Parish Pastoral Council for Responsible Voting

July 18, 2022

A Partnership mandated by law

Our 2022 Mandate

a. To undertake a nationwide **voters' registration and education** program

b. To do **poll watching** and man the **Voters' Assistance Desks**

c. To be furnished with the **4th copy** of the first 8 copies of election returns printed by the VCMs prior to transmission

d. To conduct the **unofficial parallel count**

VOTER REGISTRATION CAMPAIGN
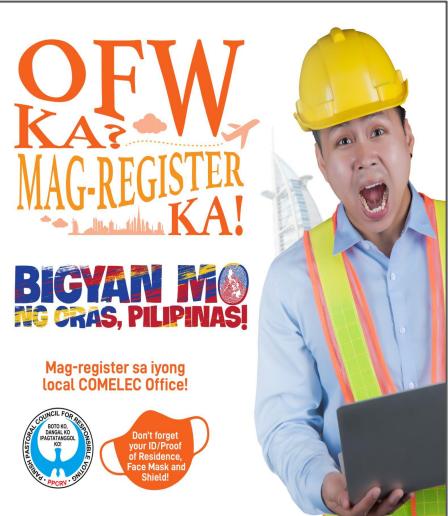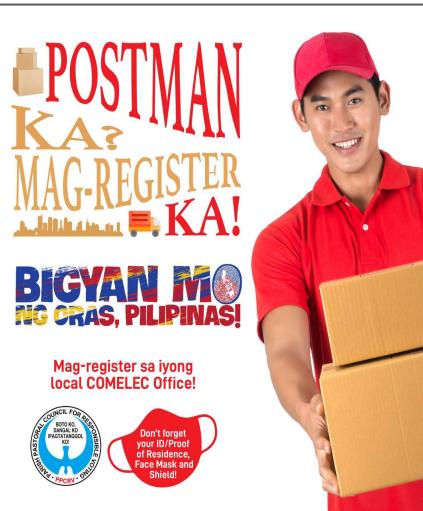
VOTER EDUCATION

**It's Good To Know :
The Technical Series :
*Trust but Verify***

It's Good To Know
PPCRV Voter's Education

**Learn. Share.
Connect. Inspire.**

Saturdays at 3:15 P.M. - 4:00 P.M.

It's Good To Know
PPCRV Voter's Education

What is a VCM?

With our guest speaker

Henry Aguda
Chief Technology Officer at Unionbank
and Board Trustee for PPCRV

Saturday, June 26 • 3:15 - 04:00 P.M.

Henry is also a lecturer at the UP Technology
Management Center and a faculty member at the
Asian Institute of Digital Transformation. Formerly
a Telco executive, Henry has likewise worked in
government for several years. He has authored the
book, Data Privacy & Cybercrime Prevention in the
Philippine Digital Age. Awarded as the Data
Protection Officer of the Year 2017-2018 and
recently as the Privacy Advocate of the Year 2020,
Henry is recognized as one of the 10 banking and
financial technology leaders in ASEAN.

It's Good To Know
PPCRV Voter's Education

**How does transmission
of votes happen?**

With our guest speaker

William Yu
Chief Technology Officer at MDI Novare
and Board Trustee for PPCRV

Saturday, July 3 • 3:15 - 04:00 P.M.

William is considered a "CTO ng Bayan". He runs
technology for MDI Novare working on various
projects involving digital transformation, elastic
infrastructure, and end to end AGILE DevOps. He is
an active advocate of shaping Internet and
Technology policy working with organizations
such as the Internet Society, The Asia Foundation,
PH-CERT, PPCRV and the Department of
Information and Communications Technology. He
is a teacher at heart, and continues to lecture at
the Ateneo de Manila University.

It's Good To Know
PPCRV Voter's Education

**How does PPCRV
do Parallel Counting?**

With our guest speaker

Rommel Bernardo
Head, Applications Delivery, CyberSoft Content Services, Inc.
Board Trustee for PPCRV and PPCRV Volunteer since 2001

Saturday, July 10 • 3:15 - 04:00 P.M.

Rommel has been immersed in IT even before he
graduated from college and has participated in
quite a few pioneering IT initiatives. For example,
during a time when maps were not yet in vogue,
he led a team that created the first locally available
online map of the Philippines! He was with the
group that implemented the first FindPrecinct
system in 2001 and 2004. When PPCRV needed a
system to conduct the unofficial parallel count
during the first automated elections in 2010, he
and his team provided that system. When he is not
behind his computer, Rommel relaxes by playing
with his dogs, taking photos, or tinkering with his
collection of fountain pens!

PPCRV HANDA NA BA LAHAT?

VOTER'S EDUCATION, PHASE 3:
TRAINING VOLUNTEERS

ACCOUNTABLE MATERIALS
VERIFIABLE AUDIT TRAIL TEAM
(AMVATT)

POLLWATCHERS
TRAINING

UNOFFICIAL PARALLEL COUNT
&
THE COMMAND CENTER

PPCRV Technology
Kick-off

PPCRV Technology Team
William Emmanuel Yu, Ph.D., Co-IT Director
Rommel Bernardo, Co-IT Director
Henry Aguda, Co-IT Director
Agnes Gervacio, Board Trustee/Treasurer

a. Observe printing of ballots

b. Monitor logistic transport of the Automated Election System equipment, and other accountable materials for the elections

c. Serve as watchers during the Final Testing and Sealing

d. Serve as Pollwatchers on election day itself

e. Retrieve the 4th copies of the Election Returns

a. COMELEC Advisory Council

b. Technical audits, ie local source code review

c. Pre-election activities :
    i. Trusted Build and Pre-Logic and Accuracy Test of the Vote Counting Machines
    ii. Mock Elections
    iii. Random Ballot Sampling
    iv. Data Center walkthrough

