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Special study on vote inflation and ballot box stuffing

478,000 votes and 5 AR seats were taken away from Renamo

It is alleged by the opposition that the vote for Frelimo and its presidential candidate was significantly inflated. In this study we see if we can identify and quantify such vote inflation.

This investigation uses the data from the EISA parallel vote tabulation (PVT) which covered 2,507 of the 20,162 polling stations inside Mozambique, 12.4%. We will also draw on other data from the 2014 election and the 2017 national population census.

We will consider the following possible areas of misconduct and vote inflation in the Presidential election:

1. Overt ballot box stuffing, as measured by exceptionally high voter turnout and high votes for one candidate, based on the PVT.

2. Votes taken away from a candidate by invalidating them, or otherwise including them with blank or invalid (nulo) votes, based on the PVT.

3. Assessing the difference between total vote for president and parliament to see if it shows ballot box stuffing in the presidential race.

4. Assessment of over-registration in South Africa.

5. Assessment of under-registration in Zambézia

6. A closer look at Gaza to see if "voters" who registered but who could not exist ("ghost voters") actually voted.

Votes improperly given to Nyusi or taken from the opposition

| | Given to Nyusi | Taken from opposition | Total |
|--|----------------|-----------------------|----------------|
| Ballot box stuffing where turnout over 75% | 90,280 | | |
| Using invalid and blank votes to cancel opposition votes | | 60,945 | |
| Voted for president but not parliament | 57,510 | | |
| Inflated registration in Africa | 62,260 | | |
| Zambézia under registration | | 45,000 | |
| Gaza ghost voters | 161,641 | | |
| | | | |
| TOTAL | 371,691 | 105,945 | 477,636 |

We conclude that the margin of victory of Frelimo Presidential candidate Filipe Nyusi was improperly inflated by at least 477,636 votes, 11% of Nyusi's total vote. The table below summarizes our conclusions. We also show that Renamo lost 3 to 5 parliament seats to ballot box stuffing and other misconduct.

This study is subject to four general caveats, which lead to an significant underestimate of vote inflation.

First, much of the study is based on PVT observer data, and we believe that polling station staff are more likely to be careful and on their best behaviour when an observer is present. So unobserved polling stations could have more misconduct.

Second, the very nature of these tests is that they only identify relatively large fraud. Widespread small fraud which we could not identify could be equal in size or larger.

Third, ballot papers should be tightly controlled and by law must remain inside the polling stations.

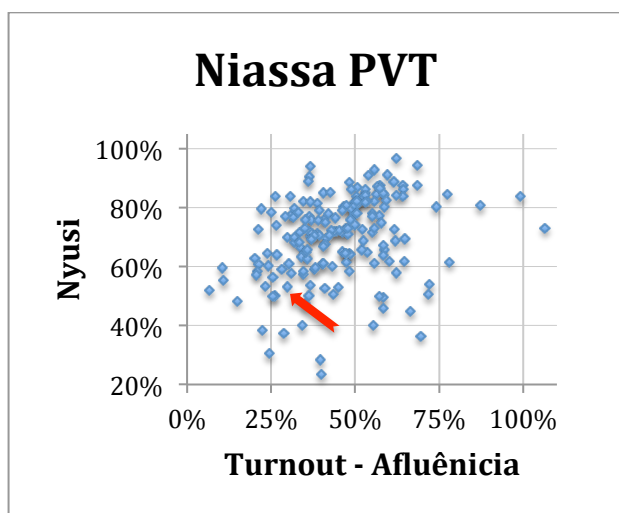
In this election there were widespread reports of people outside polling stations with ballot papers, some already marked for Frelimo, which indicates small scale ballot box stuffing of a just a few ballot papers each time. This has occurred in the past as well, but there are differences from past elections. More people are being caught. And in the past people tended to simply add presidential votes, which could be detected by comparing vote totals, but in this election the photographs of people caught show them with illegal ballot papers for president as well as parliament. This is intended to make it harder to identify ballot box stuffing of a handful of extra votes in each box.

Fourth, in Gaza and Zambézia the PVT was restricted because election commissions illegally banned 3000 civil society observers who were to have done the PVT. This reduced coverage to 8% of polling stations in Gaza and 6% in Zambézia compared to the 12.5% national average. In the other 9 provinces, coverage was adequate.

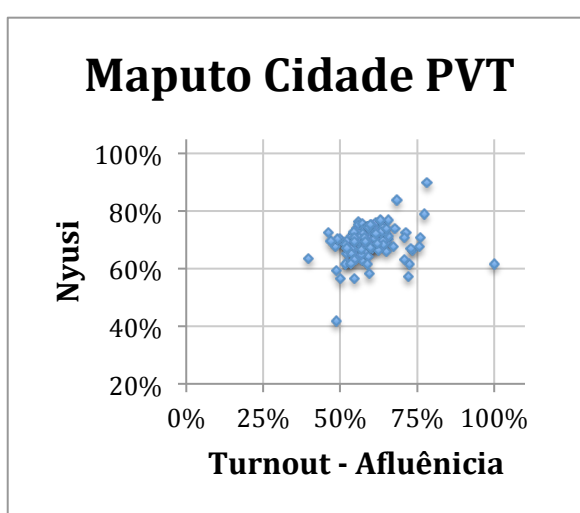
1. Ballot box "stuffing"

Ballot box "stuffing" traditionally involves putting extra ballot papers in the ballot box. But in Mozambique it more often means changing the results sheet ("edital"), often by adding hundreds of votes. So the test is to look for exceptionally high turnout.

To help understand ballot box stuffing, we use an important visual aid called a scatter diagram. Each point in our scatter diagrams is a specific, identifiable PVT polling station and its location is determined by two numbers, the %age vote for Frelimo candidate Filipe Nyusi (vertical axis) and the turnout (the %age of registered voters who said to have actually voted).



First we look at Niassa. In the Niassa PVT diagram, the arrow points to a PVT polling station which had a 30% turnout (horizontal axis) and 53% vote for Nyusi (vertical axis). Thus the arrow points to a polling station at Marimbassa primary school, Insaca, Mecanhelas, Niassa where the PVT reported those numbers.



Scatter diagrams are useful because they gives a visual representation of data. We can "see" the polling stations. This is particularly important because we can "see: polling stations with improper and excessive turnout.

