



Voting Methods and Their Distribution in Papua New Guinea

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Introduction

Three elections

In July 2022, as voters in the coastal city of Kokopo prepared to cast their ballots in Papua New Guinea's national general election, they had one concern above all others: *Would their names be on the electoral roll?* Every election, millions of Papua New Guineans wait anxiously in queues to find if they will be allowed to vote. Electoral administration processes that should collect their enrolments, safeguard this data and communicate it to polling stations often fail. Voters are turned away, sometimes in large numbers. In Kokopo the voters waited in line as emotions mounted. Many were denied the opportunity to vote — including many who had voted in previous elections. These disenfranchised voters went home, sometimes angry, but resigned to find yet another election 'without names'. Those lucky enough to be found on the roll, however, voted in privacy and with confidence.

As the voters in Kokopo waited to see if their names would be on the roll, a different scene unfolded in Tari, the capital of the mountainous Hela Province. Voters here were also anxious about the election, but for very different reasons. In the previous election, many of them had had no opportunity to vote: ballot boxes were 'hijacked' by political gangs and filled in secret, protected by armed men. In some cases, competing gangs raided each other's ballot boxes, destroying them. People died in the fighting. In those locations in which voters were able to cast ballots, these were often pre-marked, or they voted under the supervision of candidates and their agents. Here, the electoral roll was also a concern, but for a different reason. Where individual voters reach the inside of a polling station in Hela, they are as a rule not subject to voter identification. Nevertheless, the roll retains a vestigial function in determining the *quantity of ballots* sent to a polling station. If this quantity is unexpectedly small, the deals made between political groups can be tested, leading to potentially dangerous disputes.

As they unfolded, elections in Tari diverged far from what was happening in Kokopo, but also, critically, individual polling locations within Tari and its surrounds diverged from each other. In some, voters were able to access the polling station and cast their

own ballots, even if they did so under duress and in plain view of candidate agents. In others, their clans obtained books of ballots. Voters then participated in the election by attempting to persuade their clan leaderships about who to support. Such processes are not always inclusive. For some, the nature of kin-political organisation is such that their presence during such a 'vote' is essential, but that is the extent of their participation. They sat there, some apprehensive, some seized by deep fears, praying while a decision was made in their name. In other stations, however, situations resembling those of 2017 emerged: polling stations monopolised by armed men, and disappearing ballot boxes. There was less violence than in 2017, but for most Tari, not much more political freedom.

Halfway between Tari and Kokopo is Lae, PNG's second largest city. Here, anxiety about the electoral roll was intense. Unlike Kokopo, which holds elections over several days — offering voters the ability to search for their names at different polling station locations — voters in Tari and Lae have only one day to cast their ballots, but unlike Tari, Lae polling stations mostly attempt voter identification. Here, anxieties about the electoral roll reached a fever pitch. As the day progressed crowds of increasingly outraged voters assembled, pressuring electoral officials to allow them to vote. In some stations, the officials held their line. At the end of the day at these 'compliant' stations, surplus ballots were set on fire in front of the citizens 'without names', lest suspicions arise as to their fate. In other stations, however, polling officials relented, and 'opened' the polling station. Voters formed a queue and voted without use of the electoral roll.

Making sense of Papua New Guinean elections

The three vignettes above, based on detailed accounts by electoral observers, are all taken from the same national election, carried out under homogeneous national legislation and by an administration which is — at least in theory — largely centralised. The elections can be perplexing. Despite deep regional differences in electoral conditions across Papua New Guinea, there is only a very limited tendency for political regionalisation. The members of parliament

who succeed in these very different contests will go to the same parliament. There they will form coalitions with one another, and in so doing, the nature of local electoral practices ceases to matter. It is as if, once the results are declared, parliament were an international forum and the modes by which each representative arrived there a matter of the domestic politics of separate nation states. A great deal of political inequality disappears from view to achieve expedient, workable governing coalitions (see May 2003:16). This process has important implications for the analysis of Papua New Guinea's political system. Understanding what that inequality comprises is therefore essential.

To date, accounts of Papua New Guinea's polling conditions have provided detailed portraits of particular locations (e.g. Oliver 1989; Ketan 2004, Haley 2011a, Goro and Sanida 2023), while observation reports provide more general discussions contrasting patterns in different regions (e.g. Haley and Anere 2009; Haley and Zubrinich 2013, 2018; TIPNG 2017, 2022; Wood et al. 2023). While such accounts are indispensable, a more detailed understanding of the geographical distribution of electoral inequality in Papua New Guinea is possible.

In this Discussion Paper, we propose a systematic classification of polling practices in Papua New Guinean national elections, using data gathered by election observers in 2022. Our classification permits a more careful examination of electoral inequality in Papua New Guinea, its geographical distribution and, with the use of data from previous elections, its change over time. It does so by focusing on the mechanical process of voting (or more generally, producing and destroying completed ballots). While there are important limitations both to this data and the proposed classification, they provide a valuable perspective on the geography of subnational political inequality and have a number of important applications in the analysis of Papua New Guinean politics and electoral administration.

We begin by discussing how this data was gathered and its limitations. We then describe the proposed classification, its rationale and how it is derived from the data. By mapping the distribution of classes of polling practices, we then show that there are deep differences between the country's five regions,¹ but also far more heterogeneity within the region with the most disrupted elections, the New Guinea Highlands, than elsewhere in the country. While greater diversity is expected where there is less compliance, we find that even in areas where box hijackings and monopolisation of polling stations are common, there are nevertheless 'islands of relative compliance'. There are some indications that these 'islands of relative compliance' tend to favour high status communities and individuals. Outside of the Highlands, we note the distribution of voting methods shows important differences between rural and urban voting, and illustrates the divergence of the National Capital District (NCD) from other 'coastal' areas. In the next section, we extend the classification to include previous electoral observations that used

similar methods for 2007, 2012 and 2017, focusing on the New Guinea Highlands.

In the following section, we compare the prevalence of certain other key aspects of polling across voting method classes, contrasting the Highlands with other areas. While polling observation data is quite complex and its complete analysis is outside the scope of this paper, an illustration is provided of how such analysis can show differences in polling organisation at a regional level, and some of the difficulties this gives rise to. In the final section, we provide a programmatic outline of applications and extension of the present method.

Election observations as data

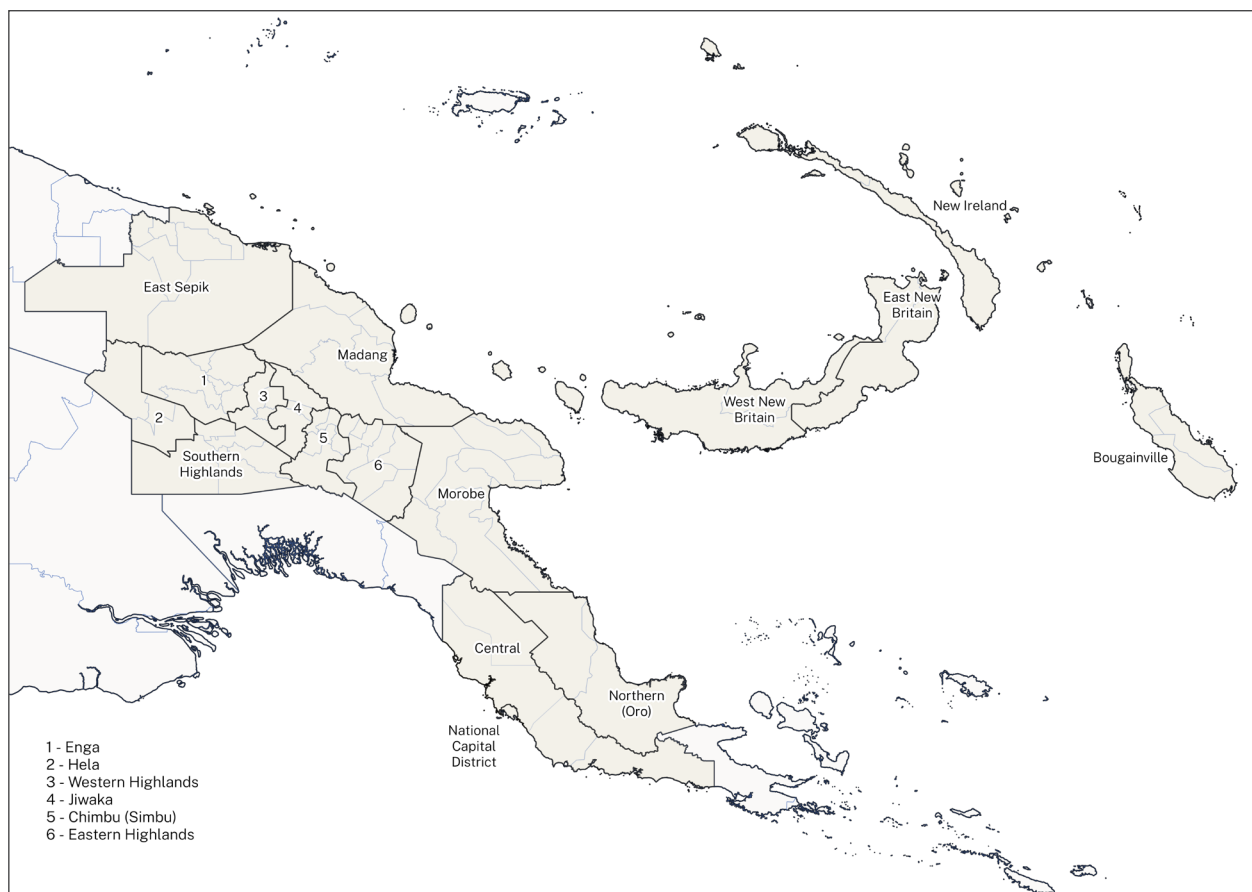
To explore inequalities in electoral conditions in Papua New Guinea, we make use of data collected by electoral observers during the 2022 National General Elections. This study uses methodology developed by The Australian National University (ANU) across four national elections (Haley and Anere 2009; Haley and Zubrinich 2013, 2018). Election observation produces large quantities of data, which has so far been subjected to limited systematic analysis, particularly in relation to the observation of polling day conditions. Handling this data requires awareness of the context in which it is generated. Election observations are not purely data gathering exercises. They have multiple additional aims, including assessment of election quality, fairness and freedom, as well as the transfer of basic research skills and fostering capacity for independent monitoring of electoral conditions.

The 2022 study made use of 335 observers, operating across 17 of PNG's 22 provincial-level divisions, including the National Capital District and Autonomous Region of Bougainville (Figure 1). Observations were made in 54 of PNG's 96 open electorates. Observers are overwhelmingly Papua New Guinean nationals serving in a volunteer capacity. The selection of provinces and electorates is made on the basis of continuity with previous studies and the existence of capacity in terms of the availability of observers, logistical capacity and security conditions. Observers are organised into teams attending to open and provincial electorates: provincial electorates comprise between one and ten open electorates. Team leaders are drawn from a pool of experienced observers who have participated in ANU-led studies since 2007 and are assisted by ANU and University of Papua New Guinea scholars.

Observers for the most part observe in their home electorates. This has some important benefits, particularly in terms of navigating Papua New Guinea's cultural and linguistic diversity. Observers are also, as a rule, familiar with political conditions in their home districts. This is essential, as electoral observations take place in areas with minimal media coverage, and for which detailed information on political and social conditions is scarce.

Observers are understood within the study design as co-interpreters of political processes and are not simply

Figure 1: Study operational area, 2022 National General Election



Source: Authors; National Statistics Office, PNG, base map.

enumerators assigned a task of filling forms. Indeed, polling day observation forms were initially developed as an adjunct methodology within an explicitly qualitative study of electoral conditions. In this methodology, the main source of information about the election was debriefing and interview of observers after the election, in a format resembling a collaborative ethnographical study. This input from observers was then used to refine further iterations of the study. This feedback mechanism is important from a design perspective as a major challenge in designing research instruments for volunteer use in a culturally and socially diverse context is to produce questions that can be interpreted by the observer in a predictable fashion.

To record observations, each volunteer was issued with an observation journal. Journals are printed in English; the first large-scale ANU observation in 2007 included the option of Tok Pisin journals, but this proved problematic and was abandoned in later studies. The polling day section of the journal contains 134 questions covering the physical set-up of the polling station, the number of persons in attendance, aspects of the polling process, electoral offences, interference in the process, assistance of voters, violent incidents, presence of weapons, time of operation of the polling station, evaluations of the perceived competence of electoral officials and security officials, and evaluation

of the overall fairness of the process. As many of these questions are multiple response and qualitative write-in fields, the total number of variables arising from the polling day section is very large and can be challenging to interpret systematically.

Elections in the New Guinea Highlands, the NCD and the urban centres of Lae and Madang are run as 'one day polling', in which all wards in an electorate vote in a single day. In the Highlands, this day may differ between electorates. Elsewhere, polling takes place over a period of several days with polling teams touring wards across the electorate. Observers in one-day polling areas typically visit three polling stations in one day, while observers in multi-day polling areas attend a polling station for a whole day.

While these methodological choices are productive in the context of Papua New Guinean elections, they come with important costs. Sampling of polling stations is not random. Rather, team leaders and members decide on a schedule of polling stations to visit by balancing three requirements. The locations must (a) be safe, (b) have tractable logistics and (c) reflect a balance between known political, cultural and kin divisions in the electorate. Where security concerns are not overwhelming, logistics is the main constraint on achieving a balanced selection. In most cases, the result of this process is a sample of polling stations

that is believed to be biased towards less insecure and less remote locations: the overwhelming majority of polling stations selected are within a few hours' walk of a road. It is likely that this bias leads to the resulting data understating the severity of certain problems, as more remote and insecure locations are unlikely to have better polling conditions.

Voting methods and their classification

The compliant voting procedure

To understand the variability of polling practices in Papua New Guinea, it is useful to begin with a description of what *should* happen in a Papua New Guinean election, before considering how *actual* polling practices diverge from this prescription. Papua New Guinean electoral law establishes a specific sequence of actions for polling. There is only one such sequence, which we may term the compliant voting method. The Organic Law on National and Local-level Elections 1997 and National and Local-level Electoral Regulation 1997 establish a process which every polling station in Papua New Guinea should follow without exceptions:

1. The prospective voter initiates the polling process by walking up to the Presiding Officer's desk at a time of their choosing, or by joining a queue.
2. The prospective voter's fingers are checked for the presence of indelible ink. If the prospective voter has already received indelible ink, they are not allowed to vote.
3. The prospective voter is subject to voter identification. All and only voters identified in the roll have a right to vote.
4. The Presiding Officer initials the back of both the provincial and open ballot papers, and presents them directly to the voter.
5. Voters are only issued one set of ballot papers.
6. Once voter is issued ballots, indelible ink is applied.
7. The voter fills the ballot within a polling booth that has screens for privacy.
8. Only the voter may mark the ballot paper, unless the voter requests assistance.
9. If a voter satisfies the Presiding Officer that they are sight impaired, physically incapacitated or illiterate, the Presiding Officer can allow the voter to be assisted. No other provision exists for assisting or supervising voters.
10. The ballot is placed in the appropriate ballot box by the voter.
11. The voter is then free to leave the polling area.²

A polling station that always follows this sequence is *compliant* in terms of polling mechanics. This compliance is, in a sense, a minimal standard which does not preclude the existence of serious barriers to voter participation and free exercise of civil rights. Many other factors can weigh on voters apart from polling mechanics, including coercion, intimidation, fear of reprisals, poor communication from electoral authorities, disenfranchisement by mismanagement of

critical functions such as the electoral roll, malfeasance prior to polling or corrupted counts. Several of these broader factors are much more difficult to observe, and to do so directly and consistently, than the polling-time sequence. Breaches of the compliant sequence, although they are far from the only factors affecting election fairness, tend to place voters at further and often serious disadvantage. They do so both directly and indirectly. For instance, absence of privacy screens directly harms the right to a secret ballot, while a failure to carry out voter identification might dilute a voter's rights by permitting others to vote multiple times. Further indirect harm to the individual's right is caused by neglect of voter identification, as this creates incentives for politicians to 'stack' such polling stations with their own supporters. Changes in polling practices, in other words, have important political implications, and can be observed.

