affect election turnout at the district level. The Kalimantan ethnicity variable does not affect district election turnout in OLS, but in IV, it decreases district election turnout insignificantly, by 4.3%. In both OLS and IV, the Sulawesi ethnicity variable decreases election turnout significantly, by 32% and 31%, at the district level. The Nusa Tenggara ethnicity variable does not affect district election turnout in OLS and IV.

Regression Results from Presidential Elections

For the second analysis, years of education were examined vis-à-vis turnout during presidential elections. The results are presented in Table 7. Again, from the OLS and IV regression results, years of education do not affect turnout during presidential elections

Table 7. Presidential Election Outcome

Dependent variable: Presidential Election		
	(OLS)	**(IV)**
YearEdu	0.000	0.053
	(0.001)	(0.040)
gender	⁻0.005	⁻0.005
	(0.006)	(0.008)
stat	0.003	0.004
	(0.008)	(0.010)
islm	0.020	0.008
	(0.013)	(0.018)
javbEthn	0.015	0.033*
	(0.011)	(0.019)
sumEthn	-0.020	-0.083*
	(0.012)	(0.049)
klmEthn	-0.027	-0.095
	(0.028)	(0.060)
sulEthn	-0.033	-0.029
	(0.048)	(0.059)
nstEthn	0.177	0.114
	(0.153)	(0.191)
IV Estimate		

	(OLS)	(IV)
young_cohort	-	0.331**
		(0.1374)
constant	0.812***	0.183
	(0.019)	(0.464)
dum_by	Yes	Yes
Observations	14.426	14.426

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Standard errors are in parentheses.

In OLS and IV, the gender variable decreases presidential election turnout by 0.5% and thus is statistically insignificant. The marital status and Islam variables likewise do not affect turnout during presidential elections. In IV, the Javanese/Balinese ethnicity variable increases turnout significantly during presidential elections, by 3.3%. The Sumatran ethnicity variable, in IV, decreases presidential election turnout significantly, by 8.3%. In both OLS and IV, the Kalimantan ethnicity variable decreases presidential election turnout by 2.7% and 9.5%, respectively, and thus is statistically insignificant. Neither the Sulawesi ethnicity nor the Nusa Tenggara ethnicity was found to affect turnout during presidential elections.

Gubernatorial Election Results

Table 8 presents the effect of education on voter turnout during gubernatorial elections. Each year of education was found to decrease voter turnout by 3.7%, which is statistically insignificant. IV corrected the underestimation results of OLS, indicating that years of education do not affect voter turnout during gubernatorial elections.

Table 8. Gubernatorial Election Outcome

Dependent variable: Gubernatorial election		
	(OLS)	**(IV)**
YearEdu	⁻0.037	0.091
	(0.089)	(0.070)
gender	0.005	⁻0.013
	(0.081)	(0.011)
stat	-0.031	0.013
	(0.095)	(0.012)
islm	0.236	-0.019
	(0.163)	(0.027)

javbEthn	-0.343**	0.053*
	(0.145)	(0.031)
sumEthn	1.162***	-0.160*
	(0.157)	(0.084)
klmEthn	1.262***	-0.177*
	(0.354)	(0.100)
sulEthn	-0.055	0.088
	(0.614)	(0.081)
nstEthn	1.185	0.171
	(1.944)	(0.268)
IV Estimate		
young_cohort	-	0.229*
		(0.123)
constant	11.715***	-0.342
	(0.222)	(0.822)
dum_by	Yes	Yes
Observations	14.428	14.428

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are in parentheses.

