EXHIBIT 2

An Analysis of Surveys Regarding Absentee Ballots Across Several States

William M. Briggs

November 23, 2020

1 Summary

Survey data was collected from individuals in several states, sampling those who the states listed as not returning absentee ballots. The data was provided by Matt Braynard.

The survey asked respondents whether they (a) had ever requested an absentee ballot, and, if so, (b) whether they had in fact returned this ballot. From this sample I produce predictions of the total numbers of: **Error** #1, those who were recorded as receiving absentee ballots without requesting them; and **Error** #2, those who returned absentee ballots but whose votes went missing (i.e. marked as unreturned).

The sizes of both errors were large in each state. The states were Georgia, Michigan, Wisconsin, and Arizona where ballots were across parties. Pennsylvania data was for Republicans only.

2 Analysis Description

Each analysis was carried out separately for each state. The analysis used (a) the number of absentee ballots recorded as unreturned, (b) the total responding to the survey, (c) the total of those saying they did not request a ballot, (d) the total of those saying they did request a ballot, and of these (e) the number saying they returned their ballots. I assume survery respondents are representative and the data is accurate.

From these data a simple parameter-free predictive model was used to calculate the probability of all possible outcomes. Pictures of these probabilities were derived, and the 95% prediction interval of the relevant numbers was calculated. The pictures appear in the Appendix at the end. They are summarized here with their 95% prediction intervals.

Error #1: being recorded as sent an absentee ballot without requesting one.

Error #2: sending back an absentee ballot and having it recorded as not returned.

State	Unreturned ballots	Error #1	Error $\#2$
Georgia	138,029	16,938-22,771	31,559–38,866
Michigan	139,190	29,611 - 36,529	27,928 - 34,710
Pennsylvania*	$165,\!412$	$32,\!414 - \!37,\!444$	26,954 - 31,643
Wisconsin	96,771	16,316-19,273	13,991-16,757
Arizona	518,560	$208,\!333 -\!229,\!937$	78,714 - 94,975

^{*}Number for Pennsylvania represent Republican ballots only.

Ballots that were not requested, and ballots returned and marked as not returned were classed as *troublesome*. The estimated average number of troublesome ballots for each state were then calculated using the table above and are presented next.

State	Unreturned ballots	Estimated average	Percent
		troublesome ballots	
Georgia	138,029	53,489	39%
Michigan	139,190	$62,\!517$	45%
Pennsylvania*	$165,\!412$	61,780	37%
Wisconsin	96,771	29,594	31%
Arizona	518,560	303,305	58%

^{*}Number for Pennsylvania represent Republican ballots only.

3 Conclusion

There are clearly a large number of troublesome ballots in each state investigated. Ballots marked as not returned that were never requested are clearly an error of some kind. The error is not small as a percent of the total recorded unreturned ballots.

Case 2:20-cv-02321-DJH Document 1-2 Filed 12/02/20 Page 15 of 52

Ballots sent back and unrecorded is a separate error. These represent votes that have gone missing, a serious mistake. The number of these missing ballots is also large in each state.

Survey respondents were not asked if they received an unrequested ballot whether they sent these ballots back. This is clearly a lively possibility, and represents a third possible source of error, including the potential of voting twice (once by absentee and once at the polls). No estimates or likelihood can be calculated for this potential error due to absence of data.

4 Declaration of William M. Briggs, PhD

- 1. My name is William M. Briggs. I am over 18 years of age and am competent to testify in this action. All of the facts stated herein are true and based on my personal knowledge.
- 2. I received a Ph.D of Statistics from Cornell University in 2004.
- 3. I am currently a statistical consultant. I make this declaration in my personal capacity.
- 4. I have analyzed data regarding responses to questions relating to mail ballot requests, returns and related issues.
- 5. I attest to a reasonable degree of professional certainty that the resulting analysis are accurate.

I declare under the penalty of perjury that the foregoing is true and correct.

William M. Kinggo

23 November 2020

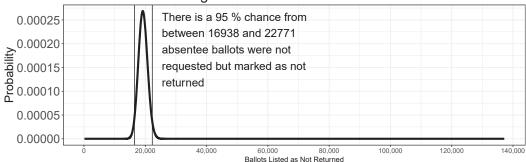
William M. Briggs

5 Appendix

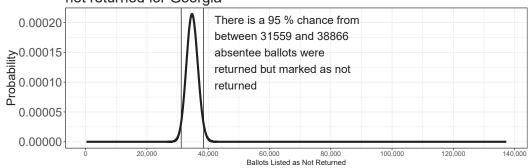
The probability pictures for each state for each outcome as mentioned above.

