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TERRITORIAL REPRESENTATIONAL ASYMMETRY IN A MULTI-DISTRICT PROPORTIONAL REPRESENTATION SYSTEM: MARGINAL SEAT THRESHOLDS IN MACEDONIA, 2002–2024

Abstract

Macedonia elects 120 members of parliament from six domestic electoral districts of equal magnitude, each returning twenty seats through closed-list D'Hondt allocation. Equal district magnitude and a common allocation rule do not, however, imply an identical marginal threshold for the final seat. Using official district-level results for eight parliamentary elections from 2002 to 2024, this article calculates the twentieth (lowest winning) D'Hondt quotient for each of 48 district-election observations. The measure is interpreted narrowly as a district-level marginal winning threshold, not as a general individual-level measure of vote value or as classical malapportionment. The results show persistent territorial asymmetry: ED4, ED3, and ED1 generally display higher marginal thresholds, while ED6 lies below the cross-district mean in every election and records the lowest value in six of the eight contests. A seat-weighted calculation shows that Macedonian- and Macedonian-led mandates were won in district environments with an average marginal threshold of 7,629 votes, compared with 6,720 for Albanian- and Albanian-led mandates, a difference of 909 votes (13.5

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percent). This pattern does not arise from reserved seats, ethnic allocation rules, or a lower legal threshold; the domestic system has no general national legal threshold. Rather, it reflects the territorial distribution of votes, valid-vote volume, and party competition. Registered-voter data point the same way: the two districts with the highest mean marginal thresholds, ED4 and ED3, have the smallest 2024 electorates, so the asymmetry documented here runs counter to, rather than with, classical apportionment inequality. The article thus identifies a form of territorial representational asymmetry that is conceptually distinct from classical malapportionment and offers a replicable diagnostic for multi-district proportional representation systems.

Keywords: Macedonia, electoral districts, D'Hondt, marginal winning quotient, effective threshold, district magnitude, territorial representational asymmetry, minority representation, proportional representation

INTRODUCTION

Macedonia elects 120 members of parliament from six domestic electoral districts.¹ Each district returns 20 members of parliament (MPs) through closed-list proportional representation using the D'Hondt formula. The institutional design is formally symmetrical with respect to district magnitude and the allocation rule: every domestic district elects twenty MPs under the same divisor formula. The Electoral Code does not impose a general national legal threshold for representation in these domestic districts. The central question is therefore narrower: does formal symmetry in magnitude and formula also produce similar district-level marginal thresholds in practice?

The empirical puzzle is immediately apparent. If all six districts share the same magnitude, should the marginal threshold for the final seat not converge across them? The answer is no, and the divergence is systematic. The twentieth, lowest winning D'Hondt quotient varies persistently across districts and over time. Some districts repeatedly record a higher cut-off for the final allocated quotient, while others

¹ The Republic of Macedonia changed its constitutional name to North Macedonia in 2019. The short form Macedonia is used throughout this article.

record a lower one. This variation matters because parties and voters compete in territorially distinct electoral sub-arenas with different valid-vote totals and different structures of inter-party competition.

The article therefore asks: what was the marginal winning quotient for the twentieth and final mandate in each electoral district across the parliamentary elections of 2002, 2006, 2008, 2011, 2014, 2016, 2020, and 2024? And what does variation in that district-level threshold imply for the electoral environments in which Macedonian-led and ethnic Albanian-led party families win seats? The core argument is that the observed difference is not a formal ethnic privilege embedded in the electoral code. No reserved domestic seats are allocated on ethnic lines, no ethnic allocation formula is applied, and ethnic Albanian-led lists face no separate or lower legal threshold. The difference is territorial: ethnic Albanian-led mandates are won overwhelmingly in lower-threshold districts, above all ED6, while Macedonian-led mandates are more heavily concentrated in higher-threshold environments, including ED3 and ED4.

The contribution of the article is both empirical and theoretical. Empirically, it compiles a systematic district-election series of twentieth D'Hondt quotients for all six districts across eight elections, providing an election-specific measure of the marginal cut-off for the last seat. Theoretically, the article shows that formally identical district magnitude and allocation rules can coexist with persistent territorial differences in marginal representational access when valid-vote volumes and the distribution of votes among lists differ across districts. This phenomenon is conceptually distinct from classical malapportionment, which concerns the allocation of seats relative to district population or electorate size. The article, therefore, uses the broader term territorial representational asymmetry for the observed pattern. This distinction contributes to the literature on electoral inequality and minority representation in post-communist and multi-ethnic states (Bieber 2004; Friedman 2005) and offers a diagnostic that can be applied to other multi-district proportional systems.

THEORETICAL FRAMEWORK AND LITERATURE

The analysis builds on four bodies of electoral-system scholarship: district magnitude, effective thresholds, malapportionment, and minority representation. District magnitude occupies a central

position in comparative electoral studies because it shapes the relationship between votes and seats and thereby affects proportionality, fragmentation, and accountability (Lijphart 1994). Carey and Hix (2011) identify a low- to medium-magnitude institutional “sweet spot” that can balance proportionality and governability. With twenty seats per district, Macedonia uses relatively large multi-member districts, yet D’Hondt allocation can still create meaningful barriers for smaller or geographically dispersed lists. Regional scholarship likewise illustrates how the interaction of proportional representation, D’Hondt allocation, legal thresholds, and coalition strategies can shape parliamentary fragmentation and representational access (Daskalovski 2019; Orlović 2015). Work on the Macedonian case has in turn assessed the overall proportionality of the six-district model against European comparators (Fidanovski and Rechica 2023).