Voting methods

We define as a 'voting method' a procedure for generating, or destroying, completed ballots with the objective of influencing an election outcome. Voting methods include the compliant voting method and procedures that feature minor deviations from compliance. They also include more severe irregularities such as ballot-dumping, multiple voting, systematic coercion or issuing voters with prefilled ballots. This definition encompasses many procedures at odds with conventional understandings of 'voting'. In extreme contexts, military action to destroy ballot boxes is a 'voting method', if the objective is to influence the electoral outcome rather than to completely disrupt the election. We define the voting method over the set of procedures observed at polling time. The definition, while encompassing a set of practices much broader than found in 'ordinary' elections, therefore does not include processes at work before or after polling, or away from the polling location.

Divergent voting methods

Where the compliant sequence is not followed, there are alternative, noncompliant voting methods. There are many more noncompliant methods than there are steps to be broken in the prescribed sequence: there are more ways to break a rule than to follow it. Classifying polling stations *solely* in terms of compliance with the steps in the compliant sequence would therefore fail to capture critical aspects of polling organisation as it is found in practice. For instance, in many polling stations step 5 is not followed, so voters are not always issued a single, individual set of ballot papers. However, in some cases additional sets are issued to a few individuals who re-enter the queue, in some cases several sets of ballots are issued to household heads, while in still more extreme cases bulk papers are given to faction leaders. These differences have profound implications both from the perspective of voters, and from the perspective of the analysis of Papua New Guinean political systems, since they reflect substantial differences in the scale and modality of political interference in polling.

The steps in the compliant chain vary in the degree to which they serve as practical diagnostics. Some are difficult to observe consistently or have radically different interpretations in different contexts. Notably, observing step 9, in which assistance is only provided to a very restricted class of voters, requires extreme attention and is often impractical. While forced assistance of voters is an important means by which monopolistic capture of a polling station is carried out in Papua New Guinea, the execution of such assistance can be relatively subtle: perhaps only voters known to have wavering loyalties are ‘assisted’. In many cases assistance is selectively forced on illiterate persons, who are less able to notice a mismatch between their expressed choice and the filled ballot. This also obscures the forced choice from the observer. In contexts of very high coercion, voters may not be able to complain or comment about the voting process even if they see their choice has been usurped. There is a large range of possibilities between strict compliance with the rule set out in step 9 and overt, indiscriminate forced assistance of voters, and in many cases the nature of voter assistance cannot be determined from a distance. There are difficult and to a degree subjective choices involved, and comparing counts of cases of forced assistance is further complicated by the practical limitation of carrying out counts of any sort in potentially chaotic observational contexts. Similar considerations affect the issue of ballot secrecy and interference in the voting process by political agents, although not to the same extent.

Other steps in the compliant chain are poor diagnostics because they lack specificity. Failure to use indelible ink is strongly associated with many additional problems. However, it is possible to organise elections with sound voter identification and secret ballots without ink, and it is common for ink to be applied in contexts where voter identification is severely deficient or absent, or even in some polling stations where ballots are pre-filled by officials.

Importantly, use of ink in noncompliant contexts is far more common outside the Highlands than within it. The proposed classification of voting methods advanced here omits indelible ink, voter secrecy and breaches of the prescribed voter assistance procedures.

Observation form features

To ascertain the basic process of voting, observers are asked in the observation journal ‘What method of voting was employed on polling day?’ They are provided 12 items, including a write-in ‘other’, which may be multiply selected (Table 1). These features were developed over the course of several election cycles by including those voting methods that were most conspicuous in previous election observations. The general approach was established in the first observation exercise in the series, in 2007, building on individual observations of the extremely problematic 2002 election (e.g. Standish 2002). It was subsequently amended in each iteration by incorporating feedback and detailed descriptions of voting processes by observers. The result is that the form options represent anticipated *patterns* of voter organisation, and the observer’s task in filling the form is one of matching the – potentially innovative – practice seen on polling day with these patterns. The form wording is chosen to evoke salient features of the pattern. During training, observers are provided an explanation of the key features of each ‘voting method’, provided examples and given guidance on how to handle intermediate cases. Should there be ambiguity in the process, they are instructed to select multiple responses and, if possible, to leave a written account.

There are several ways that the individual form features can be classified. It is possible, for instance, to transform the observation data via dimensionality reduction techniques to group the form features, and to generate clusters of polling stations. This data-driven ‘bottom up’ or ‘unsupervised’ approach has several advantages, notably the inclusion of important features

Table 1: Observation journal form fields and their classification

Voting method class		Form feature
VM1	‘Orderly’	‘Voters formed an orderly line, identified themselves and voted in order of arrival’
VM2	‘Roll call’	‘Voters were called from the roll in alphabetical order’
VM3	‘No-ID Individual’	‘Voters voted in order of arrival without identifying themselves’ ‘“Next” voting’ ‘ <i>Man-meri</i> voting’ ‘The roll was used as a tally only’
VM4	‘Household’	‘Household heads were given an allocation for the <i>hauslain</i> /family’ ‘Voters were called up in household groups and given an individual paper to mark’
VM5	‘Disrupted/ Monopolised’	‘The ballot papers were marked by a few key individuals’ ‘The ballot papers were marked by the polling officials’ ‘ <i>Tanim tebol</i> ’
VM6	‘Collapsed’	‘Other’ / Requires written account by observer

Source: Authors.

of polling other than the voting method. However, such an approach has the disadvantage that it is far more challenging to interpret, and we anticipate may prove especially opaque to practitioners. Here, we propose a simple rubric of *voting method classes* based on conceptual similarities between the patterns of voting.

We build the voting method classes by pooling together features that share certain basic characteristics related to *initiative*, *voter identification*, *ballot issue*, *control of the process*, and *exclusion of voters* (Table 2). These are effectively answers to the questions: ‘Does the voter initiate the voting process?’, ‘Is there voter identification?’, ‘Who receives the ballots?’, ‘Who controls the process?’ and ‘To what extent are voters excluded from the polling premises?’ While there are other ways to understand the polling process, these questions are those that can best be answered given the form wording.

Although the classification is conceptually simple, its application is complicated by several factors. Polling stations are often attended to by more than one observer, and observers may select more than one form feature. Observers do not always use the form as anticipated, and polling processes themselves can be ambiguous. In general, the approach taken here is to trust the observer. The methodology followed for resolving multiple selection is for the most part to select the ‘highest’ or ‘most disrupted’ voting method class except where there is a written account of the process by the observer.³

In the following section, we provide a more detailed description of the form features, with attention to some possible ambiguities and important effects of the voting method on political organisation. It is important to note that while it can be argued that the voting method classes are ordered (see exploration of the relationship between voting method classes and other aspects of polling below), we do not make this assumption here, apart from the resolution of conflicted reports, and implicitly, in prioritising ‘higher’ voting method classes in map displays. As we discuss in the next section, the *appearance* of a polling station in a very disrupted class such as VM3 or VM5 can in some cases be relatively tranquil and orderly, while relatively compliant polling stations in VM1 are often characterised by substantial tensions.

Detailed description of voting method classes

VM1 ‘Orderly’

‘Voters formed an orderly queue, identified themselves and voted in order of arrival’

In this class, the process is initiated by the voter, there is voter identification, and voting is by individuals. During training, observers are told that should a queue not be well formed, or if individuals push in so that they do not vote in the order of arrival, the most important aspect of this pattern is that there is voter identification without a roll call. This, however, can be difficult to ascertain, and there is a possibility of misclassification between VM1 and VM3 stations in disorganised contexts. In some stations classified as VM1 alternate voter identification is accepted by officials, which we term *degenerate voter identification*. Where this can be established to be systematic we classify the polling station as VM3. The compliant voting method sequence is a strict subset of VM1 stations. Only VM1 polling stations can be compliant with Papua New Guinean electoral regulations, but not all VM1 polling stations are compliant: they may lack appropriate use of ink, lack privacy screens, there may be voter offences and supervision of voters, or they may feature innumerable other problems.

VM2 ‘Roll call’

‘Voters were called alphabetically from the electoral roll then voted’

In this voting method class, voters do not initiate the process. Instead, they assemble and wait for their names to be called by the officials. This is a relatively easy pattern to recognise. However, there are instances in which a name is called from the roll but no effort is made to confirm that it matches the person stepping forward, which we term *systematic proxy voting*. In other cases, the names are called out and community leaders, candidate agents or scrutineers vet the identity of the voter, which is a form of degenerate voter identification. Where this can be established to have taken place systematically, the station is coded as VM3. Electoral rolls in Papua New Guinea often feature numerous duplicate enrolments and non-deletion of persons who are deceased or have left wards. This, in combination

Table 2: Key differences between voting method classes

Voting method class		Voter initiative	Voter ID	Ballots issued to	Control	Exclusion
VM1	‘Orderly’	Yes	Yes	Individuals	Officials	None
VM2	‘Roll call’	No	Yes	Individuals	Officials	None
VM3	‘No-ID Individual’	Mixed	No	Individuals	Mixed	Limited
VM4	‘Household’	Limited	Rarely	Households	Mixed	Limited
VM5	‘Disrupted/Captured’	No	No	Key individuals	Agents	Most
VM6	‘Collapsed’	No	No	Not issued	Agents	Total

Source: Authors.

with incomplete enrolment of eligible persons, can create substantial pressure to admit proxies.

In some cases, *family* names are called out. While this can be intended to speed up identification, it often creates additional difficulties as Papua New Guinean naming practices are not standardised and can vary within families. Such ‘family roll calls’ are rare, and are difficult to dissociate from family *voting*, in which the head of family receives bulk ballots on behalf of their family, or the ballots are issued for the family to vote as a group.

The difference between VM1 and ‘roll call’ stations might seem slight, but the loss of initiative by the voter has meaningful implications. Despite the near certainty that roll calls will expose the inaccuracy of the roll to all those within hearing distance, roll calls are sometimes implemented explicitly as a response to poor quality rolls to limit the opportunity of voters to challenge officials. Where the number of persons not found on the roll is relatively small, an individual who is omitted from the roll call may have to approach the officials ahead of someone who has been called. In effect, this aims to co-opt community dissatisfaction with the roll to discipline individuals.

VM3 ‘No-ID individual’

‘Voters filed through and voted in order of arrival without identifying themselves’

“‘Next’ voting (names are crossed on roll without attempt to identify voter)”

‘Man-meri voting (names are crossed matching gender only)’

‘Separate tally of the number of voters is kept (records to be forged later)’

Voting methods in this class comprise different ways to organise an *individual vote without voter identification*. In the first, the process superficially resembles an ‘orderly’ station, but without voter identification. ‘Next’ voting resembles a roll call without roll use, but frequently involves calling forward *sets* of voters to fill the available polling booths. ‘Man-meri’ and ‘tally’ voting attempt to forge a plausible record in the roll usage forms either by calling forward pairs (or balanced groups) of men and women (*man* and *meri*), or by using the roll as a tally sheet, with no effort towards voter identification. *Man-meri* and ‘next’ voting are generally believed to have been the common forms of polling organisation in the Highlands in the 1990s, and have since been gradually displaced by group voting and more explicitly captured methods. Tally methods are difficult to detect and can create the impression among voters and observers that there is voter identification; typically they are detected when the person maintaining the tally stands away from the line of voters.

It is relatively common for enrolled voters to be allowed to vote first and then for unenrolled voters to be given leftover ballots. This often results in observers marking the form as ‘orderly’ or ‘roll call’ along with one of the VM3 options. Observers on occasion select

only the roll-using options and provide a written note that surplus ballots were distributed without voter identification. We code these stations as VM3. However, observers do not always record the fate of leftover ballots, and therefore some stations that are coded as VM1 and VM2 are likely to have been ‘opened’ at the end of the polling day.

In some cases of ‘no-ID individual voting’, there are alternative, informal voter identification processes. These can involve eminent villagers, scrutineers or campaign officials vetting voters. Such vetting often arises where the roll is understood by all those present to be incorrect, and its application would lead to the disenfranchisement of most voters. Rather than allowing a ‘free-for-all’, officials and the community impose a degree of control on the process. Such a situation need not have a benign, democratic spirit: it is also observed in contexts where settlers are excluded from voting by landowners, and such a process is obviously prone to capture. There are also instances in which polling officials are threatened with violence if they do not ‘open’ the station. Vetting voters by any means other than the electoral roll is illegal, but misinformation about this is common. For example, there are stations in which the officials claim that the returning officer has allowed either voters or officials to use alternative documents, such as student cards or rolls from previous elections, or in which voters are allowed to vote by ‘registering’ at polling time.

Roll compliance is not like a light-switch: there are gradations between a roll call, a roll call that tolerates many proxies, and ‘next’ voting. Voter identification in ‘orderly’ polling stations can lead to many persons being rejected; in some cases the unidentified persons might be allowed to vote if local leaderships recognise them, without this fully eliminating voter identification for most persons. It is difficult to code such cases consistently, but where the observer leaves a description of the method that indicates systematic ‘alternative’ voter identification or use of proxy names, we classify these cases as class VM3.

VM4 ‘Household’

‘Household heads were given an allocation for the *hauslain*/family’

‘Voters were called up in household groups and given individual paper to mark’

Both these patterns involve *hauslain*, or ‘households’, and represent a transition from individual to non-individual organisation of polling. The first is explicitly a non-individual voting method. Ballots are provided in bulk to ‘household heads’, which in practice can mean the leader or representative of a hamlet comprising several nuclear families or distinct sub-lineages, as kinship organisation in Papua New Guinea varies greatly. The second is intended to include cases of ‘family roll calls’, in which families are called forward and individual family members are issued separate ballots. Group voting along family and clan lines has a long history in some areas of the New Guinea Highlands (see for instance Commonwealth Observer

Group 1997:27). For the 2012 election, the electoral roll in the New Guinea Highlands was organised by family; in practice, the ‘family order roll’ was used in that election within areas that already featured provision of ballots in lots to household heads, and caused confusion where this was not customary. This attempt to normalise family roll calls was abandoned in subsequent elections. The difference between these two approaches to organising ‘family’ polling can be greater in theory than in practice. While in some rare cases a true ‘family roll call’ is observed, with voter identification and separate voting for each family member, most ‘family roll calls’ are implemented under polling conditions lacking voter identification and affording no privacy for individual voters. The family fills the ballots together. However, there are some signs that where household heads are presented bundles of votes, there are more frequent and more severe problems with the overall organisation of the polling station than in the case where households are called up as a group.

VM5 ‘Disrupted/Captured’

‘The ballot papers were marked by a few key individuals’

‘The ballot papers were marked by polling assistants/polling officials’

‘*Tanim tebol* (complete take-over of voting process)’

In this voting method class, the patterns of voting feature no voter identification and most individuals are not able to cast a *complete* vote. In the most extreme cases the process is fully captured by a single candidate whose supporters fill all ballot papers, sometimes with the (willing or coerced) assistance of polling officials. This can be realised in a number of different ways: in some cases, an agreement is made prior to the election and the execution is relatively tranquil, while at other times candidate’s agents impose their will by force on polling day. The latter is referred to as *tanim tebol* (‘turn the tables’) and typically involves loss of control of the process by polling officials. It is not possible to distinguish consistently, given the data on hand, between polling stations that are in this extreme category and others in which more ‘inclusive’ arrangements are made. The latter are often referred to as *kat vot* (‘cut ballots’). In these ‘cut ballot’ arrangements ballots are split between competing factions and clans — indeed, the ballot books may be physically cut into chunks for distribution. At the least monopolised end of the spectrum, this resembles ‘household’ voting with larger kin-political units (the ballots are cut between groups of voters), but *kat vot* also includes deals in which a handful of individuals mark all ballots (the ballots are cut between candidates or their representatives).