The PPCRV - KBP Command Center

Securing the 4th Copy
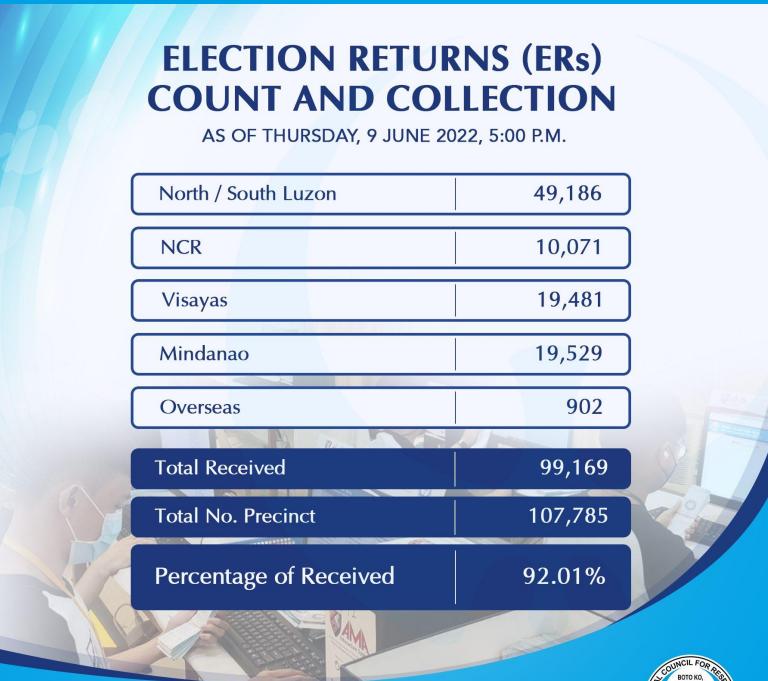
ELECTION RETURNS (ERs) COUNT AND COLLECTION
AS OF THURSDAY, 9 JUNE 2022, 5:00 P.M.

North / South Luzon	49,186
NCR	10,071
Visayas	19,481
Mindanao	19,529
Overseas	902
Total Received	99,169
Total No. Precinct	107,785
Percentage of Received	92.01%

NATIONAL & LOCAL ELECTIONS 2022
UNOFFICIAL PARALLEL COUNT AT THE POPE PIUS XII CATHOLIC CENTER

ENCODED AND MATCHED ELECTION RETURNS (ERs)
AS OF FRIDAY, 10 JUNE 2022, 5:00 P.M.

Encoded Physical ERs	86,938
Encoded ERs Matching Transmitted Results	85,739
Not Yet Compared with Transmitted Results	12
No Transmitted Results	963
For Revalidation	224
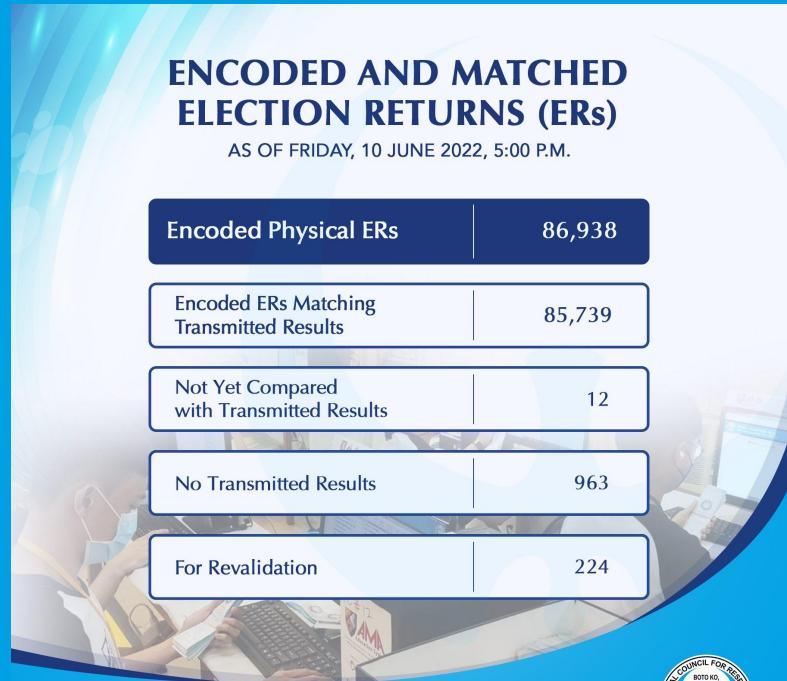
NATIONAL & LOCAL ELECTIONS 2022
UNOFFICIAL PARALLEL COUNT AT THE POPE PIUS XII CATHOLIC CENTER

> **When Public is in doubt of Elections Results**
> Answer via Data

A lot of Questions and Misunderstanding

a. Speed of Transmission
b. VCM > Vote Counting Machine
c. Encoding the 4th Copy
d. Final Trusted Build > Source Code Review
e. Command Center
f. RMA > Random Manual Audit
g. COMELEC Responsibilities
h. Ballot Printing
i. Logistics
j. FTS > Final Testing & Sealing
k. What Pollwatchers do
l. AES > Automated Election System
m. TEC > Technical Evaluation Committee
n. Pre-LAT > Pre-Logical & Accuracy Testing
o. Mock Elections

