

## Probabilities and seat gains of minor parties in the 2019 municipal legislative election in Surabaya City, Indonesia

### *Probabilitas dan perolehan kursi partai kecil dalam pemilihan umum anggota DPRD tahun 2019 Kota Surabaya, Indonesia*

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Article History: Received 1 April 2024; Accepted 14 August 2024; Published Online 17 September 2024

#### Abstract

This study examines the relationship between seat acquisition probabilities and the acquisition of minor party seats in the 2019 Surabaya City DPRD election. This research is crucial because theoretically the proportional representation electoral system quota/allocation of electoral district seats (*dapil*) has the probability to be accessed by all parties participating in the election, but in fact in the 2019 Surabaya City DPRD election the quota/allocation of seats was dominated by large parties. This research method is library research with the analysis technique using the Pearson Product Moment statistical test. According to the research results, first, the relationship between seat acquisition probability and minor party seat acquisition is negative and insignificant. The results of the research hypothesis test show  $r_{\text{count}} (-0.753) < r_{\text{table}} (0.997)$ . Second, the relationship between these two variables controlled by the threshold variable is significantly positive. The research hypothesis test result is  $r_{\text{count}} (0.000) > r_{\text{table}} (0.997)$ . Based on this research: (1) the electoral system of proportional representation quota/allocation of electoral district seats is not accessible to all minor parties participating in the election; (2) the size of electoral districts with seat quotas in the medium-large criteria does not have a significant positive effect on the acquisition of seats of parties participating in the election; (3) the threshold simultaneously affects the significant positive relationship between the size of the medium-large quota electoral districts and the acquisition of seats of parties participating in the election; and (4) the acquisition of party votes below the lower threshold still has the probability to get the remaining seats.

**Keywords:** electoral district; minor parties; seat acquisition; Surabaya City DPRD

#### Abstrak

Penelitian ini menguji hubungan antara probabilitas perolehan kursi dan perolehan kursi partai kecil dalam pemilu anggota DPRD Kota Surabaya 2019. Penelitian ini krusial karena secara teoretis sistem pemilu representasi proporsional kuota/alokasi kursi daerah pemilihan (*dapil*) berpeluang dapat diakses oleh semua partai peserta pemilu, namun faktanya dalam pemilihan DPRD Kota Surabaya 2019 kuota/alokasi kursi tersebut didominasi oleh partai besar. Metode penelitian ini adalah penelitian pustaka dengan teknik analisisnya menggunakan uji statistik Pearson Product Moment. Menurut hasil penelitian, pertama, hubungan antara probabilitas perolehan kursi dan perolehan kursi partai kecil adalah negatif tidak signifikan. Hasil uji hipotesis penelitian  $r_{\text{hitung}} (-0.753) < r_{\text{tabel}} (0.997)$ . Kedua, hubungan kedua variabel ini yang dikontrol oleh variabel ambang batas adalah positif signifikan. Hasil uji hipotesis penelitian  $r_{\text{hitung}} (0.000) > r_{\text{tabel}} (0.997)$ . Berdasarkan penelitian ini: (1) sistem pemilu representasi proporsional kuota/alokasi kursi *dapil* tidak dapat diakses oleh semua partai kecil peserta pemilu, (2) besaran *dapil* dengan kuota kursi di kriteria menengah-besar tidak berpengaruh positif signifikan terhadap perolehan kursi partai peserta pemilu, (3) ambang batas secara serentak berpengaruh terhadap hubungan positif signifikan antara besaran *dapil* kuota menengah-besar dan perolehan kursi partai peserta pemilu, dan (4) perolehan suara partai di bawah ambang batas bawah masih berpeluang mendapatkan kursi sisa dalam pemilu.

**Kata kunci:** daerah pemilihan; partai kecil; perolehan kursi; DPRD Kota Surabaya

## Introduction

This study aims to examine the relationship between the possibility of seat acquisition and the performance of minor parties in the legislative elections in Surabaya City held in 2019. This research tests the grand theory which states that the city's proportional representation electoral system or electoral district seat allocation has the potential to be accessible to all participating political parties and the results were not proven significantly in the case of the 2019 Surabaya City DPRD election. The case was *ex post-facto* (has already passed), and yet is still relevant with today's Indonesian political development. Numerous investigations have extensively scrutinized the role of minor parties in various general elections, including legislative and presidential elections across several nations, such as Europe, Africa, and the USA.

In Germany, the elimination of the five percent electoral threshold for municipal elections in 2001 has amplified the seats and vote share of minor parties. Although these political ramifications were mainly due to psychological changes rather than mechanical effects, they have demonstrated that removing current criteria may enhance the election prospects of minor parties (Baskaran & Lopes da Fonseca 2013). In a stark contrast with other African countries that prefer smaller parties, which is an intriguing occurrence, considering that distribution plans of small parties are far more appealing and useful than the distribution of poor, clientelistic programs of large parties (Carlson 2021), minor parties have been found to be less acknowledged by the people although they have been reported to contribute to the nurturing the democratic cultures in Ghana's 2012 general election, helped construct and preserve stable democracies, and had a normative role in political competition, particularly in developing countries (Aidoo & Chamberlain 2015).

In the USA, Hillary Clinton's victory over Donald Trump in the 2016 presidential election in the national level, but not in the Electoral College has been reported to be influenced by the appearance of leading minor parties' candidates, Johnson and Stein. Devine & Kopko (2021) reported that, had Johnson/Stein disappeared from the US 2016 presidential election, Clinton would have won the presidency. In general elections in Germany, the sharing of executive power in a multiparty democracy has an effect on voter choice. To target coalitions with minor parties, Sarah identified two voter strategies: coalition voting and compensation voting. These strategies are conceptually and empirically indistinguishable, and observationally equivalent. This analysis delineates strategies at the theoretical and empirical levels by asserting the significance of policy signals in strategic voting for minor parties, and as a result, the hybrid strategy is proposed. This can be accomplished through the use of data from campaign period surveys, opinion polls, and a collection of candidate tweets on policy issues from the 2013 and 2017 German federal elections. In 2013, voters were driven by policy utilizing a hybrid technique, but in 2017 they were motivated by a compensation plan. Whereas coalition voting was not evident in this election (Lachance 2023).