Probability of numbers of un-requested absentee ballots listed as not returned for Georgia

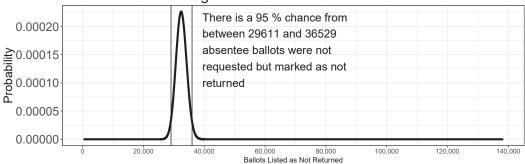
There is a 95 % chance from



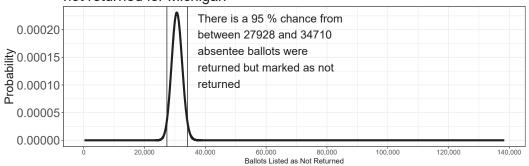
Probability of numbers of absentee ballots returned but listed as not returned for Georgia



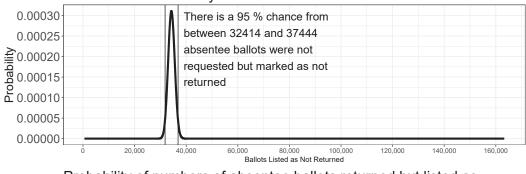
Probability of numbers of un-requested absentee ballots listed as not returned for Michigan



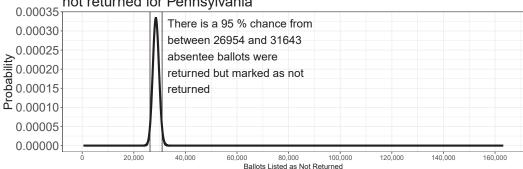
Probability of numbers of absentee ballots returned but listed as not returned for Michigan



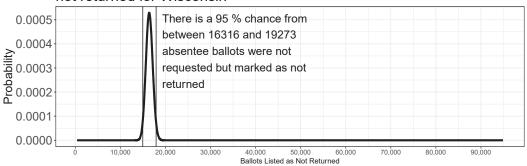
Probability of numbers of un-requested absentee ballots listed as not returned for Pennsylvania



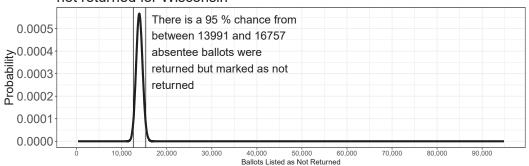
Probability of numbers of absentee ballots returned but listed as not returned for Pennsylvania



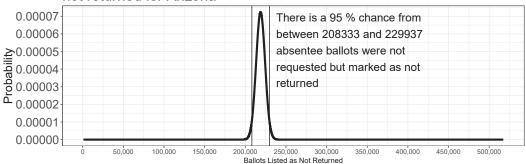
Probability of numbers of un-requested absentee ballots listed as not returned for Wisconsin



Probability of numbers of absentee ballots returned but listed as not returned for Wisconsin



Probability of numbers of un-requested absentee ballots listed as not returned for Arizona



Probability of numbers of absentee ballots returned but listed as not returned for Arizona

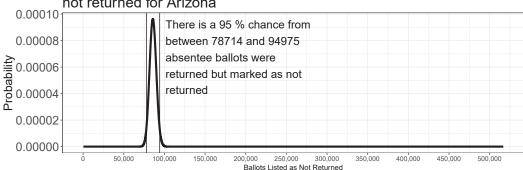


EXHIBIT 2 A

AZ Unreturned Live Agent - Mass Markets

5,604 Completes 745 1,881 2,04 684 Q4=01 1-Completed Survey 116 212 1,945 VM Message Left 2-Message Delivered VM 90 657 1, 2,975 up/RC 3-Refused 539 1,012 1, 74,437 No Answer 4-No Answer 6,764 25,056 42, 1,663 Numbers/Language 5-Bad Number 245 384 1, 100.00% List Penetration 81,708 Data Loads 81,708 Bata Loads 81,708				11/15/2020 11/16/2020 11/17/2020	11/16/2020	11/17/2020
eft 1-Completed Survey 116 212 eft 2-Message Delivered VM 90 657 3-Refused 539 1,012 4-No Answer 6,764 25,056 4 iguage 5-Bad Number 245 384 ion 100 100 100	5,604	Completes		745	1,881	2,978
1-Completed Survey 116 212 eft 2-Message Delivered VM 90 657 3-Refused 539 1,012 4-No Answer 6,764 25,056 4 iguage 5-Bad Number 245 384 ion ion 100 100						
eft 2-Message Delivered VM 90 657 3-Refused 539 1,012 4-No Answer 6,764 25,056 4 iguage 5-Bad Number 245 384 ion 100 100 100	684	Q4=01	1-Completed Survey	116	212	326
3-Refused 539 1,012 4-No Answer 6,764 25,056 4 iguage 5-Bad Number 245 384 ion ion 100	1,945	VM Message Left	2-Message Delivered VM	06	259	1,198
4-No Answer 6,764 25,056 4 iguage 5-Bad Number 245 384 ion 100 100 100 100 100	2,975	up/RC	3-Refused	539	1,012	1,424
iguage 5-Bad Number 245 384 ion	74,437	No Answer	4-No Answer	6,764	25,056	42,617
100.00% List Penetration	1,663	Numbers/Language	5-Bad Number	245	384	1,034
100.00% List Penetration List Penetration 81,708 Data Loads						
100.00% List Penetration List Penetration 81,708 Data Loads						
81,708 Data Loads	%00 [.] 001	List Penetration				
81,708 Data Loads						
	81,708	Data Loads				