In IV, the Gender variable was found to decrease the probability of voting by 1.3%, and therefore statistically insignificant. In IV regression, neither the marital status variable nor the Islam variable was found to affect turnout during gubernatorial elections. Javanese/Balinese ethnicity was found to decrease the probability of voting significantly, by 34%; however, IV regression corrected the coefficient estimate, increasing the probability of voting significantly by 5.3%. In OLS, the Sumatran ethnicity variable increased the probability of voting by 116%. However, the IV regression result corrected the coefficient, showing that the variable decreased the probability of voting in gubernatorial elections by 16%. Based on IV regression, the Kalimantan ethnicity variable was found to decrease the probability of voting in gubernatorial elections by 17.7%. In IV, neither the Sulawesi ethnicity nor Nusa Tenggara ethnicity variables were found to affect turnout during gubernatorial elections.

Discussion

OLS results show that education significantly decreases the probability of voting in district elections, at least between 2005 and 2015. These results are related to the regulations regarding the systems for updating election and voter lists (*system*

pemutakhiran data pemilih). Law No.6/2005 provides guidelines for voters, stipulating that each voter must vote based on his/her place of residence as recorded on his/her identity card. Furthermore, Law No. 1/2015 stipulates that, if a voter has more than one place of residence, that voter must choose a place of residence based on their electronic national identity card or a letter of domicile from the village head (*lurah*). Voting is held directly, in each administrative area.

Moreover, as mentioned in Regulation No. 6/2005 concerning Elections, data for the 2005 direct local elections were collected from Voter Registration and Sustainable Population Data (*Pendaftaran Pemilih dan Pendataan Penduduk Berkelanjutan/P4B*), which was collected by the Central Bureau of Statistics (*Badan Pusat Statistik/BPS*) in 2003 through door-to-door visits to houses.[14] Regulation No.6/2005 also provided mechanisms for updating and validating the voter list, as well as preparing additional voter lists and provisional voter lists (*Daftar Pemilih Sementara/DPS*).

The Election Committee (*Panitia Pemungutan Suara/PPS*) must announce the provisional list and have it posted for three days, during which it accepts improvements and revisions. The voting committee then announces the additional voter list (*daftar pemilih tambahan*), which remains posted for three days. Afterwards, the listed voters receive proof of registration. The data contained therein can be revised further after the committee validates the additional voter list to form the final voter list (*daftar pemilih*
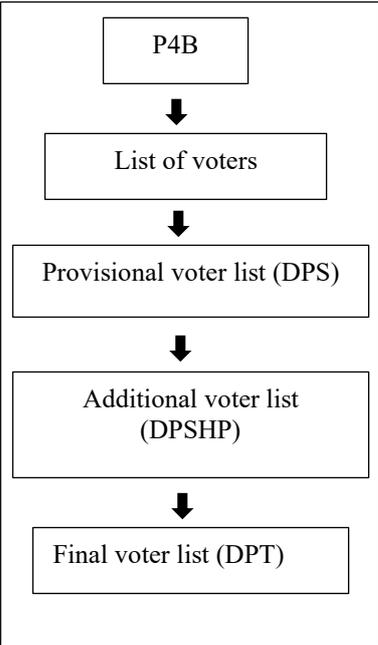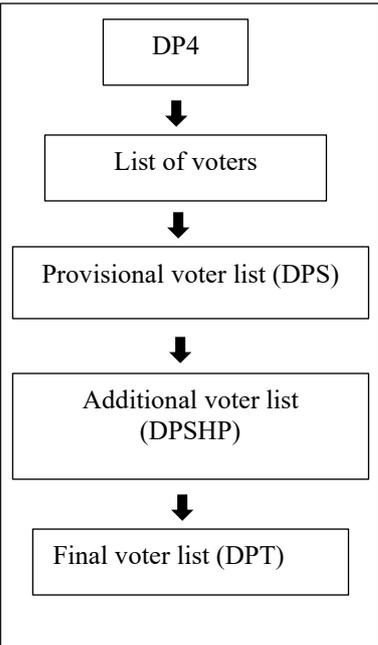
tetap/DPT).

