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Antoinette Baujard[†], Isabelle Lebon[‡]

February 28, 2022

Abstract

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1 Introduction

When voters vote, they wish to achieve goals that appeal both to heart and to reason. They may want to express their political opinion (the expressive motive); alternatively, they may wish to improve the voting outcome – equivalently, to avoid a worse outcome – from their own perspective (the strategic motive). If voters are rational, their voting choice can therefore potentially depart from their first preference. This induces frustration with the experience of voting, and potentially leads to resentment against electoral democracy itself. This paper intends to contribute to the literature on the relative importance of strategic behavior in the context of the strategy vs. expression dilemma.

Measuring the phenomena of strategic behavior is not straightforward. The interpretation of votes cast, with respect to what they tell us about actual individual preferences, ultimately depends on the relative importance of one or the other determinants of voting. There is indeed extensive discussion in the literature regarding the importance of strategic behavior, either taking it for granted (e.g., Downs 1957), highlighting its relatively low significance (e.g., Ferejohn and Fiorina, 1974), or insisting on the trade-off between strategy and expression (e.g., Picketty 2000, Eggers and Vivyan 2020). In any case, the disentanglement of the strategic and sincere voting motives in leading to the final voting choice requires more than just observing the votes cast. The first thing to note is that the “strategy vs. expression” dilemma does not translate into a binary distinction between sincere or insincere voting, since there are many cases in which sincere voting coincides with an instrumentally motivated choice, i.e., is a strategic vote. Conversely, there are two subcases in which sincere and strategic voting do not coincide: where voters cast a sincere vote in full awareness that it will not influence the outcome of the election; and where voters cast a strategic vote even though they would have preferred to support their favorite candidate. Frustration with the voting process in an electoral democracy arguably derives from these two cases. Moreover, as voters translate their preferences into a vote, the strategic vs. expression dilemma manifests in a way that is constrained by the voting rule. Expression deriving from preferences is mechanically framed by the balloting information contained in the voting rule,² and the strategic aspect of

²Whether you select one name (as in the standard plurality voting) or several names (as in the elections for the members of the Society for Social Choice and Welfare), whether you are asked to cross out names (as in the French municipal elections for small communities), or give nuanced support (as in the Latvian parliament), and so on.

voting closely depends on the choice of rule (Lebon et al. 2018). With respect to the voting rule that is employed in a given case, measuring strategic voting behavior requires not only that we contrast individual actual votes with the underlying individual preferences, but also that we disentangle the different reasons why they have been transformed in one way or another.

With this in mind, we conducted an experiment during the first round of the 2017 French presidential election allowing us to simultaneously collect individual political preferences and the corresponding actual vote from a sample of voters. Formally, this experiment is comparable to that carried out by Selb et al. (2013) with the aim of predicting the outcome of the second round of the municipal elections in Konstanz in 2012. In our case, the collected data show that, where voters were faced with the strategy vs. expression dilemma, they were substantially more frequently non-strategic than strategic.

Section 2 defends that the French presidential election is a particularly appropriate context to disentangle the different categories of choice situations. Section 3 claims that field experimentation conducted on the election day conveys reliable information on real individual political preferences and behaviors, and displays the experimental protocol and the material collected during the 2017 French presidential election. Section 4 specifies the definition of sincere and strategic votes given the available data, and displays the different categories of voting choice in the strategy vs. expression dilemma. Section 5 sets out the experimental results and analyzes them. Section 6 concludes.

2 Strategic context

The first round of the 2017 French presidential election provided an interesting opportunity to study the strategy vs. expression dilemma, for a number of reasons.

First, since the introduction in 1962 of the election of the President of the Republic by universal suffrage, the presidential election has become the major regular event of French political life. In spite of the phenomenon of growing abstention in Europe and in France in particular, the participation rate remains high for this specific election. Information, interviews and debates concerning the election are disseminated for many months beforehand, so that voters can form a relatively more enlightened opinion than for other elections. We here develop a specific protocol to

identify the political preference independently of the voting process; these identified preferences are then used as a benchmark (see next section).

Second, under the official voting rule, voters are required to select a single candidate, which pushes them to depart from sincere voting. Sometimes they must consciously choose between a sincere vote and a strategic vote. For the presidential election, voters are regularly polled about their voting intentions. Since they are informed about the consequences of the anticipated choices of the other voters, they can easily reflect on their best voting choice given others' votes. This context is favorable for strategic voting.