The second theoretical foundation is the literature on effective thresholds. Taagepera and Shugart (1989) and Taagepera (1998) distinguish a formal legal threshold from the practical threshold generated by district magnitude and seat-allocation mechanics. A widely used approximation is $75/(M+1)$, where M denotes district magnitude. With $M = 20$, this gives approximately 3.6 percent of the district vote. The present article does not treat that formula as an observed cut-off. Instead, it measures the actual twentieth, lowest winning D’Hondt quotient in each district-election observation. Expressed in votes, this is an ex post marginal winning quotient: the cut-off at which the final of twenty district mandates is allocated in a particular election.

Table 1. The formula-based effective threshold and the district-level marginal measure used in this article

Item	Value
District magnitude (M)	20 seats per district
Formula-based effective threshold	$75 / (M + 1)$
Expected threshold when $M = 20$	approximately 3.6%
Empirical measure in this article	20th (lowest winning) D’Hondt quotient, expressed in votes

Source: Author’s elaboration based on Taagepera and Shugart (1989) and Taagepera (1998).

Third, the article engages the literature on malapportionment and voter equality. Classical malapportionment concerns a mismatch between the share of seats allocated to a district and its share of the relevant population or electorate; one consequence can be cross-district variation in the raw-vote cost of seats (Riera and Lago 2023). Kedar, Harsgor, and Sheinerman (2016) show more broadly that proportional representation does not by itself guarantee identical representational influence across voters. The measure used here is nevertheless conceptually distinct from classical malapportionment: it does not compare population or registered voters per seat. It captures the realized district-level cut-off after turnout and the distribution of valid votes among lists is observed. The analysis therefore speaks directly to territorial asymmetry in marginal representational access, while treating classical malapportionment as a related but separate phenomenon.

For district d in election year t , the article defines the marginal seat threshold as the twentieth-highest D'Hondt quotient among all party quotients generated in that district. If list p receives V_{pdt} votes and the divisor is k , the quotient is V_{pdt}/k . The twenty highest quotients across all lists receive the twenty available seats; the twentieth quotient is therefore the lowest winning quotient and the cut-off for the final mandate. Lower values indicate a lower marginal threshold for the last seat and higher values a higher one. Crucially, the twentieth quotient is not interpreted as the intrinsic value of every vote cast in the district, nor as the average number of votes required for every seat. It is an election-specific marginal indicator shaped jointly by valid-vote volume and the distribution of votes among competing lists.

Finally, the article connects this measurement framework to scholarship on minority representation and territorially organized party systems. Proportional representation can facilitate minority inclusion, but the extent of that effect depends in part on how voters and parties are geographically distributed. A territorially concentrated community can translate votes efficiently in particular districts, while geographically dispersed support may confront less favorable district-level thresholds. In Macedonia, ethnic Albanian-led parties win most of their seats in ED6 and substantial numbers in ED1, ED2, and ED5. The institutional consequence identified here is territorial rather than formally ethnic: when seats are concentrated in districts with lower marginal thresholds, the bloc's seat-weighted exposure to those thresholds is lower even

though the legal allocation rule is identical for all lists. Comparative guidance on electoral-system design treats district structure and thresholds as choices with direct consequences for the inclusion of minority communities, which is precisely the dimension on which the present measure is informative (International Institute for Democracy and Electoral Assistance [International IDEA] 2005; Venice Commission 2008).

Table 2. Literature informing the theoretical contribution

Literature strand	Relevance for this article
Taagepera and Shugart (1989); Taagepera (1998)	Distinguishes formula-based from actual effective thresholds.
Carey and Hix (2011)	Establishes why magnitude governs proportionality, fragmentation, and accountability.
Kedar, Harsgor, and Sheiner-man (2016)	Framework for analysing voter equality under PR, not only in majoritarian systems.
Daskalovski (2019); Orlovic (2015)	Regional evidence on how proportional rules, D'Hondt allocation, and party strategies shape fragmentation and access.
Fidanovski and Rechica (2023)	Assesses the proportionality of the Macedonian electoral model.
International IDEA; Venice Commission	Connects electoral design to inclusion, thresholds, and minority representation.
Riera and Lago (2023)	Defines classical malapportionment in population/seat terms, clarifying its distinction from the marginal quotient used here.

Source: Author’s synthesis of the cited literature.

DATA, MEASUREMENT, AND METHOD

The empirical material consists of official district-level parliamentary election results published by the State Election Commission, from which the author constructed an analytical database covering the elections of 2002, 2006, 2008, 2011, 2014, 2016, 2020, and 2024 (State Election Commission of the Republic of North Macedonia n.d.). These eight contests constitute the full series examined under the domestic six-district model in which each district returns twenty

MPs by D'Hondt allocation. The analytical frame comprises the 120 seats allocated in the six domestic districts; the three diaspora mandates elected in 2011 and 2014 fall outside these districts and are therefore excluded from the district analysis and domestic-seat comparisons. Electoral-district boundaries were amended during the period under study, including changes to two districts adopted in 2011 (OSCE Office for Democratic Institutions and Human Rights [OSCE/ODIHR] 2011); the longitudinal analysis therefore follows the legally defined ED1–ED6 units applicable at each election rather than assuming perfectly invariant geographic boundaries. For 2024, the national totals used in the counterfactual simulations were updated to the final results after the repeated voting in parts of ED5 and ED6 and cross-checked against the ODIHR final results annex (State Election Commission of the Republic of North Macedonia 2024; OSCE/ODIHR 2024). The district-level twentieth-quotient series used in the core analysis is reported in Table 4.