070			11/15/2020	11/15/2020 11/16/2020 11/17/2020	11/17/2020
1,812	40.05%	40.05% A-Reached Target	307	554	951
335	7.40%	7.40% Uncertain	80	124	131
2,377	52.54%	52.54% X = Refused	382	854	1,141
0	%00.0				
4,524	100.00%	100.00% Sum of All Responses	692	1,532	2,223

Q2 - Did you request Absentee Ballot in state of AZ?	Response	11/15/2020 11/16/2020 11/17/2020	11/16/2020	11/17/2020
1,120 45.00%	45.00% A-Yes [Go to Q3]	210	361	549

754	435	Sum of All Responses	100.00%	2,489
69	45	X = Refused	14.46%	360
1	-	[Go to Close A]	0.28%	7
18	10	E-Unsure [Go to Close A]		72
10	ε	Member) [Go to Q4]	0.84%	21
6	9	Member) [Go to Q3]		24
286	162	B-No [Go to Q4]	35.56%	885
	286 9 10 11 18 1 69 69		162 5 3 3 10 - - 45 7	

Q3 - Did	23 - Did you mail your ballot	Response	11/15/2020	11/15/2020 11/16/2020 11/17/2020	11/17/2020
344		16.16% A-Yes [Go to Q4]	29	112	165
969		32.69% B-No [Go to Close A]	116	237	343
11	0.52% M	0.52% Member) [Go to Q4]	2	2	7
6		0.42% Member) [Go to Close A]	1	4	4
14	0.66% Close A]	ose A]	3	4	7
1,055		49.55% X = Refused	201	326	528
2,129		100.00% Sum of All Responses	390	685	1,054

Q4 - Can best pho at?	Q4 - Can you please give us the best phone number to reach you Response at?		11/15/2020	11/15/2020 11/16/2020 11/17/2020	11/17/2020
829	82.48% Q5]	Q5]	116	212	350
144	17.52%	17.52% B-Refused [Go to Q5]	88	20	26

0 0	%00.0				
822	100.00%	100.00% Sum of All Responses	154	262	406
Q5 - Can you provid	vide us your				
email address?		Response	11/15/2020	11/15/2020 11/16/2020 11/17/2020	11/17/2020
127	18.57%	18.57% 01-Yes [Go to Close B]	24	36	29
222	81.43%	81.43% 02-No [Go to Close B]	92	176	289
0	%00'0				
684	100.00%	100.00% Sum of All Responses	116	212	356

EXHIBIT 2 B

AZ Unreturned Live Agent - Mass Markets

5,604 Completes 745 1,881 2,04 684 Q4=01 1-Completed Survey 116 212 1,945 VM Message Left 2-Message Delivered VM 90 657 1, 2,975 up/RC 3-Refused 539 1,012 1, 74,437 No Answer 4-No Answer 6,764 25,056 42, 1,663 Numbers/Language 5-Bad Number 245 384 1, 100.00% List Penetration 81,708 Data Loads 81,708 Bata Loads 81,708				11/15/2020 11/16/2020 11/17/2020	11/16/2020	11/17/2020
eft 1-Completed Survey 116 212 eft 2-Message Delivered VM 90 657 3-Refused 539 1,012 4-No Answer 6,764 25,056 4 iguage 5-Bad Number 245 384 ion 100 100 100	5,604	Completes		745	1,881	2,978
1-Completed Survey 116 212 eft 2-Message Delivered VM 90 657 3-Refused 539 1,012 4-No Answer 6,764 25,056 4 iguage 5-Bad Number 245 384 ion ion 100 100						
eft 2-Message Delivered VM 90 657 3-Refused 539 1,012 4-No Answer 6,764 25,056 4 iguage 5-Bad Number 245 384 ion 100 100 100	684	Q4=01	1-Completed Survey	116	212	326
3-Refused 539 1,012 4-No Answer 6,764 25,056 4 iguage 5-Bad Number 245 384 ion ion 100	1,945	VM Message Left	2-Message Delivered VM	06	259	1,198
4-No Answer 6,764 25,056 4 iguage 5-Bad Number 245 384 ion 100 100 100 100 100	2,975	up/RC	3-Refused	539	1,012	1,424
iguage 5-Bad Number 245 384 ion	74,437	No Answer	4-No Answer	6,764	25,056	42,617
100.00% List Penetration	1,663	Numbers/Language	5-Bad Number	245	384	1,034
100.00% List Penetration List Penetration 81,708 Data Loads						
100.00% List Penetration List Penetration 81,708 Data Loads						
81,708 Data Loads	%00 [.] 001	List Penetration				
81,708 Data Loads						
	81,708	Data Loads				