Third, two characteristics of the 2017 French presidential election make it a particularly salient experimental context to analyze the strategy vs. expression dilemma. On the one hand, while information on the candidates and their programs is an important determinant of the incentive to vote expressively, a significant number of the 11 candidates in the 2017 presidential election³ are well-known actors in political life – having held political office themselves, or being longstanding figures of the opposition.

On the other hand, some candidates are more likely than others to be elected. In 2017 there were four such viable candidates, in contrast with the theoretical scheme that predicts at most three viable candidates in the first round of an election held according to the two-round plurality voting rule (Reed 1991, Cox 1997). One consequence is that polls predicted a very close outcome for all four candidates in the first round (around 20%), such that the second round was highly unpredictable. This context dramatically increased the probability of a swing vote, hence the crucial appeal of strategic voting. Given this, a conclusion that strategic behavior still remained minor would be all the more striking. Another consequence of an unusually high number of viable candidates is that the odds that every voter has a viable candidate among their favorites are high. As Cain (1978) has shown, voters are more inclined to behave strategically when the candidate being voted on is second-best preferred (see also Blais and Nadeau 1996). This conclusion echoes the case of the 2017 presidential election in which there was a viable candidate for every political camp, by contrast with previous elections where incentives for strategic voting were asymmetric. Studying the dilemma in this context allows us to derive general assertions which are not strongly biased by political formation. Finally, the gaps between

³The names of the candidates in each category are given in Appendix A.

the viable candidates and the non-viable candidates in the final polls taken before the election were substantial enough to identify the possibilities for strategic voting in a straightforward and uncontroversial way: voting for a non-viable candidate was not strategic.

3 Experimental design and collected data

We claim that field experimentation conducted on the day of the election conveys reliable information on real individual political preferences for two reasons. First, in order to assess the significance of strategic behavior in voting and to consider the full scope of possible reasons for both expression and strategy, individual preferences in context represent a more reliable source of data than laboratory-controlled preferences (Carter and Guerette 1992, Igersheim et al. 2016). Second, there are other surveys that seek to compare voters' opinions of candidates with their voting decisions. For instance, the CSES data collects the voters' opinion on the candidates at the same time as their choice in the official voting, but such surveys are carried out in the weeks preceding the vote. The particular features of the 2017 election, especially the unusually high number of viable candidates, resulted in many voters being indecisive before the election day. The indecision rate reported in the surveys conducted just before the elections was as high as 29% (BVA, April 20-21) or 30% (OpinionWay, April 19-21), by contrast with 20% on average in previous, similar elections. The timing of a field experiment conducted on the day of the first round allows us to consider the final voting decision of the voters. Besides this, the fact that voters participate in the experiment immediately after voting notably avoids "recall bias", likely to occur in electoral surveys asking people their vote in an election weeks after, since voters may have forgotten their opinions on the candidates and sometimes even their own choice. Hence the timing of a field experiment conducted the very day of the first round allowed us to collect particularly relevant data to tackle the strategic-expressive dilemma.

The experiment was carried out in Crolles, a residential town located in the south-east of France near the city of Grenoble. The municipality took the initiative to contact the researchers to organize a voting experiment in Crolles in line with our nationwide operation "Voter Autrement". The experiment was held during the first round of the presidential election, on April 23, 2017, in each of the five polling

stations of the town. A major information campaign was conducted in collaboration with the citizens and the municipal team prior to election day. Voters were aware of the existence and nature of the experiment, as well as its scientific purpose. After casting their official vote, every voter was invited to enter the experimental voting station, designed to resemble the official one in every respect. Among those who took part in the official first round of the presidential election at Crolles, 48% of voters, i.e., 2,617 volunteers, agreed to participate in the experiment. To comply with the official standards and to achieve anonymity, participants filled out their experimental paper ballot in a voting booth, slipped it into an envelope and dropped it in an urn. Notice that, on the same sheet as the experimental ballot, we also gathered information on every participant's opinion and choice in the official vote. Each of these elements was meant to be conducive to the reliability of our data.

