



Exit Poll Results in the 2022 Korean Presidential Election

– Integration of early voter by telephone surveys and voter exit polls on election day –

November, 2022

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Welfare	Woman	Youth
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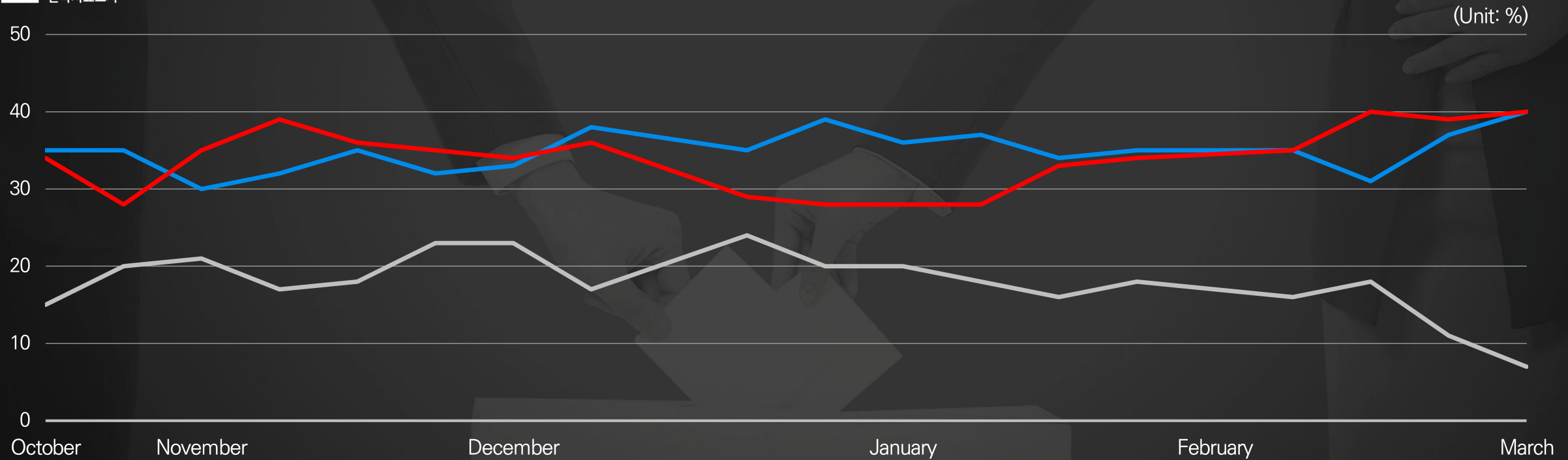
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South Korea's 20th presidential election survey : Oct, 2021~ Mar, 2022

- South Korea held its **20th presidential election on March 9, 2022**



— Lee Jae Myung — Yoon Suk Yeol — None / No Response



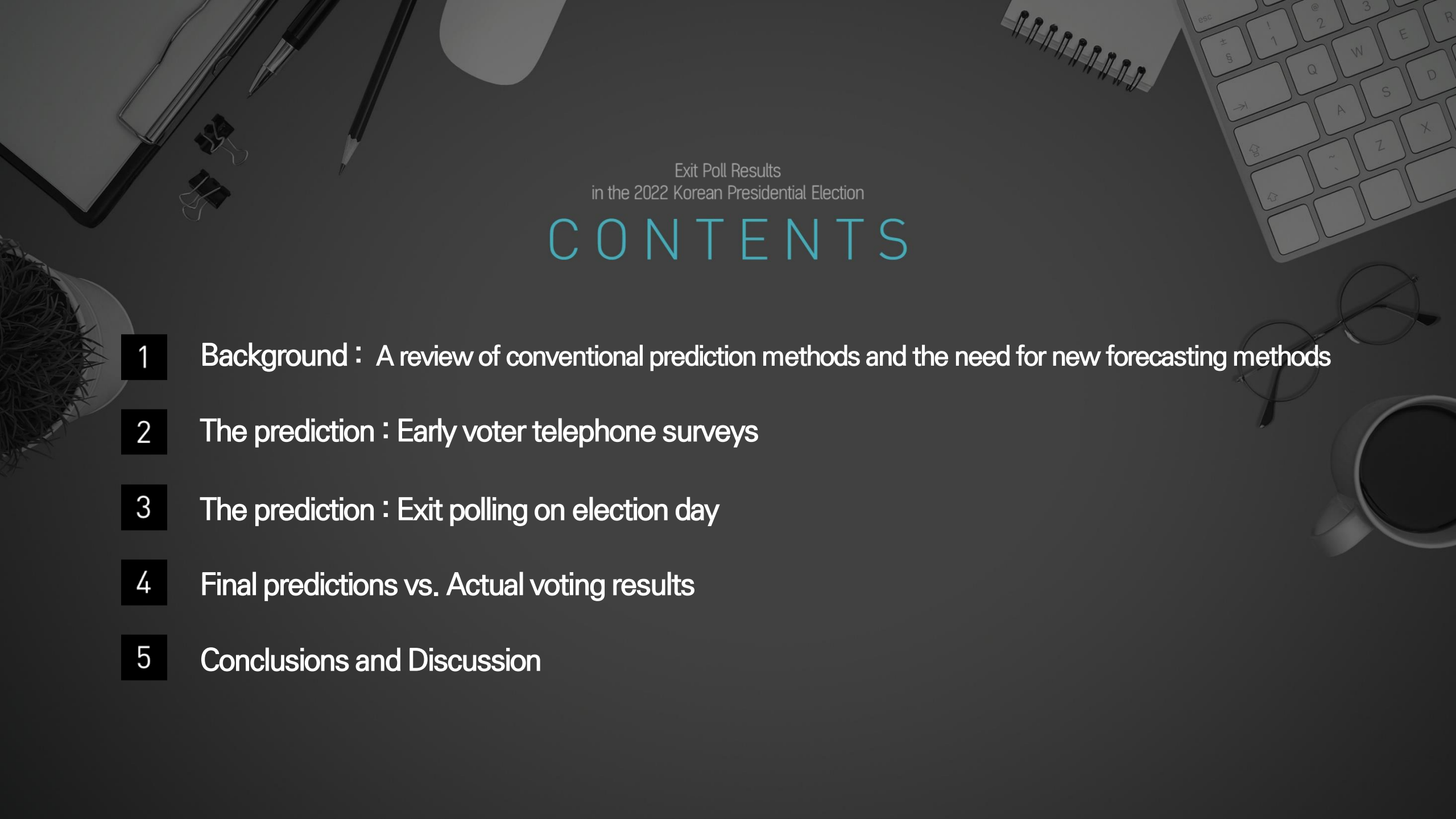
Source: NBS (National Barometer Survey)