1,812 40.05% A-Reached Target 335 7.40% Uncertain 2,377 52.54% X = Refused	Farget 307	7 2 2	0707/11/10/0707/01/11/0707/01/11
		900	951
	08	124	131
	382	854	1,141
0.00%			
4,524 100.00% Sum of All Responses	Responses 769	1,532	2,223

Q2 - Did y Ballot in s	Q2 - Did you request Absentee Ballot in state of AZ?	Response	11/15/2020	11/15/2020 11/16/2020 11/17/2020	11/17/2020
1,120	45.00%	45.00% A-Yes [Go to Q3]	210	361	549

1,300	754	435	100.00% Sum of All Responses	2,489
246	69	45	14.46% X = Refused	360
9	1	-	0.28% [Go to Close A]	7
44	18	10	2.89% E-Unsure [Go to Close A]	72
8	10	3	0.84% Member) [Go to Q4]	21
10	6	2	0.96% Member) [Go to Q3]	24
437	286	162	35.56% B-No [Go to Q4]	882

882	35.56% B-No [Go to Q4]	Q4]	162	286	437
24	0.96% Member) [Go to Q3]	o to Q3]	5	6	10
21	0.84% Member) [Go to Q4]	o to Q4]	3	10	8
72	2.89% E-Unsure [Go to Close	so to Close A]	10	18	44
7	0.28% [Go to Close A]	e A]	1	1	9
360	14.46% X = Refused	-	45	69	246
2,489	100.00% Sum of All I	Responses	435	754	1,300
No - Pid v	- Did you mail your hallot		11/15/2020	11/16/2020	11/17/2020
	16 16%	0.041	29	112	165
969	32.69% B-No [Go to Close A]	Close A]	116		343
7	0.52% Member) [Go to Q4]	o to Q4]	2	2	7
6	0.42% Member) [G	[Go to Close A]	1	4	4
14	0.66% Close A]		3	4	7
1,055	49.55% X = Refused	-	201	326	528
2,129	100.00% Sum of All Responses	Responses	390	989	1,054
Q4 - Can y					
best phone number	e number to reach you Response				
at ?			11/15/2020	11/15/2020 11/16/2020 11/17/2020	11/17/2020
678	82.48% Q5]	7 /	116	212	350
144	17.52% B-Refused [Go to Q5]	[Go to Q5]	38	20	56

Q4 - Can best pho	Q4 - Can you please give us the best phone number to reach you Response	Response			
at?			11/15/2020	11/15/2020 11/16/2020 11/17/2020	11/17/2020
829	82.48% Q5]	Q5]	116	212	350
144	17.52%	17.52% B-Refused [Go to Q5]	38	20	26

0	%00.0				
0	%00'0				
822	100.00%	100.00% Sum of All Responses	154	797	406
Q5 - Can you provi email address?	ide us your	Response	11/15/2020	11/15/2020 11/16/2020 11/17/2020	11/17/2020
127	18.57%	18.57% 01-Yes [Go to Close B]	24	36	29
257	81.43%	81.43% 02-No [Go to Close B]	92	176	289
0	%00'0				
684	100.00%	100.00% Sum of All Responses	116	212	356

EXHIBIT 2 C

MI Unreturned Live Agent - Mass Markets

			11/15/2020	11/15/2020 11/16/2020 11/17/2020	11/17/2020
3,815	Completes		1	066	2,825
248	248 Q4=01	1-Completed Survey	ı	36	212
1,257	1,257 VM Message Left	2-Message Delivered VM	ı	388	869
2,310	2,310 up/RC	3-Refused	ı	999	1,744
62,29	62,569 No Answer	4-No Answer	ı	15,482	47,087
3,644	3,644 Numbers/Language	5-Bad Number	-	220	3,074
100.00%	100.00% List Penetration				
70,030	70,030 Data Loads				

Q1 - May I please speak to <lead on="" r="" screen="">?</lead>	Response	11/15/2020	11/15/2020 11/16/2020 11/17/2020	11/17/2020
958 23.65% A	23.65% A-Reached Target	ı	158	800
3.51% Uncertain	Incertain	-	25	82
2,950 72.84% X	72.84% X = Refused	1	883	2,067
%00.0				
4,050 100.00% S	100.00% Sum of All Responses	-	1,098	2,952