The complete dataset of the experiment, data manual and the voting material are freely available from the online depository Zenodo (Bouveret et al. 2019). We here focus on the data derived from one of the treatments, an experimental ballot (presented in Appendix B and Appendix C) completed by 1,321 participants in which voters were invited to “express their opinion” regarding every candidate by assigning them an integer ranging from grade 0 – if they had the worst opinion on this candidate – up to grade 20 – if they had the best opinion. Voters also had the option of indicating, for every candidate, that they did not have any opinion of him/her. A non-response was interpreted as an absence of opinion. It was made clear to the voters that, as the opinion survey was not a vote, the absence of opinion would not later be turned into a grade. Opinions expressed through grades provided a consistent ranking of candidates for each voter. As there is no rational reason why voters who agreed to fill in the questionnaire would not answer sincerely, this ranking may be considered to coincide with their sincere political preferences. As well as this, participants were asked to fill in a questionnaire in which they were asked how they voted in the official first round. This straightforwardly informs us about their voting choice. Although anonymous, the ballots provided individual data regarding political preferences and the actual vote such that the latter and the former could be compared for every participant. This paper uses these data to analyze how voters translate their opinions into a vote.

In order to be able to study voters' motives during the 2017 French presidential election, the sample was reduced to the ballots of the participants who simultaneously indicated their official vote and filled in the opinion table by giving an

opinion grade to at least one candidate. Among the 1,321 ballots collected, 93 were discarded because they did not conform to this requirement. We therefore focus on the 1,228 remaining usable ballots. Due to the gap between the local vote and the national vote, and given the free participation of the voters in the experiment, the distribution of the official votes declared in this sample does not correspond to the distribution of ballots for the first round of the French presidential election. We corrected this bias to obtain a politically representative sample, by considering that the behavior of voters can be linked to their political choice (see Appendix D).

The majority of participants (56.76%) attached an opinion grade to every candidate (see Appendix E); the others declared themselves “without opinion” for some among the 11 candidates, either because they were unable or were unwilling to do so. With very few exceptions, which could be imputed to errors in filling in the experimental ballots, the candidate voted for in the official poll always received an opinion grade.

The candidates may be divided into two groups: the well-known candidates and the less-well-known candidates (see Appendix A). The former were evaluated in most of the experimental ballot papers, the proportion of “no-opinion” grades falling within a range of 9% to 16% for each of them. The gap is more significant for the less-well-known candidates, whose proportion of “no opinions” ranges between 24% and 37%; however, even the least-well-known candidate received an opinion grade from the majority of voters. It is therefore clear that the media campaign surrounding the presidential election provided good information to voters, whose opinion grades can be considered as valid judgements.

4 Strategic voting and sincere voting

Under the first round of the two-round plurality rule the voter is constrained to support one candidate only; alternatives are either abstention or blank votes. If a candidate gets more than half of the votes cast in the first round, he/she is elected. Otherwise – and this has been the case for over fifty years in the French presidential election – it is necessary to organize a second round between the two first candidates. Who qualifies for the second round is therefore decisive for the designation of the winner of the presidential election. Under these conditions, voters face a strong dilemma as to whether they should vote for expressive or for strategic purposes in

the first round. Voters may sincerely express their preference by voting for their favorite candidate. Alternatively, they may make a strategic choice by trying to influence the pair of candidates who qualify for the second round.

This being said, voting behaviors are not traceable as being either expressive or strategic. There are contexts in which a sincere vote is also likely to coincide with the best strategic choice, e.g. when the latter is also your favorite candidate. Besides this, not every case of insincere voting is necessarily strategic, e.g. protest or signalling voting (Picketty 2000, Kselman and Niuou 2011, Myatt 2015). Hence being strategic strongly depends on the context.