The system used to conduct exit polling for presidential election

- 3 of the country's largest broadcast companies and The Korean Broadcasters Association came together to create the **KEP** (Korea Election Pool).



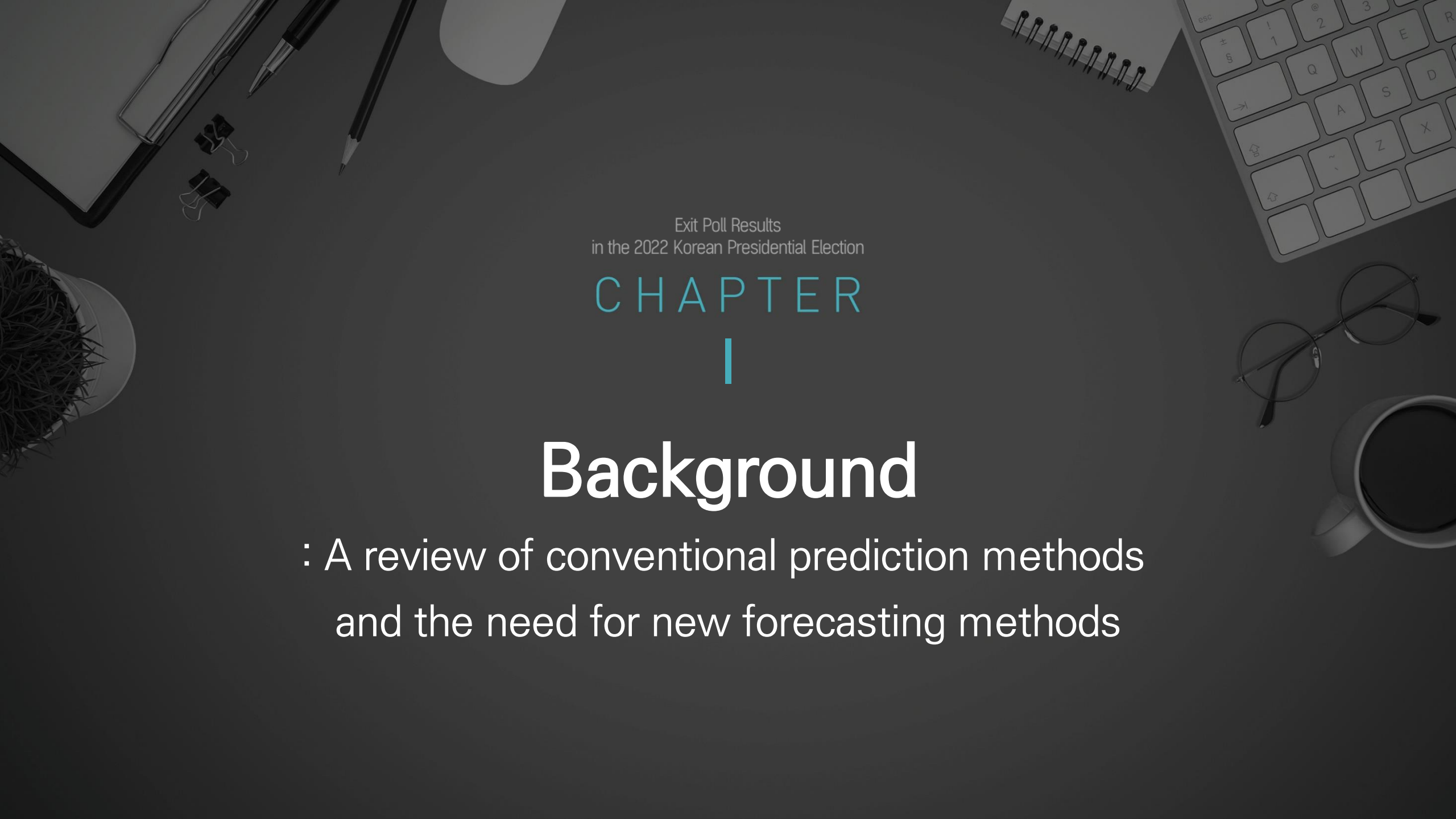
We would like to thank those working at KBS, MBS, SBS, the Korean Broadcasters Association, and advisory committee for their help in the successful execution of these efforts.