Q2 - Did Ballot in	Q2 - Did you request Absentee Ballot in state of MI?	Response	11/15/2020	11/15/2020 11/16/2020 11/17/2020	11/17/2020	
752		49.64% A-Yes [Go to Q3]	-	167	585	

1,233	707		Tuo.uu./olaliii ol Ali Responses	1,013
346	89	-	27.00% X = Refused	409
6	7	-	0.73% Moment [Go to Close A]	11
33	7	-	2.44% E-Unsure [Go to Close A]	28
15	7	-	1.12% Member) [Go to Q4]	17
45	9	-	3.30% Member) [Go to Q3]	09
200	68	1	15.78% B-No [Go to Q4]	239

Q3 - Die	23 - Did you mail your ballot back? Response	Response	11/15/2020	11/15/2020 11/16/2020 11/17/2020	11/17/2020
232		21.28% A-Yes [Go to Q4]	-	41	191
472		43.30% B-No [Go to Close A]	1	109	363
	10 0.92%	0.92% Member) [Go to Q4]	1	2	8
2	28 2.57%	2.57% Member) [Go to Close A]	1	2	26
2	22 2.02%	2.02% Close A]	1	5	17
326		29.91% X = Refused	-	09	266
			-		
1,090		100.00% Sum of All Responses		219	871

Q4 - Can best pho	Q4 - Can you please give us the best phone number to reach you	Response			
at?			11/15/2020 11/16/2020 11/17/2020	11/16/2020	11/17/2020
246	69.89% to Q5]	to Q5]	-	36	210
106		30.11% B-Refused [Go to Q5]	-	27	79

212	36	•	100.00% Sum of All Responses		248
				%00'0	0
199	31	-	92.74% 02-No [Go to Close B]		230
13	2	-	7.26% 01-Yes [Go to Close B]		18
11/17/2020	11/15/2020 11/16/2020 11/17/2020	11/15/2020	Response	ე5 - Can you provide us your email iddress?	Q5 - Can address?
588	63	-	100.00% Sum of All Responses		352
				%00'0	0
				%00.0	0

EXHIBIT 2 D

0270 PA Absentee Live ID Topline

			11/9/2020	11/9/2020 11/10/2020 11/11/2020	11/11/2020
18037	18037 Completes		4419	13618	0
834	834 survey** - Q4=01	status = C	178	959	
14,203	14,203 Machines	status = AM	3465	10738	
3,000	3,000 Hang up/RC	status = R, IR, RC, DC	922	2224	
3,521	3,521 Numbers/Languag	status = D, BC,WN, NE	256	2962	
0	0 MA	status = MA			
87.70%	87.70% List Penetration				
24,581	24,581 Data Loads		24,581		

Q1 - May I please s <lead on="" screen="">?</lead>	peak to	Response	9-Nov	10-Nov	11-Nov
2,262	75.86% 1.	1. Reached Target [Go to Q2].	593	1,669	
422	14.15% Q	Q2].	102	320	
298	X %66.6	X = Refused <go a="" close="" to=""></go>	77	221	
739	24.78% Q	Q = Hangup <go a="" close="" to=""></go>	160	579	
2,982	100.00% S	Sum of All Responses	932	2789	0

Q2 - Did you request an absentee ballot?	Response	%ON-6	10-Nov	11-Nov	
1,114 43.91% 1	6 1. Yes. [Go to Go to Q3].	331	783		
531 20.93%	6 2. No. [Go to Q4].	131	400		

98	1.42% confirmed "Yes" [Go to Q3]	12	24	
25	0.99% confirmed "No" [Go to Q4]	6	16	
91	3.59% 5. Unsure. [Go to Q3].	25	99	
68	3.51% moment. [Go to Close A]	17	72	
544	21.44% A]	105	439	
107	4.22% X = Refused <go a="" close="" to=""></go>	29	78	
147	5.79% Q = Hangup <go a="" close="" to=""></go>	36	111	
2,537	100.00% Sum of All Responses	969	1989	0

Q3 - Did you ballot?	Q3 - Did you mail back that Eballot?	Response	%ON-6	10-Nov	11-Nov
452	39.75%	1. Yes. [Go to Go to Q4].	06	362	
632	22.58%	2. No [Go to Close A].	229	403	
11	0.97%	confirmed "Yes" [Go to Q4]	_	10	
11	0.97%	confirmed "No" [Go to Close A]	4	7	
15	1.32%	5. Unsure. [Go to Close A].	9	6	
2	0.18% r	moment. [Go to Close A]	0	2	
14	1.23%	X = Refused <go a="" close="" to=""></go>	5	6	
13	1.14%	Q = Hangup <go a="" close="" to=""></go>	8	2	
1,137	100.00%	Sum of All Responses	343	807	0

the best phon	please give us e number to	Response	% on the second	10-Nov	11-Nov
834		87.61% 01 = Yes <go b="" close="" to=""></go>	178	929	
118	12.39%	12.39% X = Refused <go a="" close="" to=""></go>	36	82	
29	7.04%	Q = Hangup <go a="" close="" to=""></go>	17	20	
952	100.00%	100.00% Sum of All Responses	231	788	0