Capture of ballots in VM5 stations can also be partial: in many cases, first preferences are monopolised by a dominant politician while second and third preferences are a *kat vot*, allocated to minor

clans or even left as a ‘free vote’ for the individual or household head. Execution of these ‘preference cuts’ typically requires full control of the polling station such that the ballots are prefilled, or a tense situation develops in which candidate agents monitor each other’s ballot-rigging activities.

To an observer, the appearance of VM5 stations can vary greatly. If agreements are made before the election and adhered to, there may be a high level of control and possibly individual voting with prefilled ballots in a superficially orderly fashion. If a *tanim tebol* is improvised on the spot, the polling station may appear chaotic, sometimes described by observers as a ‘survival of the fittest’ scenario in which a few people, usually young or armed men, end up controlling most ballots. Extremely disorderly VM3 stations therefore resemble some VM5 stations, the key difference being that in VM5 stations there is exclusion of most voters. There can also be a great deal of difference in the degree to which the outcome — even a total takeover of the polling station by a single candidate — has community support: the possibilities in this respect range from communal solidarity through to extreme coercion.

Ideally, observers would be able to distinguish between these quite different scenarios, but this is extremely difficult to achieve consistently. In VM5 polling stations, almost every electoral law and regulation is broken, sometimes in innovative ways, and in chaotic, possibly dangerous circumstances. The processes diverge enough from what is normally understood as ‘voting’ that observers show difficulty, for instance, in consistently reporting ballot-stuffing as a multiple voting offence: they simply do not regard what transpired as *voting*, a plausible interpretation. VM5 stations are often unsafe to observe closely and determining what transpired might require follow up investigations. This is not always practical or advisable.

VM6 ‘Collapsed’

‘Other’/Written report

‘Collapsed’ polling processes are those in which polling is terminated by force at the prescribed location. There are two possibilities here: in a *box hijacking*, the ballot box is stolen, possibly by the polling officials themselves in cooperation with candidate agents. Ballots are then filled at some secret location. The other possibility is destruction of the ballot boxes. In either case, polling at the prescribed location ceases and there is total disenfranchisement of the voters. Box hijacks vary in execution, including interceptions of the polling teams, diversion of the boxes and raids on polling stations. Observation of collapsed polling stations is obviously challenging and potentially dangerous, but since these ‘voting methods’ are sometimes executed as a raid on a polling station, there are cases in which it is observed firsthand.

We do not classify instances in which polling is merely *cancelled* at a location as a collapse of the polling process, if there is evidence that this was the outcome of logistic errors. There is also a situation

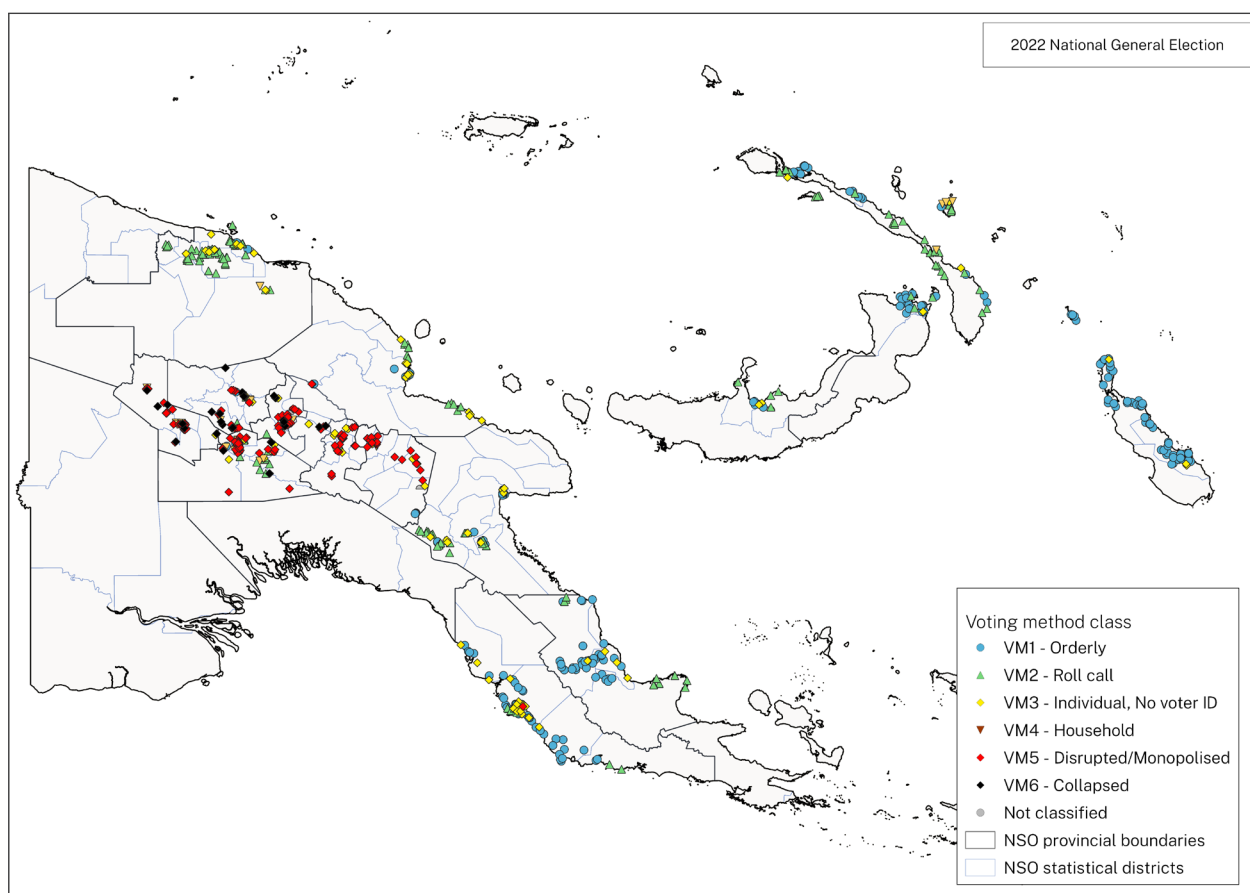
which could be described as *box hijacking in situ*, in which candidate agents (and possibly officials, including security forces) prevent public access to the polling station, fully excluding voters while ballots are filled. We assign VM5 to these stations as Papua New Guinean observers and community members more generally reserve ‘box hijacking’ for cases where the ballot box is abducted from the prescribed location.

We also do not classify boxes that are intercepted *after* polling as ‘destroyed’. This is an important dimension of electoral violence in Papua New Guinea, which includes tactics such as destroying bridges to prevent boxes from being returned, ambushes, arson and much else in what amounts to warfare as an extension of electoral politics. However, the movement of ballot boxes after polling cannot be safely observed under such circumstances, while official accounting for which boxes are hijacked (and possibly altered) after polling is dubious: such boxes should by law be excluded from counting, but frequently are not, which raises doubts about the fate of many boxes in Highlands settings, particularly those in remote locations.

Distribution of voting methods

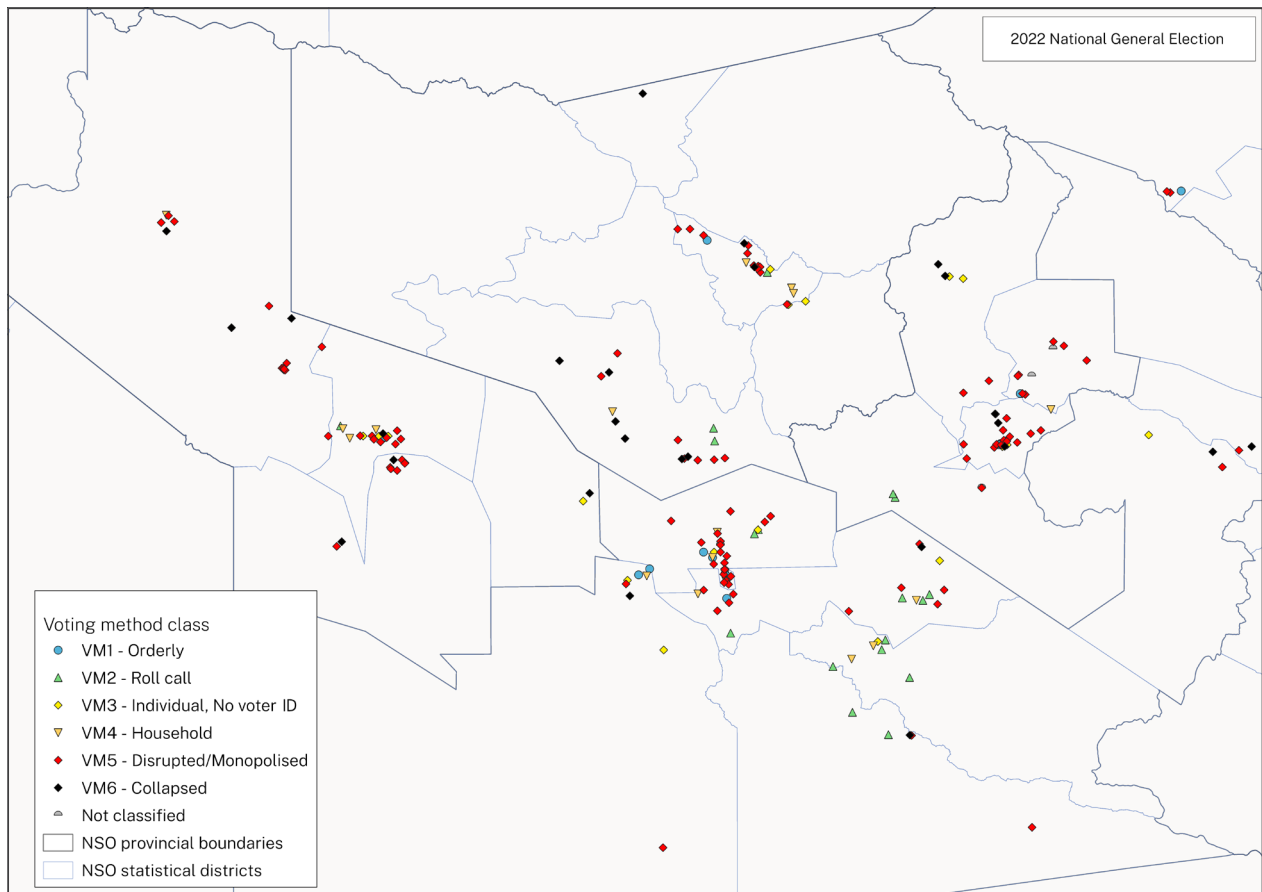
The distribution of voting method classes shows in stark terms the geographical heterogeneity of Papua New Guinean elections (Figure 2). The overall pattern conforms to some expectations about the election: the Highlands has far more severe problems than other regions. A large majority of Highlands stations were found to be in classes VM4, VM5 and VM6, in which individuals have either little direct participation in polling, or individual participation is filtered through group processes of varying degrees of inclusivity. Disrupted/Monopolised stations were very rare outside of the Highlands. Collapsed polling stations were only found in the Highlands in 2022. Indeed, the result was considerably worse than had been anticipated. Severely disrupted polling with little individual participation was formerly more common in the so-called ‘Upper Highlands’ provinces of Hela, Southern Highlands and Enga (Figure 3) than in the ‘Lower Highlands’ of Chimbu and Eastern Highlands (Figure 4). By 2022, these ‘Lower Highlands’ provinces had a similar profile to the so-called ‘Upper Highlands’, although collapsed stations, and in particular box hijackings, remained characteristic of the ‘Upper

Figure 2: Overall distribution of voting method classes in the 2022 National General Election. Where polling locations are superimposed, higher voting method classes are given priority over lower⁴



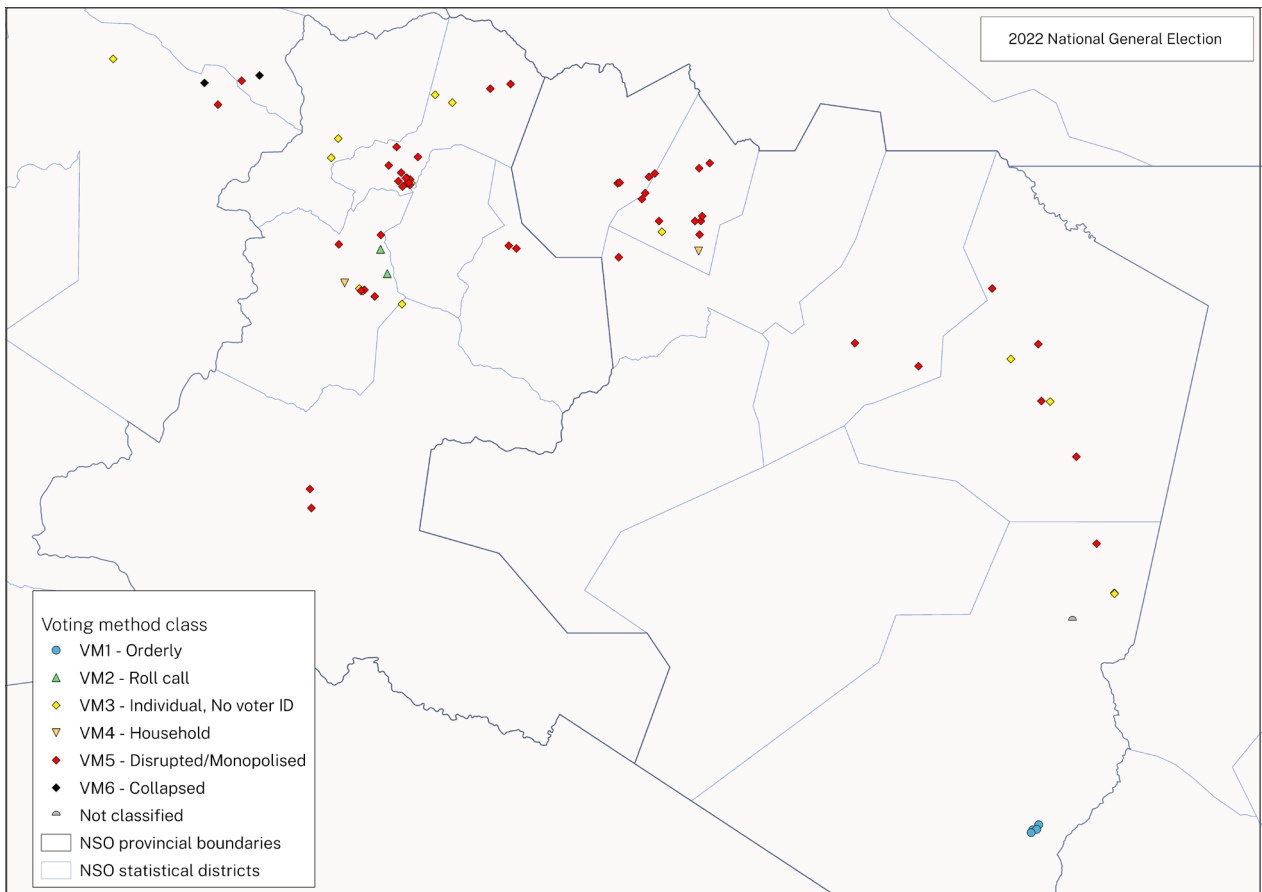
Source: Authors.