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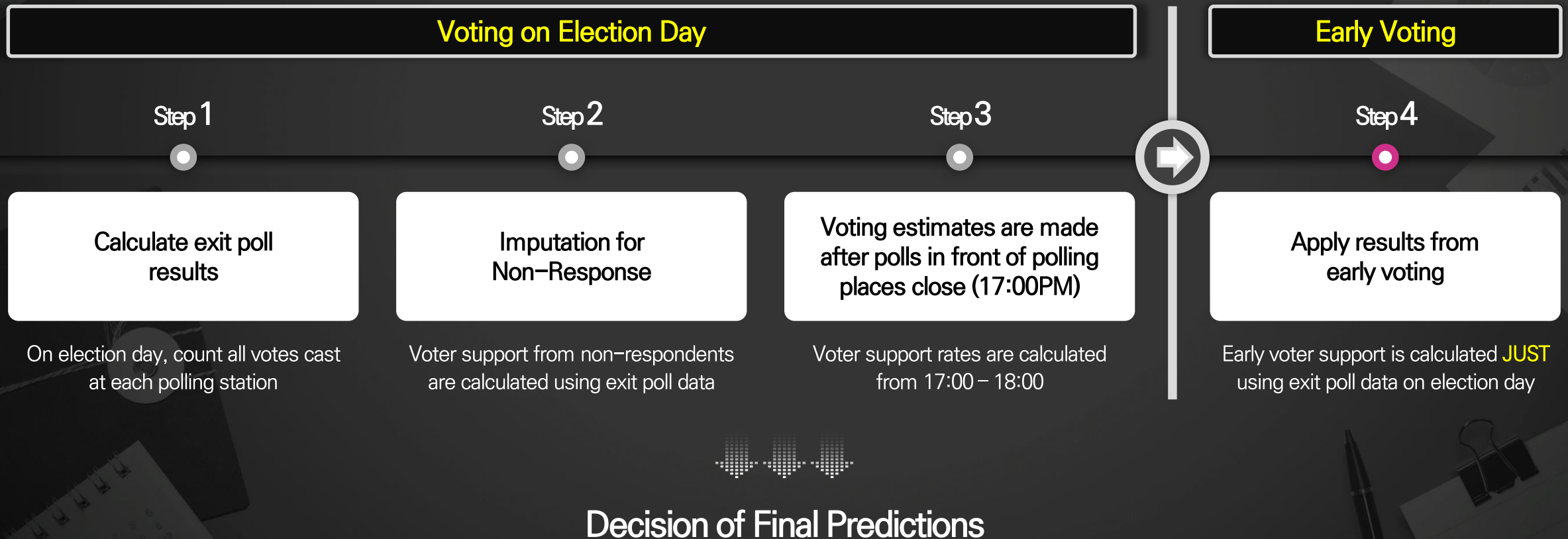
CHAPTER I

Background

: A review of conventional prediction methods
and the need for new forecasting methods

I-1. Conventional exit poll prediction methods (used previously)

- After extrapolating the results of early voting using “just” election day voting results, final predictions were determined.
 - (Assumption) early voters and voters on election day of the same age, gender from the same area would exhibit similar voting behaviors

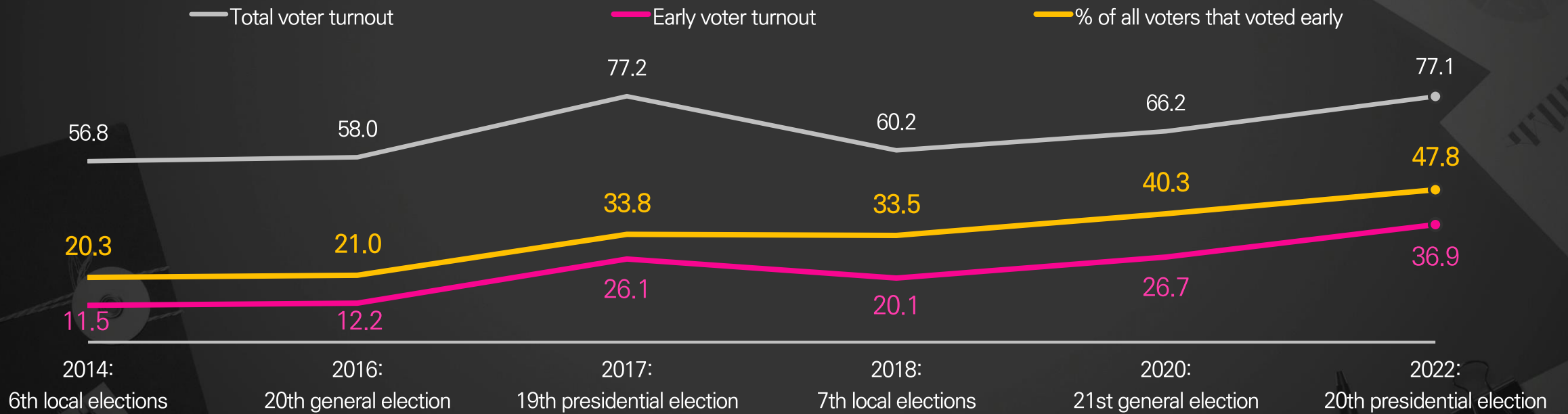


I-2. A review of conventional exit poll prediction methods

01 An increase of early voter turnout in Korea

[figure] Overall voter turnout and early voter turnout since 2014

(Unit: %)



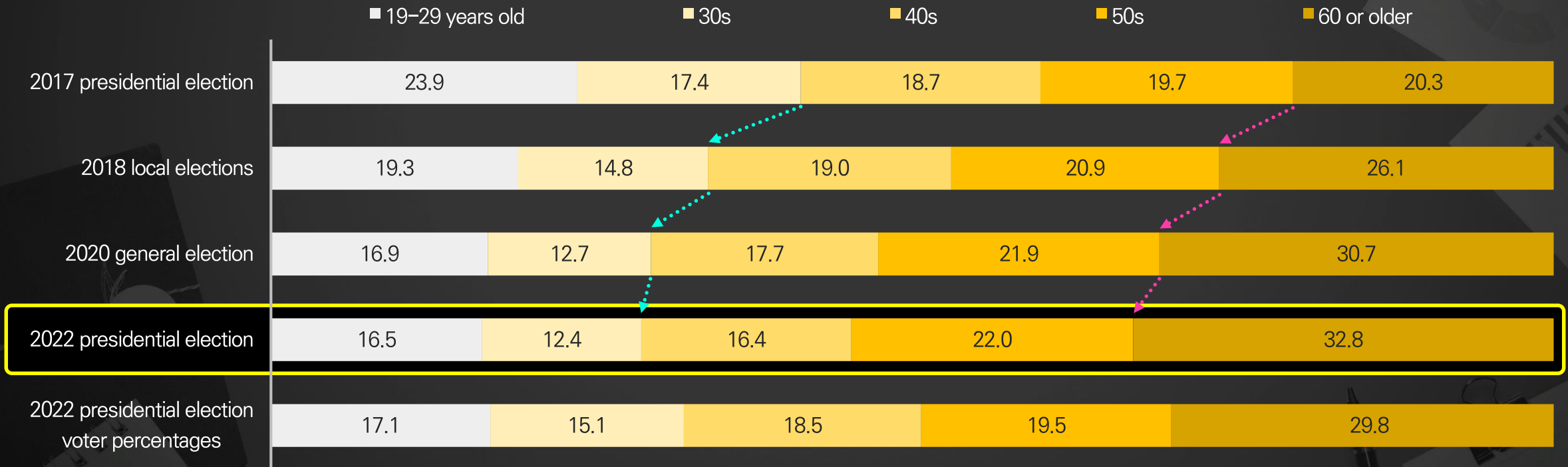
Source : National Election Commission(NEC)

