

Frauds Suspected in South Korea's April 15 Election

SEOUL, KOREA (5/5)-On April 15, 2020, South Korea's 21st general legislative election was held to elect 300 members for National Assembly, 253 from competing candidates at their respective districts and 47 from proportional party lists. The pre-election voting took place on April 10 and 11. The ruling Democratic party, pro-Moon Jae-in, won the election by landslide, garnering 180 seats vs 103 seats for the conservative opposition. The remaining 17 seats went to various surrogates.

Subsequent examination of the election results in a striking contrast between the pre-election day vote counts and the election day vote counts for the respective ruling and opposition parties. For each of 49 highly competitive districts in Seoul, the ruling party won 11.5% on average more votes on the pre-election days than on the election day while the opposition party lost the same percentage less on the pre-election days than on the election day. This pattern is similar throughout the country except Jeolla provinces where the ruling party is convincingly favored.

This anomaly alarmed Emeritus Professor Park Seong Hyun of Statistics Department, Seoul National University states that such anomaly wouldn't occur unless God makes it happen in advance. He served Korean Statistics Society as Chairperson and the most prestigious Korean Science and Technology Foundation, Han Rim Won, similar to National Science Academy in US as President.

On April 27(KT), Mr. Min Kyeong Wook, an incumbent National Assembly member and a candidate from the opposition party submitted to a court his request for keeping all the votes, server hardware and related software intact since he asserts counting processing was rigged for the votes casted on two pre-election days. The court rejected everything except votes to be preserved as evidence.

Mr. Min asserts that the National Election Commission (NEC), a government agency overseeing this election awarded LG U+ the contract for vote counting products and other related hardware without the required bidding process. The vote counting machines are networked by Huawei telecom system. He also asserts that the Huawei is suspected to participate in the wrongdoing in the counting process aforementioned above.

Concurrently, Professor Walter Mebane, Jr. of University of Michigan, a well-respected expert on the election fraud field and statistics fields, claims that most of frauds are detected in the early votes casted during pre-election days. He reports that 10.4% of the votes, about 1.5 million votes, for the ruling party, are fraudulent while 1.2 million votes for the opposition party were fraudulently stolen.

Another accusation was made by a prominent professor in Statistical Physics Department of Myongji University, Korea, Ms. Park Young A who claims that the probability of the frauds she detects in the votes of pre-election days would be close to that of flipping 1000 coins and having the same sides of all the coins, i.e., $(1/2)^{1000}$ power of 1000.

Also, Mr. Cho Shua in Korea was able to extract a manipulation number for each district suspected to be used for the pre-election day vote counting for stealing the opposition party's votes. Using this same number, he was able to undo such manipulation to restore a normal distribution for each district using Excel. In addition, he pointed out where the manipulation might have occurred in software.

Also, from the election results, Mr. Roy Kim was able to discover a simple formula that is suspected to be used to rig pre-election day vote counting. Applying this formula, one can readily estimate the desired total vote counts targeted by the ruling party stealing votes from the opposition party.

Such statistical anomaly caught the attention of Korean American scientists & engineers in the San Francisco Bay Area. They analyzed election data from 19 selected Seoul districts, the capitol city of South Korea. These districts were expected to be highly competitive for the ruling and opposition parties. Their subsequent statistical analysis using normal distribution shows the probability of such aforementioned event occurring in the Seoul districts turns out to be $1/10^{171}$. The details of their analysis are appended at the end of this article.

To explain the anomaly, the ruling party asserts that younger generations expected to be on their side over the opposition party turned out more on the pre-election days rather than the election day in explaining such abnormal statistics. The data, however, shows the opposite: the voters in 60's and older, the majority of whom are expected to favor the opposition party voted more on the pre-election days to avoid the would-be crowd election day, hoping for less exposure to COVID-19.

Furthermore, another type of votes for choosing a party, not a candidate, called the proportional party votes were counted rather by hands, not by machines. The manual counting results of the pre-election show the ruling party's proportional vote lost to the opposition proportional party. On pre-election days, these party votes show quite a discrepancy from the aforementioned candidates' votes counted by electronic counting machines, showing the ruling party winning on the average of 11.5% over the opposition party. This is extremely unlikely, given the current polarized political views in Korea. In fact, the proportional party votes on the pre-election days follows very closely the votes of both the proportional party votes as well as the candidate votes on the election day.