Coalitions are treated as the electoral lists under which votes were cast, consistent with the official allocation procedure. For the bloc-level descriptive analysis, winning lists are classified as Macedonian- or Macedonian-led, ethnic Albanian- or ethnic Albanian-led, or other/minority. This classification is used only to compare the district threshold environments in which seats are won; it does not assign ethnicity to individual voters and should not be read as a claim about the identities of all supporters of a given list.

The main dependent variable is the district-level marginal seat threshold: the twentieth-highest D'Hondt quotient in each district-election observation. It should be distinguished from average valid votes per seat, which equals total valid votes divided by twenty, and from classical voters-per-seat measures of malapportionment. Average valid votes per seat captures overall electoral volume; the twentieth quotient captures the realized cut-off for the last allocated mandate after votes have been distributed across lists through the D'Hondt divisor sequence.

To examine the correlates of district-level threshold variation, the article also uses two descriptive indicators. The first is the number of valid votes per district, an electoral measure of realized vote volume. The second is the effective number of electoral parties by votes (ENP), calculated in the standard way as the reciprocal of the sum of squared vote shares (Laakso and Taagepera 1979). ENP captures district-level fragmentation. Finally, the seat-weighted threshold for each bloc is

computed by weighting each district-election marginal threshold by the number of seats won by that bloc in the corresponding district. This statistic describes the average threshold environment in which a bloc’s seats were won; it is not an estimate of the votes actually “spent” on each of those seats.

District size, realized vote volume, and the marginal threshold are reported together in Table 3. The register figures are State Election Commission data reproduced in Constitutional Court of the Republic of North Macedonia (2025); comparable figures on district boundaries are not published for the earlier contests. For a descriptive overview of the 2024 election and district structure, see Treneska *et al.* (2024).

Table 3. Registered voters, vote volume, and marginal thresholds by electoral district

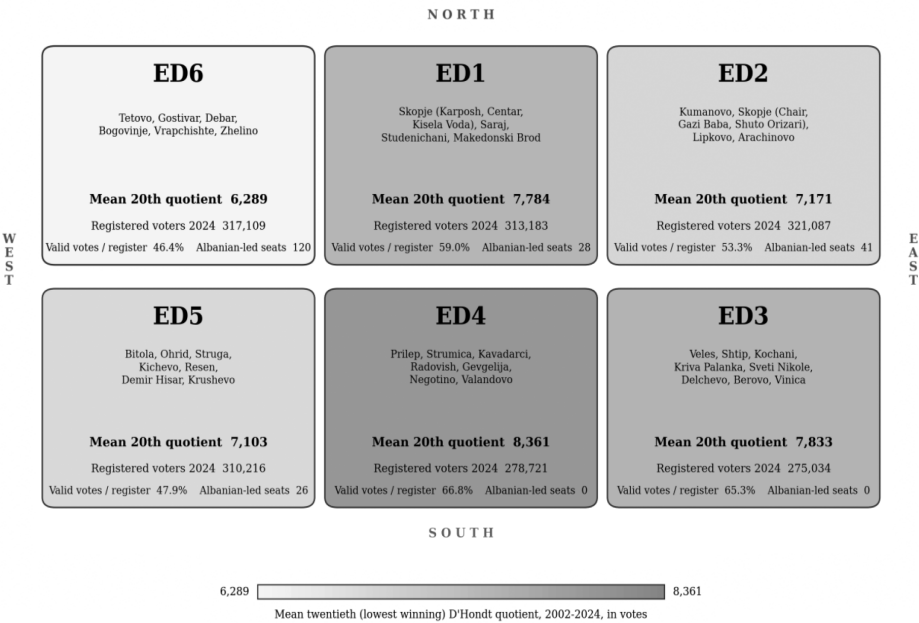
Electo- ral district	Registered voters (2024)	Share of national register (%)	Mean valid votes, 2002– 2024	Mean valid votes as a share of the 2024 register (%)	Mean 20th quotient (votes)
ED1	313,183	17.25	184,783	59.0	7,784
ED2	321,087	17.69	171,068	53.3	7,171
ED3	275,034	15.15	179,542	65.3	7,833
ED4	278,721	15.35	186,308	66.8	8,361
ED5	310,216	17.09	148,607	47.9	7,103
ED6	317,109	17.47	147,156	46.4	6,289

Source: Registered voters from State Election Commission data reproduced in Constitutional Court of the Republic of North Macedonia (2025), U.br.186/2024; valid votes and marginal thresholds are the author’s calculations from official district-level State Election Commission results, 2002–2024.

Note: Each district returns twenty seats, so the share of the national register in column three may be compared directly with a uniform seat share of 16.67 percent. Registered voters are reported for 2024 only; the valid-vote and threshold columns are means over the eight elections from 2002 to 2024, so column five is an indicative participation ratio rather than a turnout rate for a single contest. Comparable official ethnic-composition figures are not reported on electoral-district boundaries, because census data are organized by administrative units; no district-level ethnic estimates are therefore inferred here.

Two features of Table 3 bear directly on the argument. First, apportionment inequality across the six districts is modest. The registers range from 275,034 in ED3 to 321,087 in ED2, a ratio of 1.17, and the Loosemore–Hanby malapportionment index is 2.8 percent. Second, and more consequentially, what inequality there is runs in the opposite direction to the threshold ranking. ED3 and ED4 hold the two smallest registers yet record the two highest mean marginal thresholds, while ED5 and ED6 hold large registers and record low ones; across the six districts, the correlation between register size and the mean twentieth quotient is -0.73 . The cross-sectional 2024 register comparison is consistent with the interpretation that realized vote volume and participation, rather than seat apportionment, are important proximate correlates of the observed threshold differences. Mean valid votes over the eight elections amount to roughly two-thirds of the 2024 register in ED3 and ED4, but to less than half in ED5 and ED6. Because the numerator is a period mean and the denominator is the 2024 register, these ratios are indicative rather than election-specific turnout rates. The comparison nonetheless reinforces the distinction between the marginal-threshold phenomenon measured here and classical malapportionment; a registered-voter series for the earlier contests would permit a panel estimate rather than a cross-section. Figure 1 presents the same information schematically, together with the principal municipalities of each district, so that the territorial structure underlying the argument can be read at a glance, and Figure 2 shows the corresponding administrative geography.