Eggers and Vivyan (2020) consider that “purely strategic voting means casting the best insincere vote” when there is a tactical incentive to do so, “and otherwise casting a sincere vote”. Eggers and Vivyan claim that no one can be actually called a “purely strategic voter”, but that considering this hypothetical behavioral pattern provides an enlightening benchmark. Given the specific data gathered in our experiment, our paper allows us to take up the notion of purely strategic voting in a simple and transparent way, and we shall henceforth use this term to designate voting behaviors compatible with their definition. The sincere preference of a voter is indicated by opinion grades: he/she prefers the (or one of the) candidate(s) to whom he/she awarded the best of all the opinion grades. Hence a “sincere vote” in the official vote is a vote for his/her (or one of his/her) favorite candidate(s). Conversely, an “insincere vote” is a vote for a candidate who is not his/her favorite. In the case of the 2017 French presidential election, with four viable candidates of whom none were guaranteed to be present in the second round, there was a strong “tactical incentive” to vote for a viable candidate; there was no tactical incentive to vote for non-viable candidates. As a result, almost every voter faced a tactical incentive. Notice that we do not consider the case where voters may have an incentive to influence political decisions made in the longer term future by whoever gets elected, or the future political landscape, as, for example, in the absence of an ecological candidate in the 2017 election, there is no straightforward way to capture this particular instance of strategic incentive. In these conditions, a voter is called “purely strategic” when he/she casts an insincere vote for a viable candidate, and a sincere vote for a viable candidate.

Given the previous definitions, voter behaviors can be classified among one of these four categories, as in Table 1.

The experimental data and information we gathered on the actual vote provides

Table 1: Categories of behaviors

	Purely Strategic (P)	Not Purely Strategic (NP)
Sincere voting (S)	<p>Category 1 (S&P). The voter voted for a viable candidate to whom he/she gave his/her highest opinion grade.</p> <p>1i) The candidate voted for was the only one to be given the highest opinion grade.</p> <p>1ii) The candidate voted for was one among several viable candidates to be given the highest opinion grade.</p> <p>1iii) The candidate voted for was one among several candidates to be given the highest opinion grade, of which some were non-viable and some were viable.</p>	<p>Category 2 (S&NP). The voter voted for a non-viable candidate to whom he/she gave his/her highest opinion grade.</p> <p>2i) The voter expressed his/her real preference by voting only for his/her favorite candidate.</p> <p>2ii) The voter expressed his/her real preference by voting for one of his/her favorite candidates, all of whom were not viable.</p> <p>2iii) The voter gave the same grade to several candidates, among whom there were non-viable and viable candidates, and voted for a non-viable candidate.</p>
Not sincere voting (NS)	<p>Category 3 (NS&P). The voter voted for a viable candidate to whom he/she did not give his/her highest opinion grade.</p> <p>3i) The voter did not vote for his/her favorite candidate, who was also viable.</p> <p>3ii) The voter did not vote for his/her favorite candidate, who was not viable.</p>	<p>Category 4 (NS&NP). The voter voted for a non-viable candidate to whom he/she did not give his/her highest opinion grade.</p> <p>4i) The voter did not vote for his/her favorite candidate, who was viable.</p> <p>4ii) The voter did not vote for his/her favorite candidate, who was also not viable.</p>

valuable information on the distribution of voters among these categories and sub-categories. Category 1 (S&P) includes voters who vote sincerely as their favorite candidate is a viable candidate. In this category, there is no a priori contradiction between the expressive (voting for their favorite candidate) and strategic (voting for a viable candidate) motives, although the trade-off may not be equivalent depending on the context. We hence distinguish between several sub-categories: the voter votes for a viable candidate when he/she prefers one (1i) or several (1ii) candidates who are all viable, or while he/she rated a non-viable candidate similarly (1iii). In the latter case indeed, slight strategic considerations may come into play. In Category 2 (S&NP), the voter votes for his/her favorite candidate, who happens to be non-viable. This is an expressive vote: sincere voting in the presence of tactical in-

centives to vote for a viable candidate. The election outcome of sincere voting is expected to be worse for the voter, but he/she still vote sincerely. This behavior may be intrinsically motivated because these voters value the sincere expression of their true preferences per se (e.g., Hamlin and Jennings 2011). Another potential reason not to cast a more strategic vote is that they could want to impact the perception of the importance of parties and the future elections consequently (e.g., Picketty 2000), although this case is not significantly represented or hardly disentangled in our 2017 data. Last but not least, some voters may be mistaken or unaware of the value of a more strategic choice. In Category 3 (NS&P), the voter faced with tactical incentives chooses to be not sincere for strategic motives. He/she votes for a viable candidate to whom he/she didn't give his/her highest opinion grade. A first occurrence of this category (3i) concerns a voter who did not vote for his/her favorite candidate, while this candidate was also viable, most probably to obtain a more favorable duel in the second round. Alternatively (3ii) the voter did not vote for his/her favorite candidate, who was not viable. Both cases correspond to purely strategic voting in the context of tactical voting incentives. In Category 4 (NS&NP), the voter votes for a non-viable candidate to whom he/she didn't give his/her highest opinion grade. Whether his/her favorite candidate is (4i) viable or (4ii) non-viable, this behavior might reveal a protest vote (Picketty 2000).