In the 2009 direct local elections, data was not derived from P4B, but from the local governments and the database of potential voters (*Data Penduduk Potensial Pemilih Pemilu-DP4*). The remainder of the system was the same as in 2005; data compiled from *DP4* became the DPS, which was then updated to produce an additional voter list (*daftar pemilih sementara hasil perbaikan/DPSHP*), then finalised as the DPT. The databases, mechanisms, and updating systems are presented in the following table:

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[14] The information about P4B:
https://sirusa.bps.go.id/sirusa/index.php/dasa r/view?kd=40&th=2003.

Table 9. Mechanisms for direct local elections

	Direct local elections, starting in 2005[15]	Direct local elections, starting in 2009[16]
Voter data	Taken from Voter Registration and Sustainable Population Data (*P4B*) by the Central Bureau of Statistics.	Provided by the government. Contains data on potential electors (*DP4*).
Voter list updating process	P4B → List of voters → Provisional voter list (DPS) → Additional voter list (DPSHP) → Final voter list (DPT)	DP4 → List of voters → Provisional voter list (DPS) → Additional voter list (DPSHP) → Final voter list (DPT)
Deadline for registration	• PPS announces DPS for three days • PPS announces DPSHP for three days • PPS announces DPT for three days	• PPS announces DPS for 21 days • PPS announces DPSHP for three days • PPS announces DPT for three days

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[15] Derived from Government Regulation of the Republic of Indonesia No. 6/2005.
[16] Derived from PKPU No. 67/2009.

Voters	▪ Voters can only register once	▪ Voters can only register once
	▪ If voters have more than one residence, address is chosen based on identity card.	▪ If voters have more than one residence, address is chosen based on identity card.
	▪ Registered voters receive proof of registration and they can exchange it for a voter card.	▪ Registered voters receive proof of registration and they can exchange it for a voter card.
Voting locations	In their administrative area, voters come directly to the polling station (*tempat pemungutan suara/TPS*).	In their administrative area, voters come directly to the polling station (*tempat pemungutan suara/TPS*).

Voters must actively report to the election committee to update or improve their data. Additional data may result in voters losing their rights; for example, members of the armed forces and police may not vote. Furthermore, if voters fail to register before the deadline, they are unable to vote. Such voters are less likely to vote.

Polling sites can also serve as barriers. For example, when voters live far away from their electoral region (for example, overseas or in a different administrative region), they are less likely to vote. Voters compare the costs and benefits of voting; the higher the cost, the lower the participation rate. As such, in the Indonesian context, years of education can decrease turnout during district elections significantly (as shown by the OLS results). Elections in Indonesia are also likely affected by voting regulations and the year of data collection (i.e., in 2003); this may have resulted in many citizens' data not being collected or registered.

At the same time, OLS regression results are prone to underestimation, especially as the IV results show zero effect. Underestimation may also be attributed to bias; it is more likely that people who choose to vote are more likely to choose to receive higher education. The OLS results also show that the years of education variable does not affect turnout during presidential elections. As presidential elections are national, rather than local (as in district/gubernatorial elections), they are held throughout Indonesia and abroad. To facilitate Indonesian citizens living abroad, the Indonesian government established a foreign election committee (*Panitia Pemilihan Luar Negeri/PPLN*). Per Law No. 23/2003 on General, Presidential, and Vice-Presidential Elections, PPLN is mandated with handling elections overseas.

Voter data, registration, and updating systems have affected local (district/gubernatorial elections) and direct presidential elections since 2004. In the 2009 presidential election, voter data was

collected from local governments to produce a database of potential voters (*DP4*). The General Election Commission, the sub-district election committees, and the election committees were able to update voter data.

