

The Dynamics of Indonesian Democracy (2021-2024): A Nonparametric Comparative Analysis of Democracy Indices and Their Aspects

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Abstract:

Amidst the global discourse on democratic regression, the state of democracy in Indonesia post-reform continues to show complex dynamics. This study will conduct a longitudinal comparative analysis of the Indonesian Democracy Index (IDI) and its three components—Freedom, Equality, and Capacity of Democratic Institutions from 2021 to 2024 in 34 provinces. Given that the data is not normally distributed based on the Shapiro-Wilk test, the methodology used is the Friedman nonparametric test, followed by the Durbin-Conover *post-hoc* test for paired comparisons. The results show a statistically significant increase in the composite IDI score ($\chi^2=15.8$, $p=0.001$), the Equality aspect ($\chi^2=21.5$, $p<0.001$), and the Capacity of Democratic Institutions aspect ($\chi^2=29.9$, $p<0.001$) during the observation period. However, a crucial finding shows no statistically significant change in the Freedom aspect ($\chi^2=6.53$, $p=0.089$). This study argues that statistical improvements in several aspects likely reflect procedural and administrative progress driven by government policies. However, this progress can potentially obscure the reality of a more complex and sometimes contradictory substantive democracy, particularly in civil liberties and institutional integrity.

Keywords:

Civil Liberties; Durbin-Conover Test; Friedman Test; Indonesian Democracy Index; Democratic Decline

1. Introduction

The last decade has been marked by a worrying global trend, democratic backsliding (Mujani & Liddle, n.d.). This phenomenon is not only occurring in new democracies, but is also eroding the foundations of democracy in established democracies. Indonesia, once praised as a model of successful democratic transition, has not escaped scrutiny in this global narrative. Various reports and studies point to signs of stagnation and even regression in the quality of democracy in Indonesia (Al-Hamdi, 2024). Annual Report of the National Human Rights Commission (Komnas HAM), for example, explicitly states that democracy in the era of President Joko Widodo has tended to regress, partly due to a political orientation that prioritizes development and investment agendas over democratic and human rights reforms (Komisi Nasional Hak Asasi Manusia, 2023). This finding aligns with international index assessments that categorize Indonesia as a *flawed democracy*, where civil liberties are under pressure.

To monitor the quantitative development of democracy at the regional level, BPS-Statistics Indonesia collaborated with various ministries and institutions to develop the Indonesian Democracy Index (IDI). The IDI is an important instrument for political development planning at the provincial level, providing empirical data for evaluation and improvement (Hutasoit et al., 2024). Nationally, BPS-Statistics Indonesia data show fluctuations in the IDI score during this period. After reaching 78.12 in 2021, the national IDI peaked at 80.41 in 2022. This figure then corrected slightly to 79.51 in 2023 before rising again to 79.81 in 2024. Although generally showing stability in the 'good' category, these fluctuations provide an important backdrop for analyzing the dynamics occurring at the provincial level. In 2021, BPS fundamentally overhauled the IDI methodology, replacing the old framework with three new aspects: Freedom, Equality, and Capacity of Democratic Institutions. This change makes the 2021-2024 period a unique and coherent time frame for analysis. This period is crucial for Indonesian democracy, marked by post-pandemic recovery efforts, the implementation of controversial policies, and the escalation of political polarization ahead of the 2024 elections (Umam, 2024).

Although IDI is often analyzed at a single point in time (Hutasoit et al., 2024), there is a scarcity of research that conducts in-depth longitudinal analysis to test the statistical significance of changes in IDI scores and their aspects in 34 provinces using new methodologies. This study also contributes methodologically by using the Friedman test as a suitable nonparametric alternative for data that are not normally distributed, as well as explicitly applying the Durbin-Conover *post-hoc* test. This more robust follow-up test is rarely used in Indonesia (Conover, 1999). Thus, this study aims to statistically test whether there are significant differences in the Indonesian Democracy Index (IDI) and its three components in 34 provinces of Indonesia during the period 2021 to 2024.

2. Research Method

This study uses a quantitative design with a longitudinal comparative approach, utilizing secondary data in panel data from the Indonesian Democracy Index (IDI) for 34 provinces from 2021 to 2024, sourced from official publications by BPS-Statistocs Indonesia. Four main variables are analyzed: IDI as a composite score, Freedom Aspects measuring civil liberties, Equality Aspects measuring equality of access and participation, and Democratic Institutions Capacity Aspects measuring the performance of democratic institutions.

The data analysis procedure was carried out in three main stages.

- a. First, descriptive statistical analysis and normality testing using the Shapiro-Wilk test were performed to examine the data distribution assumptions. The Shapiro-Wilk test tests the null hypothesis that the sample comes from a normally distributed population. The W test statistic is calculated using the formula:

$$W = \frac{(\sum_{i=1}^n a_i x_{(i)})^2}{\sum_{i=1}^n (x_i - \bar{x})^2} \quad (1)$$

where $x_{(i)}$ is the i^{th} order statistic (i^{th} smallest sample), \bar{x} The sample mean and the coefficient a_i are constants derived from the expected value of the order statistic from the standard normal distribution. The hypothesis tested is:

H_0 : The data is normally distributed.