I-2. A review of conventional exit poll prediction methods

02 Changes in the composition of early voters

[figure] Changes in the composition of early voters, by age group

(Unit: %)



Source : National Election Commission(NEC)

I-3. The need for new forecasting methods

The integration of early voter by telephone surveys and voter exit polling on election day

the number of voters casting their votes early is growing. As a result, early voting is having an increasing impact on final voting predictions

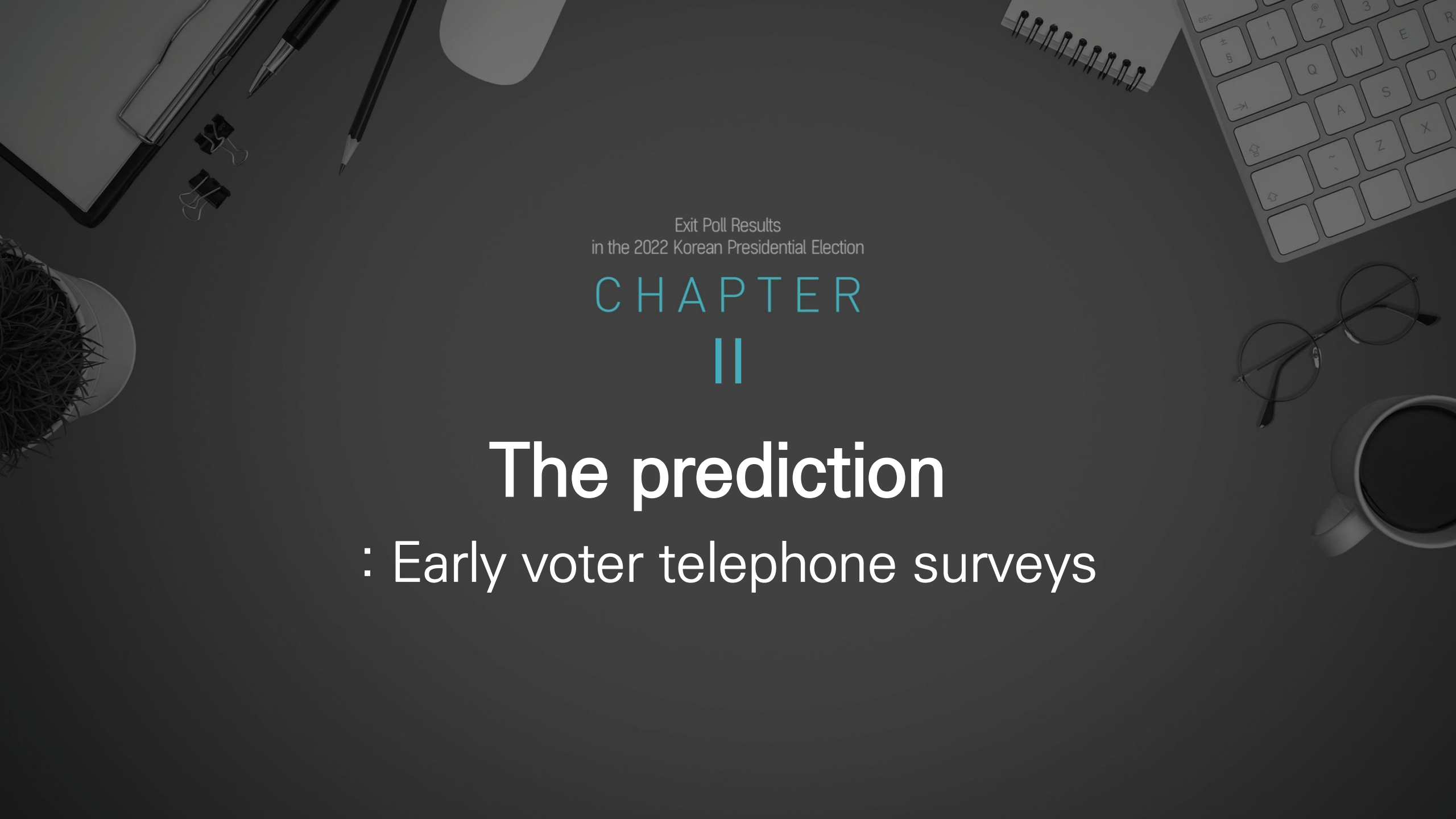
the composition of the early voter population continues to evolve

differences in the voting tendencies of early voters and election day voters

The need for a new predictive model emerged – one that included the surveying and analysis of early voting



Decision of Final Predictions



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CHAPTER II

The prediction

: Early voter telephone surveys

II-1. The Design of the Early Voter Telephone Surveys

Target respondents

Men and women 18 years of age or older residing in South Korea

Survey timeframe

March 6th – 7th

(the day after the early voting period ended / the presidential election was held on March 9th)

Survey methodology

Telephone surveys (conducted using a mobile phone virtual number)

Sample size

10,018 respondents(3 groups each of 4,000, 3,001, and 3,017 respondents)