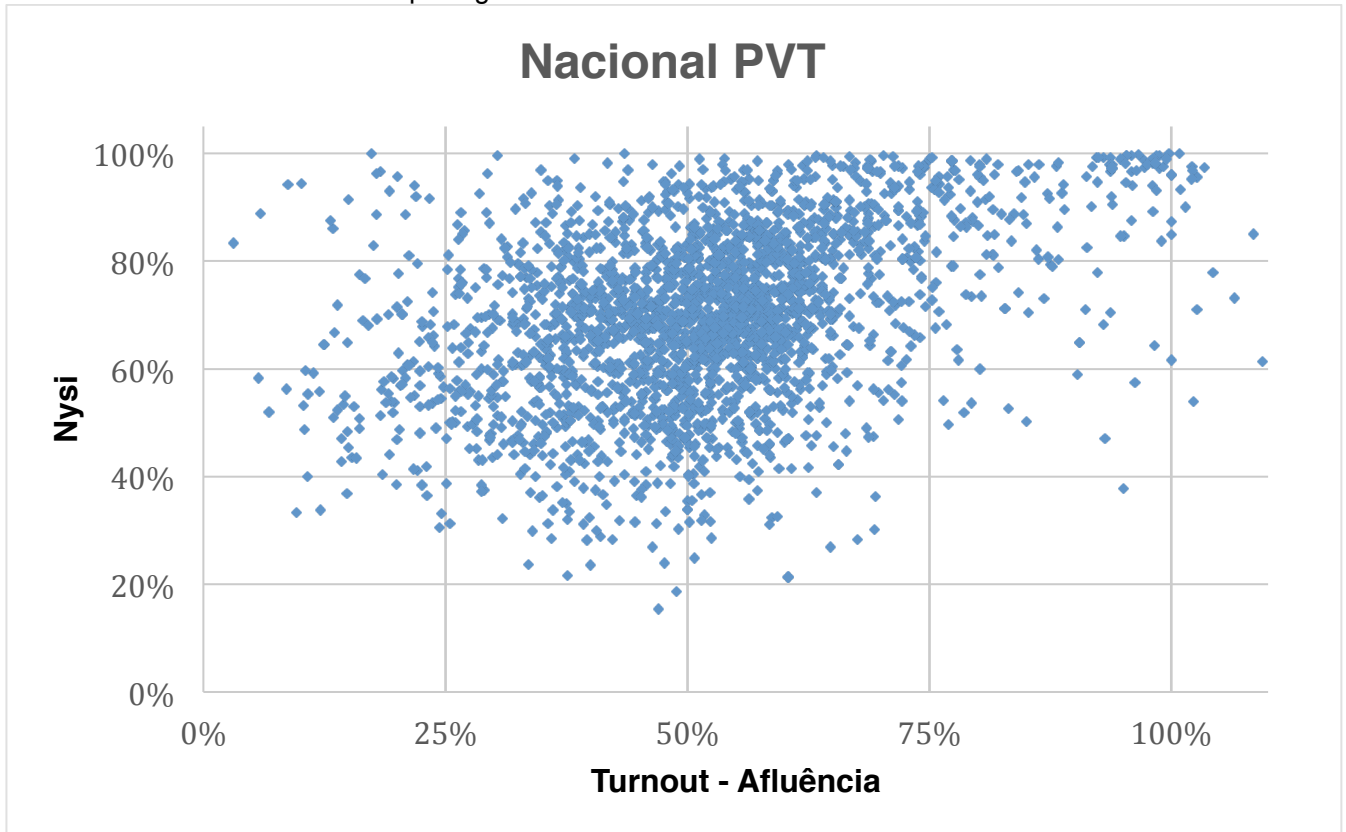
Electoral data should have what is called a "normal distribution", which means it that most points are near the mean and are equally

distributed on the two sides of the mean. Thus our polling stations should be concentrated in the centre of the scatter diagram. We show here the scatter diagrams of the two provinces in this election with the most normal distribution of PVT polling stations, Maputo City and Niassa.

The CNE results say that Niassa had a 44% turnout and 68% of the presidential vote was for Nyusi. If we look at the PVT scatter diagram, that is right at the centre of most of the polling stations.

The PVT scatter chart for Maputo City shows a similar distribution.

Now, if we look at the scatter diagram for all of Mozambique for all of the polling stations observed by EISA in the PVT, we see a pattern that is not a "normal distribution". Instead it is skewed toward the upper right of the scatter plot, with many polling stations that have a very high vote for Nyusi and at the same time a high turnout.



Turnout clusters around 50% and the vote for Nyusi at just over 70%, as the CNE results suggest they should. But looking at the upper right hand corner, we can see two things that do not appear in the relatively normal distribution of Niassa and Maputo City.

First is the cluster of polling stations in the upper right, with over 90% turnout and over 95% vote for Nyusi. Second, to the left of that group is a large number of polling stations with a vote for Nyusi of over 95%. Neither of these is credible and we argue that the polling stations in the upper right of the chart were victims of ballot box stuffing. Based on this we take 75% turnout as the cut-off point, and we argue that any turnout over 75% reflects ballot box stuffing. Extrapolating the PVT data shows that 7.5% polling stations (1510 actual polling stations) had over 75% turnout, which we estimate to be 90,280 improper votes for Filipe Nyusi.

In past elections, Frelimo has used areas where it has very strong support to stuff ballot boxes to increase the traditional Frelimo vote for President (which is totalled nationally), and where their large

local support bases reduces the chance of criticism. In the national scatter diagram the large number of polling stations in the upper right corner, meaning very high turnout and very high vote for Frelimo's candidate, suggests this pattern continues. As the scatter diagrams show, Tete and Gaza were the provinces with most ballot box stuffing in the past, and they lead again; in Tete 21% of ballot boxes had more than 75% turnout and in Gaza 20%. In Tete, as before, ballot box stuffing is centred on Changara district, as well as Marara and Cahora Bassa. In Gaza is it Bilene district, followed by Chokwe and Guijá. Next are Inhambane (10% of polling stations) and Sofala (9%). In all of these places, the goal is to increase the total vote for the Frelimo presidential candidate, and the very high turnouts - sometimes over 100% - are in polling stations with very low votes for the opposition.

Historically, and in the cases discussed above, false very high turnouts have been recorded in places where support for Frelimo was strong, and a fake results sheet could be written without protest.

This remains the dominant pattern in this election, but there is also a new pattern. Thus it appears that in some polling stations where the opposition receives a significant vote, the edital has been changed to add enough votes Nyusi to ensure he has more votes than Momade. Looking at the PVT scatter diagram for Nampula (where 4% of polling stations have turnout over 75%), there is a scattering of high turnout polling stations to the right of the chart, but at the top of the chart Nampula has very few ballot boxes with over 82% for Nyusi. That seems to be because Momade received a significant vote, so Nyusi could not be given 100%.