In Australia, mandatory voting and the resulting increase in voter participation can enhance support for left-leaning parties, according to Alexander's study. This study examines an important Australian case. Using a more precise, district-level dataset with 4,219 observations, Held (2023) examined the hypothesis that compulsory voting has a causal link with support for left-leaning parties. Contrary to commonly held beliefs, he found less evidence for a direct beneficial impact of turnout on Labour voters. However, subsequent analyses suggested that indirect effects of turnout, as well as election system changes and serious depression, may be alternate mechanisms or confounding variables. These results have important implications for our understanding of the political effects of voting requirements. While many studies have shown how minor parties can help sustain democracy and their role in political contestation, few have explored the likelihood of minor parties gaining seats in municipal legislature elections, particularly in Indonesia.

Proportional representation, or theoretically proportional allocation of seats (Reynolds et al. 2005, Katz 2007) in electoral districts (Daerah Pemilihan/DAPIL), was available to all political parties in the 2019 elections for the Regional People's Representative Council (Dewan Perwakilan Rakyat Daerah/DPRD). However, according to data from Appendices 1.1-1.5 of the Surabaya City KPU Decree (Komisi

Pemilihan Umum/General Election Commission) number 317/PL.01.9-Kpt/3578/KPU-Kot/VIII/2019 (KPU 2019b) and the attachment of electoral districts 1-5 to the Decision of the Surabaya City KPU number 318/PL.01.9-Kpt/3578/KPU-Kot/VIII/2019 (KPU 2019c), further analysis is required to fully understand the distribution of seats.

Proportional electoral systems tend to lead to multi-party systems, whether they are traditional, moderate, or radical (Duverger 1959, Sartori 2001). The members of the Surabaya City DPRD for the 2019-2024 period were established in accordance with Decree of Surabaya City KPU number 58/PL.01.1-Kpt/03/KPU/II/2018 (KPU 2019e), with 16 parties participating. However, in the 2019 election, seven of these 16 parties were considered insignificant, including Partai Gerakan Perubahan Indonesia (The Change Indonesia Movement Party/Garuda), Partai Beringin Karya (Berkarya/The Berkarya Party), Partai Persatuan Indonesia (Perindo/The Indonesian Unity Party), Partai Solidaritas Indonesia (PSI/The Indonesian Solidarity Party), Partai Hati Nurani Rakyat (Hanura/The People's Conscience Party), Partai Bulan Bintang (PBB/The Crescent Star Party), and Partai Keadilan dan Persatuan Indonesia (PKPI/The Indonesian Justice and Unity Party).

In this proportional electoral system, minor parties have the opportunity to be elected as a significant proportion of seats are allocated to each voting district. These minor parties can gain entry to the Surabaya City DPRD by receiving a sufficient number of votes that are below the lower threshold. The inclusion of minor parties in the DPRD ensures that the institution is more inclusive and reflective of all community interest groups. This, in turn, helps to ensure that the policies that are voted upon represent the desires of all community interest groups, making the political system more democratic and responsive to the needs of the population (Reynolds et al. 2005, Katz 2007). Based on data from Attachment 1.38 to KPU RI Decree number 278/PL.013-Kpt/06/KPU/IV/2018 and the 2018 population of Surabaya City (2,827,892 persons), the seat quota for the 2019 Surabaya City DPRD election was determined to be 50 seats. The allocation of seats is divided among the five electoral districts (1-5) in Surabaya, with each constituency being allotted between nine and 11 seats.

Minor parties, which are new and have limited national support, have the opportunity to win seats in the Surabaya City DPRD from 2019 to 2024, as the seat quota for the election falls under the medium-high category. However, these parties do not meet the representation threshold for The People's Representative Council of the Republic of Indonesia (DPR RI). To secure seats in the Surabaya City DPRD, minor parties must obtain a number of votes in Surabaya's 1-5 constituencies that equals or exceeds the threshold, or at least the minimum threshold.

According to Rae, Loosemore, and Hanby, if the party seat quota is calculated using the Hamilton/Hare/Niemeyer technique, the party that meets the higher threshold receives the first seat, and the party that reaches the lower level receives the remaining seats. According to Taagepera, Shugart, and Lijphart, if the mechanism employed by the divisor to determine party seats is effective, the party that achieves the threshold will gain seats (Lijphart 1994, Supriyanto & Mellaz 2011). With a quota of 9-11 seats for medium and large electoral districts, the probability of a party gaining seats decreases (Reynolds et al. 2005). This is in contrast to smaller electoral districts, which fall into the minor category with only five seats. Minor electoral districts require a larger number of votes to gain seats than larger districts (Agustiyati & Wulandari 2013).

The determination of the seat quota per electoral district in the Surabaya City DPRD is based on the principle of proportional representation as stipulated in Article 185 letter b of Law Number 7 of 2017 jis Article 4 letter b of KPU RI Regulation Number 16 of 2017 (KPU 2017), Attachment 1 Chapter II letter B KPU RI Decree number 18/PP.02-Kpt/03/KPU-I/2018. This rule and decision also allocate a significant number of seats to the electoral districts of the Regency/Municipal DPRD for the 2019 election. To ensure proportional distribution of votes and party seats, each electoral district is allotted a quota ranging from nine to 11 seats.

Despite theoretical and normative expectations, the actual relationship between seat distribution in electoral districts and the success of minor parties in the 2019-2024 Surabaya City DPRD elections is not significant. According to statistics from Appendices 1.1-1.5 to Decision KPU Surabaya City No. 317/PL.01.9-Kpt/3578/KPU-Kot/VIII/2019 (KUP 2019b) and Attachment Electoral Districts 1-5 to Surabaya City KPU Decree No. 318/PL.01.9-Kpt/3578/KPU-Kot/VIII/2019 (KPU 2019c), the majority of minor parties did not win any seats in Surabaya City.