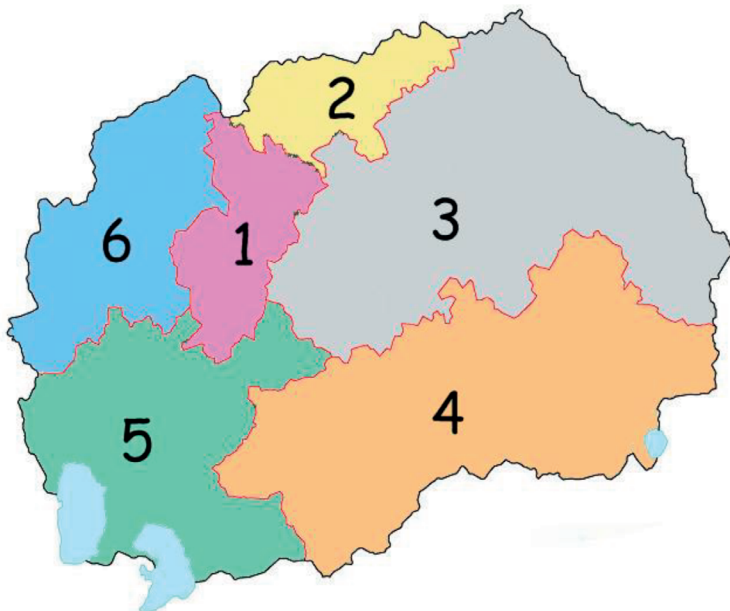
Figure 1. Schematic overview of the six domestic electoral districts



Source: Author’s compilation. District composition from the Law on Electoral Districts (2002); registered voters from State Election Commission data reproduced in Constitutional Court of the Republic of North Macedonia (2025); thresholds and vote volumes are the author’s calculations from official district-level State Election Commission results.

Note: The figure is schematic. It shows the approximate relative position of the six districts and their principal municipalities, not their administrative boundaries; municipal composition was adjusted after the 2004 territorial reorganisation. Shading is proportional to the mean twentieth D’Hondt quotient over the period, from the lowest in ED6 to the highest in ED4. Electoral-district boundaries were not perfectly invariant over the full period; the schematic is intended for orientation and does not imply a fixed 2002–2024 geometry.

Figure 2. The six domestic electoral districts of Macedonia



Source: Author.

Note: Numbers 1 to 6 denote electoral districts ED1 to ED6. The map is reproduced for geographic orientation only. District boundaries were amended during the period under study, so the figure should not be read as a fixed 2002–2024 geometry.

**SYSTEMATIC COMPARISON
OF ALL SIX ELECTORAL DISTRICTS**

Table 4 presents the central empirical measure for all districts and all eight elections. The hierarchy is persistent. ED4 most often records the highest marginal threshold, followed by ED3 and ED1, whereas ED6 lies below the cross-district mean in every election and records the lowest value in six of the eight contests; ED2 was marginally lower than ED6 in 2002 and in 2006. The finding therefore emerges from a full six-district comparison across the entire 2002–2024 series rather than from a selective ED6-versus-ED3 contrast.

Table 4. Twentieth (lowest winning) D’Hondt quotient by electoral district, 2002–2024

Year	ED1	ED2	ED3	ED4	ED5	ED6
2002	7,666	7,467	8,377	8,980	7,881	7,817
2006	6,274	5,444	6,723	7,241	6,235	5,672
2008	7,768	6,939	8,011	8,205	7,033	6,193
2011	8,234	7,383	8,536	9,356	7,496	6,274
2014	8,299	7,447	8,155	8,750	7,178	6,478
2016	9,105	8,190	9,023	9,478	7,355	6,548
2020	6,827	6,842	6,939	7,448	6,895	5,353
2024	8,096	7,656	6,896	7,427	6,753	5,980

Source: Author’s calculations from official district-level results of the State Election Commission (SEC), 2002–2024. Values rounded to the nearest whole vote.

The pattern indicates persistence rather than a purely random ordering. ED4, ED3, and ED1 are generally above or near the overall mean marginal threshold in each election, while ED6 is consistently below it. The hierarchy is not immutable: thresholds move with election-specific vote volume and the structure of competition. In 2024, for

instance, ED3 falls below its usual position while ED1 and ED2 remain elevated. Nevertheless, the lower-threshold position of ED6 and the higher-threshold position of ED4 and ED3 recur across most election cycles.

Table 5. Summary statistics by electoral district, 2002–2024

District	Mean	Median	Min	Max	SD	CV%	Mean valid votes	Mean ENP
ED1	7,784	7,932	6,274	9,105	888	11.41	184,783	3.79
ED2	7,171	7,415	5,444	8,190	813	11.34	171,068	4.08
ED3	7,833	8,083	6,723	9,023	866	11.06	179,542	2.50
ED4	8,361	8,478	7,241	9,478	907	10.85	186,308	2.34
ED5	7,103	7,106	6,235	7,881	500	7.04	148,607	3.42
ED6	6,289	6,234	5,353	7,817	737	11.71	147,156	4.00

Source: Author’s calculations from the analytical database compiled from official district-level State Election Commission results, 2002–2024.