Method of selecting respondents

Random extraction of mobile phone virtual numbers based on gender, age, and area

Sample allocation

Population-proportional allocation by gender, age, area

Sampling error

± 1.0% point at a 95% confidence level

Response rate

6.3% (by AAPOR standards : RR3)

Research agencies

Hankook Research, Korea Research International, Ipsos

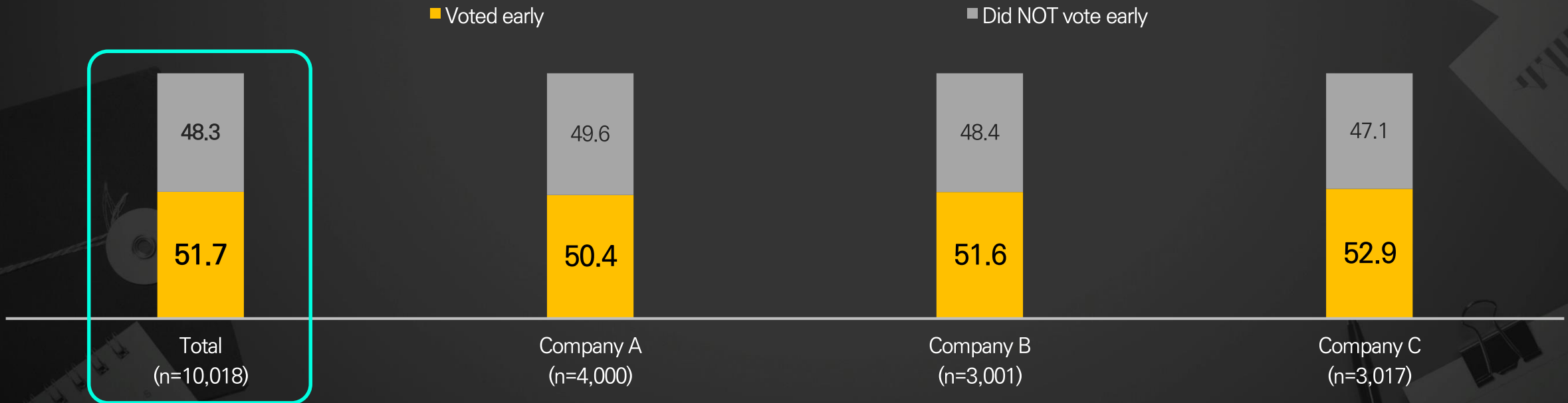
II-2. Early voter telephone surveys

Early voter survey response rates

- Of the 10,018 telephone survey respondents, 51.7% (5,183 respondents) reported that they had voted early.

[chart] Proportion of early voters among all respondents

(Unit: %)



II-3. Early voter telephone surveys

Telephone surveys vs. Actual voter composition

- Differences in age and gender composition was within 1~2 percentage point.

(Unit: %, %p)

	Early voters by telephone survey (base = 5,183)	Actual early voters from NEC (base = 16,323,602)	Difference (between telephone surveys and actuality)	
Men	18-29	9.3	8.7	0.6
	30s	7.3	6.5	0.8
	40s	9.8	8.8	1.0
	50s	11.2	11.8	-0.7
	60s	8.8	10.8	-2.0
	70 or older	5.2	6.1	-1.0
Women	18-29	8.2	7.8	0.4
	30s	6.4	5.8	0.6
	40s	8.8	7.6	1.2
	50s	10.1	10.1	0.0
	60s	8.5	9.4	-0.9
	70 or older	6.4	6.5	-0.1
TOTAL	100.0	100.0		

II-4. Early voter telephone surveys

Non-response rates

(Unit: %)

Based on early voters
(base = 5,183)

% of early voters who refused to
say who they voted for

TOTAL	3.5
18-29 years old	9.0
30s	4.5
40s	2.0
50s	1.6
60 or older	2.1

(Unit: %)

Based on early voters
(base = 5,183)

% of early voters who refused to
say who they voted for

TOTAL	3.5
Seoul	3.4
Gyeonggi	3.8
Incheon/Jeju	3.9
Daejeon/Chungnam/Sejong	3.7
Gangwon/Chungbuk	2.8
Gwangju/Jeolla	3.4
Daegu/Gyeongbuk	3.4
Busan/Ulsan/Gyeongnam	3.4

II-5. Using early voter telephone surveys to predict election results

Step 01 Imputation for non-response

- Step #1 was to impute the data for respondents who stated that they had voted early but declined to tell us who they had voted for (don't know / no response)
- Logistic regression analysis was used to analyze data
 - dependent variable: candidate he/she supports
 - independent variables: political party support, nature of the election, evaluation of state affairs, ideological tendencies, gender, age, and region

Logistic regression analysis

Independent variables used for analysis

Party Support

Nature of the election

Evaluation of state affairs

Ideological tendencies

Gender

Age

Region

Inserted after being converted into a dummy variable

Reference) Eunseon Kwak & Youngwon Kim(2022). Accuracy of the current election poll method and predictability of election results, Rresearch, 23(1), 131-153.

II-5. Using early voter telephone surveys to predict election results

Step 02 Weighting of actual early voter composition

		Early voters by telephone survey (base = 5,183)		Actual early voter from NEC (base = 16,323,602)
		Nationwide and provincially		
Men	18-29	9.3	X	8.7
	30s	7.3	X	6.5
	40s	9.8	X	8.8
	50s	11.2	X	11.8
	60s	8.8	X	10.8
	70 or older	5.2	X	6.1
Women	18-29	8.2	X	7.8
	30s	6.4	X	5.8
	40s	8.8	X	7.6
	50s	10.1	X	10.1
	60s	8.5	X	9.4
	70 or older	6.4	X	6.5



II-6. Predictions based on early voter telephone surveys

Predicted vs. Actual results

(Unit: %, %p)