South Korean NEC has been balking at anyone suggesting election fraud, even threatening to take legal action against them. Instead, the commission should explain and clarify these questions that are now surfacing in droves. Otherwise, the commission is going to lose credibility with the public and the election results. Civic groups demand that an independent investigation of the 2020 parliamentary election should take place.



Figure 1: The ballot for the pre-election days is printed right at a voting place for each voter when he or she checks in to vote and presents a residence card containing a personal data such as birth date, residence address, etc. This pre-election days ballot shown in the left side of this figure contains a QR code. The law clearly madates using a bar code to identify the district name, name of the election, and NEC, according to the Korean Election Laws Article 151, Paragraph 6. The use of the QR code is prohibited because of the possibility of including information about the voters. On the other hand, the ballot for the election day is printed beforehand and handed to a voter when he or she checks in to vote as shown in the right side of the figure. This election day ballot has no code printed other than a serial number at the lower right corner to be detached before casting.

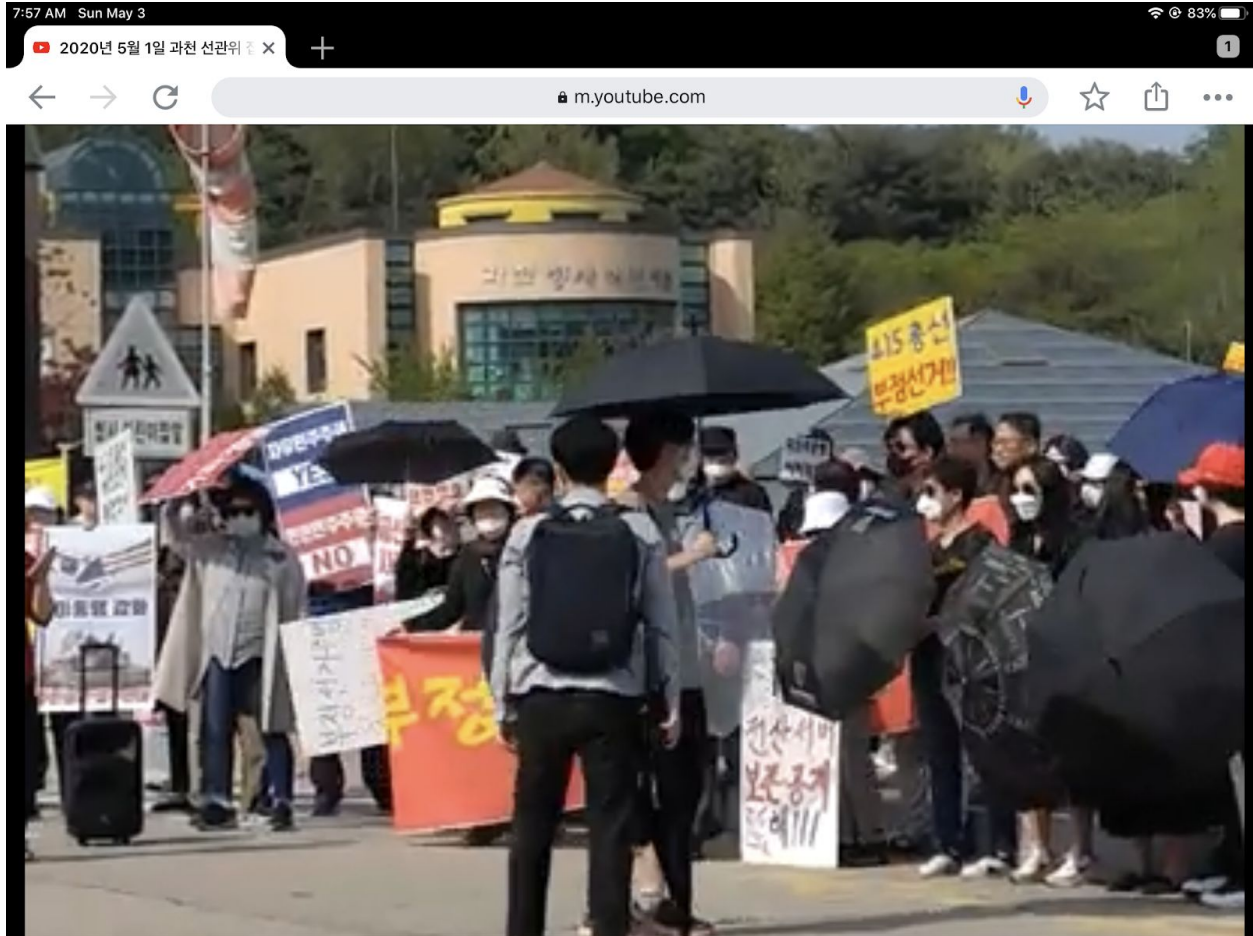


Figure 2: Demonstrators demanding at the Korean Election Committee Office to preserve the election servers as fraud evidence (5/3/20 KT)

