Majority Judgment:
A New Voting Method

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(*Joint work with Michel Balinski*)

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A voter designates one candidate. If a candidate is designated by a majority, he is elected. Otherwise, there is a run-off between the two first candidates.

2017 French presidential election

First round:

	Votes	% Votes	% Registered
E. Macron	8 656 346	24.01%	18.19%
M. Le Pen	7 678 491	21.30%	16.14%
F. Fillon	7 212 995	20.01%	15.16%
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Macron vs. Fillon   Macron vs. Mélenchon   Macron vs. Le Pen

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2nd round compared with 1st round:

	1st Round			2nd Round		
	Number	% Regis.	% Voters	Number	% Regis.	% Voters
Regis.	47 582 183			47 568 693		
Absten.	10 578 455	22.23%		12 101 366	25.44%	
Voters	37 003 728	77.77%		35 467 327	74.56%	
Blank	659 997	1.39%	1.78%	3 021 499	6.35%	8.52%
Inval.	289 337	0.61%	0.78%	1 064 225	2.24%	3.00%
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- Yet most voters see a difference between Macron and Le Pen.

What is an election?

Walter Lippmann observed in 1925:

> "But what in fact is an election? We call it an expression of the
> popular will. But is it? We go into a polling booth and mark a cross
> on a piece of paper for one of two, or perhaps three or four names.
> Have we expressed our thoughts . . . ? Presumably we have a number
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Main messages of this presentation:

1) Actual voting methods measure badly opinions, and can induce paradoxical
outcomes.

2) A better expression of opinions, solve (most of) the problems.

Voters should better express their opinions!

The Chevalier de Borda (1784):

> *It is generally accepted, and to my knowledge never challenged, that in an election the greatest number of votes always designates the will of the electorate...* But I will show that this opinion, that is true when the election is between only two candidates, can mislead in all other cases.

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The Marquis de Condorcet (1785):

> *Each voter should express his will completely by giving a comparative judgment on all candidates pair-by-pair.*

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The Borda-ranking: $C \succ A \succ B$.

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Arrow's paradox: a candidate's presence or absence can change the ranking between the others.

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- A3 [Neutral] Permuting names of candidates does not change the outcome.

May's (1952) Axioms of Majority Rule

Majority rule between two candidates asks each voter his preference/indifference among the two, the winner is the candidate most preferred.

A method of ranking among two candidates asks each voter his opinion about each candidate, and outputs which candidate is the best or a tie.

For two candidates, majority rule is the unique method satisfying the axioms:

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- A7 [Independence of irrelevant alternatives (IIA)] If $A \succeq B$ then whatever candidates are dropped or adjoined $A \succeq B$.

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MAJORITY JUDGMENT

Measuring, Ranking, and Electing

MICHEL BALINSKI AND RIDA LARAKI

Arrow's Paradox in the 1997 European Championships, Figure Skating

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Urmanov	1	1	1	1	1	2	1	1	1	1/8	1st
Candeloro	3	2	5	2	3	3	5	6	6	3/5	2nd
Zagorodniuk	5	5	4	4	2	4	2	2	3	4/7	3rd
Yagudin	4	3	3	6	4	6	4	3	2	4/7	4th
Kulik	2	4	2	3	6	5	3	4	5	4/6	5th
Vlascenko	6	6	6	5	5	1	6	5	4	5/5	6th

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Arrow's paradox occurs because of Judge 6's strategic voting!

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This flip-flop was so strident that the rules used for a half-century were changed to a method based on measure, as in gymnastic, diving, music competition.

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  - $2\frac{1}{2}$ to $4\frac{1}{2}$ "deficient"
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- There are many other instances that use well defined scales of grades, to rank and or to designate winners: guide Michelin, figure skating, gymnastics, concours Chopin, wine competitions, etc.