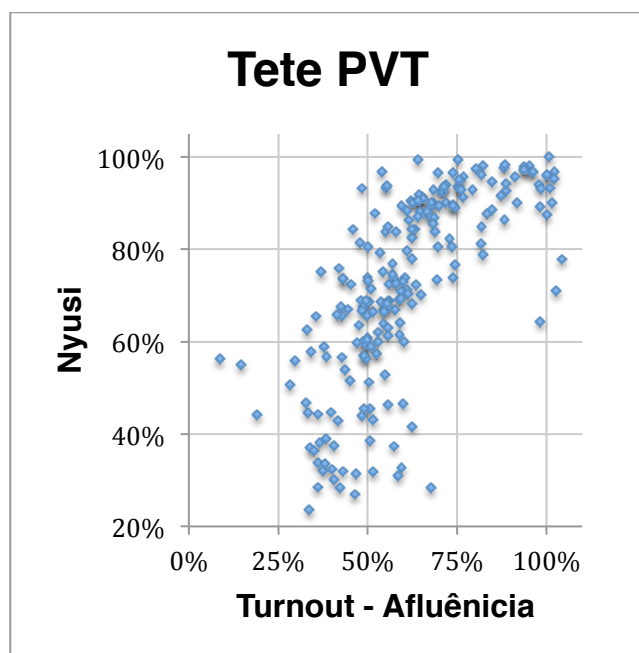
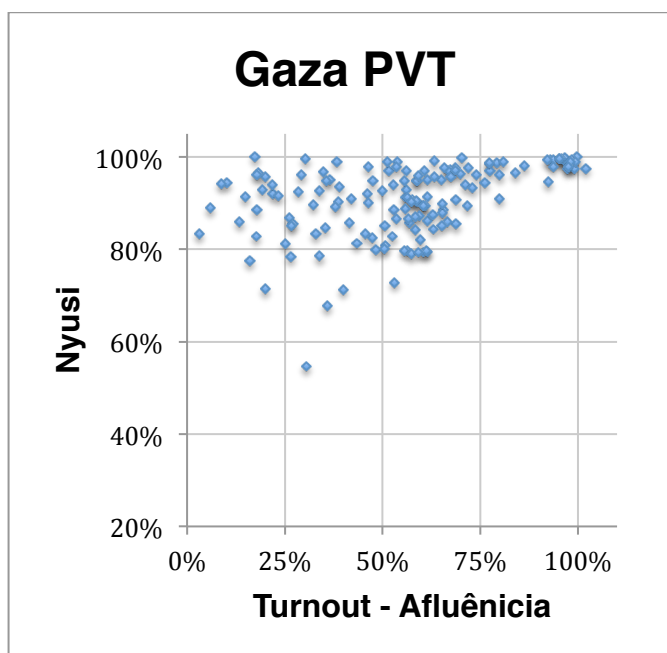
Extrapolation: We estimate the number of additional votes for Nyusi in ballot boxes with very high turnout by extrapolating the PVT. Based on the discussion above, we assume all votes over 75% turnout are stuffed ballots for Nyusi. We assume that the PVT is largely representative of the total vote (subject to the caveats in the introduction). So we increase the number of polling stations and the number of votes according to the size of the provincial sample, as shown in this table:

We conclude that 90.280 votes from Frelimo candidate Filipe Nyusi were improperly stuffed into ballot boxes or by adding to results sheets in polling stations with over 75% turnout.

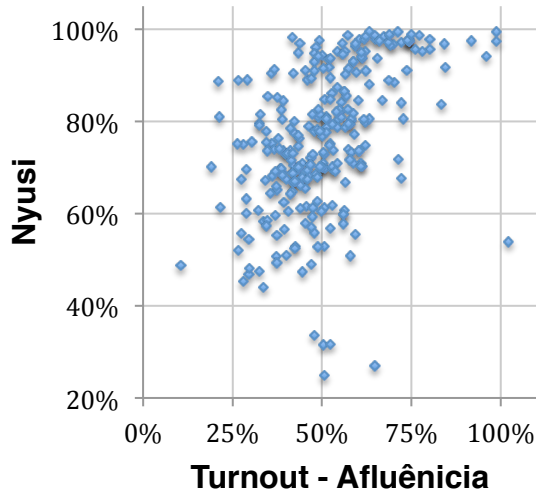
Table 1: Polling stations with over 75% turnout

| | A | B | C | D | E | F | G | H | I | J | K |
|------------------|------------------------|----------------------|------------------------|-------------------|-----------------------|--------------|---------------------------|-----------------------------|-------------------------|----------------|-------------------|
| | | | =B/A | | | =E/D | | =G/C | =G/A | | =J/F |
| | Total polling stations | Polling stations obs | % polling stations obs | Registered voters | Registered voters obs | % voters obs | Obs polling stations >75% | Total polling stations >75% | % polling stations >75% | Obs votes >75% | Total voters >75% |
| Niassa | 1,198 | 182 | 15.2% | 677,764 | 123,831 | 18.3% | 5 | 33 | 2.8% | 156 | 854 |
| Cabo Delgado | 1,860 | 274 | 14.7% | 1,185,024 | 190,646 | 16.1% | 13 | 88 | 4.7% | 822 | 5,109 |
| Nampula | 3,486 | 517 | 14.8% | 2,361,973 | 373,997 | 15.8% | 20 | 135 | 3.9% | 1,288 | 8,134 |
| Zambézia | 3,219 | 190 | 5.9% | 2,140,125 | 136,620 | 6.4% | 4 | 68 | 2.1% | 171 | 2,679 |
| Tete | 1,906 | 218 | 11.4% | 1,119,378 | 149,704 | 13.4% | 46 | 402 | 21.1% | 3,345 | 25,011 |
| Manica | 1,333 | 187 | 14.0% | 893,426 | 132,423 | 14.8% | 16 | 114 | 8.6% | 625 | 4,217 |
| Sofala | 1,491 | 153 | 10.3% | 1,028,374 | 113,692 | 11.1% | 13 | 127 | 8.5% | 721 | 6,522 |
| Inhambane | 1,177 | 221 | 18.8% | 657,142 | 137,826 | 21.0% | 22 | 117 | 9.9% | 828 | 3,948 |
| Gaza | 1,845 | 152 | 8.2% | 1,166,011 | 108,707 | 9.3% | 30 | 364 | 19.7% | 2,984 | 32,007 |
| Maputo Província | 1,665 | 287 | 17.2% | 1,015,798 | 205,731 | 20.3% | 4 | 23 | 1.4% | 85 | 420 |
| Maputo Cidade | 982 | 126 | 12.8% | 700,906 | 95,045 | 13.6% | 5 | 39 | 4.0% | 187 | 1,379 |
| Nacional | 20,162 | 2,507 | 12.4% | 12,945,921 | 1,768,222 | 13.7% | 178 | 1510 | 7.5% | 11,212 | 90,280 |

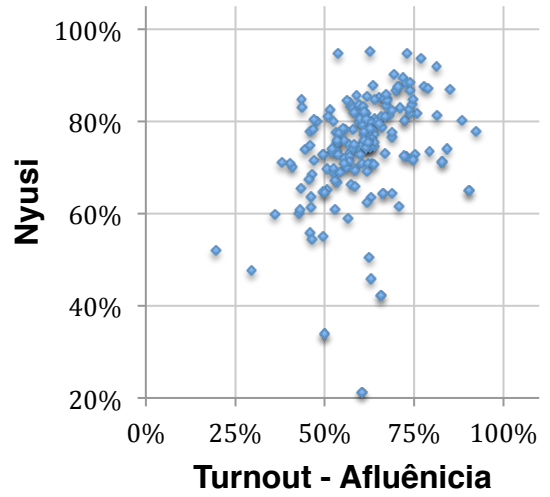
Obs=observed by PVT observers Columns A and D, CNE data Columns G and H, PVT observer reports