	Lee Jae Myung	Yoon Suk Yeol	Sim Sang Jung	Other candidates	Non-response
Results from early voter by telephone surveys	50.9	41.9	2.4	1.3	3.5
[Step 1] Imputation for non-response	52.9	43.4	2.4	1.3	—
[Step 2] Weighting actual composition from NEC	51.7	44.7	2.3	1.3	—
Final prediction(A)	51.7	44.7	2.3	1.3	—
Actual results(B)	52.3	44.6	2.2	1.0	—
Prediction error (A-B)	-0.6	+0.1	+0.1	+0.3	—



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CHAPTER III

The prediction

: Exit polling on election day

III-1. The Design of Exit Polling on Election Day

Target respondents

Voters exiting voting booths at designated polling stations nationwide

Survey timeframe

March 9th, 06:00 – 18:00 (voters diagnosed with coronavirus voted from 18:00 – 19:30)

Survey methodology

Exit polling

Method of extracting respondents

Every 5th voter exiting a polling station was asked to participate in the exit poll (Systematic Sampling)

of voting locations utilized

330 polling stations nationwide (total number of polling stations: 14,464)

of valid respondents

73,297 nationwide (total number of voters: 34,067,853)

Sampling error

±0.8%p at a 95% confidence level

Research agencies

Hankook Research, Korea Research International, Ipsos

III-2. Exit polling on election day

The process of selecting polling stations

- 01 Determine **the total number of polling stations** to conduct exit polls
- 02 **Allocate the proper number of exit polling stations** in cities and provinces nationwide
- 03 Designate polling stations in cities and provinces:
systematic sampling of polling stations ranked by voter support
systematic sampling of polling stations ranked by voter support:
a ranked list of polling stations is created based on past voter support for a candidate/political party. Polling stations are then selected from that list at regular intervals.
(proportionate voter support during the 2020 general elections across all cities/provinces – Citizens' Party of Korea and Future Korea Party)
- 04 Visit designated polling stations **beforehand**
- 05 **Find alternate stations** for exit polling stations where exit polling is deemed difficult/impossible
- 06 Finalize the list of all polling stations nationwide

III-3. Exit polling on election day

The number of polling stations

(unit: number, person, %p)

	2022 20 th presidential election	2017 19 th presidential election	2012 18 th presidential election
Total number of polling stations nationwide	14,464	13,979	13,542
Number of polling stations used for exit polling	330	330	360
Sample size	73,297	107,581	110,726
Margin of error	±0.8	±0.8	±0.8

III-4. Exit polling on election day

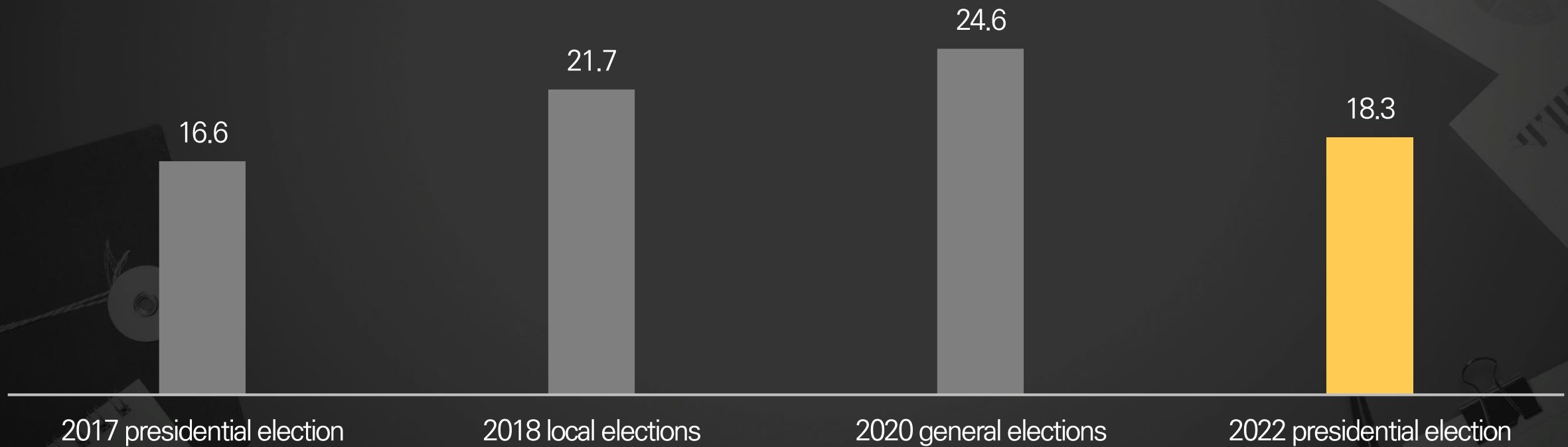
On-site polling procedures

- Exit polls placed in front of polling stations were operated in the following manner:

- 01 5 interviewers were dispatched to each exit polling station (1 team leader, 1 person manning the poll counter, 3 crew members)
- 02 Exit poll interviewers were dispatched to polling stations by 5:30AM on Election Day (March 9th)
- 03 Exit polling was conducted from 6AM to 6PM
- 04 Every 5th voter exiting a polling station was asked to participate in the exit poll
- 05 The exit poll questionnaire consisted of 3 questions: (1) gender, (2) age, (3) candidate he/she voted for

III-5. Exit polling on election day

Non-response rates



III-6. Predictions based on election day exit polling data

Imputation for non-response

- Pre-defined voting tendencies for voters of the same gender and age are used in place of non-responsive exit poll participants

Gender/Age Correction

	Candidate A	Candidate B	Non-response
Males between 18-29	<input type="text"/>	<input type="text"/>	<input type="text"/>
Males in their 30s	<input type="text"/>	<input type="text"/>	<input type="text"/>
⋮	⋮	⋮	⋮
Females in their 40s	<input type="text"/>	<input type="text"/>	<input type="text"/>
Females in their 50s	<input type="text"/>	<input type="text"/>	<input type="text"/>
Females, 60+	<input type="text"/>	<input type="text"/>	<input type="text"/>