A Use of Majority Judgment: Small Jury

Opinion profile: LAMSADE Jury ranking PhD candidates for a grant, 2015

	J_1	J_2	J_3	J_4	J_5	J_6
A:	Excellent	Excellent	V. Good	Excellent	Excellent	Excellent
B:	Excellent	V. Good	V. Good	V. Good	Good	V. Good
C:	Passable	Excellent	Good	V. Good	V. Good	Excellent
D:	V. Good	Good	Passable	Good	Good	Good
E:	Good	Passable	V. Good	Good	Good	Good
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D:	V. Good	Good	Good	Good	Good	Passable
E:	V. Good	Good	Good	Good	Good	Passable
F:	V. Good	Good	Passable	Passable	Passable	Insufficent

Compact Description of MJ

	Excellent	Very Good	Good	Passable	Insufficient
A:	5	1			
B:	1	4	1		
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Merit profile (counts), LAMSADE Jury.

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C:	**Excellent**	V. Good	V. Good	**Good**

Majority Judgement Ballot (Large Electorate)

Ballot: Election of the President of France 2012

To be president of France,
having taken into account all considerations,
I judge, in conscience, that this candidate would be:

	Outs-tanding	Excel-lent	Very Good	Good	Accep-able	Insuf-ficient	Reject
François Hollande							
François Bayrou							
Nicolas Sarkozy							
Jean-Luc Mélenchon							
Nicolas Dupont-Aignan							
Eva Joly							
Philippe Poutou							
Marine Le Pen							
Nathalie Arthaud							
Jacques Cheminade							

Pool OpinionWay-Terra Nova, April 12-16 2012

	Outs-tanding	Excel-lent	Very Good	Good	Accep-able	Insuf-ficient	Reject
Hollande	12.48%	16.15%	16.42%	11.67%	14.79%	14.25%	14.24%
Bayrou	2.58%	9.77%	21.71%	25.24%	20.08%	11.94%	8.69%
Sarkozy	9.63%	12.35%	16.28%	10.99%	11.13%	7.87%	31.75%
Mélenchon	5.43%	9.50%	12.89%	14.65%	17.10%	15.06%	25.37%
Dupont-Aignan	0.54%	2.58%	5.97%	11.26%	20.22%	25.51%	33.92%
Joly	0.81%	2.99%	6.51%	11.80%	14.65%	24.69%	38.53%
Poutou	0.14%	1.36%	4.48%	7.73%	12.48%	28.09%	45.73%
Le Pen	5.97%	7.33%	9.50%	9.36%	13.98%	6.24%	47.63%
Arthaud	0.00%	1.36%	3.80%	6.51%	13.16%	25.24%	49.93%
Cheminade	0.41%	0.81%	2.44%	5.83%	11.67%	26.87%	51.97%

Majority Grade et Gauge

	Outs- *tanding*	*Excel-* *lent*	*Very* *Good*	*Good*	*Accep-* *able*	*Insuf-* *ficient*	*Reject*
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MJ: National poll, French presidential election 2012

	p	$\alpha\pm$	q	FPP	
(1) F. Hollande	45.05%	*Good*+45.05	43.28%	(1)	28.7%
(2) F. Bayrou	34.06%	*Good*−40.71	40.71%	(5)	9.1%
(3) N. Sarkozy	49.25%	*Fair*+49.25	39.62%	(2)	27.3%
(4) J.-L. Mélenchon	42.47%	*Fair*+42.47	40.43%	(4)	11.0%
(5) N. Dupont-Aignan	40.57%	*Poor*+40.57	33.92%	(7)	1.5%
(6) E. Joly	36.77%	*Poor*−38.53	38.53%	(6)	2.3%
(7) P. Poutou	26.19%	*Poor*−45.73	45.73%	(8)	1.2%
(8) M. Le Pen	46.13%	*Poor*−47,63	47.63%	(3)	17.9%
(9) N. Arthaud	24.83%	*Poor*−49.93	49.93%	(9)	0.7%
(10) J. Cheminade	48.03%	*To Reject*+48.03	–	(10)	0.4%

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5. a candidate whose grades dominate another wins (no domination paradox).