Unlike during earlier presidential elections, in the direct presidential election of 2014, the Indonesian government used information systems and technology to support election organisers' efforts to compile, coordinate, announce, and maintain voter data. The Indonesian government was particularly concerned about special voters with resident identities. We can see these mechanisms in the following table.
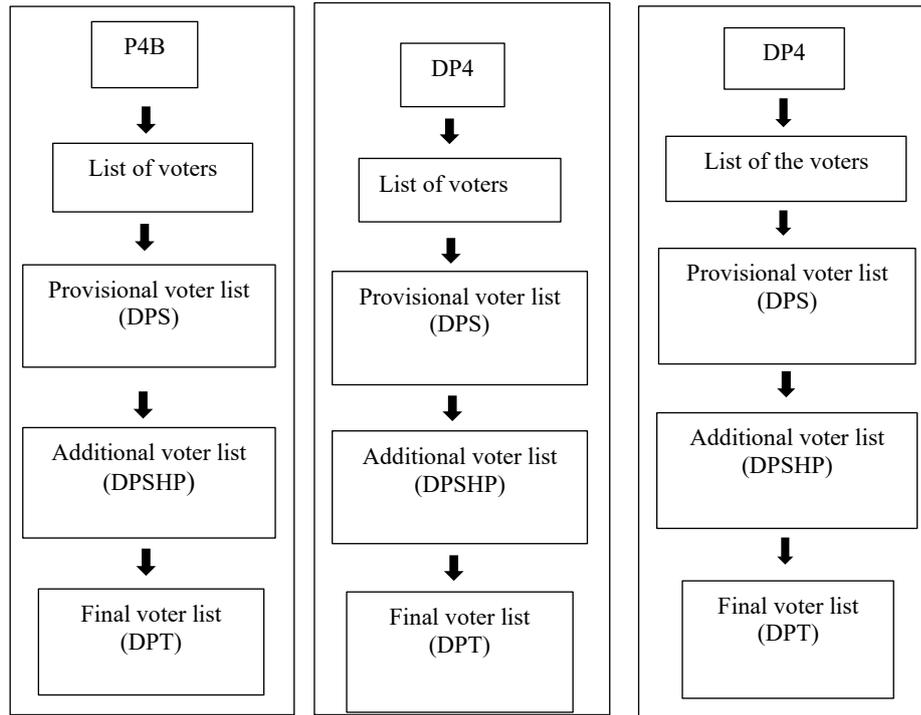
Table 10. Mechanisms for direct presidential elections

	2004 direct presidential election[17]	2009 direct presidential election[18]	2014 direct presidential election[19]
Data of voters	Taken from Voter Registration and Sustainable Population Data (*P4B*) by the Central Bureau of Statistics.	Provided by local government; contains a database of potential voters (*DP4*).	Government (in coordination with ministry of internal affairs) provides data; contains a database of potential voters (*DP4*).

[17] Derived from Law No. 23/ 2003 on the General Election of the President and Vice President.
[18] Derived from Law No. 42/ 2008 on the General Election of the President and Vice President as well as PKPU No. 14/2009.
[19] Derived from Law No. 15/ 2011 on General Election Organisation & PKPU No.9/2014.

Voter list updating process			
	P4B → List of voters → Provisional voter list (DPS) → Additional voter list (DPSHP) → Final voter list (DPT)	**DP4** → List of voters → Provisional voter list (DPS) → Additional voter list (DPSHP) → Final voter list (DPT)	**DP4** → List of the voters → Provisional voter list (DPS) → Additional voter list (DPSHP) → Final voter list (DPT)

Deadline for registration			
	• PPS announces DPS • DPS + additional voter list = DPT PPS announces DPT	• DPS updates for 30 days • PPS announces DPSHP for seven days • Improvement of DPSHP and DPSHP, becoming DPT, over seven days. • DPT set no later than 30 days before voting	• PPS announces DPSHP for seven days • DPSHP improvement for seven days. • DPT determination, 30 days before voting