Imputation for non-responsive respondents by applying the voting tendencies of voters of the same gender/age

III-7. Exit polling on election day

Predicted vs. Actual results

(Unit: %, %p)

	Lee Jae Myung	Yoon Suk Yeol	Sim Sang Jung	Other candidates	Non-response
Results of exit polls on election day	36.8	41.5	2.1	1.0	18.3
Imputation for non-response based on gender/age	44.1	51.9	2.6	1.4	-
Final prediction(A)	44.1	51.9	2.6	1.4	-
Actual results(B)	43.7	52.2	2.6	1.5	-
Prediction error (A-B)	0.4	-0.3	0.0	-0.1	-



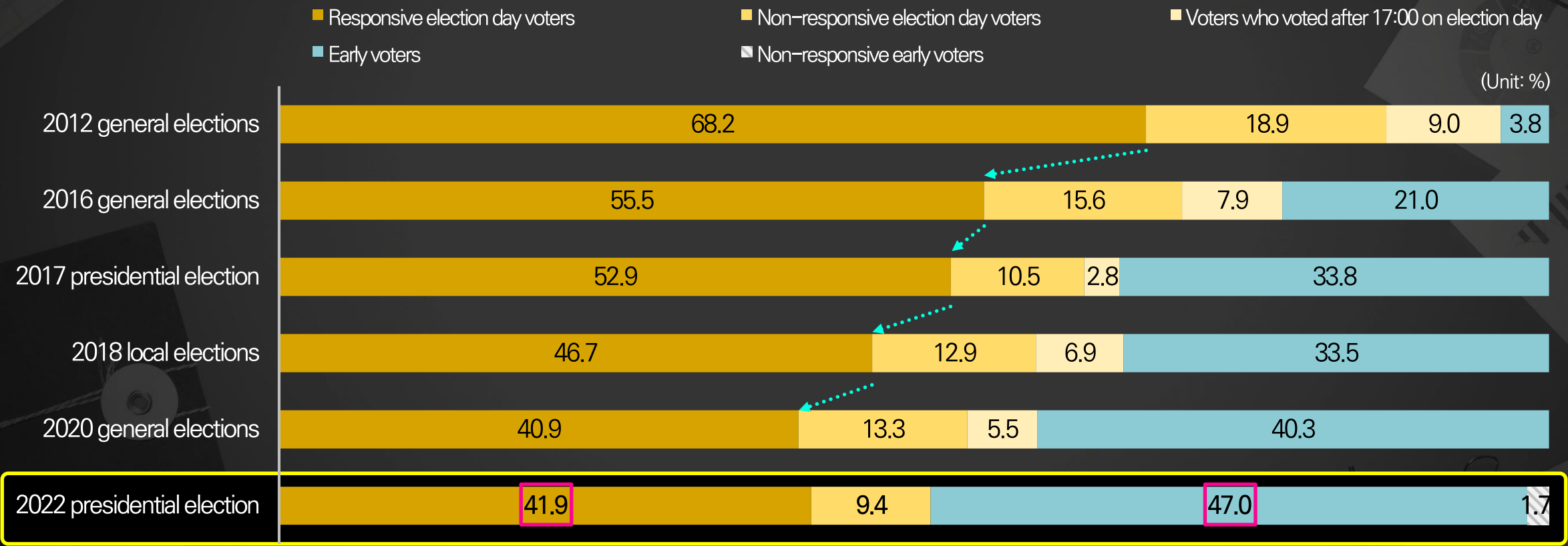
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CHAPTER IV

Final predictions vs. Actual voting results

IV-1. Voter structure of the predictions for the 2022 presidential election

- When predicting the results of the 2022 presidential election, **the overall proportion of all eligible voters who divulged who they voted for increased significantly**



Notes: during the 2022 presidential election, exit polling was conducted until 18:00, voters with coronavirus voted from 18:00 – 19:30, news coverage of election results began at 19:30)

IV-2. Final overall predictions vs. actual voting results

- The increased accuracy of a forecasting method that integrates early voter phone surveys with election day exit poll data is confirmed

(Unit: %, %p)