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Merit profile:

	Out-standing	Excel-lent	Very Good	Good	Accept-able	Poor	To Reject
Hollande:	12.5%	16.2%	16.4%	11.7%	14.8%	14.2%	14.2%
Sarkozy:	9.6%	12.3%	16.3%	11.0%	11.1%	7.9%	31.8%

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Possible opinion profile:

	9.6%	12.3%	11.7%	4.6%	10.2%	5.9%	14.2%
Hollande:	Exc.	V.Good	Good	Accept.	Accept.	Poor	Rej.
Sarkozy:	Outs.	Exc.	V.Good	V.Good	Good	Accept.	Rej.

	0.8%	5.2%	6.5%	1.4%	5.2%	4.1%	8.3%
Hollande:	Outs.	Outs.	Outs.	Exc.	Exc.	V.Good	Poor
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Majority Rule: Sarkozy: 54.3%   Hollande: 31.5%   Indifferent: 14.2%

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- To solve the problem, Dahl proposes using "an ordinal intensity scale" obtained "simply by reference to some observable response, such as a statement of one's feelings."

May + Arrow's IIA + Condorcet's Transitivity + Dahl's Intensity Scale

A method of ranking $\succeq$ is a binary relation that compares any two candidates. It must satisfy the following axioms:

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- A7 [Independence of irrelevant alternatives (IIA)] If $A \succeq B$ then whatever candidates are dropped or adjoined $A \succeq B$.

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> *No method based on measures and satisfying axioms A1 to A7 is strategy proof.*
> *Majority-gauge is always partially strategy proof,*
> *and is the unique strategy proof on the domain of polarized pairs.*

How could voters that prefer Sarkozy to Holland manipulate ?

	Outs.	Exc.	V.Good	Good	Fair	Poor	Rej.
Hollande	12.48%	16.15%	16.42%	11.67%	14.79%	14.25%	14.24%
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If a voter can manipulate MJ, he can only in one direction:
(1) or he can increase the majority-gauge of the candidate he prefers.
(2) or he can decrease the majority-gauge of the candidate he does not.

What if some motivated voters indeed manipulate ?

Suppose:

- Type 1's up Sarkozy's grade to *Outstanding*, down Hollande's to *To Reject*,
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After identical manipulation:

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"Regardless of who you currently support, I'd like to know what kind of president you think each of the following would be if elected in November 2016. . . . [D]o you think (he/she) would be a *Great, Good, Average, Poor*, or *Terrible* president?"

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March 17-27	Great	Good	Average	Poor	Terrible
John Kasich	5%	28%	39%	13%	15%
Bernie Sanders	10%	26%	26%	15%	23%
Ted Cruz	7%	22%	31%	17%	23%
Hillary Clinton	11%	22%	20%	16%	31%
Donald Trump	10%	16%	12%	15%	47%

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47% believe Clinton is *Poor* or worse and, 62% believe Trump is *Poor* or worse.

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Hillary Clinton	Great	Good	Average	Poor	Terrible
March 17-27	11%	22%	20%	16%	31%
August 9-16	11%	20%	22%	12%	35%
October 20-25	8%	27%	20%	11%	34%

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March 17-27	11%	22%	20%	16%	31%
August 9-16	11%	20%	22%	12%	35%
October 20-25	8%	27%	20%	11%	34%

Donald Trump	Great	Good	Average	Poor	Terrible
March 17-27	10%	16%	12%	15%	47%
August 9-16	9%	18%	15%	12%	46%
October 20-25	9%	17%	16%	11%	47%

Always: Clinton's grades dominate Trump's (save 1% *Great* in October).

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So why did Trump wins?

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Trump's   304 to 227 in Electoral College would have become Clinton's 302 to 229 victory.