The voters	▪ Voters can only register once ▪ If voters have more than one residence, address is chosen based on identity card. Registered voters receive proof of registration and they can exchange it for a voter card.	▪ Registered as a voter ▪ Voters can only register once ▪ If voters have more than one residence, address is chosen based on identity card.	▪ Registered as a voter ▪ Voters can only register once ▪ If voters have more than one residence, address is chosen based on identity card.
Information systems and technology	-	-	Voter data information system (*sidalih*)
Voting Site	• Within Indonesia: voters come to the polling station (*tempat pemungutan Suara/TPS*) Overseas: voters come to TPSLN (overseas polling stations)	• Within Indonesia: voters come to the polling station (*tempat pemungutan Suara/TPS*) Overseas: voters come to TPSLN (overseas polling stations)	• Within Indonesia: voters come to the polling station (*tempat pemungutan Suara/TPS*) Overseas: voters come to TPSLN (overseas polling stations)
Presidential candidates	• 5 (five) presidential candidates ▪ Election held in two rounds.	▪ 3 (three) presidential candidates	▪ 2 (two) presidential candidates

Even though the Indonesian government allows all Indonesian citizens to vote where they live and helps voters update their information, the OLS and IV results show that education does not affect turnout during presidential elections. The limited influence of education on turnout during presidential elections is more likely affected by voting regulations as well as voters' psychological condition.

In Indonesia's first direct presidential election, held in 2004, five presidential candidates contested the presidency. Indonesian citizens voted directly for their preferred candidates over the course of two rounds. When so many candidates are available, it may burden voters unduly, as they must seek information regarding regulations and candidates (including their personalities, programmes, and platforms). Such active participation is uncommon, as voters are more likely to focus on their personal lives (work/study). This factor was less influential during the 2009 and 2014 elections, when the number of candidates decreased to three candidates

and then two candidates.

Nevertheless, the IV results of this study show that education does not significantly affect electoral turnout during district, presidential election, and gubernatorial elections. These results are similar to those of Parinduri (2019), who found that education does not affect turnout during Indonesia's presidential and parliamentary elections.

The gender variable shows consistent results in IV, being associated with an insignificant decrease in turnout during district, presidential, and gubernatorial elections. This variable should not be understood as influencing turnout in and of itself. Rather, it is more likely that the gender variable correlates with other demographic characteristics. We also believe that gender correlates with swing voting, as many voters did not express their preference for a particular political candidate.

In dealing with swing voters, we must look Dahl's (2015) understanding of modern representative democratic government: (1) Elected officials: control over government policy decisions that is constitutionally vested in elected officials; (2) Free, fair, and frequent elections: citizens elect officials infrequently using fairly conducted elections where coercion is comparatively uncommon; (3) Freedom of expression: citizens' right to reveal themselves without danger of harsh punishment on political concerns broadly explained, including a critique of officials, the government, the regime, the socioeconomic order, and the current ideology; (4) Access to alternative sources of information: citizens' right to explore options and accessible sources of information from others (citizens, experts,

newspapers, magazines, books, telecommunications); (5) Associational autonomy: to achieve their different rights, citizens also have a right to form moderately independent associations or organisations, including independent political parties and interest groups; and (6) Inclusive citizenship. From the aspects Dahl mentioned, we believe that access to information and inclusive citizenship are essential, especially during election time. Access to information is paramount, as potential voters have the right to know everything about the election, especially regulations and voters.

The marital status variable shows no effect on turnout during district, presidential, and gubernatorial elections. This may potentially be associated with psychological conditions. Marital status is one potential requirement for voting, as only individuals who have reached the age of seventeen or who have married can participate in elections. Marital status, thus, should not be considered a factor hindering electoral turnout.

The religion (Islam) variable has the same effect on turnout during district and gubernatorial elections, decreasing turnout insignificantly during these elections. During presidential elections, meanwhile, it does not affect turnout. This may be attributed to the fact that Islam does not make participation in elections compulsory for Muslims. All Muslims have the freedom to decide whether they vote or not. Even though Indonesia is a Muslim majority country, Islam has no significant effect on election turnout.