Note: Threshold values are the 20th D’Hondt quotient in votes. Mean valid votes and mean ENP are computed over the eight elections in the dataset. Summary statistics for the threshold columns are computed from the rounded integer series reported in Table 4; means are rounded half up, so the ED3 mean of exactly 7,832.5 is reported as 7,833. CV% = coefficient of variation.

The average gap is substantively large. ED4’s mean marginal threshold is 8,361 votes, compared with 6,289 in ED6, a ratio of 1.33. Thus, the cut-off for the final seat was, on average, approximately one-third higher in ED4 than in ED6. This is the article’s core descriptive evidence of territorial representational asymmetry in marginal seat thresholds.

**MECHANISMS: VOTE VOLUME
AND PARTY-SYSTEM FRAGMENTATION**

The first proximate correlate of the district threshold is vote volume. Because each district returns exactly twenty MPs, districts with more valid votes tend to generate higher winning quotients, other things equal. Across the 48 district-election observations, the Pearson correlation between total valid votes and the marginal seat threshold is 0.74, a positive and moderately strong association. The result is consistent with the structural expectation that equal district magnitude combined with unequal realized vote volumes can produce different marginal cut-offs.

The second correlate is district-level party competition. Fragmentation affects the distribution of quotients across lists and, therefore, where the cut-off falls. In the present dataset, the correlation between ENP and the marginal seat threshold is negative (−0.57): more fragmented competition is associated with a lower twentieth quotient, while more concentrated competition tends to coincide with a higher cut-off. These are descriptive associations, not causal estimates. Fragmentation and vote volume may themselves be related to demographic, geographic, and political conditions that are not modeled here.

Table 6. Descriptive correlations with the marginal seat threshold
(N = 48 district-election observations)

Relationship	Correlation (r)	Interpretation
Valid votes → marginal seat threshold	0.74	Moderate-to-strong positive: districts with more valid votes generally face higher entry quotients.
ENP (votes) → marginal seat threshold	−0.57	Moderate negative: More fragmented competition is associated with lower final-seat costs.

Source: Author’s calculations from the analytical database compiled from official district-level State Election Commission results, 2002–2024.

Table 7. Cross-district dispersion of marginal seat thresholds by election

Year	Mean	Min	Max	Range	CV%
2002	8,031	7,467	8,980	1,513	6.91
2006	6,265	5,444	7,241	1,797	10.56
2008	7,358	6,193	8,205	2,012	10.44
2011	7,880	6,274	9,356	3,082	13.56
2014	7,718	6,478	8,750	2,272	10.83
2016	8,283	6,548	9,478	2,930	13.80
2020	6,717	5,353	7,448	2,095	10.53
2024	7,135	5,980	8,096	2,116	10.52

Source: Author’s calculations from the analytical database compiled from official district-level State Election Commission results, 2002–2024.

Note: Range = maximum minus minimum district marginal threshold within the election year. Range and CV% are computed from the rounded integer threshold series reported in Table 4. CV% = coefficient of variation.

The range between the highest and lowest district marginal thresholds is narrowest in 2002 and widest in 2011 and 2016. One plausible interpretation is that years with larger vote volumes and more concentrated competition in ED3 and ED4 raise the final winning quotients in those districts, while lower vote volumes and more fragmented competition in ED6 keep its threshold comparatively lower. A causal test would require polling-station-level turnout, detailed demographic data, and party-entry variables beyond the aggregate dataset used here. The evidence should therefore be read as consistent with, rather than proof of, the proposed mechanisms.

EFFECTS ON MACEDONIAN-AND ETHNIC
ALBANIAN-LED PARTIES

The politically salient question is whether unequal district thresholds amount to an ethnic privilege. The evidence does not support a claim of formal ethnic privilege. The D’Hondt formula and district magnitude are the same for all competing lists in the six domestic districts. There are no reserved domestic seats, ethnic allocation quotas, or separate lower legal thresholds for ethnic Albanian-led lists. The evidence does show a bloc-level asymmetry in exposure to district

marginal thresholds, driven by the territorial concentration of seats rather than by differential legal treatment. This distinction is analytically important.

Table 8. Seat-weighted exposure to district marginal thresholds by bloc, 2002–2024

Bloc	Seats in the dataset	Seat-weighted marginal threshold	Difference vs Albanian-led	% difference
ethnic Albanian / Albanian-led	215	6,720	—	—
Macedonian / Macedonian-led	743	7,629	+909 votes	+13.5%

Source: Author’s calculations from the analytical database compiled from official district-level State Election Commission results, 2002–2024.

Note: The two-bloc comparison excludes two seats classified as other/minority (one in 2006 and one in 2008); bloc totals therefore sum to 958 rather than 960 domestic seats across the eight elections.

Across all eight elections, the seat-weighted marginal threshold associated with Macedonian- and Macedonian-led mandates is 7,629 votes, compared with 6,720 for ethnic Albanian- and ethnic Albanian-led mandates. The difference is 909 votes, or 13.5 percent. Substantively, this means that Macedonian-led seats were won, on average, in districts and election years where the final-seat cut-off was higher. It does not mean that every Macedonian-led mandate literally required 909 more votes than every ethnic Albanian-led mandate; the statistic summarizes differential exposure to district threshold environments.

Table 9. Mean marginal seat threshold in selected districts, 2002–2024

District	Mean marginal threshold	Comparison with ED6
ED6	6,289	Baseline: below the cross-district mean in every election
ED3	7,833	+1,544 votes (+24.6%)
ED4	8,361	+2,072 votes (+32.9%)

Source: Author’s calculations from the analytical database compiled from official district-level State Election Commission results, 2002–2024.