Gillets Jaunes Bandole, Narbonne December 8, 2018

JugementMajoritaire2022, a web vote on 42 propositions of les Gilets Jaunes

Résultats détaillés

Candidat	Mention retenue	Adhésion
Fin des indemnités présidentielles à vie	Excellent	73.84% (0% de mentions strictement meilleures)
Que les gros (McDo, Google, Amazon, Carrefour...) payent gros et que les petits (artisans, TPE, PME) payent petit.	Excellent	71.93% (0% de mentions strictement meilleures)
L'intégralité de l'argent gagné par les péages des autoroutes devra servir à l'entretien des autoroutes et routes de France ainsi qu'à la sécurité routière.	Excellent	67.85% (0% de mentions strictement meilleures)
Taxe sur le fuel maritime et le kérosène	Excellent	64.58% (0% de mentions strictement meilleures)
Interdiction de vendre les biens (barrages, aéroports...)appartenant à la France	Excellent	63.76% (0% de mentions strictement meilleures)
Fin de la politique d'austérité. On cesse de rembourser les intérêts de la dette qui sont déclarés illégitimes et on commence à rembourser la dette sans prendre l'argent des pauvres et des moins pauvres, mais en allant	Excellent	63.76% (0% de mentions strictement meilleures)

JugementMajoritaire2022, a web vote on 42 propositions of les Gilets Jaunes

Election de délégué, CM1

Candidat	Mention retenue	Adhésion
Jade	Bien	62.07% (0% de mentions strictement meilleures)
Nathan	Bien	55.17% (0% de mentions strictement meilleures)
Emma	Assez bien	82.76% (44.83% de mentions strictement meilleures)
Sacha	Assez bien	75.86% (44.83% de mentions strictement meilleures)
Sasha	Assez bien	68.97% (34.48% de mentions strictement meilleures)
Clémence	Assez bien	65.52000000000001% (44.83% de mentions strictement meilleures)
Romane	Assez bien	65.52000000000001% (17.24% de mentions strictement meilleures)
Lou-Ann	Correct	72.41% (37.93% de mentions strictement meilleures)
Rubens	Correct	68.97% (37.93% de mentions strictement meilleures)
Enora	Correct	68.97% (27.59% de mentions strictement meilleures)
Yanis	Correct	62.07% (41.38% de mentions strictement meilleures)

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- Le profil de Yanis est trés intéressant.
- Toujours élu délégué depuis le CP (cercle d'amis dévoués votant pour lui), il n'a cette fois pas été élu car rejeté par beaucoup d'élèves.

← → C 🔒 https://maju.app ☆ L

🔴 maju 🇬🇧

Créez votre sondage maju en quelques secondes !

Entrez votre question ici...

Ajoutez vos options ici

1. Option...

2. Option...

3. Option...

❯ Réglages avancés

Créer le sondage

1. Créez un sondage   2. Partagez le lien   3. Analysez les résultats

Qu'est-ce que le jugement majoritaire ?

https://www.voteinapp.com

VoteIn   by apollo

+ Nouveau scrutin   Conne

Facebook   Twitter   Google+   LinkedIn   Pinterest   Reddit   Tumblr   WhatsApp   Telegram

Email

Organisez gratuitement vos scrutins avec VoteIn

CRÉER VOTRE SCRUTIN

Quels sont les défauts du scrutin majoritaire ?

Le scrutin majoritaire, c'est le mode de scrutin que nous connaissons depuis toujours. Il a l'avantage d'être simple. De l'élection présidentielle à l'élection des délégués de classe, tout est fait pour nous habituer à ce mode qui comporte de nombreux défauts.

Il mesure **mal** les opinions des électeurs.

Il force l'électeur à **voter pour un seul candidat** alors qu'il a des **opinions sur tous les candidats.**

Il le force parfois à voter utile, ou voter contre. Néanmoins, **chaque vote est comptabilisé comme une adhésion**. Il va sans dire que cela engendre de nombreuses incohérences.