EXHIBIT 2 E

0276 GA Unreturned_Absentee Live ID Topline

			11/16/2020 11/17/2020	11/17/2020
15179	15179 Completes		8143	7036
184	184 Q5=01 or 02	status = C	64	120
13,479	13,479 Answering Machines	status = AM	2002	6389
1,516	1,516 up/RC	status = R, IR, RC, DC	686	527
4,902	4,902 Numbers/Language	status = D, BC,WN, NE	2436	2466
0	0 MA	status = MA	0	0
58.45%	58.45% List Penetration			
34,355 Data I	Data Loads		34,355	

Q1 - May I please screen>?	speak to <lead on<="" th=""><th>Response</th><th>16-Nov</th><th>17-Nov</th></lead>	Response	16-Nov	17-Nov
191	65.28%	65.28% 1. Reached Target [Go to Q2].	446	321
252	21.70%	21.70% [Go to Q2].	165	06
153	13.02%	13.02% X = Refused <go a="" close="" to=""></go>	104	49
388	32.77%	32.77% Q = Hangup <go a="" close="" to=""></go>	267	118
1,175	400.00%	100.00% Sum of All Responses	985	578

Q2 - Did you ballot?	Q2 - Did you request an absentee ballot?	Response	16-Nov	17-Nov
591	61.31%	61.31% 1. Yes. [Go to Go to Q3].	343	248
128	13.28%	13.28% 2. No. [Go to Q4].	84	44

411	611	100.00% Sum of All Responses	964
25	33	6.02% Q = Hangup <go a="" close="" to=""></go>	28
28	42	7.26% X = Refused <go a="" close="" to=""></go>	70
34	48	8.51% moment. [Go to Close A]	82
14	26	4.15% 5. Unsure. [Go to Q3].	40
3	11	1.45% member confirmed "No" [Go to Q4]	14
15	24	4.05% member confirmed "Yes" [Go to	39

Q3 - Did you mai	u mail back that ballot? Response	Response	16-Nov	17-Nov
240		38.52% 1. Yes. [Go to Go to Q4].	149	91
317		50.88% 2. No. [Go to Close A].	174	143
17	2.73%	2.73% member confirmed "Yes" [Go to	10	7
6		1.44% member confirmed "No" [Go to Close A]	4	5
24		3.85% 5. Unsure. [Go to Close A].	14	10
11	1.77%	1.77% moment. [Go to Close A]	8	3
5		0.80% X = Refused <go a="" close="" to=""></go>	5	0
7	1.12%	1.12% Q = Hangup <go a="" close="" to=""></go>	3	4
623		100.00% Sum of All Responses	367	263

best phone numk	ase give us tine ber to reach you	Response	16-Nov	17-Nov
313	82.15%	82.15% 01 = Yes <go q5="" to=""></go>	205	108
49	12.86%	12.86% 02 = No <go q5="" to=""></go>	26	23
19	4.99%	4.99% X = Refused <go a="" close="" to=""></go>	13	9
18	4.72%	4.72% Q = Hangup <go a="" close="" to=""></go>	10	8

381	100.00%	100.00% Sum of All Responses	254	145
Q5 - May w	25 - May we please have an email		70 N 9F	47 1000
address to follov	follow-up as well?	Response	00N-91	10N-71
66	78.86%	28.86% 01 = Yes <go b="" close="" to=""></go>	64	35
229		66.76% 02 = No <go b="" close="" to=""></go>	144	85
15	4.37%	4.37% X = Refused <go a="" close="" to=""></go>	1	4
19	5.54%	5.54% Q = Hangup <go a="" close="" to=""></go>	12	7
343		100.00% Sum of All Responses	231	131