As explained above, the features of the particular context of the 2017 French presidential election predicted a strong concentration of votes for viable candidates, corresponding to Categories 1 (S&P) and 3 (NS&P), for two (potentially cumulative) reasons. On the one hand, purely strategic voting is ultimately costless – or low-cost – to most voters, as there is a viable candidate in every part of the political space: instances of behavior of Category 3 (NS&P) should therefore be much less likely than those of Category 1 (S&P). We thus expect Category 1 (S&P) to be strongly represented. On the other hand, the substantial uncertainty about which two candidates would qualify for the second round tended to prompt voters to be “purely strategic”, hence a higher representation of Categories 1 (S&P) and 3 (NS&P) as a whole than of Category 2 (S&NP) .

More precisely, if Category 3 (respectively Category 1iii) is relatively more represented, we may conclude that purely strategic behavior that supposes being insincere (respectively strategic concerns while remaining sincere) is a meaningful phenomenon. By contrast, if Category 2 is relatively more represented, we may conclude that voters, in a context of strong tactical incentives, ultimately do not behave strate-

gically.

5 Results

We now focus on the voters’ motives for their choices, and display the proportion of corrected ballots corresponding to each of the categories previously defined in Table 2.

Table 2: Behavior of voters in the official vote

	Purely Strategic (P)	Not Purely Strategic (NP)
Sincere voting (S) when voters have	Category 1 (S&P): 77.62%	Category 2 (S&NP): 14.42%
i) Just one favorite candidate	1i) 62.21%	2i) 11.72%
ii) Several favorite candidates, all being non-viable/viable	1ii) 8.20%	2ii) 0,53%
iii) Several favorite candidates, either viable or non-viable	1iii) 7.32%	2iii) 2.17%
Not sincere voting (NS) when	Category 3 (NS&P):	Category 4 (NS&NP):
i) favorite candidate is viable	6.98%	0.87%
ii) favorite candidate is non-viable	3i) 2.38%	4i) 0.56%
	3ii) 4.6%	4ii) 0.31%

The experimental results presented in Table 2 provide information on the voting behaviors in the context of tactical incentives in accordance with the above definitions.

During the 2017 presidential election, a vast majority of voters had a purely strategic behavior in the sense we defined above. According to our definition, a voter is indeed “purely strategic” when he/she casts an insincere vote for a viable candidate (Categories 3i, 3ii: 6.98%), or a sincere vote for a viable candidate (Categories 1i, 1ii, 1iii: 77.62%). 84.6% of the votes are hence consistent with purely strategic voting. This high number makes sense in the preference profile which is specific to the 2017 election.

Notably due to the high probability that at least one of the voter’s favorite candidates is viable, the relative importance of Category 1 (S&P) suggests that most cases of purely strategic behaviors are not costly for individuals. The strategy vs. expression dilemma is salient for only a segment of the purely strategic voters: the share

of Category 3 among the purely strategic voters is around 8.25% (corresponding to 6.98% among the 84.6% of purely strategic voters). To analyze the significance of strategic behaviors, we now need to compare whether voters are strategic rather than not, either when they are concerned by tactical incentives which are costly in the sense that they would gain in being insincere (Category 3 compared with 2i and 2ii), or when they are not (Category 1iii compared with 2iii). To put it differently, voters face a strategy vs. expression dilemma when voting for a viable candidate requires not voting for (one of) their favorite candidate(s), while the dilemma does not occur when such voting does not impose any expression cost to them.

Purely strategic voting is free of expressive cost for a voter when a viable and a non-viable favorite candidate receive the same highest opinion grade. The instrumental voting motive then commands the voter to vote for a viable candidate rather than for a non-viable candidate (Category 1iii: 7.32%). However, some non-strategic voters vote for a non-viable candidate when they could vote for a viable candidate who has the same opinion grade (Category 2iii: 2.17%). When we focus on cases where strategic voting is not costly in the strategy vs. expression dilemma, voters seem to be more strategic (7.32%) than not (2.17%).