Transmission Rate for 2022 and previous NLEs

Transmission was a bit slower for 2022 at the start but caught up likely due to improvements in technology
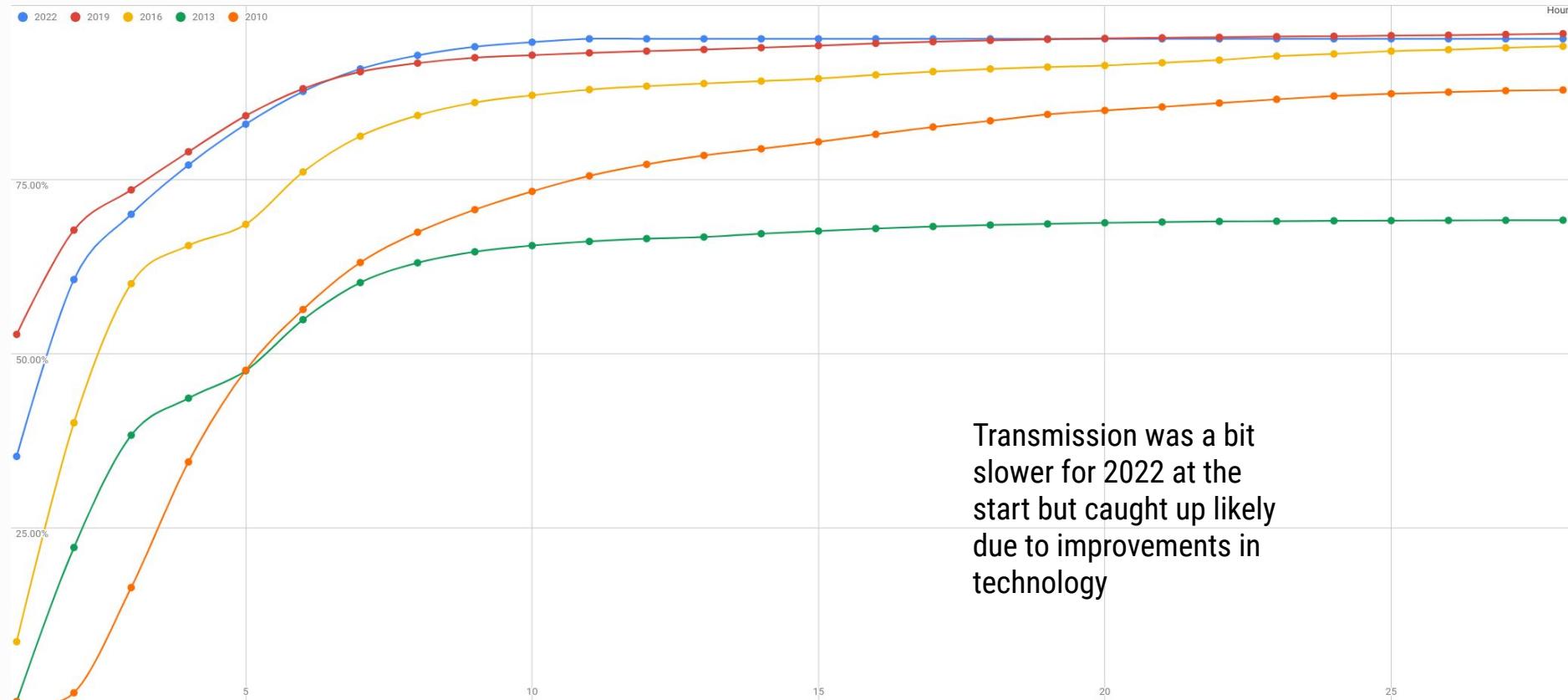
Overall PPCRV Data Visibility

	ERs Received from Transparency Server (1)	ERs not Received from Transparency Server (2)	ERs Physically Received but not in Transparency Server (3)	Total ERs received by PPCRV (4) = (1) + (3)	ERs Received from Transparency Server (%)	Total ERs received by PPCRV (%)
2010	70,255	6,092	1,496	71,751	92.02%	93.98%
2013	59,681	18,485	11,880	71,561	76.35%	91.55%
2016	90,637	3,642	1,522	92,159	96.14%	97.75%
2019	86,463	1,077	99	86,562	98.77%	98.88%
2022	106,008	1,777	978	106,986	98.35%	99.26%

- Cut-off for 2010 is on May 24 2010. Total CPs is 76,347.
- Cut-off for 2013 is on May 22 2013. Total CPs is 78,166.
- Cut-off for 2016 is on May 18 2016. Total CPs is 94,279.
- Cut-off for 2019 is on May 22 2019. Total CPs is 87,540.
- Cut-off for 2022 is on May 13 2022. Total CPs is 107,785.

	Total # of CP/VCMs	VCM Failures	%	SD Card Failures	%
2019	87,540	434	0.496%	2,231	2.55%
2022	106,174	533	0.502%	216	0.20%

VCM &
SD Card Failures

Block Votes

Precincts that gave zero votes to Candidate ROBREDO

2022 Presidential Race (ROBRE)			
Region	Province	Precincts	Voters
BARMM	SULU	279	141,900
BARMM	TAWI-TAWI	45	21,559
CORDILLERA ADMINIS	ABRA	45	14,870
REGION X	LANAO DEL NORTE	36	16,460
BARMM	MAGUINDANAO	22	11,767
BARMM	LANAO DEL SUR	20	6,864
REGION I	ILOCOS NORTE	20	7,026
REGION XII	SARANGANI	17	5,556
REGION I	ILOCOS SUR	16	3,503
REGION XII	SULTAN KUDARAT	16	10,637
REGION XI	DAVAO OCCIDENTAL	14	6,615
BARMM	BASILAN	12	7,133
REGION XI	DAVAO DEL SUR	9	2,433
REGION VIII	SAMAR	8	1,481
CORDILLERA ADMINIS	APAYAO	6	1,206
REGION XII	SOUTH COTABATO	5	2,002
REGION III	NUEVA ECIJA	4	1,543
REGION I	LA UNION	3	869
REGION II	CAGAYAN	3	624
CORDILLERA ADMINIS	IFUGAO	2	234
CORDILLERA ADMINIS	KALINGA	2	816
REGION IV-A	CAVITE	2	1,183
REGION IX	ZAMBOANGA SIBUGAY	2	865
REGION X	MISAMIS OCCIDENTAL	2	269
REGION XIII	AGUSAN DEL SUR	2	707
REGION XIII	SURIGAO DEL NORTE	2	1,297
REGION II	ISABELA	1	663
REGION IV-A	RIZAL	1	655
REGION IX	ZAMBOANGA DEL SUR	1	708
REGION V	MASBATE	1	294
REGION VIII	LEYTE	1	191
REGION XI	DAVAO DEL NORTE	1	423
		600	272,353