Figure 3: ‘Upper Highlands’ voting method classes in 2022



Source: Authors.

Figure 4: ‘Lower Highlands’ voting method classes in 2022



Source: Authors.

Highlands: 'Household' voting methods were common in 2017, especially in Enga, but for 2022 more extreme polling conditions were encountered.

The Highlands picture was also surprising in being more heterogeneous than had been anticipated (Table 3; individual form features are summarised in Table B1, Appendix B). There are both localised exceptions to otherwise extreme polling conditions, and broader areal differences. Highlands VM1 and VM2 stations commonly featured multiple voting offences, indicating that where roll enforcement is attempted in the Highlands it is often subverted. There was also much greater tension in Highlands VM1 and VM2 stations than was observed for similarly organised stations in other regions. In some cases, observers commented that candidates and their agents pressured officials to attempt to impose a 'block vote', with individual voting 'allowed' only after tense negotiations. Enforcement of the electoral roll in the Highlands can lead to severe disenfranchisement, and it is possible that such enforcement is strategically used to limit participation by certain communities in the election.

In several cases, the relatively functional and compliant polling stations in the Highlands were situated near elite residences including public servants' housing, hospitals and police stations. In this sense, the geographical dimension of inequality reproduces at larger scales inequalities also observed at certain polling stations, in which factional 'cuts' or supervision of voters affect most ballots, but not those of elite individuals. Finally, there were also more isolated and unpredictable cases in which community action, action by formal and informal security forces, or effective polling officials were able to implement more compliant methods. In one case in Hela, for instance, a community insisted on 'proper' voting in the context of a religious revival.

In the Southern Highlands there was a clear difference between areas in the central part of the province, near the capital Mendi, and those further east, which had comparatively milder conditions. In some of these cases, detailed observer reports suggest that candidates refrained from extreme methods where they expected the result to be in their favour.

In the Eastern Highlands, relatively compliant stations were only observed in the extreme south-east of the province. This area is culturally and logistically closer to the neighbouring Morobe Province and is notably very difficult to access from the Highlands Highway, which runs across the north of the Eastern Highlands. This was one of the few areas in the Highlands where polling appears to have become more compliant since 2017. Chimbu polling conditions also appear to have become more extreme overall. Observers in this province, some of whom have observed elections since 2007, noted a sharp deterioration and much more forceful implementation of 'cuts' and 'block voters' in 2022. This was evident across the province but was particularly conspicuous in the surroundings of the capital, Kundiawa.

Outside the Highlands, there was greater compliance and much less diversity in the organisation of polling. In Momase, we see that urban centres tended to feature predominantly VM1 and VM3 stations, while hinterland areas practised roll calls (Figure 5). In East Sepik and Madang, VM1 stations were virtually absent outside of urban contexts; in Morobe, there were no observations of roll calls in Lae. This pattern was also observed to some extent in Northern (Oro) Province, but here roll call stations were only detected in more remote rural areas. In New Ireland, roll calls were absent from the capital and appear to be distributed in clusters, in the coastal areas and in the central part of the island.

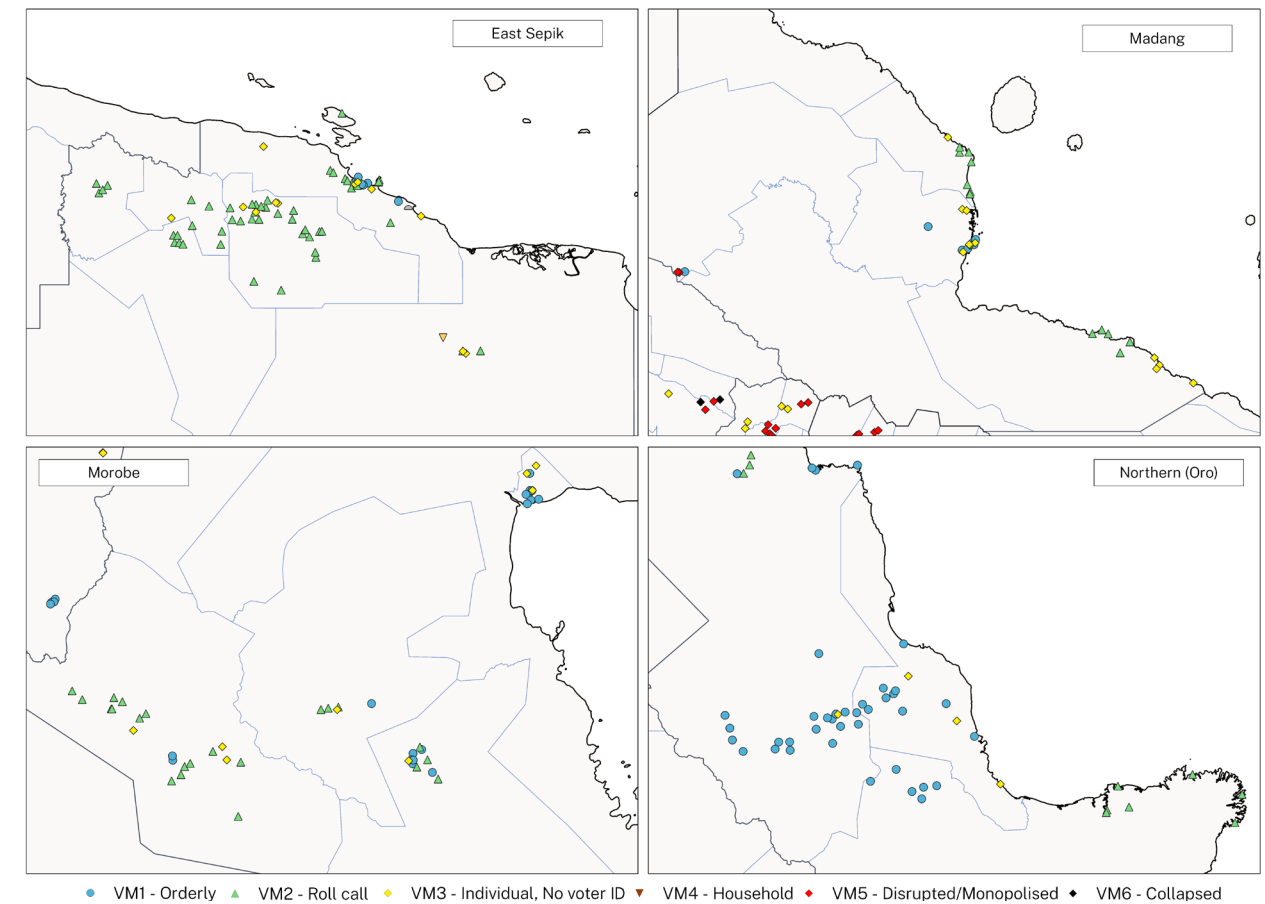
The National Capital District did not show this relationship of greater compliance in the urban centre vis-à-vis the hinterland. Indeed, polling in the NCD and its largely rural neighbouring provinces differed dramatically, with a much greater prevalence of no-ID individual polling stations, especially at inland locations and in the Port Moresby North East electorate. In many other respects, NCD polling conditions were far more conflicted than those in Southern and Momase regions: across a wide range of measures, we see worse performance in the capital. Post-election surveys suggest that compliance with voter identification in the NCD was comparable to that seen in the Highlands. The NCD uses more diverse voting methods than other urban centres outside of the Highlands, and here we found

Table 3: Proportion of polling stations in voting method class by region, 2022 National General Election

Region	Voting method class (%)						Not classified
	1	2	3	4	5	6	
Highlands	6	7	12	7	56	9	2
Islands	68	24	5	2	–	–	1
Momase	22	55	21	1	1	–	1
NCD	43	11	41	–	2	–	4
Southern	74	15	11	–	–	–	–

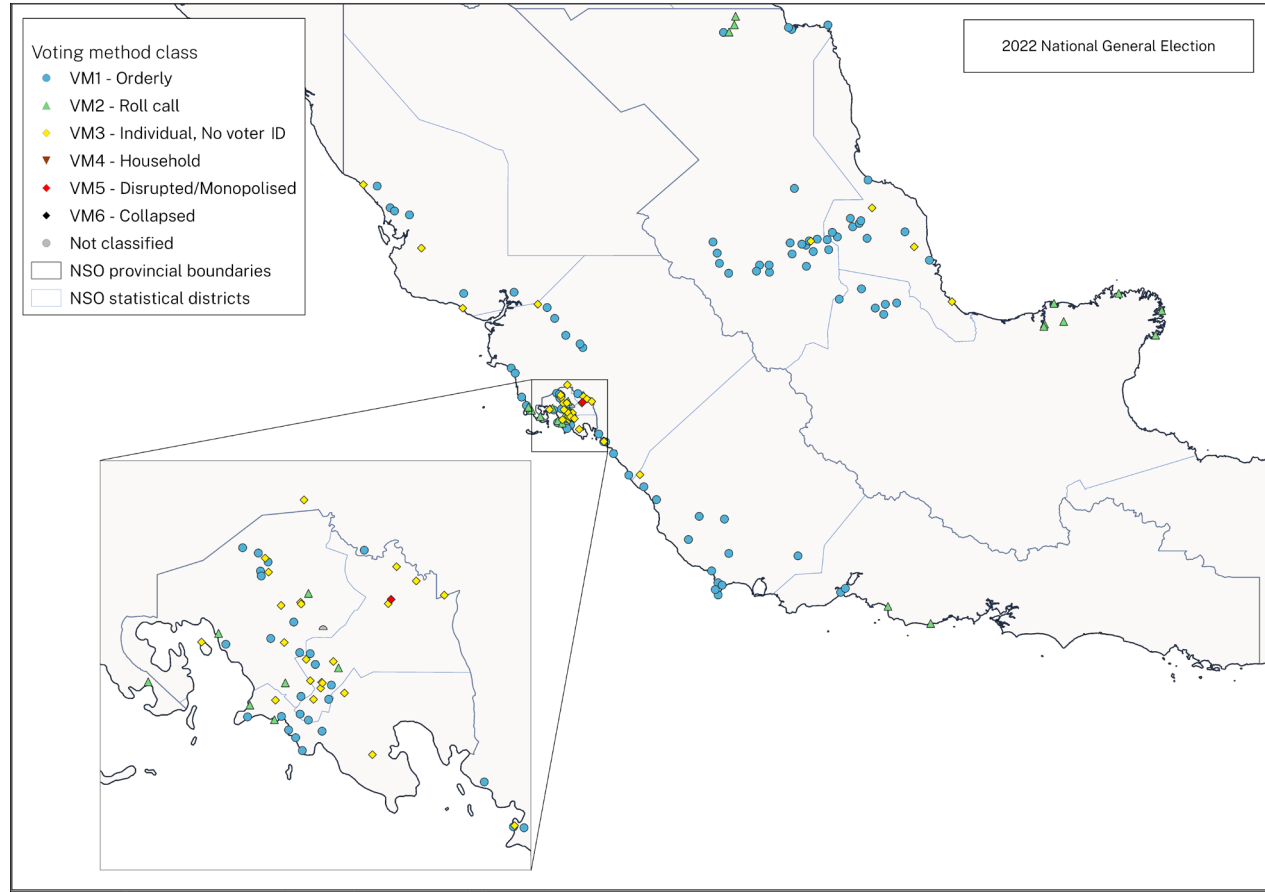
Source: Authors' compiled data.

Figure 5: Clockwise from the top left: East Sepik, Madang, Northern (Oro) and Morobe voting method classes in 2022



Source: Authors.

Figure 6: Voting method classes for the NCD and its geographical neighbourhood in 2022



Source: Authors.

stations that practise roll calls, sometimes in settlement and encapsulated village contexts, but not exclusively.

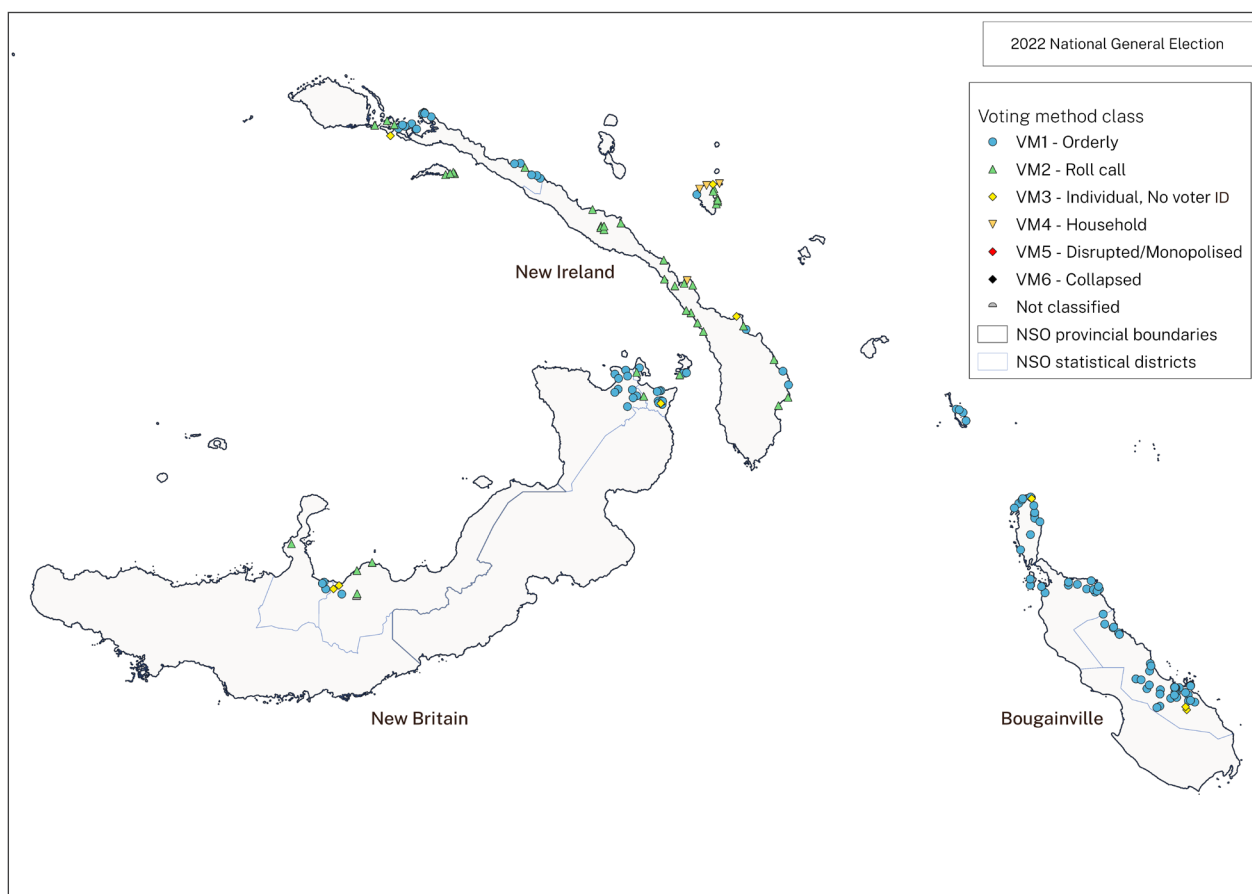
NCD voting processes contrast markedly with Oro and Central provinces (Figure 6): roll usage was far stricter in these provinces, which were also quite distinct from those studied in Momase. While observers recorded instances of polling officials filling ballots in Oro, these reflect misinterpretation of assistance procedures by the observer. Nevertheless, the presence of extensive assistance does point towards somewhat more problematic polling conditions than what was observed in the Islands region, which was otherwise comparable.