Purely strategic voting is costly for a voter when a voter does not value any viable candidate as much as his/her favorite candidate(s): strategic voting requires being insincere (Category NS&P 3: 6.98%), while voting sincerely requires being non-strategic (Categories S&NP 2i and 2ii: 12.25%). In such a context, most voters prefer to be sincere. By contrast, almost a third of insincere voters voted for a viable candidate when they preferred another viable candidate (Category 3i: 2.38% out of Category 3: 6.98%): these insincere votes intended to increase the probability of a more favorable second round regarding their objectives compared with a sincere vote. These voters may have wanted to promote the opponent who would be most easily beaten by their favorite in the second round; for example a voter preferring Macron could have voted Le Pen. However, we do not observe this type of behavior in our sample: we suspect that no less than the lack of certainty as to the presence of any candidate in the second round was detrimental to such a strategy in 2017. Instead, we rather observe the following ballots in our sample: some voters voted for a candidate most likely to win in the case of his participation to the second round, here mainly for Macron, the centrist candidate, while their favorite candidate was either Fillon or Mélenchon. We suspect they may have aimed to avoid the election of a candidate even more distant from them on the political spectrum.

In a nutshell, voters often vote in accordance to their preference for a non-viable candidate despite the consequences of their sincerity. Only a quarter (26.8%) of the 17.16% voters who have no viable candidate among their favorites ultimately vote for a viable candidate. Or, if we focus only on the cases where voters face the strategy vs. expression dilemma, i.e. where voting strategically is costly (since the instrumental motive conflicts with the expressive motive) and where voting sincerely is also costly (since it waives the ability to impact the final outcome), the proportion of the voters who engage in insincere strategic voting (Category NS&P 3: 6.98%) is half that of those who resolve to remain sincere (Categories S&NP 2i and 2ii: 12.25%).

6 Conclusion

The voting system used for the French presidential election is often accused of influencing voters to vote strategically instead of expressing themselves sincerely. This widespread belief contrasts with some of the scholarly findings. Pons and Tricaud (2018) argue that the overwhelming majority of French voters are sincere when they vote in the first round. Our experiment clearly confirms these results, since we obtain a figure of 92.04% for sincere voters. It is also consistent with the findings of the literature on strategic voting. Kawai and Watanabe (2013) indeed indicate in their survey of the literature that the estimated proportions of strategic *and* insincere voting range only from 3% to 17%, depending on the study. In our sample, the proportion of voters who vote strategically and insincerely is 6.98%, which lies towards the lower part of Kawai and Watanabe's interval.

In addition, our results allow us to go further in the analysis of voting behavior. First, they allow us to measure purely strategic voting in the sense that purely strategic voters cast an insincere vote for a viable candidate, and a sincere vote for a viable candidate: there was a total of 84.6% of such potentially instrumentally motivated voters in the 2017 French presidential election. Secondly, most of these voters do not actually face any strategy vs. expression dilemma since they can be sincere while voting for a candidate who is likely to qualify for the second round. However, much of the frustration problem associated with strategic voting lies in the strategic vs. expression dilemma. Thirdly, the major contribution of this paper is based on our focus on the voters who actually face the strategy vs. expression dilemma, i.e. those for whom voting for a viable candidate requires not voting for (one of) their

favorite candidate(s). The small minority of French voters who vote strategically and insincerely (6.98%) contrasts with the ratio of voters who, in the same context of dilemma, prefer to be sincere and not strategic (12.25%). Considering that being sincere requires that they accept the cost of being sincere, i.e., that they waive their capacity to influence the outcome of the election, the doubling of the ratio from insincerity to sincerity for a similar context is quite striking. These features support the view that voters value expressiveness, even in a context where tactical incentives are particularly strong.

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Appendix A: Characterization of the candidates for the 2017 French presidential election

In Table 4, candidates are presented according to their ranking in the first round of the presidential election: Emmanuel Macron (EM), Marine Le Pen (MLP), François

Fillon (FF), Jean-Luc Mélenchon (JLM), Benoît Hamon (BH), Nicolas Dupont-Aignan (NDA), Jean Lassalle (JL), Philippe Poutou (PP), François Asselineau, Nathalie Arthaud, Jacques Cheminade (JC)

Table 3: Definition of candidate sets

	Well-known candidates					Less-known candidates					
	Viable candidates				Non-viable candidates						
	EM	MLP	FF	JLM	BH	NDA	JL	PP	FA	NA	JC
Proportion of voters who gave an opinion grade to this candidate	88.76	90.99	87.90	86.04	83.99	74.99	68.55	75.94	63.04	72.00	64.32

Appendix B: Experimental ballot



Participez à une expérimentation scientifique
Testez de nouveaux modes de scrutin

Nous avons repris ici, comme pour le scrutin officiel, l'ordre de la liste des candidats établi par tirage au sort par le Conseil constitutionnel.