DAVAO 2.3%
SULTAN KUDARAT 2.7%
ILOCOS SUR 2.7%
SARANGANI 2.8%
ILOCOS NORTE 3.3%
LANAO DEL SUR 3.3%
MAGUINDANAO 3.7%
LANAO DEL NORTE 6.0%
ABRA 7.5%
TAWI-TAWI 7.5%
SULU 46.5%
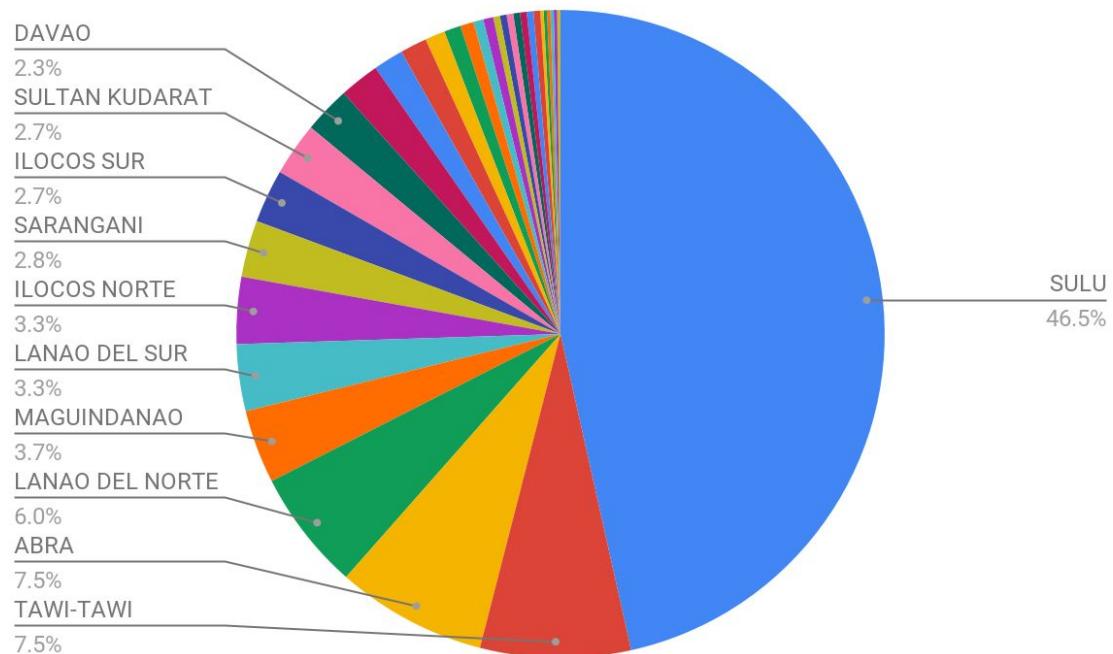
Precincts that gave zero votes to Candidate MARCOS

2022 Presidential Race (MARCO)			
Region	**Province**	**Precincts**	**Voters**
BARMM	LANAO DEL SUR	29	7,129
REGION X	LANAO DEL NORTE	21	9,849
BARMM	MAGUINDANAO	17	9,632
REGION VIII	EASTERN SAMAR	4	544
REGION V	ALBAY	2	81
REGION V	CAMARINES SUR	1	190
REGION VIII	SAMAR	1	78
REGION XII	COTABATO	1	372
		76	27,875

COTABATO 1.3%
ALBAY 2.6%
EASTERN SAMAR 5.3%
MAGUINDANAO 22.4%
LANAO DEL SUR 38.2%
LANAO DEL NORTE 27.6%
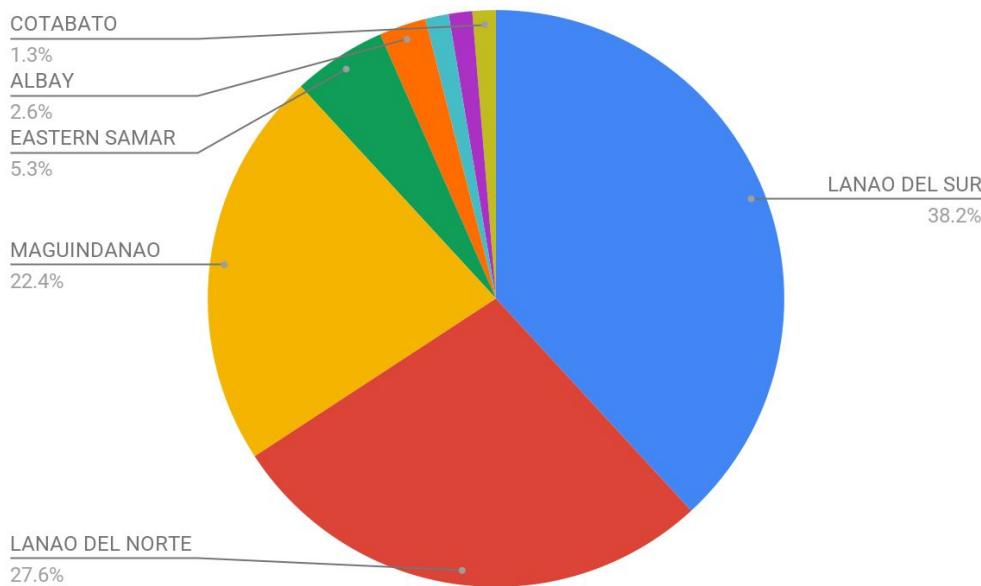
Precincts that gave 99% of their votes to one candidate for President