The empirical evidence indicates that, out of the seven minor parties that participated in the 2019-2024 elections for the members of Surabaya City DPRD, only one party (14.29%), Partai Solidaritas Indonesia (PSI), secured seats. This means that 85.71% of the minor parties did not win any seats, demonstrating that the probability of gaining seats in the Surabaya City DPRD is considerably low for minor parties, except for PSI. The results of the regional elections have led to the formation of an extreme multi-party system (Sartori 2001, Supriyanto & Mellaz 2011) with a very high degree of party power distribution in the Surabaya City DPRD. The Effective Number of Parliament Parties (ENPP) (Shugart & Taagepera 2018) with value of 6.56 and fragmentation index of 0.93 (di Cortona et al. 1999) are indicative of this system, which consists of seven parties and involves the allocation of political power among nine parties in the Surabaya City DPRD based on the 2019 election results as shown in Table 1.

**Table 1.**  
ENPP Index and Election Results Fragmentation for the Members of Surabaya City DPRD for the Period 2019-2024

(1) Party	(2) Seat (S)	(3) Seat (%)	(4) (Si) <sup>2</sup>
PKB	5	10.00	0.0100
Gerindra	5	10.00	0.0100
PDI-P	15	30.00	0.0900
Golkar	5	10.00	0.0100
NasDem	3	6.00	0.0036
PKS	5	10.00	0.0100
PPP	1	2.00	0.0004
PSI	4	8.00	0.0064
PAN	3	6.00	0.0036
Demokrat	4	8.00	0.0064
Total	50	100.00	0.1504
ENPP Index			6.65
Fragmentation Index			0.93

Source: Author's examination of data from Appendix 1.1-1.5 Surabaya City KPU Decree number 317/PL.01.9-Kpt/3578/KPU-Kot/VIII/2019 (KPU 2019b)

PSI is one of the nine minor parties that participated in the 2019 election for members of the Surabaya City DPRD. However, the remaining six minor parties, namely the Garuda Party, Berkarya, Perindo, Hanura, PBB, and PKPI, were unsuccessful in winning seats in the Surabaya City DPRD. This decision was made based on Attachment 1 to the Surabaya City KPU Decree number 188/PL.02.6-Kpt/Kota/V/2019 (KPU 2019a), which indicates that these parties did not meet the threshold in the Surabaya 1-5 electoral districts in terms of vote gains.

Based on the description provided, this research aims to address the following inquiries: (1) Is there a correlation between the likelihood of gaining seats and the actual number of seats won by minor parties that participated in the elections for the members of Surabaya City DPRD from 2019-2024? (2) Was the relationship between the probability of gaining seats and the actual number of seats won by minor

parties participating in the 2019-2024 elections for the members of Surabaya City DPRD influenced by the threshold? The contested threshold is the hidden/informal/natural (mathematical) threshold in each electoral district, which is related to the upper threshold, effective threshold, and lower threshold.

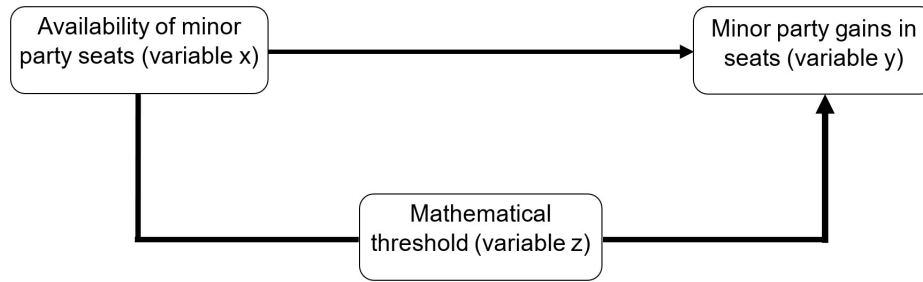
Proportional electoral systems are known to foster multiparty systems (Duverger 1959, Sartori 2001). The recent election in Surabaya has resulted in the formation of a straightforward, conventional (moderate), and radical multiparty system (Sartori 2001, Supriyanto & Mellaz 2011), which is a common outcome of proportional systems. In general, the use of a proportional system for political representation is deemed appropriate (Supriyanto & Mellaz 2011, Aliff 2016, Mngomezulu 2019). Reynolds et al. (2005) argue that this approach can reduce the disparity between the proportion of votes and legislative council seats. Proportionality can be achieved through party lists, which allows parties to present their candidates to voters in the electoral district. This underscores the importance of having many candidates in the election district as a key justification for a proportional electoral system. One of the benefits of elections is the formation of a legislative assembly that represents all significant community interest groups (Reynolds et al. 2005, Negri 2018).

A proportional voting system enables both major and minor parties to have the opportunity to become the dominant party in the legislative council, as noted by Lijphart (2003) and Negri (2018). Reynolds et al. (2005) emphasize that this mechanism provides minor parties with the chance to win seats, even if their percentage gains differ. This system is particularly advantageous in a new democracy with a diverse society. The mechanical effect allows voters to choose from a range of options, and psychological pressure to vote for a specific party is intentionally reduced. The proportional system has significant difference in mechanical and psychological impacts compared to the plurality system. Under the plurality system, there is only one candidate in each electoral district, which creates a problem for voters who wish to support minor parties as their votes may be deemed ineffective if the chosen candidate loses. As a result, supporters often shift their support to other party candidates who have a better chance of winning seats in the district (Reynolds et al. 2005).

Minor parties' access to seats is determined by the number of votes cast in the electoral district. The proportion of votes required to win an election is influenced by the size of the electoral district (Gallagher & Mitchell 2018). Supriyanto & Mellaz (2011) and Pileček (2024) classify electoral districts in a proportional voting system as minor, medium, and large. The quota for minor-seat constituencies is two to five seats, for moderate-seat districts, it is six to 10 seats, and for large-seat constituencies, it is greater than 11 seats. The distribution of these seats is proportional, meaning the number of seats gained in each election district corresponds to the number of votes received.