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Grades:	Exclt	V Good	Good	Accp	Poor	Rejct
Highest	52%	37%	9%	2%	0%	1%
Second highest	–	35%	41%	16%	5%	3%
Third highest	–	–	26%	40%	22%	13%

Voting "behavior" in the Orsay 2007 presidential experiment

Average numbers of each grade per ballot show the language was common:

	3 prcts.	1st prct.	6th prct.	12th prct.	Samples of 100		Dsjt samples of 50	
					Avg. (σ)	Rg	Avg. (σ)	Rg
Excll	0.7	0.7	0.7	0.7	0.7 (.07)	0.6/0.8	0.7 (.12)	0.5/0.9
V.Good	1.3	1.2	1.2	1.4	1.2 (.13)	1.1/1.5	1.3 (.16)	1.1/1.5
Good	1.5	1.5	1.4	1.6	1.5 (.13)	1.4/1.7	1.5 (.27)	0.9/1.8
Accp	1.7	1.7	1.7	1.8	1.8 (.15)	1.7/2.1	1.7 (.27)	2.1/2.6
Poor	2.3	2.3	2.3	2.2	2.3 (.19)	2.1/2.7	2.3 (.19)	2.1/2.6
Rjct	4.6	4.8	4.6	4.3	4.5 (.29)	4.1/4.8	4.5 (.41)	4.1/5.3

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V.Good	1.3	1.2	1.2	1.4	1.2 (.13)	1.1/1.5	1.3 (.16)	1.1/1.5
Good	1.5	1.5	1.4	1.6	1.5 (.13)	1.4/1.7	1.5 (.27)	0.9/1.8
Accp	1.7	1.7	1.7	1.8	1.8 (.15)	1.7/2.1	1.7 (.27)	2.1/2.6
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Rjct	4.6	4.8	4.6	4.3	4.5 (.29)	4.1/4.8	4.5 (.41)	4.1/5.3

Yet, the majority judgement winner not the same in all 3 precincts. Extensive statistical analyses of a large number of samples show the same stability.

Was the language common to French voters?

	Prct	% number of times grades used in a ballot								
		0	1	2	3	4	5	6	7	+8
	1st	47.0	43.1	7.7	1.6	0.2	0.2	0.0	0.0	0.2
Exc	6th	46.6	41.8	8.7	2.0	0.7	0.0	0.2	0.0	0.2
	12th	51.1	37.3	7.9	2.3	0.9	0.2	0.0	0.0	0.3
	1st	30.2	40.3	19.7	6.8	1.1	1.3	0.5	0.2	0.0
VG	6th	28.8	37.9	22.0	7.2	2.7	0.8	0.3	0.3	0.0
	12th	26.0	37.9	20.4	8.2	4.4	2.1	0.7	0.3	0.0
	1st	24.3	35.1	22.2	11.4	4.7	1.4	0.7	0.2	0.0
Gd	6th	26.3	35.1	20.5	10.1	5.3	2.2	0.3	0.2	0.0
	12th	21.8	30.4	25.5	12.0	7.2	2.3	0.3	0.3	0.2
	1st	23.3	29.3	20.0	16.8	6.4	3.6	0.2	0.0	0.4
Acc	6th	22.6	28.8	24.1	13.0	6.5	3.7	0.3	0.5	0.5
	12th	22.5	23.0	24.6	17.1	7.3	3.8	0.5	0.9	0.2
	1st	16.5	20.0	22.9	15.9	14.0	5.5	2.9	1.4	0.9
Pr	6th	16.3	24.0	19.5	17.0	9.5	5.7	5.8	1.0	1.3
	12th	23.2	20.8	18.5	15.2	10.6	6.1	3.1	1.4	1.0
	1st	3.0	6.1	10.7	12.0	16.3	17.2	10.4	9.3	15.0
TR	6th	4.7	4.7	9.2	17.0	18.1	14.5	11.0	7.3	13.6
	12th	7.0	7.3	14.5	14.0	14.5	13.8	7.3	7.0	14.7

On the Optimal Number of Grades

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In our field experiments, 4 grades were few, 6 grades were sufficient

No. of grades:	1	2	3	4	5	6	7	Total
2007:	1%	2%	10%	31%	42%	14%	–	100%
2012:	1%	6%	13%	31%	36%	13%	1%	100%

Statistical comparisons: (4) favoring the centrist

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10,000 random samples of 201 <u>from 501 "representative" ballots</u>.