EXHIBIT 2 F

William M. Briggs, PhD Statistician to the Stars! matt@wmbriggs.com 917-392-0691

1. Experience

- (1) 2016: Author of Uncertainty: The Soul of Modeling, Probability & Statistics, a book which argues for a complete and fundamental change in the philosophy and practice of probability and statistics. Eliminate hypothesis testing and estimation, and move to verifiable predictions. This includes AI and machine learning. Call this The Great Reset, but a good one.
- (2) 2004-2016 Adjunct Professor of Statistical Science, Cornell University, Ithaca, New York I taught a yearly Masters course to people who (rightfully) hate statistics. Interests: philosophy of science & probability, epistemology, epidemiology (ask me about the all-too-common epidemiologist fallacy), Bayesian statistics, medicine, climatology & meteorology, goodness of forecasts, overconfidence in science; public understanding of science, limitations of science, scientism; scholastic metaphysics (as it relates to epistemology).
- (3) 1998-PRESENT. STATISTICAL CONSULTANT, VARIOUS COMPANIES Most of my time is spent coaxing people out of their money to tell them they are too sure of themselves. All manner of analyses cheerfully undertaken. Example: Fraud analysis; I created the Wall Street Journal's College Rankings. I consultant regularly at Methodist and other hospitals, start-ups, start-downs, and with any instition willing to fork it over.
- (4) 2003-2010. RESEARCH SCIENTIST, NEW YORK METHODIST HOSPITAL, NEW YORK
 Besides the usual, I sit/sat on the Institutional Review Committee to assess the statistics of proposed research. I was an Associate Editor for *Monthly Weather Review* (through 2011). Also a member of the American Meteorological Society's Probability and Statistics Committee (through 2011). At a hospital? Yes, sir; at a hospital. It rains there, too, you know.
- (5) FALL 2007, FALL 2010 VISITING PROFESSOR OF STATISTICS, DEPART-MENT OF MATHEMATICS, CENTRAL MICHIGAN UNIVERSITY, MT. PLEAS-ANT, MI
 Who doesn't love a visit from a statistician? Ask me about the difference
 - Who doesn't love a visit from a statistician? Ask me about the difference between "a degree" and "an education."
- (6) 2003-2007, ASSISTANT PROFESSOR STATISTICS, WEILL MEDICAL COL-LEGE OF CORNELL UNIVERSITY, NEW YORK, NEW YORK Working here gave me a sincere appreciation of the influences of government money; grants galore.
- (7) 2002-2003. Gotham Risk Management, New York A start-up then, after Enron's shenanigans, a start-down. We set future weather derivative and weather insurance contract prices that incorporated information from medium- and long-range weather and climate forecasts.
- (8) 1998-2002. DoubleClick, New York Lead statistician. Lot of computer this and thats; enormous datasets.
- (9) 1993-1998. Graduate student, Cornell University

2

- Meteorology, applied climatology, and finally statistics. Was Vice Chair of the graduate student government; probably elected thanks to a miracle.
- (10) 1992-1993. NATIONAL WEATHER SERVICE, SAULT STE. MARIE, MI Forecast storms o' the day and launched enormous balloons in the name of Science. My proudest moment came when I was able to convince an ancient IBM-AT machine to talk to an *analog*, 110 baud, phone-coupled modem, all using BASIC!
- (11) 1989-1992. Undergraduate student, Central Michigan University

 Meteorology and mathematics. Started the local student meteorology group

to chase tornadoes. Who knew Michigan had so few? Spent a summer at U Michigan playing with a (science-fiction-sounding) lidar.

(12) 1983-1989. UNITED STATES AIR FORCE
Cryptography and other secret stuff. Shot things; learned pinochle. I adopted and became proficient with a fascinating and versatile vocabulary. Irritate me for examples. TS/SCI, etc. security clearance (now inactive).

2. Education

- (1) Ph.D., 2004, Cornell University. Statistics.
- (2) M.S., 1995, Cornell University. Atmospheric Science.
- (3) B.S., Summa Cum Laude, 1992, Central Michigan University. Meteorology and Math.

3. Publications

3.0.1. Popular.

(1) Op-eds in various newspapers; articles in *Stream, Crisis Magazine, The Remnant, Quadrant, Quirks*; blog with ∼70,000 monthly readers. Various briefs submitted to government agencies, such as California Air Resources Board, Illinois Department of Natural Resources. Talks and holding-forths of all kinds.

3.0.2. Books.

- (1) Richards, JW, WM Briggs, and D Axe, 2020. *UThe Price of Panic: How the Tyranny of Experts Turned a Pandemic into a Catastrophe*. Regnery. Professors Jay Richards, William Briggs, and Douglas Axe take a deep dive into the crucial questions on the minds of millions of Americans during one of the most jarring and unprecedented global events in a generation.
- (2) Briggs, WM., 2016. Uncertainty: The Soul of Modeling, Probability & Statistics. Springer. Philosophy of probability and statistics. A new (old) way to view and to use statistics, a way that doesn't lead to heartbreak and pandemic over-certainty, like current methods do.
- (3) Briggs, WM., 2008 Breaking the Law of Averages: Real Life Probability and Statistics in Plain English. Lulu Press, New York. Free text for undergraduates
- (4) Briggs, WM., 2006 So You Think You're Psychic? Lulu Press, New York. Hint: I'll bet you're not.

3.0.3. Methods.

(1) Briggs, WM and J.C. Hanekamp, 2020. Uncertainty In The MAN Data Calibration & Trend Estimates. *Atmospheric Environment*, In review.