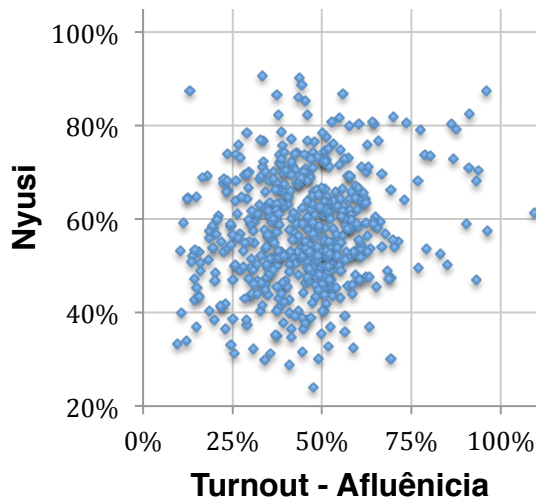
Cabo Delgado PVT



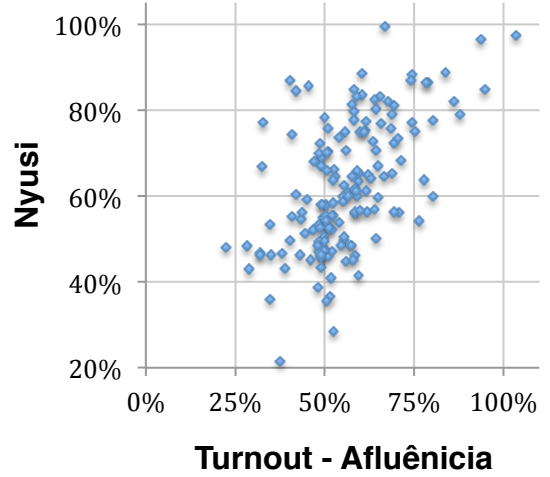
Manica PVT



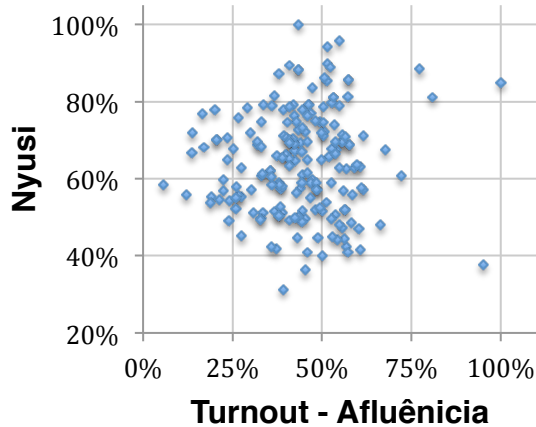
Nampula PVT



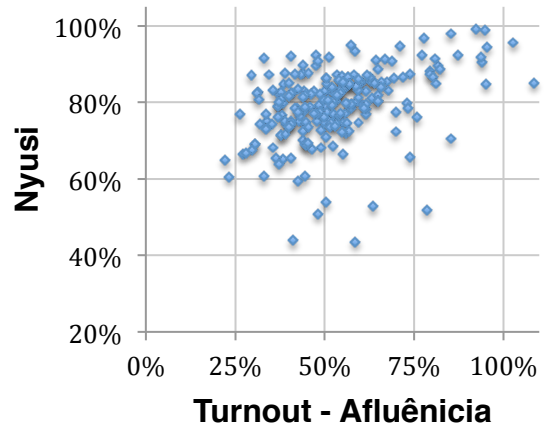
Sofala PVT

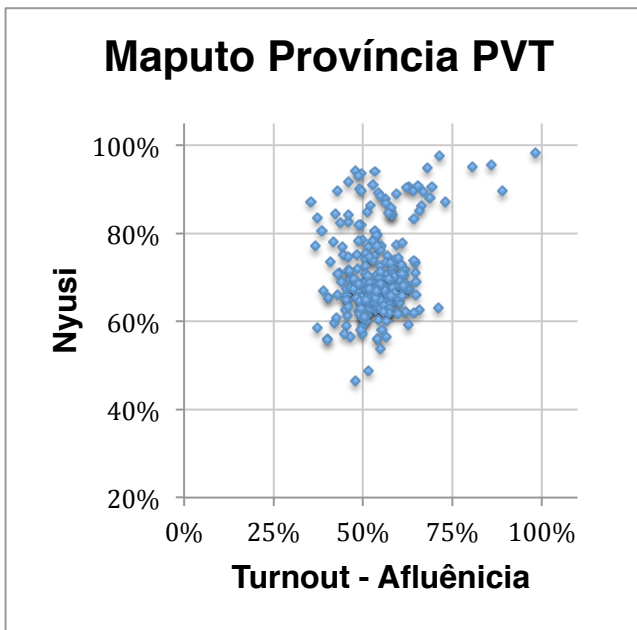


Zambézia PVT



Inhambane PVT





2. Votes taken away from opposition

Two kinds of votes are excluded during the counting, blank votes (brancos) in which no candidate is indicated, and invalid votes (nulos) in which it is not clear which candidate has been chosen or where a word has been written on the ballot paper. In the CNE results for this election there were 4.2% blank votes and 3.3% invalid votes. This is similar to 2014, when the official results gave 5.4% blank and 3.2% invalid. Blank votes can be a form of protest or of indecision. In the past invalid votes were reconsidered by the CNE, in part because polling stations often interpreted the law too strictly; the law says a vote is valid if the intent of the voter is clear (and no words are written on the ballot paper). In the 2014 presidential election, polling stations considered 4.4% of ballot papers invalid, but the CNE accepted more than one fourth of those, leaving 3.2% invalid.

The reconsideration process was open in 2014 and earlier elections, and it was obvious that two things had occurred in the polling stations. As opposition parties complained repeatedly, opposition ballot papers had been made invalid by a member of the polling station staff adding a fingerprint for a second candidate; this was obvious in a significant number of occurrences where a series of a dozen or more ballot papers would have the same extra fingerprint in exactly the same place on the ballot paper. In 2014 a new version was discovered in which a group of valid opposition ballot papers had simply been included with invalid votes, probably moved from one pile on the floor to

another in the dark during the count late at night in the polling station. A significant number of invalid votes accepted as valid by the CNE in 2014 were obviously valid votes in the invalid pile (and not decisions which were simply too strict an interpretation of the law). However, in changes in the law last year, the requalification of invalid votes has been eliminated, so this sort of fraud will not be caught.