There is a significant correlation between the size of the electoral district and the allocation of seats, as well as the level of party competition for those seats. As the constituency size increases, the level of competition decreases, whereas it increases when the constituency size decreases. To secure a seat in the constituency, a party must attain a minimum number of votes within that constituency. This minimum number of votes required is known as the threshold (Gallagher & Mitchell 2018). The threshold is an implicit, natural, or informal mathematical concept that consists of a higher threshold, an effective threshold, and a lower threshold. The party whose vote increase surpasses the upper threshold has the potential to win the first seat, followed by the party whose vote gain reaches the effective threshold and the party whose vote gain reaches the lower threshold. Election scientists devised the mathematical criterion. Rae, Loosemore, and Hanby devised the higher and lower criteria for the Hamilton/Hare/Niemeyer variant quota method's seat allocation calculation. The effective threshold was developed by Taagepera et al. based on the seat allocation method that employs the highest average or divisor (Lijphart 1994, Gallagher & Mitchell 2005, Supriyanto & Mellaz 2011).

Based on the description, this study proposes two hypotheses. Figure 1 represents the two hypotheses:



**Figure 1.**

Origin of the research hypothesis

Source: Formulated by researchers from diverse sources depicted in the theoretical framework

First Hypothesis:  $H_o =$  There is no correlation between the likelihood of gaining seats and the number of seats gained by minor parties in elections for the members of Surabaya City DPRD for the period 2019-2024.

$H_a =$  Minor parties competing in elections for the members of Surabaya City DPRD for the period 2019-2024 have a correlation between their chances of getting seats and the number of seats they win.

Second Hypothesis:  $H_o =$  There is no correlation between the probability of getting seats and the number of seats gained by minor parties in elections for the members of Surabaya City DPRD for the period 2019-2024, which are governed by a threshold.

$H_a =$  Minor parties competing in elections for the members of Surabaya City DPRD for the period 2019-2024 that are governed by a threshold have a link between their chances of gaining seats and their seats gained.

In accordance with the principle of proportional representation in the Surabaya City DPRD elections for the 2019-2024 term, the Indonesian KPU has set a range of 6-10 members for each electoral district. This determination was made in KPU RI Decree No. 18/PP.02-Kpt/03/KPU/I/2018 (KPU 2018) and is consistent with KPU RI Decree No. 278/PL.013-Kpt/06-KPU/IV/2018, where Appendix 1.38 specifies the seat allocation range for the 2019 Surabaya City DPRD election district as being between 9 and 11 seats. The aim of this proportional voting system is to ensure that the number of seats won by a party corresponds to the proportion of votes it receives.

## Research Method

In this quantitative literature review (Dawson 2007), the aim is to explore the relationship between chance and party seat gain, as exemplified by the case study (Yin 2003). The study focuses on the probability of minor parties winning seats in the Surabaya City DPRD elections for the 2019-2024 period, as evaluated by both the KPU RI and the Surabaya City KPU. The decision was established through a series of decrees, namely KPU RI Decree number 13/PL.01.3-Kpt/03/KPU/I/2018 and KPU RI Decree Number 278/PL.01.3-Kpt/06/KPU/IV/2018, as well as Surabaya City KPU Decree number 188/PL.02.6-Kpt/Kota/V/2019, Surabaya City KPU Decree number 317/PL.01.9-Kpt/3578/KPU-Kot/VIII/2019, and Surabaya City KPU Decree number 318/PL.01.9-Kpt/3578/KPU-Kot/VIII/2019.

The independent variable (x) represents the probability of winning a seat, while the dependent variable (y) refers to the likelihood of actually winning a seat. The relationship between these two variables is influenced by a mathematical/hidden threshold variable (z). This mathematical threshold variable consists of an upper threshold ( $z_1$ ), an effective threshold ( $z_2$ ), and a lower threshold ( $z_3$ ).

The study is located in Surabaya, the capital city of East Java Province in Indonesia. The Indonesian General Election Commission (KPU RI) has issued Decree number 13/PL.013-Kpt/03/KPU/I/2018 and number 278/PL.013-Kpt/06/KPU/IV/2018 to regulate the number of candidates for the members of Surabaya City DPRD for the period of 2019-2024. The election involves a population of over one million people, a seat quota of 50 seats, 16 participating parties, five electoral districts, and 31 subdistricts.

The present study relies on secondary data collected by the KPU RI and the Surabaya City KPU. The relevant secondary data are presented in Appendix 1.38 of Appendix XIV of KPU RI Decree number 13/PL.013-Kpt/03/KPU/I/2018 and Appendix 1 to KPU RI Decree number 278/PL.013-Kpt/06-KPU/IV/2018. Moreover, Surabaya City Electoral Districts 1-5 KPU Surabaya City Decree number 188/PL.02.6-Kpt/Kota/V/2019 and Appendix 1.1-1.5 Attachments electoral districts (DAPIL) 1-5 to KPU Surabaya City Decree number 317/PL.01.9-Kpt/3578/KPU-Kot/VIII/2019 provide additional secondary data relevant to the elections for the members of Surabaya City DPRD for the period 2019-2024. The investigation of this secondary data is critical for the attainment of the study objectives.

Data analysis used the formula for estimating the likelihood of a seat, the mathematical threshold, the seats gained, and correlation and partial correlation tests. The formula for analysis is as follows:

Probability of a seat:

$$P = \frac{NA}{NS} \times 100\% ; P \text{ is the likelihood of winning a seat, NA is the size of the electoral district, and NS is the political party}$$

Threshold formula:

$$\text{Upper Threshold} = \frac{100}{(m + 1)} ; \text{Effective Threshold} = \frac{75}{(m + 1)} ; \text{Lower Threshold} = \frac{100}{(2m)} ; m \text{ is the number of electoral districts}$$

The formula for party vote gain is based on data obtained from the Sainte-Lague divisor technique used by the KPU Surabaya City, while the correlation and partial correlation tests rely on the Pearson Product Moment statistical test and the SPSS program, respectively.

## Results and Discussion

This research on the probability and seats gained of minor parties in the 2019 general election for members of the Surabaya City DPRD will examine three crucial factors: (a) the size of the electoral district, (b) the minor party's vote gain, and (c) the probability and seats gained by minor party. This research aims to test the grand theory which states that the proportional representation electoral system for cities or the allocation of electoral district seats has the potential to be accessible to all participating political parties, which turns out not to be significantly proven.