The four provinces surveyed in the Islands region had more homogeneous voting methods (Figure 7). New Ireland and West New Britain featured isolated instances of problematic polling, and in New Ireland's case, there were indications that several polling stations in Lihir Island had adopted at least temporarily non-individual voting procedures. Observers interpreted this as the introduction of 'Highlands ways' (*pasin hailans*) of election making; however, it is not entirely clear that these stations in fact broke with roll usage, let alone individual voting, and the recorded result may reflect observer bias in a context in which a Highlander candidate was present. While the classification of Lihir stations must be considered tentative, there is little doubt that polling conditions in the island were much more tense than elsewhere in the province.

New Ireland and West New Britain had superficially similar voting practices as seen from the perspective of the voting method. However, conditions in West New Britain were in practice more tense and less organised. It is important to note that while New Ireland was surveyed over a wide geographic range and includes relatively isolated areas such as Lihir, sampling for West New Britain was largely confined to the capital Kimbe and its environs. Post-polling surveys suggest enforcement of the roll was not as strict in West New Britain as in other parts of the Islands region. Mechanically, however, both provinces saw the presence of roll calls, which were absent from Bougainville and rare amongst the East New Britain locations visited.

East New Britain and Bougainville had the most compliant polling across a wide range of measures, and this was true also of the voting method. In the case of Bougainville, observers were able to achieve wide coverage in two of three electorates including remote locations and it appears that polling was for the most part in class VM1. A caveat here is that in a Bougainvillean context Office of the Bougainvillean Electoral Commissioner (OBEC) rolls were occasionally resorted to when Papua New Guinea Electoral Commission (PNGEC) rolls proved inaccurate. OBEC rolls benefit from intensive assistance provided for the compilation of the

Figure 7: New Guinea Islands voting method classes in 2022



Source: Authors.

2019 referendum roll. We believe this situation was substantially different from the instances in which informal roll procedures were instituted on an ad hoc basis elsewhere in PNG: although the OBEC roll should not have been used according to PNG electoral law, nevertheless it is an electoral roll produced by a state agency and was used as such, quite unlike cases in which university enrolment was accepted by presiding officers in Port Moresby, for instance. To some degree, the use of OBEC rolls represented a form of passive resistance to Port Moresby in the context of the dynamics of Bougainville secessionism.

East New Britain appears similar to Bougainville, with an important difference that here difficulties with the roll were severe. However, it should be noted that the selection of polling stations in East New Britain was largely confined to the Gazelle Peninsula: it is unknown if voting in hinterland areas follows a similar or different path.

Change in Highlands voting methods, 2007 to 2022

Datasets similar to that considered above exist for 2007, 2012 and 2017. As the methodology and forms were developed by iteration across election cycles, comparison between elections requires careful interpretation. The electoral observations grew substantially in scale between 2007 and 2022, and the set of polling stations visited mostly changed for each election. There are important methodological and organisational differences between the 2007 and 2012 studies: in both these studies the voting process was recorded at different times during the day, and in 2007 some two-thirds of observers used an alternative form in Tok Pisin. The 2017 and 2022 studies present the fewest difficulties for direct comparison, with only minor differences in the voting methods section of the form, essentially identical methodology, very similar geographical coverage and a large pool of observers in common.

Over four elections, electoral conditions in the Highlands region appeared to have dramatically worsened (Figures 8 to 11). However, it is important to note that this sequence of observations begins in 2007. The previous election, in 2002, featured hundreds of missing or destroyed ballot boxes, and failed in six electorates in the Highlands, amid scenes of violent destruction of polling stations broadcast internationally. This spurred a shift in policy towards a much greater focus on security. Results for the 2007 election, which was observed, suggests this prevented outright collapse of electoral conditions. From the perspective of individual observer reports, the 2007 election featured generally less extreme conditions than became common later (Figure 8). Indeed for 2007 we see reports of orderly voting in Mount Hagen, which became a notorious 'hotspot' in later elections. This relatively benign picture of Highlands polling for the 2007 election must be kept in context. In practice, polling conditions may have allowed for greater individual involvement in the execution of block votes,

but coercive practices were common (Haley 2011b:65). Conditions appear to have been qualitatively worse in 2007 than in elections before 2002.

The *relatively* quiet conditions in 2007 were largely achieved by massive deployments of security forces. These were not sustained into subsequent elections, and the underlying pressures on the integrity of the electoral process were not addressed. There was a marked deterioration in 2012, which was especially notable in Hela, which has similar samples across all four elections (Figure 9). For that year, individual voting without the roll remained common in Hela, but collapsed stations — box hijackings and destruction of polling stations — were abundant. Conditions in Mount Hagen deteriorated markedly, but in Eastern Highlands, conditions remained relatively mild, with individual voting the norm.

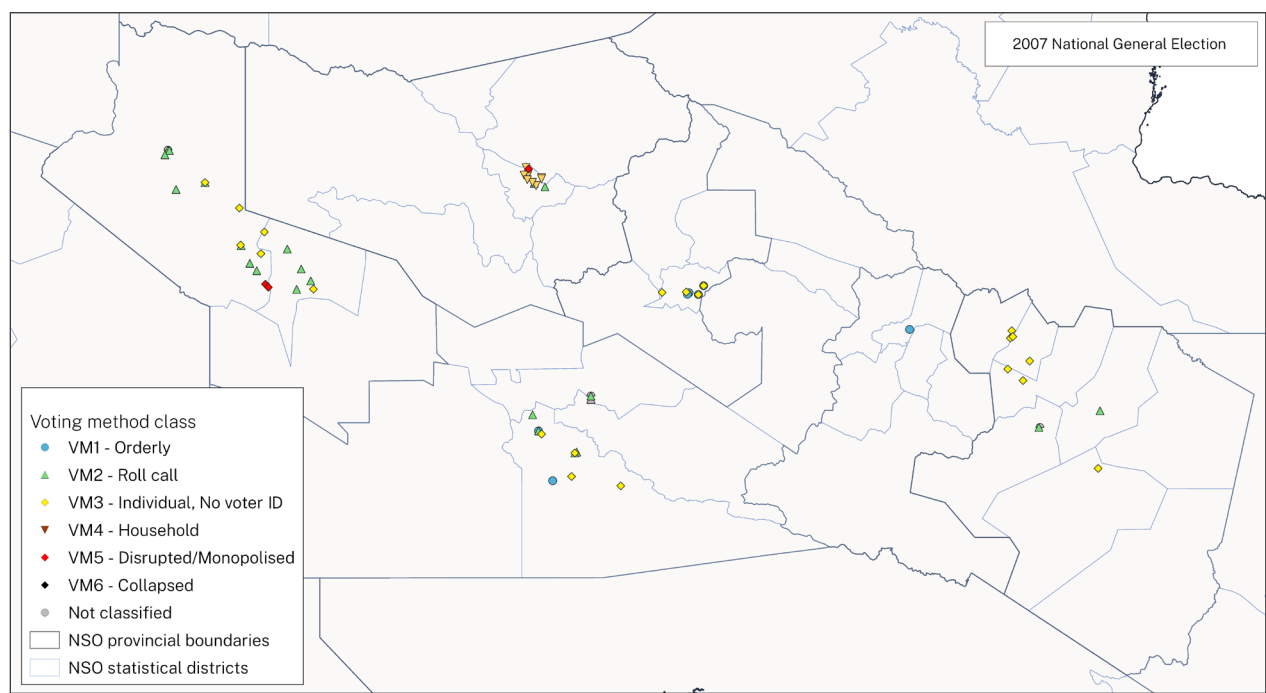
An important difference in the case of the 2012 election was the attempt to implement the family order roll, which likely contributed to a proliferation of VM4 stations that year, particularly in Enga where household and subclan voting practices had already been very common.

The 2017 observation showed a marked deterioration in Western Highlands and Chimbu (Figure 10). While there were fewer VM6 collapsed polling stations in Hela for 2017 in our dataset, it is believed that in fact more polling stations were destroyed that year than in 2012 or 2022. The clear difference between 'Upper' and 'Lower' Highlands suggested by the 2012 observation begins to dissipate in 2017, but individual voting remained common in the Eastern Highlands. By 2022, this distinction was visible mostly by the distribution of VM6 stations (Figure 11). The increasing proportion of polling locations in classes VM5 and VM6 between 2012 and 2022 is shown in Figure 12.

This sequence of studies shows a remarkable deterioration of polling conditions, but it is important to stress that particularly the 2007 and 2012 iterations of the observation study featured substantial differences in methodology, different forms and considerable differences in study organisation. The 2007 study, in particular, was relatively small, and subsequent studies showed that there is a great deal of heterogeneity in the Highlands. In Chimbu, for instance, detailed polling station reports were only available for Kundiawa in 2007, but it is known that in that year Chuave polling was often carried out to exhaustion of ballots with no secret voting to enforce the 'community consensus' (Kaupa 2011). Overall conditions in 2007 appear to have been less conflicted than they later became, allowing for an individual execution of block votes, but voting practices also appear to be more consistently recorded in the later studies.

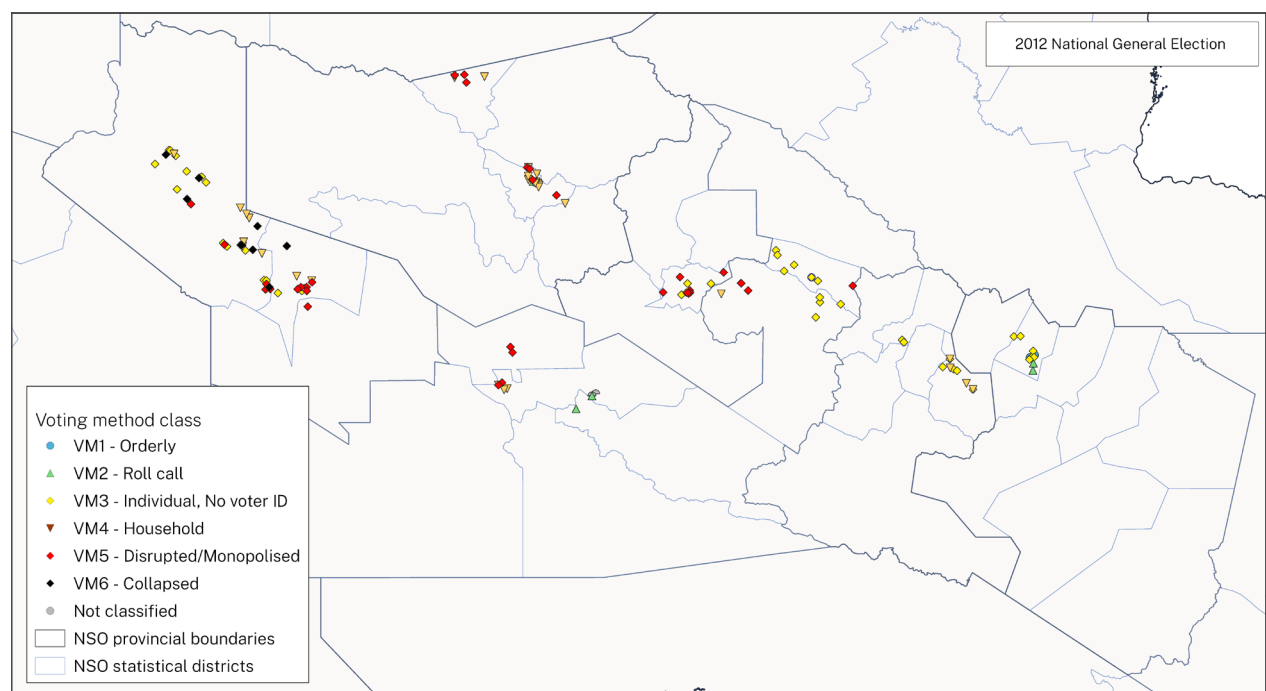
At the same time, the picture that emerges here of changes in electoral conditions between 2007 and 2022 for the Highlands is unlikely to surprise those familiar with these elections. The observations provide a dramatic illustration of the fact that the securitisation of elections after the chaos of 2002 failed and led

Figure 8: Voting method classes across the Highlands region for 2007



Source: Authors.

Figure 9: Voting method classes across the Highlands region for 2012



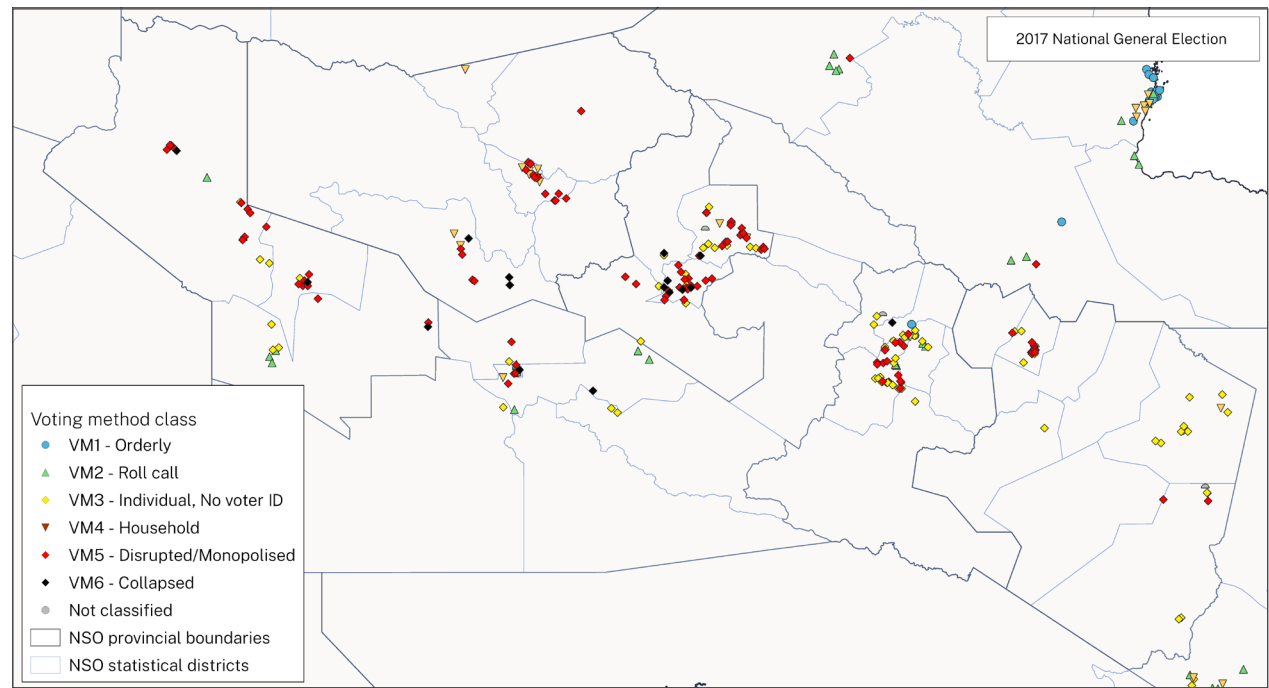
Source: Authors.

first to a lowering of the bar for ‘successful’ elections (Haley 2011a), before lowering, it seems, the bar on what can count as an election.