Of the ethnicity variables, Javanese/Balinese ethnicity significantly affects turnout during district, presidential, and gubernatorial elections. This is likely

due to the size of this category; Java and Bali are the most populous islands in Indonesia and include two of the country's largest ethnic groups: the Javanese (40.05%) and Sundanese (15.50%)[20] (Ananta et.al:2015).

The Sumatran ethnicity variable shows no effect on district elections. However, in presidential and gubernatorial elections, this variable decreases turnout significantly. According to Ananta et al. (2015), two ethnic groups in Sumatra are among Indonesia's largest—the Malays (3.70%) and the Bataks (3.58%), which are respectively the third- and fourth-largest ethnic groups in Indonesia. However, this composition has no positive effect on turnout. It is more likely that population size also affects electoral turnout. This is also the same for the Kalimantan and Sulawesi ethnicity variables. Finally, the Nusa Tenggara ethnicity shows no effect in the OLS and regression results.

Conclusion and Policy Implications

These findings provide little evidence that members of the young cohort with more years of education are more or less likely to vote. These results are the same as those of Parinduri (2019). However, members of the young cohort were found to have more years of education than their older peers, as shown in the first stage regression result. Many factors must be considered when measuring electoral turnout, including governmental, geographic, demographic (ethnicity, religion, etc.), regulatory (especially as related to voting), data, access, psychological, and economic (such as the cost of voting).

In the context of Indonesia, another variable affects electoral turnout: ethnicity. Javanese/Balinese ethnicity has a significant effect on voter turnout in Indonesia, especially compared to smaller ethnic groups such as those in Sumatra, Kalimantan, Sulawesi, and Nusa Tenggara. The gender, Islam, and marital status variables are found to have no significant effect on turnout during district, presidential, and gubernatorial elections.

As an implication of this study, education—especially the nine years of compulsory education provided by law—is essential and has a significant effect on the young cohort. The first stage regression results showed that the average level of education increased among the young cohort. Therefore, the Indonesian government should maintain this programme, increase the education budget, and/or give citizens more opportunities to pursue higher education.

This research has several limitations. As such, further research using different methods, theories, and data is needed to determine the hidden determinants of electoral turnout.

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[20] This information is based on the composition of ethnic groups in Indonesia: See Ananta et al. (2017).

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Appendix

Table 11. First-Stage Regression Result

$YearEdu$ is the endogenous variable.

	Dis. Election	Pres. Election	Gub. Election
$gender$	0.0201	0.0185	0.0213
	(0.081)	(0.081)	(0.0811)
$stat$	-0.1062	0.1078	-0.1178
	(0.1075)	(0.1075)	(0.1062)
$islm$	0.2334	0.2331	0.2347
	(0.1634)	(0.1634)	(0.1634)
$javbEthn$	-0.3468**	0.3475**	-0.3464**
	(0.1451)	(0.1451)	(0.1451)
$sumEthn$	1.1636***	1.1636***	1.1646***
	(0.1570)	(0.1570)	(0.1570)
$klmEthn$	1.2605***	1.2603***	1.2586***
	(0.3536)	(0.3536)	(0.3536)
$sulEthn$	-0.0609	0.0607	-0.0598
	(0.6138)	(0.6138)	(0.6137)
$nstEthn$	1.1878	1.1884	1.1830
	(1.9439)	(1.9437)	(1.9438)
$youngcohort$	0.3338**	0.33078**	0.2287*
	(0.1374)	(0.1374)	(0.1226))
$constant$	11.5728***	11.574***	11.6212***
	(0.2209)	(0.2209)	(0.2157)
dum_by	Yes	Yes	Yes
$Observations$	14.428	14.426	14.428
$R-squared$	0.0198	0.0198	0.0196

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. Standard errors are in the parentheses.

Conflicts of interest/Competing interests

NA

Availability of data and materials

Data is available from https://www.rand.org/well-being/social-and-behavioral-policy/data/FLS/IFLS/ifls5.html.

Code availability

We used Stata Application17