### Size of the voting district

Based on the statistical data provided in Appendix XIV of KPU RI Decree number 13/PL.01.3-Kpt/03/KPU/I/2018 (KPU 2019d) and Appendix 1.38 of KPU RI Decree number 278/PL.01.3-Kpt/06/KPU/IV/2018 (KPU 2019f), the population of Surabaya City for the 2019-2024 period elections for members of the Surabaya City DPRD is estimated to be 2,827,892 individuals. To comply with Article 191 paragraph (2) letter g of Law Number 7 of 2017 and Article 8 paragraph (2) letter g of KPU RI Regulation Number 16 of 2017, the Indonesian KPU has set a seat quota of 50 for the Surabaya City DPRD members' election in 2019. This decision was established by the KPU RI, in accordance with KPU RI Decree number 13/PL.01.3-Kpt/03/KPU/I/2018 (KPU 2019d) and number 278/PL.01.3-Kpt/06/KPU/IV/2018 (KPU 2019f).

**Table 2.**  
Number of Electoral Districts Elections for the Members of Surabaya City DPRD  
for the Period 2019-2024

No	Constituency	Districts	Amount				Seat Quota					
			Population	Seat Rate	Legitimate Voice	Seat Rate						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)					
1	Surabaya 1	Bubutan	98,051	59,094	53,721	32,827	10					
		Genteng	57,310		32,337							
		Gubeng	133,695		77,424							
		Krembangan	111,789		61,284							
		Simokerto	93,251		50,426							
		Tegalsari	96,844		53,076							
		Sub-Total	590,940		59,094			328,268	32,827	10		
2	Surabaya 2	Kenjeran	154,279	56,525	85,632	31,163	11					
		Pabean Cantikan	75,142		39,869							
		Semampir	178,332		94,336							
		Tambaksari	214,024		122,958							
		Sub-Total	621,777		56,525			342,795	31,163	11		
		3	Surabaya 3		Bulak			42,619	57,481	24,133	34,406	9
					Gunung Anyar			53,730		33,423		
Mulyorejo	81,844			48,417								
Rungkut	106,121			65,440								
Sukolilo	103,689			60,628								
Tenggilis Mejoyo	55,170			33,469								
Wonocolo	74,157			44,147								
Sub-Total	517,330	57,481	309,657	34,406	9							
4	Surabaya 4	Gayungan	41,927	54,207	23,797	30,691	10					
		Jambangan	48,140		28,363							
		Sawahan	198,371		110,797							
		Sukmanunggal	100,241		57,956							
		Wonokromo	153,395		85,993							
		Sub-Total	542,074		54,207			306,906	30,691	10		
5	Surabaya 5	Asem Rowo	45,473	55,577	23,216	32,933	10					
		Benowo	59,322		36,363							
		Dukuhpakis	57,555		33,203							
		Karangpilang	68,906		41,660							
		Lakarsantri	55,062		34,114							
		Pakal	52,840		32,066							
		Sambikerep	61,849		36,573							
		Tandes	87,997		51,455							
		Wiyung	66,767		40,675							
		Sub-Total	555,771		55,557			329,325	32,933	10		
Total / Average			2.827,892	56,558	1,616,951	32,339	50					
Population Splitter				56,558		32,339						

Source: This analysis is based on data obtained from two sources. Attachment 1.38 of the KPU RI Decree number 278/PL.013-Kpt/06/KPU/IV/2018 and Appendix 1 of the Surabaya City Electoral Districts 1-5 Surabaya City KPU Decree Number 188/PL.02.6-Kpt/City/V/2019



In Appendix 1.38 of KPU RI Decree number 278/PL.013-Kpt/06-KPU/IV/2018, the seat quota for the Surabaya City DPRD is allocated across its five electoral districts. Surabaya electoral district 1 is allocated 10 seats and has a population of 590,940, electoral district 2 is allocated 11 seats and has a population of 621,777, electoral district 3 is allocated nine seats and has a population of 517,940, electoral district 4 is allocated 10 seats and has a population of 542,074, while electoral district Surabaya 5 is allocated 10 seats and has a population of 555,771.

Based on Appendix 1 of Surabaya City Electoral Districts 1-5 in Surabaya City KPU Decree number 188/PL.02.6-Kpt/City/V/2019, the total number of valid votes in the 2019 general election for members of Surabaya City DPRD was 1,616,951. Among the five electoral districts, Surabaya 1 had 328,268 valid votes, which constituted 20.30% of the total; Surabaya 2 had 342,794 valid votes, which constituted 21.20%; Surabaya 3 had 309,657 valid votes, which constituted 19.15%; Surabaya 4 had 306,906 valid votes, which constituted 18.98%; and Surabaya 5 had 329,325 valid votes, which constituted 20.37%.

Employing the Hamilton/Hare/Niemeyer quota technique, the Population Divisor Number (Bilangan Pembagi Penduduk/BPPd) was computed to be 56,558 votes by dividing the total population of 2,827,892 by a quota of 50 seats. It is noteworthy that the Surabaya 1 electoral district garnered 59,094 votes, the Surabaya 2 electoral district received 56,525 votes, the Surabaya 3 electoral district secured 57,481 votes, the Surabaya 4 electoral district accumulated 54,207 votes, and the Surabaya 5 electoral district amassed 55,557 votes, as shown in Table 2.

Based on the verified ballots, the BPPd received a total of 32,339 votes. The breakdown of votes per electoral district is as follows: Surabaya 1 received 32,827 votes, Surabaya 2 received 31,163 votes, Surabaya 3 received 34,406 votes, Surabaya 4 received 30,691 votes, and Surabaya 5 received 32,933 votes.