H_a : The data is not normally distributed.

If the p-value is less than the significance level (e.g., 0.05), then H_0 is rejected and the data is declared not normally distributed.

- b. Second, a comparative hypothesis test was conducted using the Friedman nonparametric test, suitable for detecting differences between treatments in k-related sample designs. In this context, each province ($n=34$) acted as a "block" and the four years of measurement (2021-2024) as "treatments" ($k=4$). The Friedman test statistic, often denoted by χ_r^2 , was calculated using the formula:

$$\chi_r^2 = \frac{12}{nk(k+1)} \sum_{j=1}^k R_j^2 - 3n(k+1) \quad (2)$$

Where n is the number of blocks (provinces), k is the number of treatments (years), and R_j is the number of ranks for treatment j .

The hypothesis tested is:

H_0 : The medians of the k treatment groups are equal.

H_a : At least one median of the treatment groups is different.

If the p-value is less than the significance level (e.g., 0.05), then H_0 is rejected, and it is stated that there is at least one pair of median differences between the tested year pairs.

- c. Third, if the Friedman test is significant, the analysis continues with the Durbin-Conover post-hoc test. This test is a paired comparison procedure designed explicitly as a follow-up to the Friedman test and is more statistically robust because it uses pooled variance based on all ranks.¹⁰ For each pair of years compared, this test examines the hypothesis:

H_0 : No significant difference exists between the medians of the tested year pairs.

H_a : There is a significant difference between the medians of the tested year pairs.

If the p-value is less than the significance level (e.g., 0.05), then H_0 is rejected, and it is stated that there is a difference in the median between the pairs of years tested.

3. Result and Discussion

Preliminary analysis using descriptive statistics and normality tests, as presented in Table 1, shows an upward trend in the average scores for the composite IDI, Equality Aspect, and Democratic Institution Capacity Aspect from 2021 to 2024, while the Freedom Aspect shows fluctuations without a clear trend. Further analysis at the provincial level shows significant variations in achievement. Consistently during the 2021-2024 period, the province of DI Yogyakarta recorded the highest IDI score, while the province of Papua consistently ranked lowest. This wide gap underscores the challenge of equalizing the quality of democracy. The Shapiro-Wilk normality test confirmed that most data distributions significantly differed from normal distributions ($p < 0.05$), providing strong justification for using a nonparametric approach.

Table 1. Descriptive Statistics and Shapiro-Wilk Normality Test for IDI and Its Aspects

Aspect	Descriptives						Shapiro-Wilk	
	Year	Mean	Median	SD	Min	Max	W	p
Indonesian Democracy Index	2021	76.1	76.5	4.36	66.4	82.1	0.936	0.046
	2022	77.9	78.8	5.43	62.9	85.6	0.896	0.004
	2023	77.2	77.5	5.01	65.5	85.1	0.935	0.044
	2024	78.5	79.4	6.7	56.5	89.3	0.911	0.009
Freedom	2021	81.1	82.4	8.01	59.4	92.8	0.936	0.047
	2022	80.4	82.7	9.08	53.6	91.4	0.904	0.006
	2023	79.5	81.2	7.49	64.5	92.2	0.962	0.271
	2024	79.5	81.7	8.33	63.4	91.2	0.942	0.068
Equality	2021	77.2	78.1	5.23	62.3	87.3	0.965	0.344
	2022	79.5	80.5	4.87	66.8	88.8	0.945	0.086
	2023	79.7	80.2	5.07	60.1	89.2	0.884	0.002
	2024	80	81.8	6.37	61	90.6	0.929	0.028
Capacity of Democratic Institutions	2021	69.9	69.5	7.43	56.1	82	0.956	0.18
	2022	73.7	73.7	7.22	50.5	85	0.95	0.122
	2023	72	73.8	7.98	50	84.3	0.944	0.083
	2024	75.7	76.3	8.94	44.5	88.2	0.895	0.003

The results of the Friedman test (Table 2) show statistically significant differences in the composite IDI median scores, the Equality aspect, and the Capacity of Democratic Institutions aspect ($p < 0.05$). Conversely, there was insufficient statistical evidence for the Freedom Aspect to reject the null hypothesis ($p = 0.089$), which means that, in aggregate, no significant change was detected in this aspect during the observation period.