The result here is extremely worrying. While we saw some improvements between the 2017 and 2022 elections in certain locations outside the

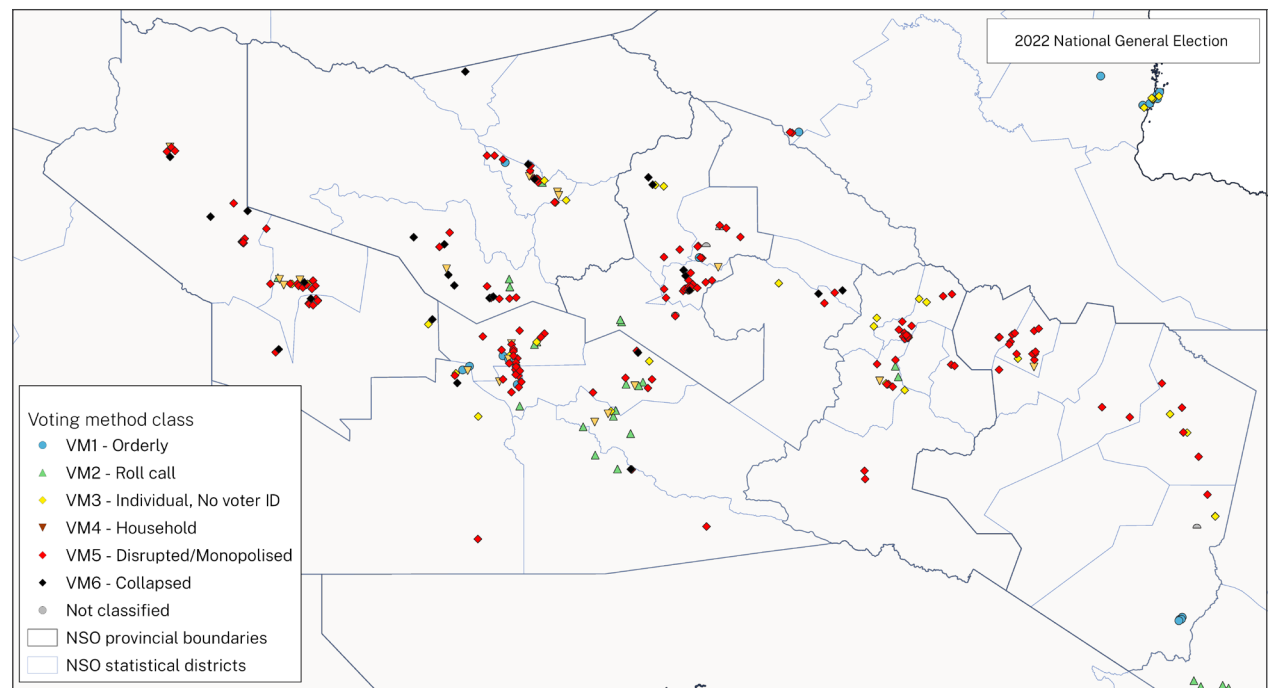
Highlands, it appears that there is a strong tendency that once a certain degree of dysfunction becomes entrenched, reversing course is less likely than further deterioration. There is, however, one glimmer of light in this very dark picture. Explanations for the extreme outcomes that have become common in the Highlands

Figure 10: Voting method classes across the Highlands region for 2017



Source: Authors.

Figure 11: Voting method classes across the Highlands region for 2022

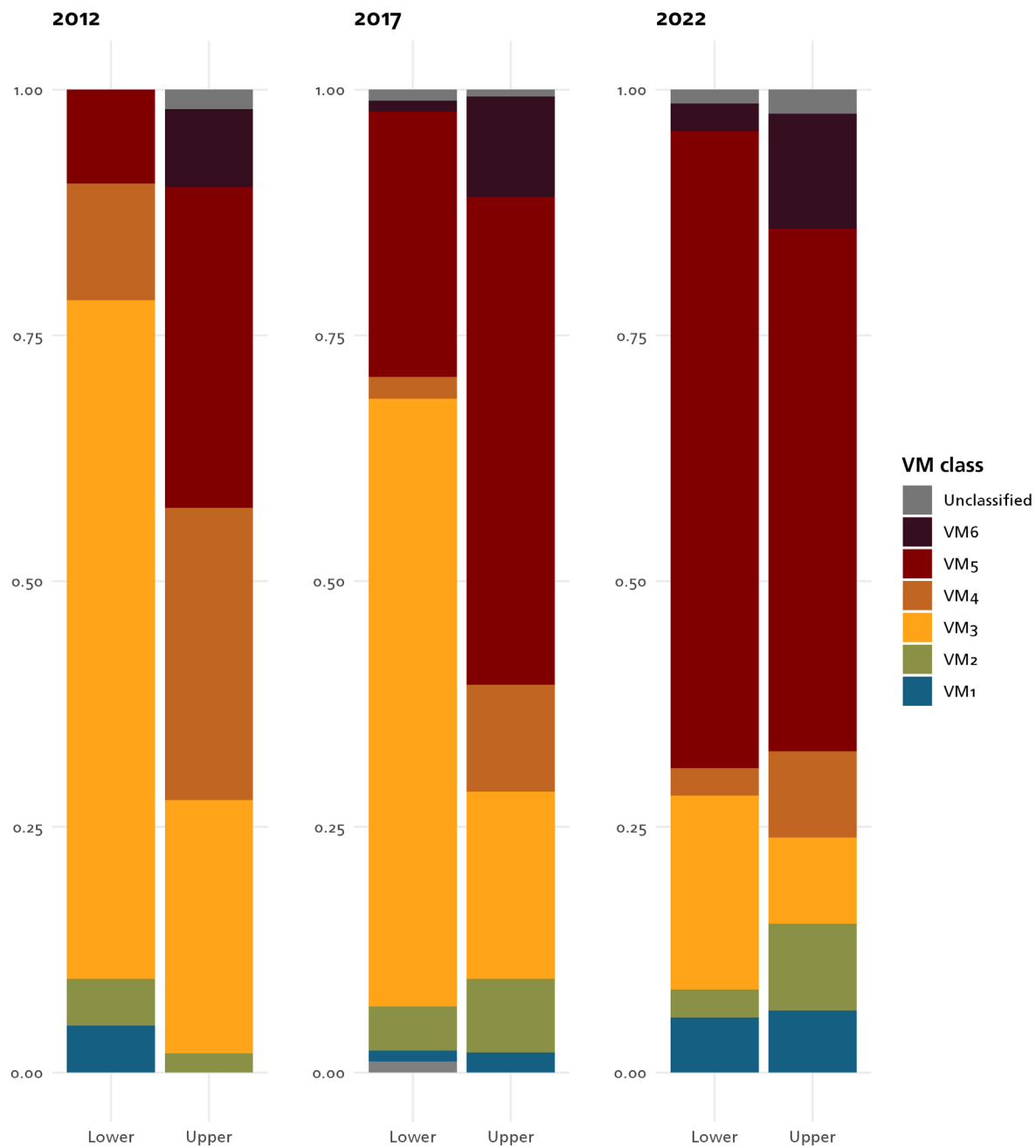


Source: Authors.

have sometimes amounted to essentialising cultural — or even ethnic — explanations that Highlanders are more prone to violence, and willing to risk everything for the sake of political prestige. It appears that if there is a ‘Highlands culture’ of political violence, this has not always had the same consequences or been expressed in the same way, and indeed, this ‘culture’ appears to have become much more pronounced in the

recent past. Indeed, while political violence has been a feature of Highlands elections for a long time, there appears to be a long-term tendency for this violence to be organised in a manner that involves fewer and fewer persons in the process of voting. Andrew Strathern, writing in 1993, observed a process of ‘neotribalisation’ in Mount Hagen as guns and intensified violence led to more rigid understandings of kin identity, and reported

Figure 12: Proportions of observed location in voting method class, 2012, 2017 and 2022, Lower vs Upper Highlands



Source: Authors; data from Table B3, Appendix B.

the view that ‘it was now absolutely necessary for rival candidates to outbid each other in offers of bribes to every *individual* elector’ (Strathern 1993:725, emphasis added). This is increasingly not the case, as more and more individuals lose control of their ballots.

It may well be more productive to inquire as to what has been done, and not been done, to have stimulated these changes. Increased numbers of firearms, limited government services, failure to establish effective methods of policing and the impact of resource rents in otherwise poor and marginal provinces of the Upper Highlands are likely to be important factors here. The toleration of ‘elections’ in

which an appreciable percentage of polling stations are captured or collapsed implies an infiltration of the authorities responsible by what is a form of organised electoral crime. ‘Community consensus’ practices that were at least in theory an aspect of clan articulation have become increasingly destabilised in a context of increased violence, hired mercenaries and higher-level ‘money politics’ between candidates and warlords. This is a process that unfolds over time, gradually disenfranchising a large fraction of the Highlands population, concentrating power in the hands of factional leaders, and transforming the nature of community political organisation.

Relationship of voting method and other observation features

As noted in the section on divergent voting methods, indelible ink, ballot secrecy and assistance of voters are observable features of the sequence for voting prescribed by Papua New Guinean law, the compliant voting method. These features were recorded by observers, as were many other aspects of the polling process, including incidents of violence, loss of control of the polling station, interference in the process and assistance of voters. We have not used these to define voting method classes because, while they have strong associations with core voting mechanics, they are not specific diagnostics of the voting method. We present more comprehensive approaches to this broader dataset in a separate paper. Here we discuss some results that illustrate some important associations, and which also illustrate the difficulties of working with these additional variables. For brevity, we compare the Highlands and non-Highlands averages for voting method classes, collapsing classes VM4, VM5 and VM6 into a class 'VM4+', using the data from 2022.

Both the application and checking of indelible ink was found to have strong associations with the voting method, but as can be seen in Figure 13a and Figure 13b, this varied drastically. Both the application and checking of indelible ink had strong associations with the voting method, but as can be seen in Figure 13a and Figure 13b, this varied drastically between regions. In the Highlands, the association was especially marked: 88 per cent of VM1 and 60 per cent of VM2 Highlands stations applied ink, but this fell to 22 per cent for VM3 and 12 per cent of those in VM4, VM5 and VM6. Ink checking had a similar profile to ink application within the Highlands. Outside the Highlands, however, the difference between VM2 and VM3 was not nearly as great, especially in the case of ink application (97 to 82 per cent). Application of ink featured in 63 per cent of polling stations with more severely disrupted processes outside the Highlands, but here we would caution that there are few such VM4+ stations outside the Highlands, and they may include misclassifications.

Ballot secrecy followed approximately the same pattern (Figure 13d). It was much less common in the Highlands than outside it. The high proportion of VM4+ stations outside the Highlands with reported ballot secrecy suggests a substantially different realisation of exclusionary practices within the Highlands and outside it. It is notable that both in the Highlands and outside it, VM3 tended to have poorer provision for a secret ballot: while in these locations polling was individual, evidently in many cases this occurred in a context that also eroded individual rights.

As noted above, observation of 'forced assistance' is quite difficult and leads to results that are difficult to interpret. In Figure 13c we see that unambiguously forced assistance was relatively uncommon overall but was reported about twice as often among observed Highlands VM1 stations than in any other category. This may reflect the selection of a strategy of coercion of

individuals, rather than capture of the polling process, but here we must caution that the total number of Highlands VM1 stations was relatively small and could include misclassifications.

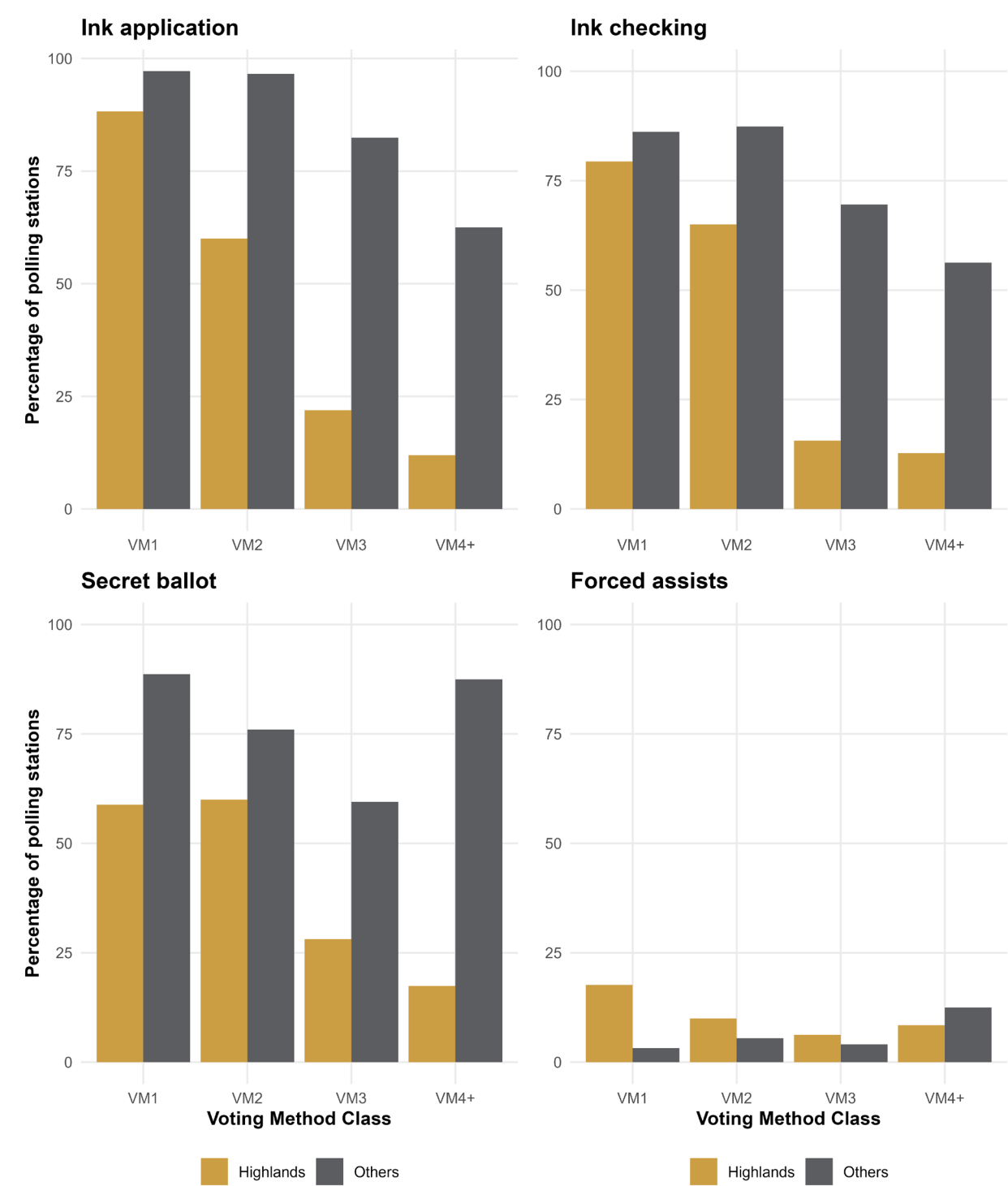
The presence of persons turned away as 'not found on the roll' (NFOR) is very likely given the poor quality of Papua New Guinean rolls. Since VM1 and VM2 require the use of the roll, it is to be expected these would be strongly associated with the observation of at least one NFOR case. However, NFORs are also a trigger for 'escalation' of the voting method either through 'opening' the polling station or through conflict, and zero NFOR cases can also arise where there is some combination of high roll quality and effective communication between the electoral authorities and potential voters. Outside the Highlands, a relationship was observed: 32 per cent of VM3 stations feature zero NFOR, while for VM1 the figure is only 20 per cent. Within the Highlands, every voting method except roll calls includes large majorities of zero NFOR stations. It is unclear why this is so. It may be due to misclassification between VM1 and VM3 stations, but it may also be because roll calls tend to make NFOR easier to observe, particularly in the more crowded and chaotic conditions seen in most Highlands stations.