We consider blank and invalid votes in the 3% to 5% range to be reasonable and normal. However an inspection of the PVT reports shows some polling stations with extremely high numbers. A polling station at Monequera primary school, Ulongué, Angonia district, in Tete had 45% invalid votes. There were polling stations with more than 25% invalid votes in Tete (especially Angonia and Maravia), Nampula (Mossuril), Niassa (Mecanhelas), Zambézia (Molumbo). and Manica.

There were only four candidates on the presidential ballot paper and we cannot believe that such high portions of people could make mistakes, even if they are illiterate.

Blank votes also showed unusually high levels in some places. Did 32% of voters at a polling station in Muhumbua primary school in Muau town, Niassa, really not know who to choose? There were polling stations with more than 20% blank votes in Cabo Delgado (Balama, Namuno), Nampula (Erata-Namapa, Lalaua, Nacarôa) and Zambézia.

We assume that blank and invalid votes are unacceptable if they are double the national average, so we assume that all blank votes over 8.5% were taken from the opposition and invalid votes over 6.6% were taken from the opposition - ballot papers put in the wrong pile or votes changed on the result sheets (editais).

We found less large scale ballot box stuffing in the four northern provinces, Niassa, Cabo Delgado, Nampula and Zambézia. Instead, misuse of invalid and blank ballots is more common in the north. Zambézia leads in invalid votes, with excessively high invalid ballot papers in 21% of polling stations, followed by Tete (13%). and Niassa, Nampula and Inhamabane (all 10%). Cabo Delgado leads on blank votes, with an incredible 36% of polling stations having excessively high blank votes, followed by Zambézia (23%), Nampula (22%), Tete (11%) and Niassa (10%).

As with ballot box stuffing based on excessive turnout, we use the same technique to extrapolate the PVT data to all polling stations, working by province. We make the assumption that all blank votes over 8.5% were taken from the opposition and invalid votes over 6.6% were taken from the opposition.

Table 2: Polling stations with excessive invalid or blank votes

| | Polling stations observed | | | | Votes | | | |
|-----------------|--|-------------|---|--------------|------------------------|--------------------------|-----------------------|-------------------------|
| | G | H | I | J | K | L | M | N |
| | | =G/B | | =I/B | | =K/F | | =M/F |
| | Obs polling stations w/ invalid votes>6.6% | | Obs polling stations w/blank votes>8.5% | | Obs invalid votes>6.6% | Total invalid votes>6.6% | Obs blank votes >8.5% | Total blank votes >8.5% |
| Niassa | 19 | 10.4% | 19 | 10.4% | 283 | 1,549 | 145 | 794 |
| Cabo Delgado | 17 | 6.2% | 99 | 36.1% | 102 | 634 | 1,317 | 8186 |
| Nampula | 52 | 10.1% | 115 | 22.2% | 898 | 5,671 | 1,391 | 8785 |
| Zambézia | 40 | 21.1% | 44 | 23.2% | 886 | 13,879 | 443 | 6940 |
| Tete | 29 | 13.3% | 24 | 11.0% | 767 | 5,735 | 165 | 1234 |
| Manica | 9 | 4.8% | 13 | 7.0% | 244 | 1,646 | 73 | 493 |
| Sofala | 14 | 9.2% | 11 | 7.2% | 346 | 3,130 | 98 | 886 |
| Inhambane | 22 | 10.0% | 12 | 5.4% | 91 | 434 | 82 | 391 |
| Gaza | 1 | 0.7% | 1 | 0.7% | 23 | 247 | 12 | 129 |
| Maputo Prov | 4 | 1.4% | 0 | 0.0% | 37 | 183 | 0 | 0 |
| Maputo Ciity | 0 | 0.0% | 0 | 0.0% | 0 | 0 | 0 | 0 |
| Nacional | 207 | 8.3% | 338 | 13.5% | 3,677 | 33,107 | 3,726 | 27,838 |

Obs = observed by PVT observer Columns A-F are the same as in Table 1 33,107 + 27,838 = 60,945

The table above shows that 60,945 votes were improperly removed from the opposition.

We note that the table above only counts one form of gross fraud, because we are only looking at polling stations with double the average numbers of extra blank or invalid votes - 4.2% of blank votes and 3.2% of invalid votes above average. In a polling station of 800 registered voters, that is 35 blank or 26 invalid ballot papers. This only catches cases where handfuls of ballot papers have been invalidated or removed from opposition piles. We note three forms of fraud which are missed by this estimation:

First, Moving 5 or 10 ballot papers would not be noticed by this calculation, yet would be very large in total if it occurred across many polling stations.

Second, we have no way of estimating votes moved from Mamode to Nyusi. Observers saw small differences between the results written on the final results sheet (editais) and the tick marks put

on the classroom blackboard during the count. And there are observer reports of ballot papers being moved in the dark late at night from the Mamode pile to the Nyusi pile of ballot papers on the polling station floor.

Third, the official observer manual shows a picture of a blackboard in which the number of tick marks does not correspond to the total written on the blackboard; tick marks are grouped in fives, and some were not counted when the sum was done. Some polling station staff may have taken this as an instruction on how to reduce opposition votes.

These are small differences, perhaps 10-25 votes, which are too small to be seen in statistical tests but are large if they occurred at many polling stations.

We must have missed as many votes taken from the opposition in these ways as we found in the calculation above.

3. Presidential vote vs parliamentary vote

57,510 more people voted for President than for parliament (AR). Although this is only 0.4% of the total vote, the actual voting is watched closely and there were no reports of voters putting a ballot paper into the presidential box and not in the parliamentary box.

In past elections, there was more ballot box stuffing in the presidential election than in parliamentary, leading to a difference in the number of votes. As we note in the introduction to

this report, there are many more anecdotal reports of individuals putting a few extra ballot papers into the box, along with their own vote. This is very hard to measure. We assume as in the past there were

more extra votes for president than for parliament. **We therefore take that extra 57,510 votes as ballot box stuffing for president.**

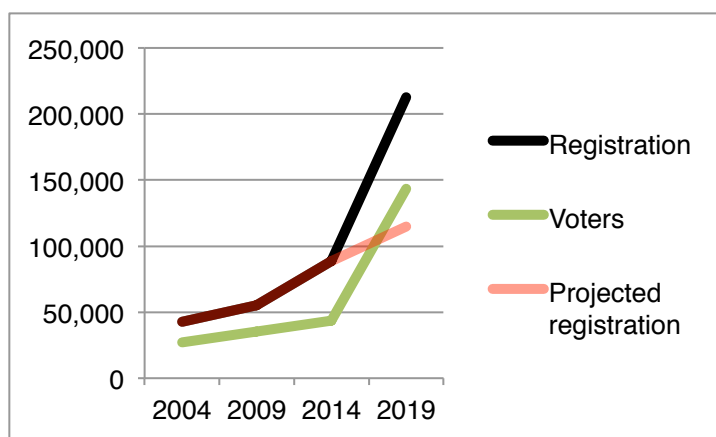
This is fewer than 3 votes per polling station, and might be suggestive of similar physical ballot box stuffing in all three elections. But we have no evidence for this, so we limit ourselves to taking the 57,510 extra votes as stuffed ballots.