Table 2. Results of the Friedman Test for IDI and its Aspects

Aspect	χ^2	df	p
IDI	15.8	3	0.001
Freedom	6.53	3	0.089
Equality	21.5	3	<001
Capacity of Democratic Institutions	29.9	3	<001

Further analysis using the Durbin-Conover *post-hoc* test (Table 3) allows for a more granular identification of when these significant changes occurred. The most notable finding is the stagnation in the Freedom aspect, which creates a sharp anomaly compared to various qualitative reports. This phenomenon can be explained by the theory of *shrinking civic space*, which refers to conditions in which the state actively or passively limits the ability of civil society to participate in public discourse.

Table 3. Results of the Durbin-Conover Post-Hoc Test for Pairwise Comparisons Between Years

Aspect	Year 1	Year 2	Statistic	p
Indonesian Democracy Index	2021	2022	2.72	0.008
	2021	2022	1.31	0.194
	2021	2024	4.03	<0.001
	2022	2023	1.41	0.162
	2022	2024	1.31	0.194
	2023	2024	2.72	0.008
Freedom	2021	2022	0.287	0.775
	2021	2022	1.53	0.129
	2021	2024	1.817	0.072
	2022	2023	1.817	0.072
	2022	2024	2,104	0.038
	2023	2024	0.287	0.775
Equality	2021	2022	2.922	0.004
	2021	2022	3,913	<0.001
	2021	2024	4,852	<0.001
	2022	2023	0.991	0.324
	2022	2024	1.93	0.056
	2023	2024	0.939	0.35
Capacity of Democratic Institutions	2021	2022	4.18	<0.001
	2021	2022	2.09	0.039
	2021	2024	6.05	<0.001
	2022	2023	2.09	0.039
	2022	2024	1.87	0.064
	2023	2024	3.96	<0.001

In Indonesia, one of the main instruments contributing to this phenomenon is the Electronic Information and Transaction Law (EIT Law), whose articles are often used to criminalize criticism and dissent, thereby creating a "chilling effect" (*chilling effect*) among activists and the general public (Freedom House, 2024) (Remanu et al., 2024). The stagnation of the IDI score in this aspect most likely reflects that the formal legal framework (*de jure*) remained relatively unchanged, but failed to capture the reality of the narrowing of substantive freedoms (*de facto*) experienced by citizens. In contrast, the Equality aspect significantly improved, which can be attributed to specific government policy *inputs*. The 2021-2024 period is marked by the massive distribution of social protection programs (*bansos*) as a post-pandemic economic recovery strategy, which directly targets indicators of poor citizens' access to social security (Salsabila et al., 2024). In addition, enacting Law Number 12 of 2022 concerning Sexual Violence Crimes (TPKS Law) was an important legislative milestone contributing to the gender equality indicator score (Triadi & Maryanto, 2024). However, various studies indicate that the implementation of the UU TPKS still faces significant challenges, so this increase in the score reflects progress at the policy level rather than change. Perceived *societal outcomes* (Fatimah & Ummul Fithriyyah, 2023); (Nurisman, 2022).

Finally, the aspect of democratic institutional capacity shows the most substantial statistical improvement, but presents a paradox. This increase can be understood through the lens of legitimacy theory, which distinguishes between procedural legitimacy (based on efficiency and compliance with rules) and substantive legitimacy (based on trust and shared values). The IDI indicators appear to measure the procedural capacity of institutions, such as the number of laws passed by the House of Representatives or the rate of case resolution in the courts, which have indeed shown an increase. However, this improvement has occurred alongside a severe substantive legitimacy crisis, which culminated in Constitutional Court Decision No. 90/PUU-XXI/2023. This ruling, which is widely considered to be rife with conflicts of interest, undermines public trust in the independence of the judiciary and shows that procedural efficiency does not always correlate with the health of democracy (Setiadi, 2024). Thus, the IDI appears to measure bureaucratic *activities*, not *the democratic legitimacy* of the institution.

4. Conclusion

A nonparametric comparative analysis of the Indonesian Democracy Index for the 2021-2024 period reveals a complex and contradictory narrative. Quantitatively, there is statistical evidence of an improving trend in the composite IDI score, driven by significant improvements in the Aspects of Equality and Democratic Institutional Capacity, but overshadowed by a worrying stagnation in the Aspects of Freedom. A synthesis of these findings points to the potential for a "validity gap" in measuring the Freedom aspect, the strong influence of policy *inputs* on the Equality aspect, and the paradox of an increase in the Capacity of Democratic Institutions aspect amid a crisis of legitimacy. The main conclusion is that the trajectory of Indonesian democracy during this period cannot be simplified, but rather shows the potential for *decoupling* between measurable improvements in procedural democracy and serious challenges to substantive democracy. Future research should conduct mixed-method studies, disaggregate analysis to the indicator level, and apply more sophisticated statistical models to deepen understanding. In terms of policy, it is recommended that BPS-Statistics Indonesia and relevant stakeholders consider revising the IDI methodology by adding indicators that are more sensitive to substantive aspects of democracy, such as public perceptions of judicial independence and the prevalence of self-censorship, so that the IDI can become a more holistic and accurate measuring tool.

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