### Minor party voting gains

In the context of the elections for the members of Surabaya City DPRD for the period 2019-2024, the allocation of votes obtained by participating parties was determined by the Surabaya City KPU in its Decree number 188/PL.02.6-Kpt/Kota/V/2019 (KPU 2019a). It was observed that minor parties received a significantly low number of votes, resulting in an insignificant gain of seats. The Surabaya City KPU, therefore, issued two decrees, namely number 317/PL.01.9-Kpt/3578/KPU-Kot/VIII/2019 (KPU 2019b) and number 318/PL.01.9-Kpt/3578/KPU-Kota/VIII/2019 (KPU 2019c), to govern the allocation of seats and the election of candidates.

**Table 3.**  
Voting Gain for Minor Parties in Elections for the Members of Surabaya City DPRD  
for the Period 2019-2024

Constituency	Minor Party													
	Garuda		Berkarya		Perindo		PSI		Hanura		PBB		PKPI	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
Surabaya 1	720	0.22	2,421	0.74	8,351	2.54	18,189	5.54	6,452	1.97	1,659	0.51	687	0.21
Surabaya 2	1,478	0.43	2,929	0.85	7,253	2.12	11,342	3.11	3,813	1.11	7,035	2.05	422	0.12
Surabaya 3	577	0.19	2,197	0.71	11,399	3.68	29,659	9.58	1,469	0.47	4,228	1.37	540	0.17
Surabaya 4	1,213	0.40	2,685	0.87	7,837	2.55	13,742	4.48	3,337	1.09	2,186	0.71	806	0.26
Surabaya 5	728	0.22	4,012	1.22	793	2.41	17,826	5.41	3,003	0.91	5,986	1.82	549	0.17
Total	4,716	0.29	14,244	0.88	42,77	2.65	90,758	5.61	18,074	1.12	21,094	1.30	3,004	0.19

Source: Author’s data analysis on Appendix 1 Surabaya City Election Region 1-5 KPU Surabaya City Decree number 188/PL.02.6-Kpt/Kota/V/2019 (KPU 2019a)

An examination of Appendix 1 of the Surabaya City Election Region 1-5 KPU Surabaya City Decree number 188/PL.02.6-Kpt/Kota/V/2019 (KPU 2019a) reveals that in the elections for members of the Surabaya City DPRD for the period 2019-2024, the minor parties, namely PSI and PKPI, attained the highest and lowest number of votes, respectively, as shown in Table 3. Specifically, in the Surabaya 1

electoral district, PSI received 18,189 votes, accounting for 5.54% of the total valid votes, while PKPI received a meagre 687 votes, representing only 0.21% of the total valid votes. In the Surabaya 2 electoral district, PSI received 11,342 votes, constituting 3.11% of the total valid votes, while PKPI secured only 422 votes, amounting to a mere 0.12% of the total valid votes. Furthermore, in the Surabaya 3 electoral district, PSI garnered 29,659 votes, representing 9.58% of the total valid votes, while PKPI garnered a paltry 540 votes, equivalent to 0.17% of the total valid votes.

The political landscape of Surabaya City DPRD for the period 2019-2024 reveals that the PSI was the minor party that gained the most votes across all electoral districts, with a total of 90,758 votes, representing 5.61% of the valid votes cast. In contrast, the PKPI garnered just 3,004 votes, accounting for a mere 0.19% of the valid votes cast. Other minor parties, such as the Garuda Party, Berkarya Party, Perindo Party, Hanura Party, and PBB, secured a range of votes between 4,716 (0.29%) and 21,094 (1.30%).

Based on the findings of the analysis, it can be observed that the minor political party that obtained a significant number of votes in the 2019 election for the members of the Surabaya City DPRD was only the PSI, despite its relatively small size compared to major parties. Notably, in the Surabaya 1, 4, and 5 electoral districts, the PSI received a considerable increase in votes. The party gained four seats in proportion to its vote count in the election. The allocation of seats and selection of candidates were determined by the Surabaya City KPU, as stipulated in Decree number 317/PL.01.9-Kpt/3578/KPU-Kot/VIII/2019 (KPU 2019b) and number 318/PL.01.9-Kpt/3578/KPU-Kota/VIII/2019 (KPU 2019c).

### Probability and gain in seat of minor party

The KPU RI established a list of 16 political parties that would participate in the 2019 elections for members of the Surabaya City DPRD. This was stipulated in KPU RI Decree number 58/PL.01.1-Kpt/03/KPU/II/2018 (KUP 2019e). These 16 parties contested the 50-seat quota allocated for the Surabaya City DPRD. Among the 16 competing parties were seven minor parties, namely Garuda Party, Berkarya, Perindo, PSI, Hanura, PBB, and PKPI, vying for seats in the DPRD.

Based on the quota of 50 seats and 16 parties participating in the elections for the members of Surabaya City DPRD for the period 2019-2024, several probabilities were calculated. Firstly, the cumulative probability of seats is 3.13%. Secondly, the probability of gaining seats in the Surabaya 1 electoral district is 0.63%. Thirdly, the probability for seats in the Surabaya 2 electoral district is 0.69%. Fourthly, the probability for seats in the Surabaya 3 electoral district is 0.56%. Fifthly, the probability for seats in the Surabaya 4 electoral district is 0.63%. Sixthly, the probability for seats in the Surabaya 5 electoral district is 0.63%. Finally, the average probability for seats is 0.63%.

$$\begin{aligned}
 \text{Probability of Seats} &= \frac{na}{ns} \times 100\% = \frac{50}{16} \times 100\% = 3.13\% \\
 \text{Electoral District Probability of Seats in Surabaya 1} &= \frac{na}{ns} \times 100\% = \frac{10}{16} \times 100\% = 0,63\% \\
 \text{Electoral District Probability of Seats in Surabaya 2} &= \frac{na}{ns} \times 100\% = \frac{11}{16} \times 100\% = 0,69\% \\
 \text{Electoral District Probability of Seats in Surabaya 3} &= \frac{na}{ns} \times 100\% = \frac{9}{16} \times 100\% = 0,56\% \\
 \text{Electoral District Probability of Seats in Surabaya 4} &= \frac{na}{ns} \times 100\% = \frac{10}{16} \times 100\% = 0,63\% \\
 \text{Electoral District Probability of Seats in Surabaya 5} &= \frac{na}{ns} \times 100\% = \frac{10}{16} \times 100\% = 0,63\% \\
 \text{Probability of Electoral District Seats on Avarage} &= \frac{\sum \text{Probability to Obtain a District Seat}}{\sum \text{Quantity of Electoral Districts}} \times 100\% = \frac{3.13}{5} \times 100\% = 0,63\%
 \end{aligned}$$

Among the seven minor parties that received significant votes, only PSI was able to gain seats in the 2019 election for members of Surabaya City DPRD. Table 4 shows that the vote increases for PSI were considerable in several electoral districts, including Surabaya 1 with 5.54%, Surabaya 2 with 3.11%, Surabaya 3 with 9.58% Surabaya 4 with 4.48%, and Surabaya 5 with 5.41%.