2022 Presidential Race				
Region	Province	Candidate	Precincts	Votes
BARMM	SULU	MARCO	165	84,289
BARMM	TAWI-TAWI	MARCO	32	16,031
CORDILLERA ADM	ABRA	MARCO	27	10,662
REGION X	LANAO DEL NORTE	ROBRE	21	9,842
REGION X	LANAO DEL NORTE	MARCO	16	7,497
REGION XII	SULTAN KUDARAT	MARCO	12	8,027
BARMM	LANAO DEL SUR	MARCO	9	3,113
BARMM	MAGUINDANAO	MARCO	9	5,605
BARMM	MAGUINDANAO	ROBRE	8	4,511
BARMM	BASILAN	MARCO	6	4,131
BARMM	LANAO DEL SUR	ROBRE	6	1,821
REGION IV-A	CAVITE	MARCO	5	2,846
REGION VIII	SAMAR	MARCO	3	446
REGION I	ILOCOS NORTE	MARCO	2	753
REGION I	ILOCOS SUR	MARCO	2	349
REGION III	NUEVA ECIJA	MARCO	2	952
REGION IV-A	RIZAL	MARCO	2	1,277
REGION IX	ZAMBOANGA SIBUGAY	MARCO	2	797
BARMM	LANAO DEL SUR	GONZA	1	3
CORDILLERA ADM	IFUGAO	MARCO	1	9
CORDILLERA ADM	KALINGA	MARCO	1	514
NATIONAL CAPITA	NCR - SECOND DISTRICT	MARCO	1	272
OAV	EUROPE	MARCO	1	1
REGION V	ALBAY	ROBRE	1	40
REGION VIII	EASTERN SAMAR	ROBRE	1	90
			336	163,878

GONZA 0.3%
ROBRE 11.0%
MARCO 88.7%
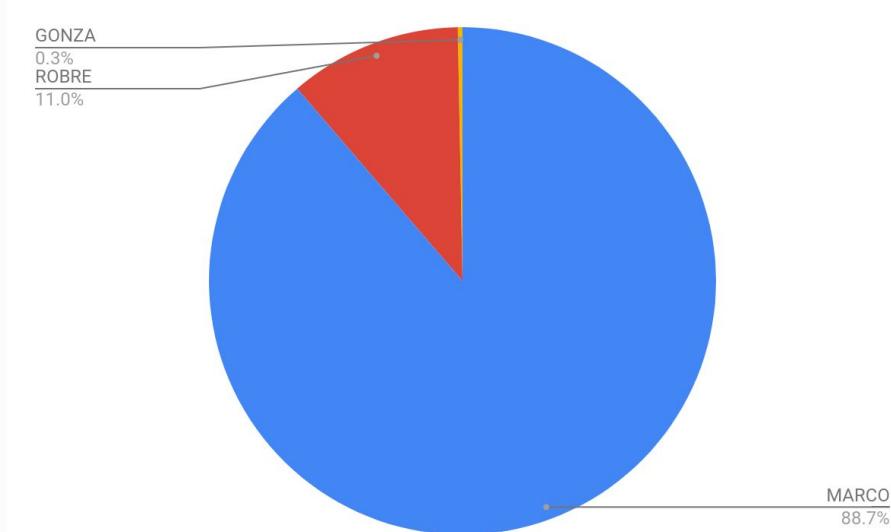
Covered precincts are only 0.31% (337/107,785) of all precincts. This affects 163,878 (0.25%) of voters.

Precincts that gave 99% of their votes to one candidate for Vice President

2022 Vice Presidential Race				
Region	**Province**	**Candidate**	**Precincts**	**Votes**
BARMM	SULU	DUTER	194	99,711
BARMM	MAGUINDANAO	DUTER	68	39,140
BARMM	LANAO DEL SUR	DUTER	52	17,999
BARMM	TAWI-TAWI	DUTER	40	19,843
REGION X	LANAO DEL NORTE	DUTER	38	18,566
CORDILLERA ADM	ABRA	DUTER	22	9,688
REGION XII	SULTAN KUDARAT	DUTER	21	14,394
BARMM	BASILAN	DUTER	11	6,759
REGION X	LANAO DEL NORTE	PANGI	7	2,982
REGION IV-A	CAVITE	DUTER	5	2,847
REGION XII	COTABATO	DUTER	5	3,160
REGION IV-A	RIZAL	DUTER	4	2,432
REGION VIII	SAMAR	DUTER	4	525
CORDILLERA ADM	KALINGA	DUTER	3	1,306
REGION IX	ZAMBOANGA SIBUGAY	DUTER	3	1,463
REGION XI	DAVAO DEL NORTE	DUTER	3	1,692
NATIONAL CAPITA	NCR - SECOND DISTRICT	DUTER	2	718
OAV	EUROPE	DUTER	2	3
REGION III	NUEVA ECIJA	DUTER	2	952
BARMM	LANAO DEL SUR	LOPEZ	1	3
REGION VIII	NORTHERN SAMAR	DUTER	1	80
REGION XI	DAVAO OCCIDENTAL	DUTER	1	495
REGION XIII	AGUSAN DEL SUR	DUTER	1	309
			490	245,067