President Nyusi gained 316,071 votes more than Frelimo candidates for Parliament, 2.2% of the total vote. The CNE final result give Nyusi 73.4% and Frelimo 71.2%. It appears that the fall can be explained in two ways. First the very long AR ballot paper may have confused some voters, and there

was a substantial increase in blank votes (from 4.2% to 6.2%) and invalid votes (from 3.3% to 4.1%). Second, the difference between Nyusi and Frelimo was largest in Maputo city and province, where the Frelimo vote fell by 78,000 while Renamo gained 50,000 and small parties gained 20,000. In Inhambane there were also larger Frelimo losses between the two polls. But in the other 8 provinces, the differences between Nyusi and Frelimo were small. Taken together, we see no further evidence of ballot box stuffing in the comparison of the presidential and parliamentary vote.

4. Inflated registration in Africa

Africa with 212,633 voters and the rest of the world (actually Europe) with 2,479 voters each elect one member of parliament, which means they are largely ignored in analyses. However the votes for President are included in the total presidential vote. Registration by the diaspora in Africa has increased steadily, and people turned up to vote. However there is very little external monitoring of the registration in Africa, and little or no observation of the elections. Actions this year suggest the registration and turnout may be inflated. STAE predicted that that 114,813 voters would register; in fact the final registration was 212,633. Turnout was a record 67%, 100,000 more people voted this year than five years ago, and 92% of them voted for Nyusi.



The table below gives the basic statistics:

Table 3: Diaspora registration and voting in Africa

| year | STAE reg. prediction | registration | vote | vote for Nyusi | Turnout | increased registration | projected increase | increased vote |
|------|----------------------|--------------|---------|----------------|---------|------------------------|--------------------|----------------|
| 2004 | | 42,739 | 27,138 | | 63% | | | |
| 2009 | | 55,206 | 35,321 | 95.8% | 64% | 12,467 | | 8,183 |
| 2014 | | 88,622 | 43,702 | 91.1% | 49% | 33,416 | | 8,381 |
| 2019 | 114,813 | 212,633 | 143,479 | 92.8% | 67% | 124,011 | 26,191 | 99,777 |

The dramatic change is also shown in the chart. STAE's projected increase of 26,000 voters is similar to previous years, and seems reasonable. But 100,000 extra voters seems impossible. The chart shows registration and voting, along with STAE's projection for this year. The 2017 national population census did not cover the diaspora, so it cannot be used as guidance.

We propose to accept as reasonable the STAE projection of registration, the average turnout of the

three previous elections (59%) and the average percentage vote for Nyusi for the previous two elections (93.4%). Thus the projected vote for Nyusi in Africa is 68,338. The CNE final results says the Nyusi vote in Africa was 130,598. **Therefore we consider the extra 62,260 votes to be ballot box stuffing for Nyusi.**

5. Zambézia

Registration targets in 2018 and 2019 did not follow the estimate of voting age adults provided to CNE by the National Statistics Institute from the 2017 national population census. This table highlights the two problem provinces:

Table 4: 2018 and 2019 registration by province

| | 2019 Voting Age Population (VaP) | CNE Targets | Targets as % of VaP | Registered Voters | Voters as % of VaP | Voters as % of Targets |
|--------------|----------------------------------|-------------------|---------------------|-------------------|--------------------|------------------------|
| Niassa | 938,273 | 845,219 | 90.08% | 677,764 | 72.24% | 80.19% |
| Cabo Delgado | 1,302,322 | 1,176,752 | 90.36% | 1,185,024 | 90.99% | 100.70% |
| Nampula | 3,085,692 | 2,793,912 | 90.54% | 2,361,973 | 76.55% | 84.54% |
| Zambézia | 2,733,532 | 2,098,542 | 76.77% | 2,140,125 | 78.29% | 101.98% |
| Tete | 1,455,999 | 1,311,683 | 90.09% | 1,119,378 | 76.88% | 85.34% |
| Manica | 1,063,767 | 949,279 | 89.24% | 893,426 | 83.99% | 94.12% |
| Sofala | 1,286,737 | 1,149,184 | 89.31% | 1,028,374 | 79.92% | 89.49% |
| Inhambane | 893,763 | 799,453 | 89.45% | 657,142 | 73.53% | 82.20% |
| Gaza | 836,581 | 1,144,337 | 136.79% | 1,166,011 | 139.38% | 101.89% |
| Maputo P | 1,288,595 | 1,161,225 | 90.12% | 1,015,798 | 78.83% | 87.48% |
| Maputo C | 807,509 | 736,731 | 91.24% | 700,906 | 86.80% | 95.14% |
| Total | 15,692,770 | 14,166,317 | 90.27% | 12,945,921 | 82.50% | 91.39% |

For nine provinces the registration target was 89%-91% of voting age population, which seems reasonable. But for Zambézia, a traditionally opposition province, the target was only 77% of voting age adults, and there were continuous complaints during the April-May 2019 registration period of registration brigades not available or of the solar panels not being available. In many places people were not able to register. Nonetheless, Zambézia hit 102% of its reduced target. Targets determine the allocation of registration brigades and equipment, so Zambézia will have had relatively fewer registration brigades. And there were repeated complaints of political interference in the registration process, which meant that registration was particularly reduced in Renamo areas. If the target had been set at 90% of

voting age adults, as was done for most other provinces, then the target would have been 2,460,000. If 95% of that target has been reached, then 2,337,000 people would have been registered, an increase of 197,000 registered voters. Zambézia historically has the lowest turnout of Mozambican provinces, and was 43% this year. So about 85,000 of these extra people would have voted. Some of these votes would have gone to Nyusi, but we assume that most voters who were wanted to register, but could not, would have voted for Momade. We arbitrarily decide that 20,000 would have voted for Nyusi and 65,000 for Momade, giving him a 45,000 majority. **Therefore we say that under-registration took 45,000 votes from Momade.**

6. Gaza

The most discussed on-going scandal of this election has been the over registration in Gaza, where 1,166,001 people were registered, which is 329,430 more people than the voting age population of Gaza, 836,581, according to the National Statistics Institute. Both the head of the National Statistics Institute and the head of the census have been dismissed, for refusing to bend the census numbers to match the registration.

If we follow the same basis that we used in Zambézia, above, that the target should be 90% of voting age adults and that 95% of them would be registered, then Gaza should only have 715,277 voters. Thus the excess is 450,724 voters - that is 3.4% of the entire national register book. We believe the 2017 census which has won praise, so

these people cannot exist, and thus we call them "ghost voters".

Following the model we have used elsewhere, we should multiply by Gaza's very high turnout (63.8%) and the high percentage of votes for Nyusi (94.7%), which would give 272,321 ghost votes for Nyusi. Instead we look more closely at districts, and suggest some ghosts were ashamed to vote.