Apart from the Surabaya 2 and 4 electoral districts, PSI's vote increases exceeded the lower threshold in most other electoral districts. Based on this vote tally which was calculated using the Sainte-Lague divisor method, the KPU Surabaya City determined that PSI won one seat in Surabaya electoral district 1, Surabaya electoral district 3, Surabaya electoral district 4, and Surabaya electoral district 5. The KPU Surabaya City made this decision in decrees numbered 317/PL.01.9-Kpt/3578/KPU-Kot/VIII/2019 (KPU 2019b) and 318/PL.01.9-Kpt/3578/KPU-Kota/VIII/2019 (KPU 2019c). Based on the Surabaya City KPU's decrees, four PSI seats were secured in the elections for the members of Surabaya City DPRD for the 2019-2024 period. The percentages obtained were as follows: 10.00% (0.10) in the Surabaya 1 electoral district, 0.00% (0.00%) in the Surabaya 2 electoral district, 10.00% in the Surabaya 3 electoral district, 10.00% in the Surabaya 4 electoral district, and 10.00% in the Surabaya 5 electoral district, with an average of 8.00% (0.08). The required vote percentage was met in the Surabaya 1, 3, and 5 electoral districts.

**Table 4.**

Probability of Wnning Seats,T, and Minor Party Seats in Elections for the Members of Surabaya City DPRD for the Period 2019-2024

Constituency	(1)	(2)	(3)	(4)	(5)
	Probability	Upper Threshold	Effective Threshold	Lower Threshold	Gaining Seats
Surabaya 1	0.63	9.09	6.82	5.00	0.10
Surabaya 2	0.69	8.33	6.25	4.55	0.00
Surabaya 3	0.56	10.00	7.50	5.56	0.10
Surabaya 4	0.63	9.09	6.82	5.00	0.10
Surabaya 5	0.63	9.09	6.82	5.00	0.10
Average	0.63	9.12	6.84	5.02	0.08

Source: Author's Data Analysis on Appendix 1 The Decision of the KPU Surabaya City number 188/PL.02.6-Kpt/Kota/V/2019 (KPU 2019a)

Based on Table 4, we have made the assumption that the variables of interest, namely the chance of gaining seats ( $x$ ), the upper threshold ( $z_1$ ), the effective threshold ( $z_2$ ), and the lower threshold ( $z_3$ ), as well as the seats gained by minor parties ( $y$ ), follow a normal distribution. The results of the residual skewness and kurtosis tests indicate that these assumptions are valid, with values ranging from -1.98 to 1.98% (-2.00 to 2.00%).

The findings of our analysis reveal a significant negative correlation coefficient of -0.753 between the likelihood of gaining seats ( $x$ ) and the seats gained by minor parties ( $y$ ), with a p-value of 0.142 (see Table 5). Based on a 5% level of significance (0.05) and degrees of freedom equal to 3, we find that the observed correlation coefficient ( $r_{count}$ ) of -0.753 is not statistically significant when compared to the critical value ( $r_{table}$ ) of 0.999. Therefore, we accept the null hypothesis ( $H_0$ ) and reject the alternative hypothesis ( $H_a$ ).

**Table 5.**

Correlation Analysis of Probability and Gaining Seats for Minor Parties in Surabaya City DPRD Elections (2019-2024)

		Seat Opportunity	Seat Gain
Seat Opportunity	Pearson Correlation	1	-.753
	Sig. (2-tailed)		.142
	N	5	5
Seat Gain	Pearson Correlation	-.753	1
	Sig. (2-tailed)	.142	
	N	5	5

Source: Data processed by authors using Pearson Product Moment correlation test with SPSS software

The findings of the research analysis pertaining to the relationship between the probability of gaining a seat (x) and the actual seat gained (y) are noteworthy. Specifically, it is observed that the upper threshold ( $z_1$ ), the effective threshold ( $z_2$ ), and the lower threshold ( $z_3$ ) exhibit simultaneous control over this relationship. The correlation coefficient between the two variables is determined to be 0.000, with a significance level of 0.00. In light of the sample size of three and an error rate of 5% (0.05), the computed value of  $r_{count}$  (= 0.000) is found to be greater than the tabled value of  $r_{table}$  (= 0.997), while the value of significance (0.00) is less than the threshold value of 0.05. These observations imply the rejection of the null hypothesis ( $H_0$ ) and the acceptance of the alternative hypothesis ( $H_a$ ).

**Table 6.**  
Correlation Analysis of Probability of Winning Seats and Gained Seats by Minor Parties in Surabaya City DPRD Elections (2019-2024) Subject to the Threshold Requirement

Control Variables		Lower Threshold	Probability of Seat	Seat Gained	Upper Threshold	Effective Threshold	Probability of Seat
-none <sup>a</sup>	Probability of Seat	Correlation	1.000	-.753	-.998	-.998	-.826
		Significance (2-tailed)	.	.142	.000	.000	.085
		df	0	3	3	3	3
	Seat Gain	Correlation	-.753	1.000	.791	.791	.250
		Significance (2-tailed)	.142	.	.111	.111	.685
		df	3	0	3	3	3
	Upper Threshold	Correlation	-.998	.791	1.000	1.000	.791
		Significance (2-tailed)	.000	.111	.	.000	.111
		df	3	3	0	3	3
	Effective Threshold	Correlation	-.998	.791	1.000	1.000	.791
		Significance (2-tailed)	.000	.111	.000	.	.111
		df	3	3	3	0	3
Lower Threshold	Correlation	-.826	.250	.791	.791	1.000	
	Significance (2-tailed)	.085	.685	.111	.111	.	
	df	3	3	3	3	0	
Upper Threshold, Effective Threshold & Lower Threshold	Probability of Seat	Correlation	1.000	.	.	.	.
		Significance (2-tailed)	.	.	.	.	.
		df	0	0	0	0	0
	Seat Gained	Correlation	.	1.000	.	.	.
		Significance (2-tailed)	.	.	.	.	.
		df	0	0	0	0	0

a. Cells contain zero-order (Pearson) correlations.