APPENDIX for statistical analysis in details:

The table below is used to investigate Mr. Min’s assertion of the rigged election. in this table, each party vote counts in percentages are calculated from the data publicly available from the Central Election Management Committee, a government agency overseeing this election aforementioned above.

A histogram is shown for a variable created by combining the opposition party Election Day votes subtracted their mean, “DateB%-MeanB ”as denoted in the table for the opposition party and the differences from Election Day votes to early voting votes, “Date% minus Early%” denoted in the table for both parties, A and B.

In this histogram, the vertical axis is the number of districts whose total is 19 while the horizontal axis is vote count in percentage.

The middle distribution can be readily viewed as the election day vote counts in percentage minus their mean for Mr. Min's party whose shape would approach to a normal curve as the sample size increases as predicted in Central Limit Theorem (CLT). Such shape in this histogram indicates this data behaves as a random variable as expected. No suspicion is noticed here in this middle distribution for the election day.

The right side distribution can be readily viewed as the difference from the Election Day and the early voting votes for Mr. Min's opposition party while the left side distribution is for for the ruling party. These two distributions should not be separated as a bimodal distribution shown in this histogram if they both are randomly distributed. One can clearly see that pre-vote data are rigged. If the pre-vote data are not rigged, this bimodal distribution should manifest itself to be a normal curve in a similar shape to the middle distribution in the histogram.

The right side and left side distributions have their means away from the mean of the middle distribution by 11 and -12 percentages as readily seen in the histogram and also shown in Table, respectively.

Next, we can calculate the probability of aforementioned bimodal distribution occurrence suspected to be created by election malfeasance and fraudulent actions as below:

We say p is the probability of one candidate winning election then $(1-p)$ would be the probability of the other candidate winning the election.

The probability of a vote count away from one standard deviation from its mean in a normal distribution is 0.16 while the one for 3.5sd is 0.0001.

Since a binomial distribution becomes a normal distribution as sample size, n , increases, we use standard deviation, sd for the binomial distribution which is expressed as:

$$sd = \sqrt{P(1-P)/n}$$

sd (max) = .004 with $p=0.5$ and $n=16000$ where it is assumed each district has 16000 voters.

Using the 11 percentage mentioned above, which is the right side distribution mean location away from the mean of the middle distribution, we can see the probability of such bimodal distribution would occur at 28 times sd where $28=0.11/0.004$.

The probability of such bimodal distribution for one district occurring at 28 sd is less than $(1/10)^9$ where $*$ is power symbol.

For 19 districts, this probability would become less than $(1/10)$ power of $(9 \times 19) = (1/10)^{171}$ which is approaching to zero.

19 Selected Seoul District	EarlyA% [% of Early Votes for Party A]	DateA% [% of Election Day Votes for Party A]	DateA% minus EarlyA%	EarlyB% [% of Early Votes for Party B]	DateB% [% of Election Day Votes for Party B]	DateB% minus EarlyB%
1	66	50	-16	32	47	15
2	61	49	-12	34	45	11
3	59	46	-13	39	52	13
4	55	40	-15	40	53	13
5	61	48	-13	33	45	12
6	58	44	-14	41	53	12
7	60	47	-13	34	47	13
8	60	49	-11	35	47	12
9	63	53	-10	32	40	8
10	65	54	-11	32	42	10
11	67	55	-12	30	41	11
12	66	54	-12	32	42	10
13	63	52	-11	33	43	10
14	71	59	-12	27	39	12
15	61	49	-12	33	45	12
16	59	48	-11	39	49	10
17	64	52	-12	32	42	10
18	69	58	-11	29	40	11
19	59	48	-11	38	48	10
Mean	62	50	-12	34	45	11
sd	3.9784	4.5519	1.47	3.7342	4.26543	1.55775

| Table: Early Voting Dates: 4/10 8

Histogram