We note that 85% of the ghosts are in the five largest districts, and we will concentrate on them. The next questions is to see if the ghosts voted, and for whom. We note that in four of our five districts (not Chokwe) turnout dropped dramatically. We attribute this to ghosts not voting, particularly where there were observers. PVT observers noted some polling stations where no one voted except the staff.

We make a series of assumptions. First, we make the assumption that real voters are those we counted above as a realistic target. Second, we make the assumption that they maintain the same turnout as in 2014. That means the remaining voters are ghosts, and we assume that all ghosts vote for Nyusi.

We believe that of 450,724 ghosts, only 161,641 actually voted.

Table 5. Gaza districts population and registration

| | 2019 Voting Age Population (VaP) | Target | Total registered | Target as % of 2019 VaP | Total as % of 2019 VaP | Total as % of 2019 target | Realistic target = VAP*.9*.95 | Ghosts |
|---------------|----------------------------------|-----------|------------------|-------------------------|------------------------|---------------------------|-------------------------------|---------|
| Xai-Xai | 84,139 | 139,944 | 147,027 | 166% | 175% | 105% | 71,939 | 75,088 |
| Chókwè | 141,230 | 237,220 | 238,447 | 168% | 169% | 101% | 120,752 | 117,695 |
| Mandlakazi | 82,646 | 129,142 | 131,615 | 156% | 159% | 102% | 70,662 | 60,953 |
| Bilene | 88,504 | 120,365 | 125,758 | 136% | 142% | 104% | 75,671 | 50,087 |
| Chibuto | 129,905 | 174,038 | 181,793 | 134% | 140% | 104% | 111,069 | 70,724 |
| | | | | | | | | |
| Chicualacuala | 16,140 | 23,053 | 18,262 | 143% | 113% | 79% | 13,800 | 4,462 |
| Chongoene | 71,422 | 89,254 | 82,443 | 125% | 115% | 92% | 61,066 | 21,377 |
| Limpopo | 89,386 | 101,462 | 105,095 | 114% | 118% | 104% | 76,425 | 28,670 |
| Massangena | 12,912 | 14,518 | 12,287 | 112% | 95% | 85% | 11,040 | 1,247 |
| Chigubo | 13,666 | 12,577 | 13,982 | 92% | 102% | 111% | 11,684 | 2,298 |
| Guijá | 55,216 | 50,399 | 52,284 | 91% | 95% | 104% | 47,210 | 5,074 |
| Massingir | 21,927 | 19,314 | 21,923 | 88% | 100% | 114% | 18,748 | 3,175 |
| Mabalane | 25,797 | 19,837 | 19,435 | 77% | 75% | 98% | 22,056 | -2,621 |
| Mapai | 17,538 | 13,214 | 15,660 | 75% | 89% | 119% | 14,995 | 665 |
| | | | | | | | | |
| Total | 850,428 | 1,144,337 | 1,166,011 | 135% | 137% | 102% | 727,116 | 438,895 |

374,547 85%

64,348 15%

Table 6: Real and ghost voters

| | A | B | C | D | E | F | G |
|------------|---------|------|-------------------|---------|------------|--------|--------|
| | | | | | =B*(C+D) | =A*C | =E-F |
| | Turnout | | Registered voters | | 2019 voted | | |
| | 2014 | 2019 | Real | Ghosts | Total | Real | Ghosts |
| Xai-Xai | 61% | 41% | 71,939 | 75,088 | 60,281 | 43,883 | 16,398 |
| Chokwe | 69% | 68% | 120,752 | 117,695 | 162,144 | 83,319 | 78,825 |
| Mandlakazi | 55% | 46% | 70,662 | 60,953 | 60,543 | 38,864 | 21,679 |
| Bilene | 61% | 53% | 75,671 | 50,087 | 66,652 | 46,159 | 20,492 |
| Chibuto | 66% | 61% | 111,069 | 70,724 | 110,894 | 73,305 | 37,588 |

| | |
|--|---------|
| Ghosts who voted in 5 districts | 137,395 |
| Ghosts in Gaza who voted = (5 districts)/.85 | 161,641 |

7. Parliament (Assembleia da República, AR)

Taking away the ghost and other inflated votes also has an impact of the parliamentary election, shifting three or five seats from Frelimo to Renamo. Nine of the eleven provinces had a relatively normal registration but Gaza has a huge number of ghost voters and in Zambézia potential voters were excluded. If we correct the registration of these two to 85% of voting age adults, then Gaza loses 8 seats, Zambézia gains 4 seats, and 4 other provinces gain one seat each.

Just taking away Frelimo's inflated vote gives Renamo 3 additional parliamentary seats, but if this is combined with taking away the 8 Gaza seats from ghost voters, then Renamo gains 5 seats in parliament.

To calculate this, we first look at the vote inflation in each province and subtract that from the Frelimo vote for parliament. This includes very high level of turnout, invalid ballots and blank ballots, as well as the Gaza and Zambézia registrations. (We do not include the issues of vote for president but not parliament, and inflated registration in Africa because they do not affect the parliamentary vote.) This gives a revised vote table.

Next we recalculate the number of seats allocated to each province based on voting age adults, which reduces the seats in Gaza and

increases them in Zambézia. Finally, we take the revised vote table and use the d'Hondt method to assign parliamentary seats. We do this for both the present seat distribution, and the revised one if seat assignment followed the census and did not include ghost voters.

The election results announced by the CNE give 60 AR seats to Renamo, but if the obvious ballot box stuffing is removed, this rises to 63, and if the Gaza ghost voters are thrown off the voters role, Renamo wins 65 seats.

Table 7: Inflated votes by province

| Province | Total votes>75% | Total invalid votes>6.6% | Total blank votes >8.5% | Zambézia & Gaza | TOTAL |
|--------------|-----------------|--------------------------|-------------------------|-----------------|----------------|
| Niassa | 854 | 1,549 | 794 | | 3,197 |
| Cabo Delgado | 5,109 | 634 | 8,186 | | 13,929 |
| Nampula | 8,134 | 5,671 | 8,785 | | 22,590 |
| Zambézia | 2,679 | 13,879 | 6,940 | 45,000 | 68,498 |
| Tete | 25,011 | 5,735 | 1,234 | | 31,980 |
| Mancia | 4,217 | 1,646 | 493 | | 6,356 |
| Sofala | 6,522 | 3,130 | 886 | | 10,538 |
| Inhambane | 3,948 | 434 | 391 | | 4,773 |
| Gaza | 32,007 | 247 | 129 | 161,641 | 194,024 |
| Maputo Prov | 420 | 183 | 0 | | 603 |
| Maputo City | 1,379 | 0 | 0 | | 1,379 |
| TOTAL | 90,280 | 33,107 | 27,838 | 206,641 | 357,866 |