Table 10. Seat-weighted marginal threshold by bloc and election

Year	Alb. seats	Alb. Threshold	Mac. Seats	Mac. Threshold	Difference
2002	26	7,740	94	8,112	+372
2006	28	5,778	91	6,415	+637
2008	29	6,651	90	7,590	+939
2011	25	6,833	95	8,155	+1,322
2014	27	7,005	93	7,925	+920
2016	20	7,131	100	8,514	+1,383
2020	28	6,103	92	6,904	+801
2024	32	6,732	88	7,281	+549

Source: Author's calculations from the analytical database compiled from official district-level State Election Commission results, 2002–2024.

Note: The table reports the two major blocs only. One other/minority seat in 2006 and one in 2008 are excluded, so those two rows sum to 119 rather than 120 seats.

The seat-weighted difference between the two blocs is present in every election in the dataset, though its magnitude varies. It is smallest in 2002 and 2024 and largest in 2016. This variation is consistent with the territorial interpretation: the size of the gap changes as seat geography, vote volume, and district-level competition change, rather than remaining fixed as would be expected from a formal rule that systematically privileged one bloc.

Table 11. Territorial concentration of ethnic Albanian- and ethnic Albanian-led mandates, 2002–2024

Electoral district	Ethnic Albanian-led seats	Share of all ethnic Albanian-led seats
ED1	28	13.0%
ED2	41	19.1%
ED5	26	12.1%
ED6	120	55.8%
ED3 + ED4	0	0.0%

Source: Author's calculations from official seat allocations in the analytical database, 2002–2024

Table 11 makes the territorial mechanism transparent. More than half of all ethnic Albanian-led mandates across the eight elections are won in ED6 alone, with the remainder concentrated in ED1, ED2, and ED5. Ethnic Albanian-led parties do not win seats in ED3 or ED4 in the allocation data used for the period under study. The lower seat-weighted marginal threshold for the ethnic Albanian-led bloc, therefore, follows from the geographic distribution of its mandates across district threshold environments, not from a different legal rule for those lists.

UNREPRESENTED VOTES, SMALL PARTIES, AND THRESHOLD EFFECTS

The district-threshold mechanism also shapes opportunities for smaller parties. The article's primary analytical focus remains the marginal cut-off for the final seat, but district allocation also leaves votes cast for non-winning lists without parliamentary representation. These are referred to here as unrepresented votes rather than "wasted votes," since the latter can imply a broader normative judgment about the political value of voting. Strategic coordination theories nevertheless predict that voters and parties may respond to low perceived chances of representation by consolidating support or forming coalitions (Duverger 1954; Cox 1997).

The 2024 election illustrates this point. Using the final results after the repeated voting, lists that secured no seats under the official six-district D'Hondt model received 18,630 votes in aggregate, or 1.9 percent of 978,980 valid votes (State Election Commission of the Republic of North Macedonia 2024; OSCE/ODIHR 2024). In a national Hare largest-remainder counterfactual with all 120 seats allocated in a single district and no additional legal threshold, GROM and New Alternative would each receive one seat, while AVAJA would remain without a seat. Those two seats would come from the larger lists: in the same simulation, the VMRO-DPMNE coalition falls from fifty-eight seats to fifty-four, and the European Front and VLEN each lose one, while the SDSM coalition, Levica, and ZNAM gain. The exercise is a counterfactual illustration of how district structure can affect small,

dispersed lists; it is not a claim that Hare allocation is the uniquely “proportional” benchmark.

Table 12. Zero-seat lists in 2024 under the official model and a national Hare largest-remainder counterfactual

List	Votes	Official seats	Seats: national Hare LR
GROM	4,522	0	1
New Alternative	3,515	0	1
AVAJA	2,908	0	0
Other zero-seat lists (combined)	7,685	0	0
Total zero-seat votes	18,630	0	2

Source: Author’s calculations from final 2024 State Election Commission results, cross-checked against OSCE/ODIHR (2024); national Hare largest-remainder counterfactual.

The threshold effect is not confined to micro-parties. Levica and ZNAM both won representation in 2024, but their seat totals also vary across the counterfactual rules reported in the workbook. Under the official six-district D’Hondt model, Levica won six seats; under six-district Sainte-Laguë allocation, it would receive eight. ZNAM secured six seats under the official model and seven under a single-district D’Hondt simulation. A counterfactual single national district with a five-per-cent legal threshold produces the same allocation among the six represented lists as the one-district D’Hondt simulation shown in Table 13. The equivalence is not accidental: the six lists that clear five percent are precisely the six that win seats when no threshold is applied, and the 1.9 percent of votes removed by the threshold is too small to displace any divisor quotient. These comparisons indicate that formula and district structure can matter for medium-sized as well as very small lists.

Table 13. Official 2024 seat totals and selected simulation results

Party / list	Votes 2024	Official: 6 ED D'Hondt	6 ED Saint.- Lag.	1 district D'Hondt	1 district 5% threshold
VMRO-DPMNE coalition	436,407	58	56	56	56
SDSM coalition	154,447	18	18	19	19
DUI / European Front	137,690	18	18	17	17
VLEN	106,937	14	14	13	13
Levica	68,637	6	8	8	8
ZNAM	56,232	6	6	7	7
GROM	4,522	0	0	0	0
New Alternative	3,515	0	0	0	0
AVAJA	2,908	0	0	0	0

Source: Author’s simulations based on final 2024 State Election Commission results; official seat totals from the State Election Commission.