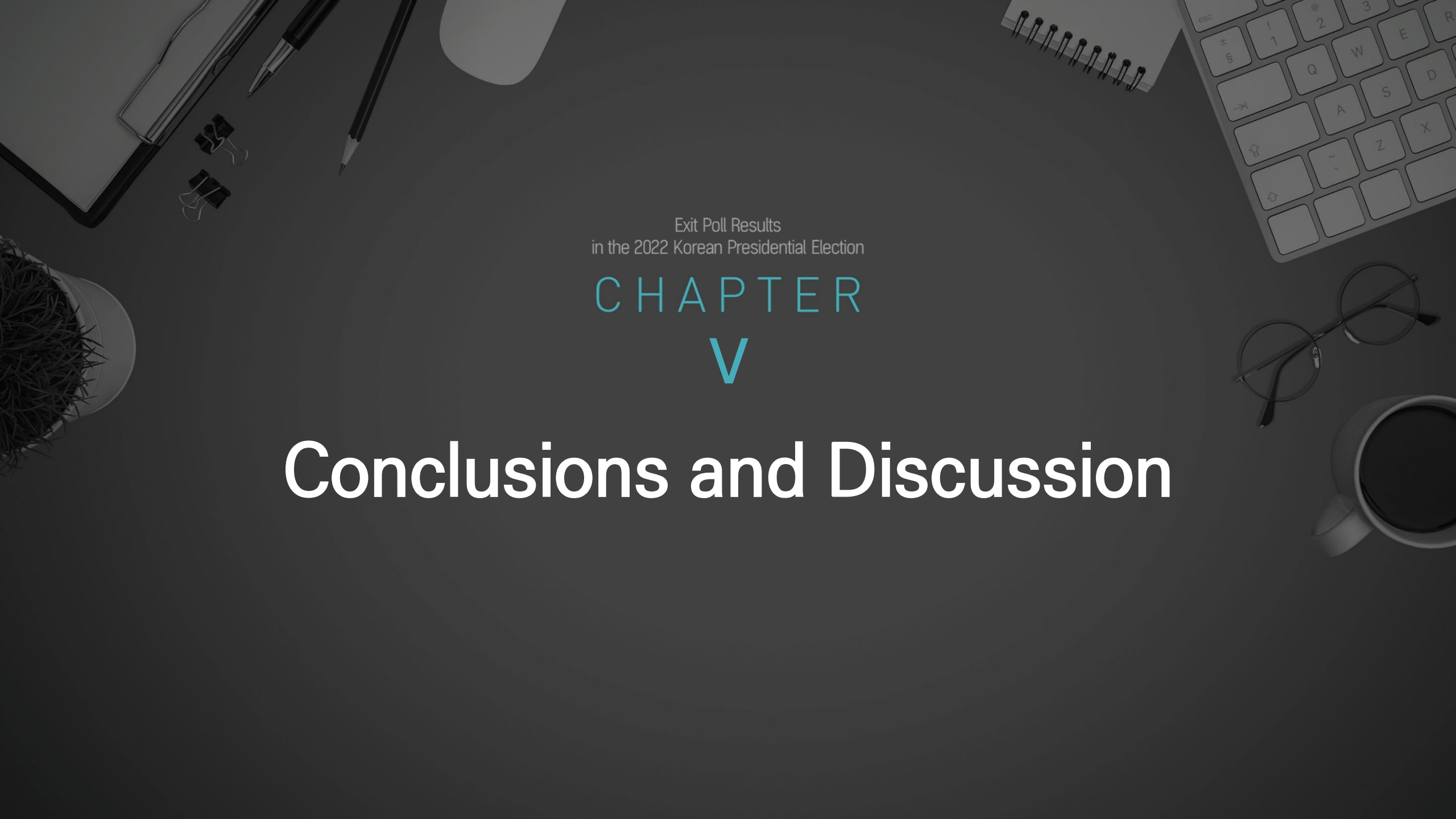
	Lee Jae Myung			Yoon Suk Yeol		
	Predicted (A)	Actual (B)	Prediction Error (A-B)	Predicted (C)	Actual (D)	Prediction Error (C-D)
Early voters	51.7	52.3	-0.6	44.7	44.6	0.1
Voter on Election day	44.1	43.7	0.4	51.9	52.2	-0.3
Total	47.8	47.8	0.0	48.4	48.6	-0.2
[reference] Total (using conventional prediction methods)	45.2	47.8	-2.6	50.8	48.6	2.2

IV-3. By City / Province : overall predictions vs. actual voting results

- Across 16 cities and provinces in Korea, predicted results were within $\pm 0.0\%p - \pm 2.4\%p$ of actual voting results.

(Unit: %, %p)

	Predicted		Actual Voting Results		Prediction Error	
	Lee Jae Myung (A)	Yoon Suk Yeol (B)	Lee Jae Myung (C)	Yoon Suk Yeol (D)	Lee Jae Myung (A-C)	Yoon Suk Yeol (B-D)
Nationwide	47.8	48.4	47.8	48.6	0.0	-0.2
Seoul	45.4	50.9	45.7	50.6	-0.3	0.3
Busan	38.5	57.8	38.2	58.3	0.3	-0.5
Daegu	24.0	72.7	21.6	75.1	2.4	-2.4
Incheon	49.6	45.6	48.9	47.1	0.7	-1.5
Gwangju	83.3	13.7	84.8	12.7	-1.5	1.0
Daejeon	47.3	48.2	46.4	49.6	0.9	-1.4
Ulsan	39.1	56.5	40.8	54.4	-1.7	2.1
Gyeonggi	50.8	45.9	50.9	45.6	-0.1	0.3
Gangwon	41.2	54.3	41.7	54.2	-0.5	0.1
Chungbuk	45.0	50.3	45.1	50.7	-0.1	-0.4
Chungnam (Sejong)	47.2	48.2	46.0	50.1	1.2	-1.9
Jeonbuk	82.6	14.4	83.0	14.4	-0.4	0.0
Jeonnam	83.7	13.3	86.1	11.4	-2.4	1.9
Gyeongbuk	24.6	72.1	23.8	72.8	0.8	-0.7
Gyeongnam	39.0	57.1	37.4	58.2	1.6	-1.1
Jeju	52.2	42.5	52.6	42.7	-0.4	-0.2



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CHAPTER V


Conclusions and Discussion

V-1. Conclusions and Discussion Points

Reasons for the predicted results being so close to actual voting results

 The error rate of predictions made based on early voter by telephone surveys was small

- 01 Sampling framework: a mobile phone number was used 100% of the time
- 02 Sample size: a large sample size of 10,018 respondents helps to minimize error (5,183 early voters)
- 03 The non-response rate among early voters was low at 3.5%
- 04 Imputation for non-responses were accurate
- 05 The pool of early voter telephone survey respondents was weighted for gender, age, and region in accordance with actual data received from the National Election Commission

 The error rate of predictions made based on election day exit polls was small

- 01 Exit polls located in front of polling stations made use of an equal sampling interval method (every 5th voter exiting a polling station)
- 02 Imputation for non-responses were accurate

V-2. Conclusions and Discussion Points

Steps needed to further increase the accuracy of predictions

Research Design

- 1 When there is a significant number of electoral districts to predict (such as with general and local elections), early voter telephone surveys and election day exit polls must be optimized by constituency groups
- 2 Improve budget efficiency to the furthest extent possible

Fieldwork and data analysis

- 1 Minimize the non-response rates of early voter telephone survey respondents as well as election day exit poll participants
- 2 Further refine the imputation for non-response

Electoral System

- 1 Consider allowing exit polls to exist within 50 meters of a polling station (currently, exit polls are NOT allowed within 50 meters of a polling station)

THANK YOU
감사합니다