Nous vous remercions par avance de respecter le secret et la sérénité du scrutin.

Merci de votre participation



Votre opinion
Selon vous, ce candidat serait-il un bon président ?

	Note entre 0 et 20	Sans opinion
Nicolas DUPONT-AIGNAN	0 5 10 15 20 ○○○○○○○○○○○○○○○○○○○○	
Marine LE PEN	0 5 10 15 20 ○○○○○○○○○○○○○○○○○○○○	
Emmanuel MACRON	0 5 10 15 20 ○○○○○○○○○○○○○○○○○○○○	
Benoît HAMON	0 5 10 15 20 ○○○○○○○○○○○○○○○○○○○○	
Nathalie ARTHAUD	0 5 10 15 20 ○○○○○○○○○○○○○○○○○○○○	
Philippe POUTOU	0 5 10 15 20 ○○○○○○○○○○○○○○○○○○○○	
Jacques CHEMINADE	0 5 10 15 20 ○○○○○○○○○○○○○○○○○○○○	
Jean LASSALLE	0 5 10 15 20 ○○○○○○○○○○○○○○○○○○○○	
Jean-Luc MELENCHON	0 5 10 15 20 ○○○○○○○○○○○○○○○○○○○○	
François ASSELINEAU	0 5 10 15 20 ○○○○○○○○○○○○○○○○○○○○	
François FILLON	0 5 10 15 20 ○○○○○○○○○○○○○○○○○○○○	

Instructions
Ceci n'est pas une procédure de vote, juste une façon d'exprimer votre opinion. Notez chacun des 11 candidats entre 0 à 20 en cochant la case correspondante. 0 est la plus mauvaise note, 20 est la meilleure. Si vous ne souhaitez pas vous exprimer sur un candidat ou si vous ne le connaissez pas, cochez la case « Sans opinion »

L'élection officielle
Au vote officiel, j'ai voté pour

Nicolas Dupont-Aignan Jacques Cheminade
 Marine Le Pen Jean Lassalle
 Emmanuel Macron Jean-Luc Mélenchon
 Benoît Hamon François Asselineau
 Nathalie Arthaud François Fillon
 Philippe Poutou J'ai voté blanc

Qui êtes-vous ?

Age 18-29 ans 40-49 ans 60-69 ans
 30-39 ans 50-59 ans 70 ans et plus

Sexe Femme Homme

Niveau d'étude primaire supérieur
 secondaire préfère ne pas répondre

Catégorie socio-professionnelle
 artisan, profession libérale, chef d'entreprise retraité
 salarié dans le secteur privé étudiant
 salarié dans le secteur public autres.....
 en recherche d'emploi

Avez-vous des commentaires ?

Notice that here we do not include the second page, concerning the test of approval voting, which we do not use in the present paper. Complete information on voting material is available at www.gate.cnrs.fr/vote.

Appendix C: Experimental ballot, translation into English



Take part in a scientific experiment
Test new voting systems

We have repeated here, in line with the official ballot, the list order of the candidates drawn lots the Constitutional Council.

We thank you in advance for respecting the secrecy and serenity of the vote.

Thank you for your participation



Your opinion
Do you think this candidate would be a good president?