Violent incidents showed fewer differences between the Highlands and non-Highlands, at least before VM4+ (Figure 14b). This result is somewhat surprising, but it should also be stressed that there are substantial differences in what is classified as 'violence' in the context of elections in different parts of Papua New Guinea. In some areas, raised voices and offensive language may be considered violent, while in others disrupted conditions have become entrenched and minor episodes of physical violence might have become unsurprising.

Detection of multiple voting offences has a much clearer association with the voting method outside the Highlands (Figure 15a). Within the Highlands, somewhat fewer VM4+ stations featured multiple voting offences, as compared to VM3. There are two factors involved here. In the Highlands, election conditions are often so far removed from the process foreseen in electoral procedures that observers are either unable to observe at close enough range or do not classify what is taking place as 'voting'. Splitting ballot books between candidate agents and filling them en masse, group voting or box hijacking necessarily requires some form of 'multiple voting', but most observers appear to understand multiple voting as involving *individuals*. In some cases, observers asserted that 'no voting took place' in contexts of full monopolisation. This interpretation is not in our view indefensible and could be understood as insightful as to the profound changes in political organisation that has taken place in such polling stations.

Outside the Highlands, multiple voting offences are far more common in VM4+ stations, but this was not the case for underage voting (Figure 15b). These peak at VM3 outside the Highlands, while in the Highlands, they are common in VM1 and VM3 stations. We interpret

Figure 13: Percentage of polling stations in each voting method class with a given feature, contrasting the Highlands region and non-Highlands regions, 2022 election. Clockwise from top left: a) ink application, b) ink checking, c) forced assists, d) secret ballot

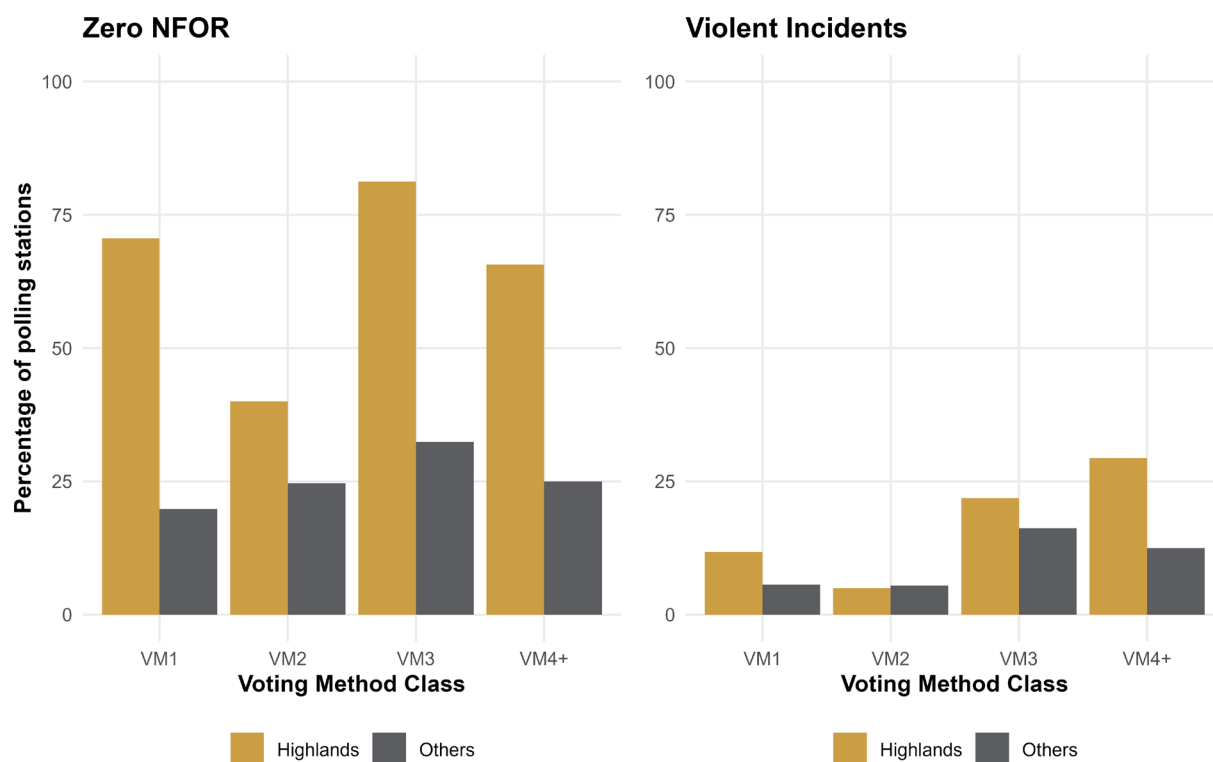


Source: Authors; data from Table B3, Appendix B.

this as VM4+ stations outside the Highlands being surprising to observers, who see them as highly disturbed and understand what is happening as capture of *voting* by a handful of individuals, typically adult men. Underage voting, on the other hand, takes place in contexts in which individuals still vote. Indeed, underage voting is often accepted by communities and

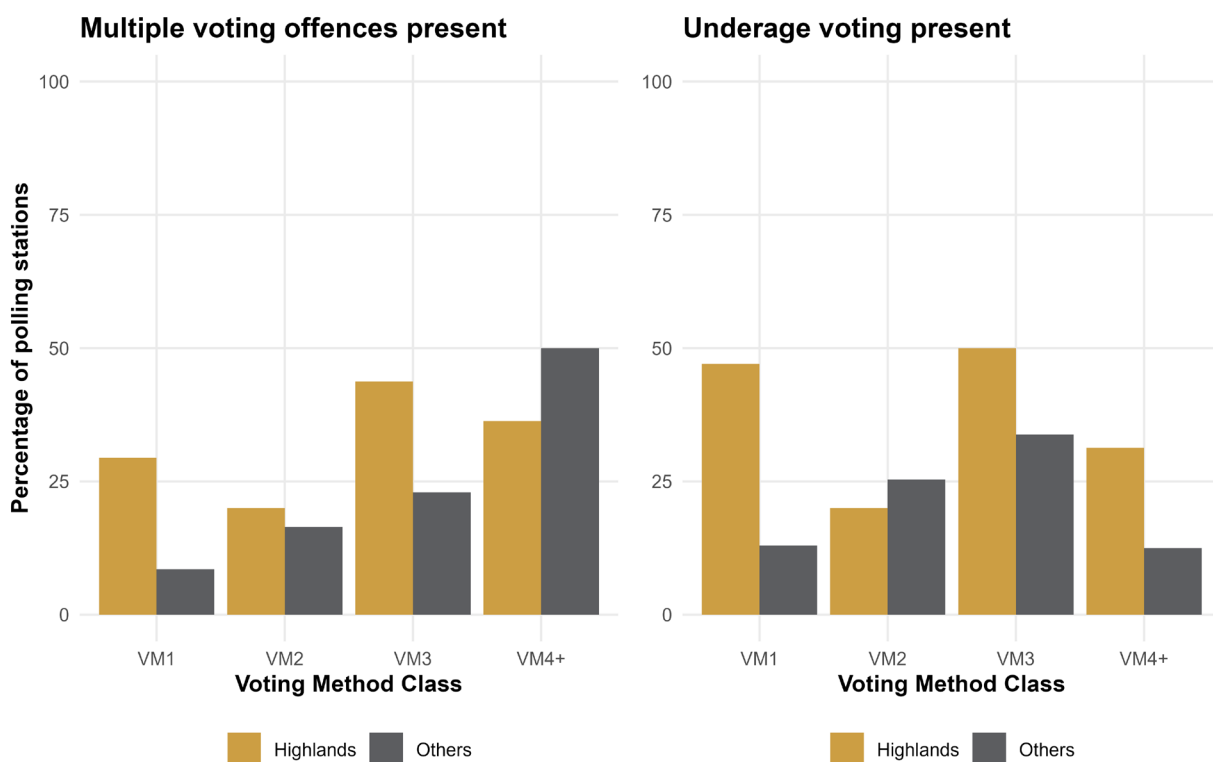
may even be seen as normative — for example, where young children or teenagers vote on behalf of ailing or infirm relatives. Of course, such procedures create serious risks of political exploitation of children in addition to the difficulties associated with weakening voter identification.

Figure 14: Percentage of polling stations in each voting method class with a given feature, contrasting the Highlands region and non-Highlands regions, 2022 election.
From left: a) zero NFOR and b) violent incidents



Source: Authors; data from Table B3, Appendix B.

Figure 15: Percentage of polling stations in each voting method class with a given feature, contrasting the Highlands region and non-Highlands regions, 2022 election.
From left: a) multiple voting offences and b) underage voting



Source: Authors; data from Table B3, Appendix B.

Extensions and applications

Further exploration of the relationship between voting method classes and other aspects of polling

There are a number of possible extensions and applications of the method of classification advanced here. In this paper, we have treated the different voting method classes mostly as nominal categories, except in the case of resolving tied observation reports and, implicitly, in the map representation that superimposes 'higher' over 'lower' voting methods. Nevertheless, there is a sense in which they form an ordered set. Conceptually, group voting typically requires voter identification to be seriously compromised or absent and implies a loss of initiative by most individuals. Captured polling stations can be understood as an extension of group voting in which one group predominates. Collapsed polling stations are an extension of capture, as either the positive or negative monopolisation of polling materials via hijacking or destruction. Empirically, we have already seen indications of an association between the voting method class and other aspects of polling. It would be surprising if other aspects of polling (or the political process more broadly) were not in some sense 'worse' in 'higher' voting method classes: that much seems certain, at least when comparing extremes. But what about the difference between ordinary voting and roll calls, or individual voting methods and without and without the roll?

Examining such questions requires handling the complexity that the observation journal forms yield over one hundred different variables apart from metadata and long-form answer fields. This makes specifying a metric for 'worse' polling difficult. Not all variables contribute to an election being 'better' or 'worse' in the same way. How many problems does the physical structure of the polling station need to have to 'offset' the effect of correct voter identification? The observation forms were not designed with this purpose in mind, and the broader data has many of the same limitations as that used in this paper. In a separate paper, we use principal components analysis (PCA) to explore such relationships in this data, essentially constructing a metric of election mechanical quality. Two notable results of this analysis are that both PNG's regions and voting method classes apart from VM6 'collapsed' are stochastically ordered with respect to the first principal component, and that it is possible to distinguish populations of VM1 from VM2 stations, and VM3 from VM4, to note the classes with the greatest similarity. This supports the idea that voting methods have ordinal features.

We believe such analysis is important not only because it supports the classification scheme proposed here, but also because it allows us to pinpoint variables that are especially strong indicators of election quality. In future, this may allow the refinement of observation methodology, and its democratisation through the construction of easy-to-use, effective diagnostics.

How do voting methods change over time?

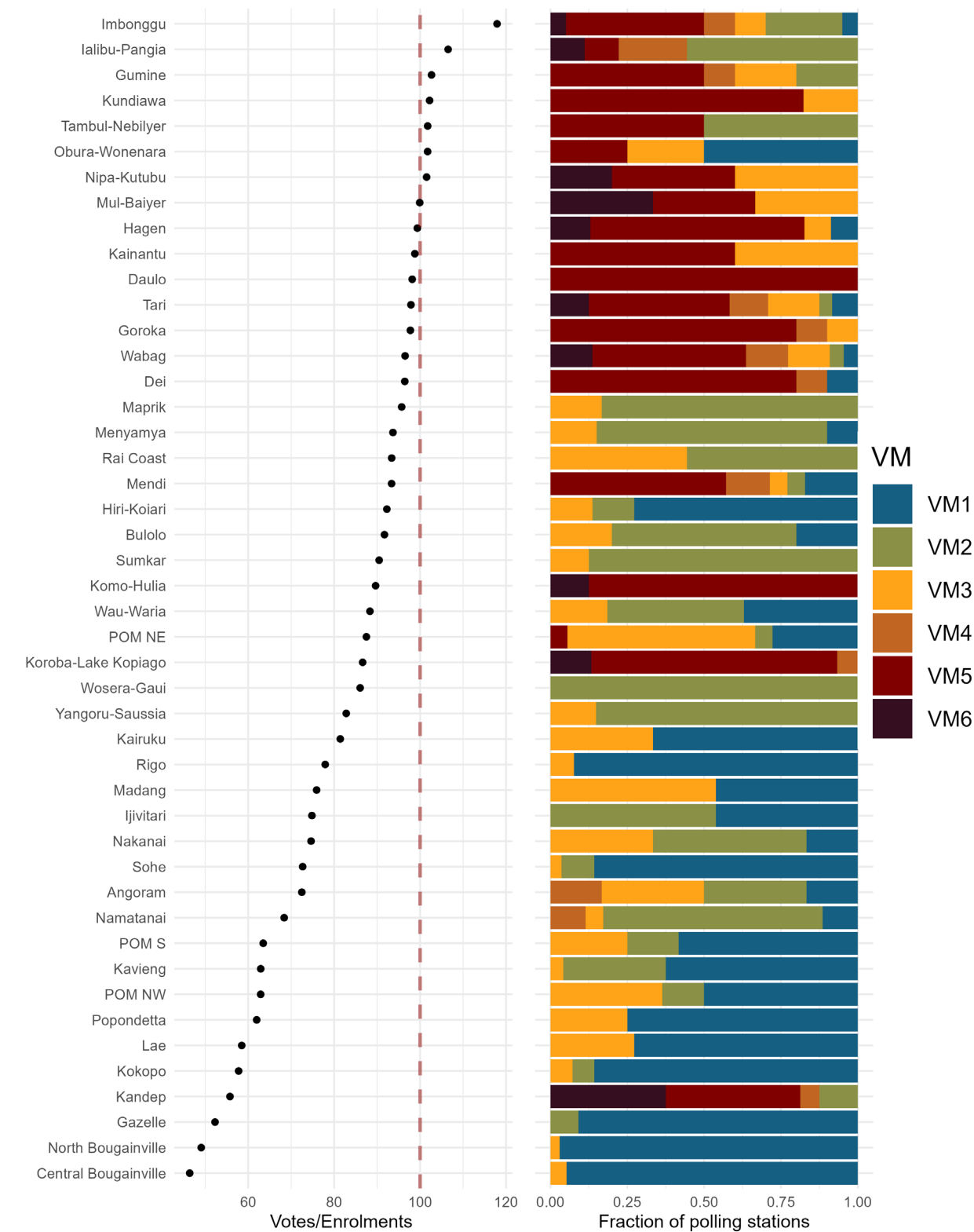
While both conceptual and empirical considerations support an understanding of the voting method classes as having ordinal characteristics — higher classes add conditions to the preceding classes and become progressively 'worse' for voters — we believe that in reality, the *causal* relationship between different types of voting procedures is complex. The transitions between ways of organising polling stations need to be studied carefully, both in the short time horizon of a single election, and in a long time horizon of succeeding election cycles. It is unlikely that such transitions depend solely on processes at work within individual polling locations, particularly in relation to succeeding elections. Conditions in electoral administration, organisation of security, logistics and the intensity of political competition matter, and these have national, provincial and district elements.

Polling processes at individual polling stations may, however, be diagnostic of the impact of these broader factors. There are also plausible mechanisms that would lead to a dissemination of particular voting methods across a wider region: at the less severe end of the scale, approaches such as roll calls may be improvised at a location to address shortcomings of the roll, prove effective at managing voters and be emulated by other officials. Complex dynamics are likely to be at play in this regard. Officials often 'learn the ropes' as polling clerks before becoming presiding officers; returning officers overseeing the electorate have usually graduated from the ranks of presiding officers: but what they can and cannot do at a polling station depends also on what the local community considers acceptable and desirable. At the more extreme end of the scale, the use of violence in elections can provoke an arms race in electoral methods and the adoption of monopolistic practices 'defensively'; the organisation of local fighting forces often has defensive origins before fighters acquire political ambitions or the utility of a militia becomes clear to politicians. The geographical distribution of voting methods shown here points towards the possibility of an epidemiological treatment of electoral dysfunction, although the challenges before such a project remain formidable.