COUNTER-ARGUMENTS AND ANALYTICAL
QUALIFICATIONS

A first counter-argument is that the territorial pattern may itself be partly shaped by political choices over district boundaries. Formal neutrality of the D’Hondt formula does not imply that boundary design is substantively neutral. If district boundaries interact with settlement patterns, turnout, and the geographic distribution of party support, they can contribute to persistent differences in marginal thresholds. The present analysis does not identify the historical intent behind boundary design; it establishes the electoral pattern that results from the interaction of fixed district magnitude, realized vote volume, vote geography, and competition.

A second objection concerns the choice of measure. Voters-per-seat or population-per-seat measures are appropriate for diagnosing classical malapportionment because they compare constituency size with allocated representation (Riera and Lago 2023). The twentieth D’Hondt quotient answers a different question: where did the actual divisor cut-off for the last seat fall after votes were cast and distributed among

lists? It is therefore best understood as a district-level marginal winning threshold. Its advantage is that it captures election-specific competitive conditions; its limitation is equally important: it does not measure the average “value” of every vote, nor can it by itself establish classical malapportionment.

A third consideration concerns reform. A single national district would eliminate cross-district variation in final-seat thresholds by pooling votes nationally and would generally improve opportunities for geographically dispersed lists. However, such a reform involves trade-offs. A national district can weaken territorial linkage between representatives and local communities and may increase party-system fragmentation unless accompanied by a legal threshold or other balancing mechanisms. Any reform debate should therefore distinguish between the empirical diagnosis offered here and the normative choice among proportionality, inclusion, governability, and territorial representation.

Finally, ED3 and ED4 merit particular analytical attention because they repeatedly record high marginal thresholds and because ethnic Albanian-led parties do not win mandates there in the data under study. Future research should test whether these elevated cut-offs are driven primarily by valid-vote volume, concentration of competition, candidate-list structure, registered-voter distributions, or local demographic composition. Such a test would ideally use polling-station-level data and harmonized demographic information rather than infer mechanisms from aggregate district results.

POLICY OPTIONS AND COMPARATIVE PROPORTIONAL REPRESENTATION IMPLICATIONS

The findings carry three direct implications for Macedonia. First, electoral reform debates should include district-level marginal thresholds as an explicit diagnostic alongside national proportionality, classical apportionment measures, and party-system effects. Second, if the six-district model is retained, the State Election Commission or an independent research body could publish the lowest winning D’Hondt quotient for each district after every election, increasing transparency about the realized cut-off for the final mandate. Third, public debate about ethnic fairness should distinguish a territorial pattern from formal ethnic privilege. The evidence in this article supports a territorial-

concentration mechanism operating through district vote volumes and competition, not a separate allocation rule for ethnic party families.

The workbook simulations illustrate several reform pathways without treating any one as normatively superior. A single national district would pool votes and eliminate cross-district variation in final-seat thresholds. Applied to the final 2024 results, a one-district D’Hondt model would reduce the VMRO-DPMNE coalition from 58 to 56 seats, increase the SDSM coalition from 18 to 19, reduce the European Front from 18 to 17, reduce VLEN from 14 to 13, and increase Levica and ZNAM to eight and seven seats, respectively. A counterfactual five-per-cent national threshold applied to the same single-district D’Hondt allocation produces the same distribution among those six lists. An intermediate option would retain the six districts but substitute Sainte-Laguë for D’Hondt, reducing the large-list bonus without eliminating the territorial structure that generates cross-district threshold variation.

Table 14. Sum and mean number of represented lists per election under selected simulation models, 2002–2024

Model	Sum across elections	Average per election
Official 6 ED D’Hondt	49	6.13
6 ED Sainte-Laguë	60	7.50
1 national district D’Hondt	67	8.38
1 national district Sainte-Laguë	83	10.38
1 national district Danish method	98	12.25
National district with 1/120 vote-share threshold	67	8.38
1 national district D’Hondt, 5% threshold	36	4.50
1 national district D’Hondt, 10% threshold	24	3.00

Source: Author’s simulations in the accompanying workbook. Single-district rows use explicit national list-vote totals and exact rational arithmetic; the sum of the listed votes is the simulation denominator. For 2011 and 2014, published national totals include out-of-country votes while the actual-seat column remains the 120 domestic mandates, so the national models are standardized counterfactuals. The two six-district rows derive from the author’s district-level database. The documented 2002 national input limitation is reported in the replication workbook.

Table 14 makes the inclusiveness-fragmentation trade-off explicit. Across the eight elections, the official six-district D'Hondt model yields a mean of 6.1 represented lists per election. Six-district Sainte-Laguë raises the mean to 7.5, while a single national district produces 8.4 under D'Hondt, 10.4 under Sainte-Laguë, and 12.3 under the Danish method. A national threshold set at the one-seat equivalent of a 1/120 of the vote is not binding under D'Hondt and leaves the mean unchanged at 8.4, whereas counterfactual national thresholds of five and ten percent reduce it to 4.5 and 3.0, represented lists respectively. These figures should be read as institutional simulations: reform design involves trade-offs among proportionality, minority inclusion, party-system manageability, and territorial linkage.

The comparative implication extends beyond Macedonia. The twentieth D'Hondt quotient can serve as a simple *ex post* diagnostic of marginal representational access in multi-district PR systems: it records the lowest winning quotient in each district election and therefore makes territorial differences in the final-seat cut-off visible. It should be used alongside, not in place of, conventional measures of disproportionality and malapportionment. Comparative application could help distinguish inequalities generated by seat apportionment from those generated by turnout, vote volume, party fragmentation, and territorial concentration within a common allocation rule.