PANGI
1.4%

DUTER
98.4%
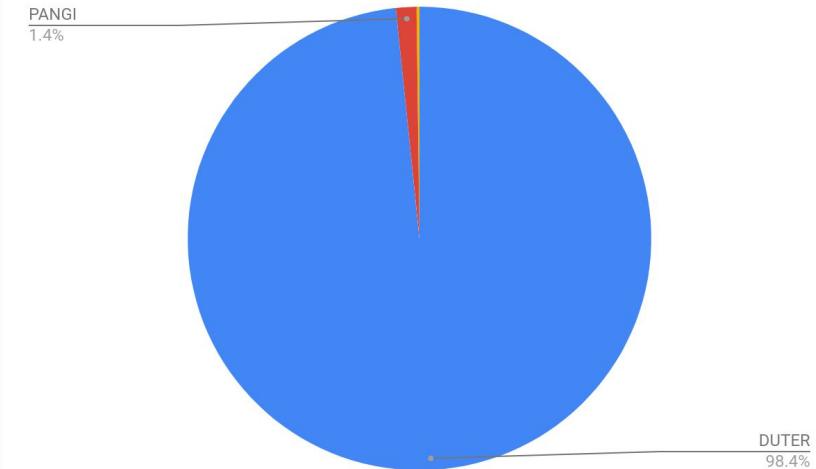
Covered precincts are only 0.45% (490/107,785) of all precincts. This affects 245,067 (0.37%) of voters.

Regional Null Vote Analysis for the President

REGION	2022				2016				2010			
	P	RV	UV	OV	P	RV	UV	OV	P	RV	UV	OV
B/ARMM	4,082	1,813,548	83,640	25,377	3,114	1,572,055	90,782	19,546	2,558	1,450,538	148,682	10,132
CAR	2,149	919,448	12,687	8,826	1,902	875,774	24,404	8,470	1,526	787,542	21,951	6,212
NCR	10,462	5,919,244	21,999	39,294	9,233	6,231,537	37,595	33,133	7,305	5,935,985	15,292	33,235
NIR	0	0	0	0	3,770	2,404,753	100,378	79,118	0	0	0	0
OAV	991	474,295	1,257	656	483	463,737	696	544	128	127,206	117	169
REGION I	6,118	3,099,258	31,152	49,982	5,300	2,913,082	59,464	33,089	4,129	2,543,519	31,999	26,409
REGION II	4,044	1,947,084	31,433	43,208	3,458	1,859,806	48,014	33,692	2,860	1,694,124	37,947	27,503
REGION III	10,858	6,223,906	58,791	80,368	9,504	6,052,126	88,804	59,816	7,097	5,257,769	38,643	49,233
REGION IV-A	13,916	7,607,478	68,628	76,502	12,032	7,596,985	90,541	62,660	8,574	6,252,537	48,362	47,974
REGION IV-B	3,339	1,667,203	38,147	28,585	2,757	1,550,536	42,939	26,863	2,103	1,317,344	30,655	17,987
REGION IX	3,771	1,848,203	88,418	40,192	3,322	1,884,319	77,561	43,576	2,542	1,659,528	75,483	26,031
REGION V	6,656	3,366,689	66,016	79,495	5,553	3,055,414	93,966	63,385	4,315	2,591,656	79,610	36,961
REGION VI	8,565	4,279,722	102,783	104,357	5,016	2,536,697	62,901	56,242	5,756	3,570,233	95,150	63,521
REGION VII	8,021	4,488,698	150,316	95,564	5,702	3,555,128	101,590	74,864	4,612	3,259,800	113,301	58,239
REGION VIII	6,265	2,704,465	126,718	56,050	5,704	2,675,500	142,415	60,070	4,466	2,146,555	147,494	34,016
REGION X	4,935	2,592,604	89,309	48,784	4,210	2,479,396	73,754	44,835	3,212	2,158,323	71,652	35,227
REGION XI	4,776	2,599,541	58,612	47,352	3,942	2,555,349	38,797	34,029	3,223	2,407,457	27,098	30,194
REGION XII	4,058	2,094,150	30,451	42,462	3,332	2,019,946	32,996	33,193	2,633	1,890,254	28,238	20,104
REGION XIII	3,002	1,551,770	56,179	30,363	2,301	1,347,001	41,600	27,091	1,941	1,257,339	42,773	17,628
TOTAL	**106,008**	**55,197,306**	**1,116,536**	**897,417**	**90,635**	**53,629,141**	**1,249,197**	**794,216**	**68,980**	**46,307,709**	**1,054,447**	**540,775**
Annual Change		2.92%	-10.62%	12.99%		15.81%	18.47%	46.87%				

Regional Null Vote Analysis for the Vice President

REGION	2022				2016				2010			
	P	RV	UV	OV	P	RV	UV	OV	P	RV	UV	OV
ARMM	4,082	1,813,548	148,116	10,218	3,114	1,572,055	204,975	8,855	2,558	1,450,538	206,321	4,950
CAR	2,149	919,448	34,303	5,932	1,902	875,774	45,089	5,896	1,526	787,542	45,372	3,919
NCR	10,462	5,919,244	56,143	38,461	9,233	6,231,537	73,650	31,966	7,305	5,935,985	43,701	23,052
NIR					3,770	2,404,753	232,367	53,329				
OAV	991	474,295	2,015	1,474	483	463,737	1,173	468	128	127,206	393	191
REGION I	6,118	3,099,258	92,372	35,015	5,300	2,913,082	92,010	29,623	4,129	2,543,519	85,778	16,935
REGION II	4,044	1,947,084	94,920	29,527	3,458	1,859,806	99,334	24,005	2,860	1,694,124	77,702	17,471
REGION III	10,858	6,223,906	156,352	65,300	9,504	6,052,126	201,085	50,232	7,097	5,257,769	129,636	32,507
REGION IV-A	13,916	7,607,478	194,759	63,354	12,032	7,596,985	212,033	53,429	8,574	6,252,537	120,951	33,263
REGION IV-B	3,339	1,667,203	109,185	19,264	2,757	1,550,536	107,934	18,338	2,103	1,317,344	72,189	10,427
REGION IX	3,771	1,848,203	207,164	27,484	3,322	1,884,319	193,754	27,850	2,542	1,659,528	158,507	13,951
REGION V	6,656	3,366,689	248,541	50,474	5,553	3,055,414	191,221	51,336	4,315	2,591,656	179,457	22,432
REGION VI	8,565	4,279,722	314,614	64,141	5,016	2,536,697	157,194	33,247	5,756	3,570,233	210,142	37,935
REGION VII	8,021	4,488,698	368,896	70,934	5,702	3,555,128	247,915	54,068	4,612	3,259,800	248,114	34,252
REGION VIII	6,265	2,704,465	288,305	37,716	5,704	2,675,500	320,513	43,728	4,466	2,146,555	286,081	20,165
REGION X	4,935	2,592,604	199,493	30,837	4,210	2,479,396	200,773	28,572	3,212	2,158,323	165,939	16,507
REGION XI	4,776	2,599,541	108,165	33,921	3,942	2,555,349	126,112	22,995	3,223	2,407,457	87,111	16,524
REGION XII	4,058	2,094,150	99,101	29,321	3,332	2,019,946	102,409	20,829	2,633	1,890,254	72,522	11,223
REGION XIII	3,002	1,551,770	110,466	19,818	2,302	1,347,684	109,364	17,268	1,941	1,257,339	97,243	9,344
TOTAL	106,008	55,197,306	2,832,910	633,191	90,636	53,629,824	2,918,905	576,034	68,980	46,307,709	2,287,159	325,048
Annual Change		2.92%	-2.95%	9.92%		15.81%	27.62%	77.22%				