Interpretation of anomalous turnouts

It is also possible to use the distribution of voting methods introduced here to shed light on certain conspicuous aspects of Papua New Guinea's elections, notably the distribution of anomalous reported 'turnouts', understood as the ratio of ballots received to enrolments.⁵ Turnouts above 95 per cent are common in certain areas and should be considered with great scepticism as the electoral roll is known to be inflated and extremely inaccurate. In some electorates, turnouts above 100 per cent are recorded. Qualitatively, it can be shown that extreme turnouts are matched with the presence of severely disrupted voting methods, notably those in which the individual has little participation (Figure 16). It is important to note that several highly disrupted electorates with

Figure 16: Reported turnouts and voting method classes for electorates with five or more observed locations, 2022 election



Notes: POM NE Moresby North-East; POM S Moresby South; POM NW Moresby North-West
Source: Authors; data from Table B3, Appendix B.

seemingly plausible turnouts — Koroba-Lake Kopiago, Kandep and Komo-Hulia — have ‘low’ reported turnouts because of excluded ballot boxes. Rather than ‘outliers’,

these electorates might be instances of a distinct set of processes that affect the turnout. At very high levels of observed dysfunction, the expected turnout may

be lower as the probability of destroyed and excluded ballot boxes increases — the latter can come about when higher organisational levels of the electoral administration resist accepting suspicious ballot boxes, but also when political infiltration at such levels leads to selective refusal of ballot boxes.

More subtly, within the range of turnouts that are not immediately implausible — below 95 per cent — we see that lower turnouts are associated with a greater proportion of polling stations with ‘orderly’ methods. Roll calls likely contribute directly to greater turnouts, as the polling process grinds to a halt if voters are absent, leading to a community effort to mobilise voters (or eventual fury when it turns out it is the roll’s inaccuracy, and not the community, that is at fault for the slow progress). Roll calls also create opportunities for impersonation, and may be diagnostic of more serious underlying problems. It can also be seen that observations of VM3 stations are more evenly distributed across ‘turnouts’; this possibly arises because abandoning voter identification processes occurs at different points in time in the polling day, not always permitting a full exhaustion of ballots, and because informal vetting of voters continues in many VM3 stations.

A more rigorous, quantitative approach to the issue may be also possible. There are two substantial difficulties with such an exercise. The first is the non-random nature of the sampling. This can only be addressed through methodological changes to future observations. The second is the compositional nature of voting method observation data at the required unit of aggregation. Polling station-level turnouts are not generally available, forcing us to consider the issue from the perspective of electorates. In a separate paper, we assess the PCA of voting methods observation features as a predictor of the reported turnout for electorates. While we find a weak relationship, in an ideal case there should be *no relationship* between the way polling is organised and turnout. Both informal, qualitative arguments and regression show that there is little doubt that the inequality in Papua New Guinean elections not only deprives individuals of rights depending on where and who they are, but also is bound with the fraudulent generation of election results that have a national significance.

Limitations of the present study

There are important limitations to the results presented here. The methodology of electoral observations has, to date, required non-random sampling in a Papua New Guinean context, and our sample is known to be biased in favour of locations that are logistically convenient and relatively safe. The difference in the organisation of the election between one-day and multi-day polling also has effects on sampling and the length of observation time, which is not controlled for here. Ascertaining the effect of these and other, unknown, biases will require methodological refinements in future studies or comparison to other independent

datasets. There are also important limitations to our classification, and to the data it has been applied to. The data captures *only* polling day conditions and does not capture important differences in political organisation if these do not affect these conditions. In extreme cases, well-run polling stations may have produced polling boxes that were subsequently supplemented with illegally filled ballots, or they may have been destroyed. In several cases, it is known that ‘block vote’ agreements were made prior to polling at locations that subsequently polled with relatively compliant methods — and as we have discussed above, forced assistance on polling day is an important means of generating ‘block votes’ which we have not incorporated into our classification, and remains challenging to study systematically.

The instruments themselves have obvious shortcomings and lead to substantial ‘noise.’ They are vulnerable to cultural differences between observers, which are considerable. They can generate ambiguous results when observers fail to log in writing what has transpired, particularly in complex polling stations or those in a state of flux. Future electoral observations will have to modify instruments, training and supervision procedures to produce more accurate and easily interpretable results. The results presented here can assist in designing more effective instruments.

Conclusion

In this paper we have provided an outline for using existing electoral observation datasets to classify Papua New Guinean polling stations in terms of ‘voting method classes’ which capture important differences in mechanical organisation of elections. These differences directly impact on individual rights and point towards key differences in political organisation in different parts of the country. Mapping the distribution of these classes renders legible the extreme inequality in individual access to the political process in Papua New Guinea, and beyond this suggests that there are quite different ways that political agents approach the task of ‘producing ballots.’ These differences include regional differences that are widely known but also include subregional and even local-level heterogeneity that was not anticipated by previous studies. Comparison between elections introduces additional methodological complexities but paints a picture of dynamic change in electoral conditions that undermines simplistic explanations of the geographical differences in terms of ‘culture.’ The data provides an unprecedented view into an electoral system in a state of deep crisis, one in which the ‘firewall’ between electoral administration and politics is in the process of being breached, and it provides insights into how electoral systems evolve after this breach takes place. The data has several important use cases. Above all, it provides a pathway for systematic study of Papua New Guinean politics that moves beyond invocations of ‘diversity’ to the analysis of heterogeneity in functional terms.

Endnotes

1. Papua New Guinea is normally split into four regions — Highlands, New Guinea Islands, Momase and Southern. We have split the National Capital District off from the Southern region as it presents a drastically different profile to the Southern provinces, and in an electoral context is best treated as an entity *sui generis*.
2. List compiled from the Organic Law on National and Local-level Elections 1997 (OLNLE) and National and Local-level Electoral Regulation 1997 (NLER): step 2 — Section 20, NLER; step 3 — Section 136, OLNLE; step 4 — Sections 126 and 199, OLNLE; step 5 — Sections 132 and 191, OLNLE; step 6 — Section 21, NLER; step 7 — Section 138, OLNLE 1997; step 8 — Sections 143 and 190, OLNLE 1997; step 9 — Section 140, OLNLE 1997.
3. A detailed description of this methodology is found in Appendix A.
4. Papua New Guinean electorates were redistricted in 2022. This redistricting exercise had serious faults and led to electorates being inconsistently defined. Additionally, elections before and after the redistricting are frequently not scheduled according to legal electorates. The actual polling schedule in practice more closely resembles the National Statistics Office map of 'statistical districts', which we have used here. The NSO map of provinces also has a different representation of the Western Highlands–Jiwaka border. See Haley and Oppermann (2024a, 2024b).
5. For reasons this paper has hopefully made clear, turnout in this sense should not be confused with the participation rate, that is the number of voters who cast ballots in the election divided by enrolments.

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Appendix A: Detailed coding methodology

Multiple voting method features selected

The polling day observation form allows for multiple responses: the observer is free to select one or more patterns of voting. Combinations of form responses occur in 364 of 1,098 observation reports. It is particularly common where one of the VM5 or VM3 responses is selected. The designers' intention in constructing the form with possible multiple responses was to allow for the situation in which there is a change in voting practices. Observer written accounts suggest many, but not all, cases of multiple response can be attributed to such changes.

However, multiple response also leads to what could be called *adverbial* use of the form options, in which a single pattern of voting is described using a combination of two or more options. This can reflect ambiguous processes, such as roll calls that do not appear to always follow the roll, supervised voting, or voter identification that is habitually ignored. Other cases are more problematic. The introduction of gender segregated polling outside the Highlands region in 2022 led many observers to select '*man-meri*' voting where there was in fact parallel lines for men and women, both with voter identification: in such cases '*man-meri*' was used to modify the 'orderly voter ID' option. In an extreme example, an observer saw a *tanim tebol* come about through amicable negotiation and selected both *tanim tebol* and *orderly voter identification*, evidently seizing on the word 'orderly' to modify *tanim tebol*. This form usage can be distinguished from the scenario in which the observer first ticks *orderly voter identification* and later notes that *tanim tebol* occurred only if the observer leaves a written description of what transpired — in this example, '*tanim tebol* was applied in a peaceful way'. Such written accounts are not always present, and they can be hard to interpret. To add to the complexity, on some very rare occasions the community resists efforts by officials and candidate agents to capture a polling station: there is *tanim tebol* to preserve relatively inclusive methods.

Our approach to handling cases in which multiple options are selected is, in the general case, to apply the original concept that multiple selections indicate a change in the voting process, and select the highest voting method class compatible with the choices. Where the observer leaves a written record that

clarifies their choice, we defer to the observers' written description. It would be possible to deconflict voting method selections using other observed features, since certain factors, for instance large numbers of persons turned away as 'not found on the roll', distinguish gender segregated voting with voter identification from true '*man-meri*' voting. However, we have not done so, as this would further compromise the already limited independence between observation of polling procedure and remaining aspects of the observation form. Instead, we present the data as close to its source as feasible, revising only those cases in which the observer's intended meaning is clear. In total, 53 reports out of 1,098 were subject to such revisions.

Multiple observations of one polling station

Observers are advised to attend polling stations alone unless there are security or logistic limitations. In practice these exceptions are not enforced strictly: there are 1,098 reports for 755 distinct polling locations. Where several observers produce reports for a single polling station, we carry out a weighted 'vote': each voting method selected by the observer is assigned a value of $1/n$ features selected. This penalises observers who select several different features, which in most cases has the effect of producing more conservative results — that is to say, a lower voting method. Because multiple observations of the same polling location are more common outside of one-day polling areas, the moderating effect of this procedure introduces a geographical bias such that more extreme classes should be more prevalent in one-day polling areas. However, this effect is expected to be small compared to objective differences in polling organisation. Cases in which several reports are merged are reviewed, and for a handful of locations — 6 out of 755 — additional adjustments are made if there is a detailed written account of the voting process by one of the observers.

Multiple days of observations at a single polling station

The same procedure is followed for cases where a polling station is observed in the course of several days. In the majority of cases, polling stations that operate for two or more days are located in towns in areas with multi-day voting and tend to have stable polling conditions. While it is possible to aggregate the data in terms of polling location-days, this introduces substantial complexities.

Observation times

A major complexity in the data is that in one-day polling areas, observers travel between polling stations, observing three to five different locations in the course of the day. This means these polling stations are typically observed for much shorter periods, and at different periods. Polling stations change during the course of the day, and this is more pronounced in the highly disrupted areas. This may lead to some

scepticism about the presence of VM1 and VM2 stations in one-day polling areas: perhaps once the station ran out of enrolled voters, unenrolled persons were allowed to vote. This is almost certainly true of some cases and is a known limitation of the method. However, the majority of relatively compliant polling stations observed in the Highlands were observed in the afternoon, suggesting the recorded voting method was in place for most of the station's operating time, as reversion to VM1 or VM2 from more severely disrupted methods appears to be rare.

Observer errors

As noted above, interpretation of the form features can differ between areas, but observers are also known to make mistakes or demonstrate an inability to classify the polling process. This is evident, for instance, where the observer selects a method and leaves a written record of the voting method that directly contradicts their choice. Unfortunately, such records are not always present in cases where the selected method is implausible in light of other choices: for instance, the selection of 'polling officials voted' in Northern (Oro) Province stations where we see an absence of offences, interference or persons turned away as not found on roll. We have revised the voting method class where there is strong evidence to do so *apart* from form choices, that is to say, where there is a written record or where independent information was available. However, we consider observer error to be an important source of noise in the data. The most common forms of observer error are expected to be the following:

- Recording 'only a few select individuals voted' in cases of roll failure
- Selection of 'polling officials marked ballots' in cases of voter assistance
- Selection of 'orderly voting' where there is a queue but no voter identification
- Selection of 'next' voting where there is voter identification
- Selection of '*man-meri*' voting where separate gender queues with voter identification were present
- Selection of '*tanim tebol*' in cases of conflict or violence that do not lead to an alteration of the voting procedure.

Appendix B: Summary tables

Table B1: Features selected by observers by region for the 2022 National General Election

Feature	Highlands	Islands	Momase	NCD	Southern	Overall
Orderly line with voter identification	95	166	95	71	175	602
Roll call	49	55	149	11	27	291
Order of arrival without voter identification	87	9	23	22	17	158
‘Next’ voting	38	1	15	16	3	73
‘Man-meri’ voting	32	6	27	7	7	79
‘Tally’ voting	22	2	4	3	5	36
Household distribution to individuals	18	1	8	–	1	28
Household bundles	35	3	2	–	2	42
Only key individuals voted	116	–	7	–	7	130
Polling officials filled ballots	69	3	2	–	11	85
<i>Tanim tebol</i>	107	–	3	7	1	118
Boxes hijacked	21	–	–	–	–	21
Boxes destroyed	3	–	–	–	–	3
Other	36	–	–	4	–	40

Source: Authors’ compiled data.

Table B2: Voting method classes in the New Guinea Highlands, 2012 to 2022, by province (continues next page)

Province	Year	Voting method class (%)						Not classified
		VM1	VM2	VM3	VM4	VM5	VM6	
Chimbu	2012	–	–	56	44	–	–	–
	2017	2	8	59	2	27	2	–
	2022	–	6	24	3	68	–	–
EHP	2012	11	11	78	–	–	–	–
	2017	–	–	66	3	26	–	5
	2022	13	–	16	3	66	–	3
Enga	2012	–	4	–	65	30	–	–
	2017	–	–	–	37	53	10	–
	2022	3	8	8	11	47	24	–
Hela	2012	–	–	36	19	28	17	–
	2017	3	14	25	–	47	8	3
	2022	4	2	10	8	61	14	–
Jiwaka	2012	–	–	67	7	27	–	–
	2017*							
	2022	–	–	20	–	40	40	–

Notes: EHP Eastern Highlands Province.

* No observations took place in Jiwaka in 2017.

Source: Authors’ compiled data.

Table B2: (continued) Voting method classes in the New Guinea Highlands, 2012 to 2022, by province

Province	Year	Voting method class (%)						Not classified
		VM1	VM2	VM3	VM4	VM5	VM6	
SHP	2012	–	6	17	33	33	–	11
	2017	5	30	20	10	25	10	–
	2022	10	17	8	13	46	4	3
WHP	2012	–	–	46	–	54	–	–
	2017	2	–	25	5	57	11	–
	2022	7	4	9	2	61	11	7

Notes: SHP = Southern Highlands Province; WHP = Western Highlands Province.

Source: Authors' compiled data.

Table B3: Selected polling day features by voting method class, Highlands vs other regions, 2022 election

Voting method class	Region	Ink applied (%)	Ink checked (%)	Secret ballot (%)	Zero NFOR (%)	Violent incident (%)	Forced assistance (%)	Multiple voting (%)	Underage voting (%)
VM1	Highlands	88	79	59	71	12	18	29	29
	Others	97	86	89	20	6	3	9	9
VM2	Highlands	60	65	60	40	5	10	20	20
	Others	97	87	76	25	5	5	16	16
VM3	Highlands	22	16	28	81	22	6	44	44
	Others	82	70	60	32	16	4	23	23
VM4+	Highlands	12	13	17	66	29	8	36	36
	Others	63	56	88	25	13	13	50	50

Source: Authors' compiled data.

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