CONCLUSION

This article has compared the twentieth, lowest winning D'Hondt quotient across all six electoral districts of Macedonia for eight parliamentary elections from 2002 to 2024. The results reveal a persistent territorial asymmetry in marginal seat thresholds. ED4, ED3, and ED1 generally constitute higher-threshold environments, while ED6 lies below the cross-district mean in every election and records the lowest value in six of the eight contests. The mean threshold in ED4 is 8,361 votes compared with 6,289 in ED6, a difference of 2,072 votes, or 32.9 percent. Registered-voter data for 2024 show that this ordering is not a by-product of seat apportionment: the two districts with the highest mean marginal thresholds, ED4 and ED3, have the smallest electorates, and across the six districts, register size and the mean marginal threshold are negatively correlated.

The bloc-level pattern follows from this territorial geography. Ethnic Albanian- and ethnic Albanian-led parties win a majority of their mandates in lower-threshold districts, particularly ED6, whereas Macedonian- and Macedonian-led parties win more seats in higher-threshold districts, including ED3 and ED4. Their seat-weighted marginal thresholds are 6,720 and 7,629 respectively, a difference of 13.5 percent. This statistic describes the threshold environments in which seats were won; it is not evidence that the law assigns different formal values to ethnic votes. The allocation rule is common to all lists.

The broader conclusion is that analysis of electoral fairness in proportional systems should consider more than national vote-seat proportionality and formal legal thresholds. District-level outcomes also depend on where votes are cast, how realized vote volumes differ across districts, and how competition distributes those votes across divisor quotients. Equal district magnitude and an identical allocation formula can therefore coexist with unequal marginal thresholds. The twentieth D'Hondt quotient provides a transparent and replicable way to observe that specific form of territorial representational asymmetry, while classical malapportionment and individual-level vote equality remain conceptually distinct questions for separate measurement. Future research should combine this indicator with registered-voter, demographic, and polling-station data and test it comparatively in other multi-district proportional systems.

REPLICATION STATEMENT

The analysis draws on an author-compiled database constructed from official State Election Commission results for parliamentary elections from 2002 to 2024. The accompanying replication workbook contains the national list-vote inputs and actual domestic seat allocations, the district-level twentieth-quotient series reported in Table 4, the registered-voter and participation statistics reported in Table 3, the bloc seat totals and seat-weighted thresholds underlying Tables 8, 10, and 11, and the counterfactual simulations used in the reform section. The national single-district simulations in Table 14 are recomputed with exact rational arithmetic from the explicit list-vote totals in the workbook; the sum of the listed votes is used as the simulation denominator where a published valid-ballot header does not reconcile exactly with the party-list table. For 2011 and 2014, published national vote totals include

out-of-country ballots, while the actual-seat column remains the 120 domestic mandates, so the national simulations are standardized 120-seat counterfactuals. The workbook includes a *National_Data_Audit* sheet documenting these reconciliations and the remaining 2002 national-input limitation. The two six-district rows of Table 14, the mean valid-vote and ENP columns of Table 5, the correlations reported in Table 6, and the per-election bloc thresholds in Table 10 are derived from the district-level votes-by-list matrix, which is held by the author and is available on request. For 2024, national party totals use the final post-rerun results published by the State Election Commission and cross-checked against the ODIHR final results annex. Coalitions are treated as electoral lists, and bloc classifications are used only for the seat-weighted descriptive analysis.

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ТЕРИТОРИЈАЛНА АСИМЕТРИЈА ПОЛИТИЧКЕ ПРЕДСТАВЉЕНОСТИ У ПРОПОРЦИОНАЛНОМ СИСТЕМУ СА ВИШЕ ИЗБОРНИХ ЈЕДИНИЦА: МАРГИНАЛНИ ПРАГОВИ ЗА МАНДАТ У МАКЕДОНИЈИ, 2002–2024.

Резиме

Рад анализира територијалне разлике у маргиналном прагу за освајање последњег, двадесетог мандата у шест изборних јединица у Македонији на парламентарним изборима од 2002. до 2024. године. На основу званичних резултата Државне изборне комисије израчунат је двадесети, односно најнижи победнички Д’Онтов количник за сваку од 48 комбинација изборне јединице и изборне године. Показатељ се тумачи уско, као маргинални праг за последњи мандат, а не као општа индивидуална „вредност гласа” нити као мера класичног malapportionment-a, који се односи на несразмеру између броја становника или бирача и броја мандата. Резултати показују постојану територијалну асиметрију: ИЈ4, ИЈ3 и ИЈ1 углавном имају више маргиналне прагове, док је ИЈ6 у сваком изборном циклусу испод просека изборних јединица, а најнижа у шест од осам циклуса. Пондерисано бројем освојених мандата, македонске и македонски предвођене листе освајале су мандате у окружењима са просечним маргиналним прагом од 7.629 гласова, у поређењу са 6.720 код албанских и албански предвођених листа, што је разлика од 13,5%. Овај образац не произлази из резервисаних мандата, етничких квота или нижег законског прага, већ из територијалне концентрације гласова и мандата, обима важећих гласова и структуре страначке конкуренције. Подаци о броју уписаних бирача за 2024. годину показују да овај образац

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није последица неједнаке расподеле мандата: две изборне јединице са највишим просечним маргиналним праговима, ИЈ4 и ИЈ3, имају најмањи број уписаних бирача, па се територијална асиметрија креће супротно од класичне неодговарајуће заступљености (*malapportionment*). Рад стога предлаже двадесети Д'Онтов количник као једноставан, репликативан дијагностички показатељ маргиналног приступа представљању, који треба користити уз, а не уместо, стандардних мера пропорционалности и неодговарајуће заступљености (*malapportionment*).

Кључне речи: Македонија, изборне јединице, Д'Онтов метод, маргинални праг за мандат, ефективни праг, територијална асиметрија, пропорционално представљање

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