UPC Results

ENCODED?

TRANSMITTED?

	YES	NO
YES	**Verified** **88,575** (82.18%) 99.702% of compared	**17,433** (16.17%)
	For Verification 261 (0.298%)	
NO	**978** (0.91%)	**799** (0.74%)
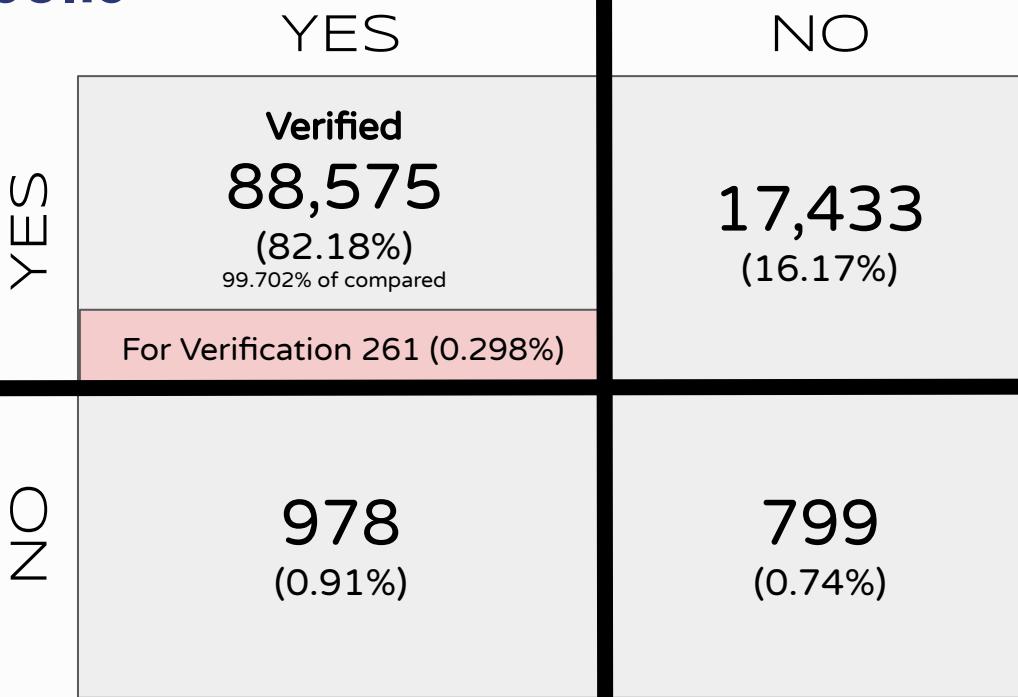
Report in progress.

Validation data is as of June 20 2022.

Cannot be read (10 cases)

FTS ER was sent (2 cases)

Mismatches (6 cases)

The 68:32 Pattern

The 'constant 47% ratio' explained

MAY 11, 2022 8:26 AM PHT
DYLAN SALCEDO

47%

Although constant vote ratios throughout the unofficial count are not indicative of election cheating, there have been several reported incidents of alleged fraud, voter suppression, and other cases of election-related violence that hindered voters from casting their ballot or sought to alter vote counts.

When the votes for BBM and LR are grouped by barangay, below are the distributions of the most significant digits, superimposed to the theoretical values of Benford's distribution.
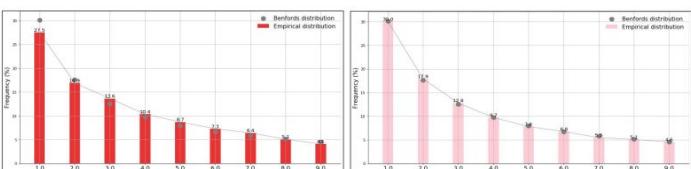
For the three empirical distributions for both BBM and LR show similar distribution as that of the theoretical Benford's distribution which implies that the vote counts are more likely naturally occurring, rather than tampered.

Transmission Arrival Analysis for May 2022 NLE

Jeric C. Briones
Nhoriel I. Toledo
Vitus Paul L. de Jesus

May 10, 2022

We are interested to see whether the circulating ratio online has any mathematical basis. For this, let us consider the ratios $\text{Leni} = \frac{\text{Leni votes}}{\text{Leni} + \text{BBM votes}}$ and $\text{BBM} = \frac{\text{BBM votes}}{\text{Leni} + \text{BBM votes}}$.