	Grade between 0 and 20					No opinion
Nicolas DUPONT-AIGNAN	0	5	10	15	20	<input type="checkbox"/>
Marine LE PEN	0	5	10	15	20	<input type="checkbox"/>
Emmanuel MACRON	0	5	10	15	20	<input type="checkbox"/>
Benoît HAMON	0	5	10	15	20	<input type="checkbox"/>
Nathalie ARTHAUD	0	5	10	15	20	<input type="checkbox"/>
Philippe POUTOU	0	5	10	15	20	<input type="checkbox"/>
Jacques CHEMINADE	0	5	10	15	20	<input type="checkbox"/>
Jean LASSALLE	0	5	10	15	20	<input type="checkbox"/>
Jean-Luc MELENCHON	0	5	10	15	20	<input type="checkbox"/>
François ASSELINEAU	0	5	10	15	20	<input type="checkbox"/>
François FILLON	0	5	10	15	20	<input type="checkbox"/>

Instructions
This is not a voting system, just a way of expressing your opinion. Grade each of the 11 candidates between 0 to 20 by ticking the corresponding box. 0 is the worst score, 20 is the best. If you do not wish to express yourself on a candidate or if you do not know him, tick the "No opinion" box.

Official election
In the official voting, I voted for

Nicolas Dupont-Aignan Jacques Cheminade
 Marine Le Pen Jean Lassalle
 Emmanuel Macron Jean-Luc Mélenchon
 Benoît Hamon François Asselineau
 Nathalie Arthaud François Fillon
 Philippe Poutou J'ai voté blanc

Who are you?

Age 18-29 years 40-49 years 60-69 years
 30-39 years 50-59 years 70 years and over

Gender Female Male

Education primary tertiary
 secondary prefer not to answer

Socio-professional category
 artisan, liberal profession, chef d'entreprise retired
 employee in the private sector student
 employee in the public sector other.....
 seeking employment

Do you have any comments?

Appendix D: Corrected Data

The purpose of data correction is to obtain a politically representative sample. The correction is made necessary by the fact that the distribution of the experimental ballots is quite different from the distribution of the official votes cast at the national level during the first round of the presidential election. The proposed correction makes it possible to distinguish the two effects which explain the observed gap:

- **Local specificities:** The municipality of Crolles is not perfectly representative of national votes. For each candidate, a weighting coefficient is defined which should be applied to the Crolles ballots to find the national distribution of the votes cast. This weighting coefficient is equal to the ratio of the percentage of the candidate at the national level to his/her percentage at the level of the municipality. (All percentages are recalculated by excluding J. Cheminade votes. Having no voters for Jacques Cheminade in our sample, we neutralize the votes granted to this candidate.)

- Participation differential: Voters of all candidates are not equally inclined to participate in the experiment. To compensate for this difference in behavior, the existing ballots must be weighted by a weighting coefficient equal to the ratio of the percentage of the candidate in the municipality to his percentage in the sample of collected ballots.
- Total weighting coefficient: For each candidate, the total weighting coefficient is the product of the two previous weighting coefficients. Applied to the experimental ballots, these total weighting coefficients make it possible to reproduce the official distribution of the votes cast.

The following tables indicate the three weighting coefficients for each of the candidates.

	Arthaud	Asselineau	Dupont-Aignan	Fillon	Hamon
% national official votes cast (excluding the votes for J. Cheminade)	0.65	0.92	4.71	20.04	6.37
% Crolles official votes cast (excluding the votes for J. Cheminade)	0.24	0.76	3.54	17.00	8.34
% experimental ballots	0.33	0.9	4.4	13.19	11.97
Weighting coefficient: Local specificities	2.66	1.21	1.33	1.18	0.76
Weighting coefficient: Participation differential	0.74	0.85	0.81	1.29	0.70
Total weighting coefficient	1.98	1.03	1.07	1.52	0.53

	Lassalle	Le Pen	Macron	Mélenchon	Poutou
% national official votes cast (excluding the votes for J. Cheminade)	1.21	21.34	24.05	19.62	1.1
% Crolles official votes cast (excluding the votes for J. Cheminade)	0.86	12.74	34.50	21.40	0.62
% experimental ballots	0.49	6.6	37.54	23.94	0.65
Weighting coefficient: Local specificities	1.41	1.67	0.70	0.92	1.78
Weighting coefficient: Participation differential	1.76	1.93	0.92	0.89	0.95
Total weighting coefficient	2.48	3.23	0.64	0.82	1.68

Appendix E: Number of assessed candidates by voters

Voters' preferences, distribution of ballots according to the number of candidates assessed by the voter (in %) :

Opinion grading number	1	2	3	4	5	6
Ballots number	4.61	5.57	4.58	3.06	4.01	4.36
Opinion grading number	7	8	9	10	11	All
Ballots number	5.07	4.33	2.57	5.08	56.76	100