Table 8: Taking inflated votes from Frelimo

| Province | A Inflated votes by province | B Frelimo AR votes - CNE | C Frelimo AR minus inflated votes | D MDM AR [CNE] | E Renamo AR [CNE] | F Others AR [CNE] |
|--------------|---------------------------------|-----------------------------|--------------------------------------|-------------------|----------------------|----------------------|
| Niassa | 3,197 | 170,176 | 166,979 | 7,404 | 70,730 | 4,779 |
| Cabo Delgado | 13,929 | 353,205 | 339,276 | 14,817 | 96,673 | 12,541 |
| Nampula | 22,590 | 495,642 | 473,052 | 28,612 | 299,150 | 30,726 |
| Zambézia | 68,498 | 505,906 | 437,408 | 26,217 | 228,615 | 11,739 |
| Tete | 31,980 | 457,526 | 425,546 | 12,208 | 121,808 | 7,794 |
| Mancia | 6,356 | 365,358 | 359,002 | 12,568 | 110,945 | 7,456 |
| Sofala | 10,538 | 361,083 | 350,545 | 66,559 | 110,052 | 6,449 |
| Inhambane | 4,773 | 246,212 | 241,439 | 14,114 | 44,016 | 13,886 |
| Gaza | 194,024 | 654,244 | 460,220 | 11,973 | 18,180 | 15,126 |
| Maputo Prov | 603 | 343,261 | 342,658 | 25,672 | 136,144 | 13,254 |
| Maputo City | 1,379 | 242,105 | 240,726 | 30,646 | 109,362 | 10,514 |
| TOTAL | 357,866 | 4,194,718 | 3,836,852 | 250,790 | 1,345,675 | 134,264 |

Table 9: Number of parliamentary seats

| | A | B | C | D | E | F |
|--------------|-------------------|----------------------|-------------------------|----------------------------------|---|------------|
| | | | | From Table 4 | | =E-C |
| Province | Registered | AR seats calc by law | AR seats actual, by CNE | Registration if Gaza/Zam 85% VaP | AR seats w/ registration based on 85% VaP | Difference |
| Niassa | 677,764 | 13 | 13 | 677,764 | 13 | 0 |
| Cabo Delgado | 1,185,024 | 23 | 23 | 1,185,024 | 23 | 0 |
| Nampula | 2,361,973 | 45 | 45 | 2,361,973 | 46 | 1 |
| Zambézia | 2,140,125 | 41 | 41 | 2,323,502 | 45 | 4 |
| Tete | 1,119,378 | 21 | 21 | 1,119,378 | 22 | 1 |
| Mancia | 893,426 | 17 | 17 | 893,426 | 18 | 1 |
| Sofala | 1,029,354 | 20 | 20 | 1,029,354 | 20 | 0 |
| Inhambane | 657,142 | 13 | 13 | 657,142 | 13 | 0 |
| Gaza | 1,166,011 | 22 | 22 | 711,094 | 14 | -8 |
| Maputo Prov | 1,015,798 | 19 | 20 | 1,015,798 | 20 | 0 |
| Maputo City | 701,184 | 13 | 13 | 701,184 | 14 | 1 |
| total | 12,947,179 | 247 | 248 | 12,675,639 | 248 | 0 |

Note: There is an arithmetic error in the law on allocating seats to provinces. The d'Hondt method should be used there as well, but is not, so sometimes the seats do not add up to 248. This happened this year, when the law only allocated 247 seats, so the CNE gave an extra seat to Maputo Province.

Table 10: Allocation of seats to parties - CNE and corrections

| Province | Allocate by d'Hondt with reduced Frelimo votes (Table 8 Columns C-F) | | | | | | Announced by CNE | | |
|--------------|---|----------|-----------|-------------------------------------|----------|-----------|------------------|----------|-----------|
| | present seats | | | corrected seats (Table 9, Col E) | | | F | MDM | R |
| | F | MDM | R | F | MDM | R | | | |
| Niassa | 9 | | 4 | 9 | | 4 | 9 | 0 | 4 |
| Cabo Delgado | 18 | | 5 | 18 | | 5 | 18 | 0 | 5 |
| Nampula | 27 | 1 | 17 | 28 | 1 | 17 | 28 | 1 | 16 |
| Zambézia | 26 | 1 | 14 | 29 | 1 | 15 | 28 | 1 | 12 |
| Tete | 17 | | 4 | 17 | | 5 | 17 | 0 | 4 |
| Mancia | 13 | | 4 | 14 | | 4 | 13 | 0 | 4 |
| Sofala | 14 | 2 | 4 | 14 | 2 | 4 | 14 | 2 | 4 |
| Inhambane | 11 | | 2 | 11 | | 2 | 11 | 0 | 2 |
| Gaza | 22 | | | 14 | | | 22 | 0 | 0 |
| Maputo Prov | 14 | 1 | 5 | 14 | 1 | 5 | 14 | 1 | 5 |
| Maputo City | 8 | 1 | 4 | 9 | 1 | 4 | 8 | 1 | 4 |
| total | 179 | 6 | 63 | 177 | 6 | 65 | 182 | 6 | 60 |

8. Concluding notes

This study can only identify the most obvious vote inflation, ballot box stuffing, registration of ghost voters, and other gross misconduct. And it is limited because it is based on information from the parallel vote tabulation (PVT) observers, who were illegally excluded in two key provinces. Yet we have enough information to show that Frelimo inflated its vote by 478,000 votes - 11% of its total vote - and that Renamo improperly lost 5 seats in parliament.

Judicial intervention and re-running all or part of an election is permitted "provided that there are illegalities that could substantially influence the overall election outcome." "Substantially" is not defined. But 478,000 votes and 5 parliament seats does seem substantial.

We believe there that there was significantly more misconduct. The PVT should be a good prediction of the outcome of the election, but the final results gave Nyusi almost 2% more of the national vote than the PVT predicted. In Nampula and Zambézia Nyusi's vote was underestimated by more than 2%, and in Gaza by nearly 4%.

We noted in the introduction the importance of observation as a way of keeping polling station staff honest. More than 3000 civil society observers were illegally barred from observing, mainly in Zambézia and Gaza, but to a lesser extent in Nampula and Tete - exactly the places where Filipe Nyusi and Frelimo gained more votes than predicted by the PVT. Clearly, these votes come from polling stations which were not observed.

As this study shows, there was a huge amount of misconduct where the observers were present and watching. But the results suggest there was even more misconduct where no one was watching.



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Detailed coverage 2019 national elections is again being provided by the *Mozambique Political Process Bulletin*, which has covered all of Mozambique's multi-party elections. We will have a large team of local journalists throughout the country, ensuring that our reports are accurate and verified.

The elections newsletter is also in Portuguese; para subscrever <http://eepurl.com/gnZXPz>

The newsletters covering the 2018 local elections are on <http://bit.ly/LocEI2018>

Newsletters from 2013 local elections and 2014 national elections are on <http://bit.ly/2H066Kg>

There are two archives of historic elections data, at IESE on <http://www.iese.ac.mz/eleicoes-resultados/> and at London School of Economics on <http://bit.ly/MozEIData>