1 Breakdown of Transmission Arrival per Region

First, we consider how the transmission arrivals are broken down per region (see Fig. 1). Notice how the regional breakdowns have been somewhat consistent over the different transmission arrivals. Since these ratios have been somewhat consistent per region per transmission, the overall ratio being consistent per transmission is not unexpected.
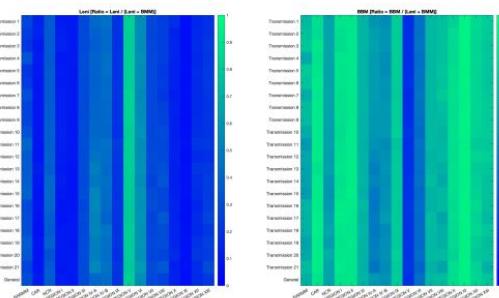
Figure 1: Heatmap of transmission arrival, broken down per region and per transmission. Blue indicates a value of zero, while green indicates value of one. The total/general regional breakdown can be seen at the bottom row for comparison.

Discussion in social media was focused on accumulated transmitted data lumped for several minutes which fail to capture insights during the transient period. To address this, we plotted the accumulated received data per minute. Below are the plots of the *number of votes* received (top) and the recently, commonly discussed, *vote ratio* (bottom) for the first 120 minutes of vote transmission.

As time passes from 7:08 PM to 7:28 PM, votes increases to 20.45M and 9.67M, respectively.

First two hours of receiving transmitted votes

At 7:08 PM, the ratios of the received BBM votes and Leni votes are ~0.74 and ~0.26, respectively.
As time passes from 7:08 PM to 7:28 PM, correspondingly, the vote ratios approach ~0.69 and ~0.33, respectively.
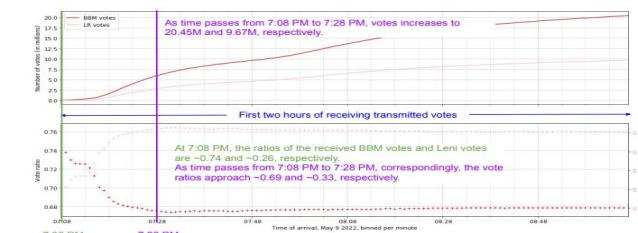
A Message of Thanks from the OVP

More than technical, the deep problems are **societal** ones …

1) Perfecting **Disinformation** as an entertaining art form and as an electoral weapon targeting the vulnerable

2) **Vote Buying** as an accepted currency of the electoral process

# Our Volunteers

FILE PHOTO: PPCRV Headquarters UST, Inquirer.net

FILE PHOTO: PPCRV Command Center (PPCRV/ Manila Bulletin)

FILE PHOTO: PPCRV Volunteers Waiting (Rappler)

FILE PHOTO: PPCRV Command Center (Inquirer.net)
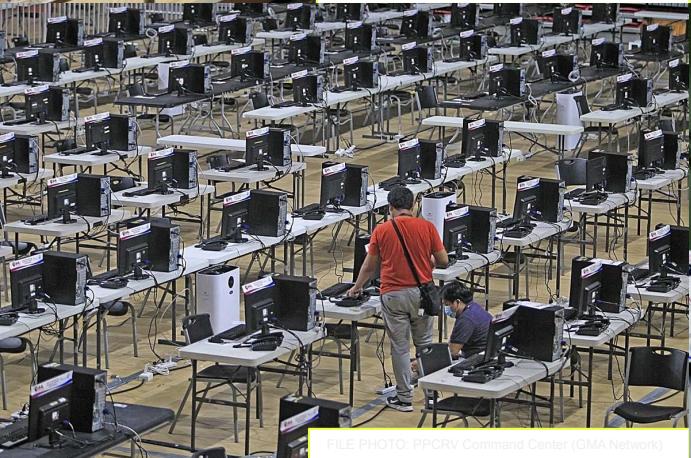
FILE PHOTO: PPCRV Command Center (GMA Network)

FILE PHOTO: PPCRV Checking the count (ABS CBN)

FILE PHOTO: PPCRV Command Center (PPCRV/ Manila Bulletin)

Thank you, PPCRV Volunteers!
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Thank you, PPCRV Volunteers!
Pre-election
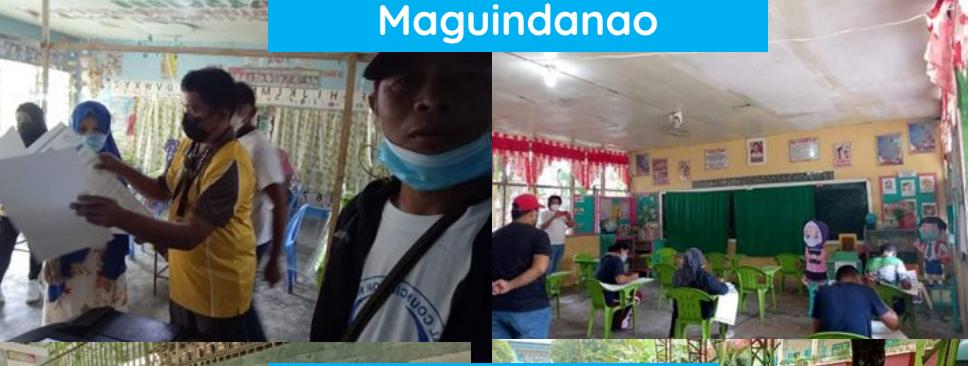
Mock Elections - December 29, 2021

Thank you, PPCRV Volunteers!
FTS & Logistics

Thank you, PPCRV Volunteers!
Election Day

Thank you, PPCRV Volunteers!
Command Center

Thank you

BOTO KO,
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KO!

PARISH PASTORAL COUNCIL FOR RESPONSIBLE VOTING

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