Source: Data processed by authors using Pearson Product Moment correlation test with SPSS software

The partial relationship between the upper threshold control variable and the effective threshold ( $z_1$  and  $z_2$ ) and seats gained (y) has a correlation coefficient value of 0.791 and a significance level of 0.11, while the partial relationship between the lower threshold variable ( $z_3$ ) and the probability of a seat (x) has a correlation coefficient value of 0.250 and a significance level of 0.685. Table 6 clearly shows that at a 5% error rate (0.05) and  $df = 3$ ,  $r_{count} = 0.791$   $r_{table} = 0.997$  and the value is  $0.11 > 0.05$ , whereas  $r_{count} = 0.250$   $r_{table} = 0.997$  and the value is  $0.68 > 0.05$  indicates that a partial positive correlation is not statistically significant.

Based on the conducted analysis, it can be inferred that the probability of gaining seats in the elections for the members of Surabaya City DPRD for the period 2019-2024 has a negative and negligible relationship with the seat gains for minor parties. However, when controlling for the effects of the upper threshold, effective threshold, and lower threshold simultaneously, the relationship between these two variables becomes statistically significant but extremely weak.

This empirical study reveals several notable findings. Firstly, it was found that the correlation between the size of the electoral district and the seat gains of minor parties is negative, yet statistically insignificant despite a very strong correlation coefficient. Secondly, the partial correlation between the threshold and the seat gains of minor parties is partially positive, but not statistically significant despite a strong correlation coefficient. Finally, the correlation between the size of the electoral district and the vote share of minor parties is also negative but lacks statistical significance.

Thus, first, the proportionality of seat distribution in a proportional representation electoral system (Lijphart 2003, Reynolds et al. 2005) with the size of the electoral district is not proven in this research. Even in constituencies with large seat quotas, not a single minor parties won a seat. Empirical evidence in the Surabaya 2 electoral district, where, with a quota of 11 seats in the large electoral district category, not a single minor party won a seat.

Second, the Rae/Looseore/Hanby lower threshold theory (Lijphart 1994, Gallagher & Mitchel 2005, Supriyanto & Mellaz 2011) in the case of the electoral district Surabaya 4 is not proven in this research. Empirical evidence is that PSI obtained 13,724 (4.48%) votes below the lower threshold (less 1,596 votes or 0.52%) 15,345 votes (5.00%/0.05) which theoretically should not have obtained the remaining seats but in fact obtained one remaining seat.

Third, in general the mathematical threshold theory of Rae/Looseore/Hanby and Taagepera/Shugart/Lijphart (Lijphart 1994, Gallagher & Mitchel 2005, Supriyanto & Mellaz 2011) is proven in this research. The proof is: (1) in electoral district Surabaya 1 PSI with 18,189 (5.54%) votes reaching the lower threshold of 16,413 (5.00%) votes getting the remaining seats; (2) in electoral district Surabaya 2 Berkarya with 2,929 (0.85%) votes, Perindo 7,253 (2.12%) votes, PSI 11,342 (3.11%) votes, PBB 7,035 (2.05%) votes, and PKPI 422 (0.12%) votes did not reach the lower threshold of 15,597 (4.55%) votes did not get the remaining seats; (3) in electoral district Surabaya 3 PSI with 29,659 (9.58%) votes reaching the lower threshold of 17,231 (5.56%) votes getting the remaining seats, and four in electoral district Surabaya 5 PSI with votes getting 17,826 (5.41%) votes reaching the lower threshold of 16,466 (5.00%) votes to obtain the remaining seats.

## Conclusion

Based on the results of this study, it can be inferred that, first, the relationship between the probability of minor parties gaining seats and the actual number of seats gained in the 2019 election for the members of Surabaya City DPRD is characterized by a negative and non-significant correlation, despite the presence of a very strong relationship between these variables. Secondly, the relationship between the likelihood of minor parties gaining seats and the actual number of seats won, which is influenced by the threshold requirement, is positive but non-significant, exhibiting a perfect correlation between these two variables. However, upon closer inspection, it was found that the relationship between the threshold requirement and the number of seats gained by minor parties is positive, although non-significant, with a very high correlation in all electoral districts of the Surabaya City DPRD elections.

The theoretical implications based on the results of this research are: (1) the theory which explains that the proportional electoral representation system of electoral district seat quotas/allocations has the potential to be accessible to all parties participating in the election has not been proven to be significant; (2) the size of electoral districts with seat quotas in the medium-large criteria (9-11 seat interval) does not have a significant positive effect on the seats obtained by participating political parties; (3) the threshold simultaneously influences the significant positive relationship between the size of; and (4) party votes below the lower threshold still have a chance of getting the remaining seats in the election.

In view of these findings, it is recommended that the KPU RI, as the election organizer, consider revising the size of the electoral district from six to 10 seats, as outlined in KPU RI Decree number 18/PP.02-Kpt/03/KPU/I/2018, in order to streamline the proportional Municipal Regency DPRD election system. Under this new seat allocation framework, the electoral district would be reduced to the minor-to-medium category, with a maximum of 10 seats. This would limit the number of parties that can achieve significant representation, resulting in a simplified multi-party system with only three to five relevant parties in the legislative council. Such a policy would have positive consequences, including the efficient execution of the legislative council's aggregation function, increased political and local government effectiveness, and the potential consolidation of political democracy and local governance.

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