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	Left ⟵		⟶Right		
	Royal	Bayrou	Sarkozy	Tie	Cycle
First-past-the-post winner	977	0	9,022	5	–
Two-past-the-post winner	1,146	98	8,197	559	–
Approval ≽ *Very Good*	467	658	7,947	928	–
Majority judgement-winner	606	4,326	5,065	3	–
Condorcet-winner	142	8,329	974	441	114
Approval ≽ *Good*	23	9,465	40	472	–
Point-summing	139	9,463	239	159	–
Borda-winner	12	9,976	0	12	–

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Borda-winner	12	9,976	0	12	–

First- and two-past-the-post (unduly) penalize the centrist, point-summing and Borda (unduly) favor the centrist.

Statistical comparisons: strategic manipulability

Manipulability of methods: 10,000 random samples of 101
from 501 "representative" ballots, given that there is a same unique winner A
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Numbers of successful strategic manipulations:

	Point-sum	Borda	First-p-p	Approval $\succeq Good$	Approval $\succeq VGood$	Cond-orcet	Majority judge
Strat 1	9,965	9,313	8,699	8,569	8,407	7,042	6,142
Strat 2	9,769	7,864	4,411	8,849	8,557	4,641	5,313

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- An association MieuxVoter has been created in 2018 to promote MJ.

Manifeste   **Découvrir**   **Participer**   **L'Association**   **Forum**   **S'inscrire**

Mieux Voter

Choisir · Élire · Décider

Avec le Jugement Majoritaire

	A Rejeter	Insuffisant	Passable	Assez Bien	Bien	Très Bien	Excellent
🧑					X		
🧑				X			
🧑	X						

Notre Constat

Chaque jour, nous prenons des **décisions en commun**. Mais les **méthodes** que nous utilisons sont souvent **inadaptées** et ne permettent pas de traduire fidèlement la volonté de la majorité.

Notre Action

Agir pour faire connaître le **Jugement Majoritaire** et **accompagner** les collectivités publiques, les entreprises, les associations et les particuliers dans son utilisation.

Every 5 years

When?   situation

We therefore propose a voting system that, at the same time, gives citizens a greater choice over their elected officials – through more elections and more local representatives – and streamlines the electoral process. Here are the broad strokes of the system we propose:

- All EU citizens above 18 vote in the same manner, regardless of their residency;
- Voting will take place on a single day every three years, for more regular elections without living in constant electoral campaigns (there are no special elections interrupting regular political life and the duration of campaign is strictly limited);
- Citizens concurrently choose their local representative (the Parliamentarian; every three years), their State representative (the Senator; elected by half every three years), and their Union representative (the President; every six years), for increased representativeness;
- Voting for senatorial and presidential elections is done by **majority judgment**, a simple and innovating method of voting which prevents strategic voting and avoids regular voting paradoxes.Voting for parliamentarian elections combines majority judgment with a vote for a political party to ensure proportional representation.

Accordingly, here are a presentation of the electoral calendar and a summary of the proposed elections.
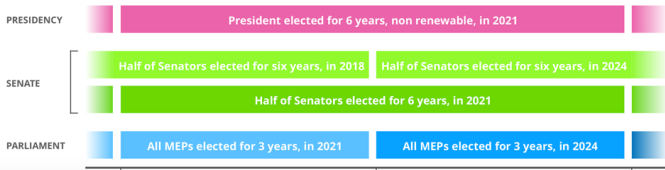
PRESIDENCY	President elected for 6 years, non renewable, in 2021	
SENATE	Half of Senators elected for six years, in 2018	Half of Senators elected for six years, in 2024
	Half of Senators elected for 6 years, in 2021	
PARLIAMENT	All MEPs elected for 3 years, in 2021	All MEPs elected for 3 years, in 2024
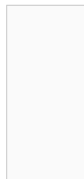
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