- (2) Briggs, WM and J.C. Hanekamp, 2020. Adjustments to the Ryden & McNeil Ammonia Flux Model. *Soil Use and Management*, In review.
- (3) Briggs, William M., 2020. Parameter-Centric Analysis Grossly Exaggerates Certainty. In *Data Science for Financial Econometrics*, V Kreinovich, NN Thach, ND Trung, DV Thanh (eds.), In press.
- (4) Briggs, WM, HT Nguyen, D Trafimow, 2019. Don't Test, Decide. In *Behavioral Predictive Modeling in Econometrics*, Springer, V Kreinovich, S Sriboonchitta (eds.). In press.
- (5) Briggs, William M. and HT Nguyen, 2019. Clarifying ASA's view on p-values in hypothesis testing. *Asian Journal of Business and Economics*, 03(02), 1–16.
- (6) Briggs, William M., 2019. Reality-Based Probability & Statistics: Solving The Evidential Crisis (invited paper). Asian Journal of Business and Economics, 03(01), 37–80.
- (7) Briggs, William M., 2019. Everything Wrong with P-Values Under One Roof. *In Beyond Traditional Probabilistic Methods in Economics*, V Kreinovich, NN Thach, ND Trung, DV Thanh (eds.), pp 22—44.
- (8) Briggs, WM, HT Nguyen, D Trafimow, 2019. The Replacement for Hypothesis Testing. *In Structural Changes and Their Econometric Modeling*, Springer, V Kreinovich, S Sriboonchitta (eds.), pp 3—17.
- (9) Trafimow, D, V Amrhein, CN Areshenkoff, C Barrera-Causil, ..., WM Briggs, (45 others), 2018. Manipulating the alpha level cannot cure significance testing. *Frontiers in Psychology*, 9, 699. doi.org/10.3389/ fpsyg.2018.00699.
- (10) Briggs, WM, 2018. Testing, Prediction, and Cause in Econometric Models. In *Econometrics for Financial Applications*, ed. Anh, Dong, Kreinovich, and Thach. Springer, New York, pp 3–19.
- (11) Briggs, WM, 2017. The Substitute for p-Values. *JASA*, 112, 897–898.
- (12) J.C. Hanekamp, M. Crok, M. Briggs, 2017. Ammoniak in Nederland. Enkele kritische wetenschappelijke kanttekeningen. V-focus, Wageningen.
- (13) Briggs, WM, 2017. Math: Old, New, and Equalitarian. Academic Questions, 30(4), 508–513.
- (14) Monckton, C, W Soon, D Legates, ... (several others), WM Briggs 2018. On an error in applying feedback theory to climate. In submission (currently *J. Climate*).
- (15) Briggs, WM, JC Hanekamp, M Crok, 2017. Comment on Goedhart and Huijsmans. *Soil Use and Management*, 33(4), 603–604.
- (16) Briggs, WM, JC Hanekamp, M Crok, 2017. Response to van Pul, van Zanten and Wichink Kruit. Soil Use and Management, 33(4), 609–610.
- (17) Jaap C. Hanekamp, William M. Briggs, and Marcel Crock, 2016. A volatile discourse reviewing aspects of ammonia emissions, models, and atmospheric concentrations in The Netherlands. *Soil Use and Management*, 33(2), 276–287.

(18) Christopher Monckton of Brenchley, Willie Soon, David Legates, William Briggs, 2015. Keeping it simple: the value of an irreducibly simple climate model. *Science Bulletin*. August 2015, Volume 60, Issue 15, pp 1378–1390.

- (19) Briggs, WM, 2015. The Third Way Of Probability & Statistics: Beyond Testing and Estimation To Importance, Relevance, and Skill. arxiv.org/abs/1508.02384.
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- (21) David R. Legates, Willie Soon, William M. Briggs, Christopher Monckton of Brenchley, 2015. Climate Consensus and 'Misinformation': A Rejoinder to Agnotology, Scientific Consensus, and the Teachingand Learning of Climate Change. Science and Education, 24, 299–318, DOI 10.1007/s11191-013-9647-9.
- (22) Briggs, WM, 2014. The Problem Of Grue Isn't. arxiv.org/abs/1501.03811.
- (23) Christopher Monckton of Brenchley, Willie Soon, David Legates, William Briggs, 2014. Why models run hot: results from an irreducibly simple climate model. *Science Bulletin*. January 2015, Volume 60, Issue 1, pp 122-135.
- (24) Briggs, WM, 2014. Common Statistical Fallacies. *Journal of American Physicians and Surgeons*, Volume 19 Number 2, 58–60.
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- (26) Legates, DR, Soon, W, and Briggs, 2013. Learning and Teaching Climate Science: The Perils of Consensus Knowledge Using Agnotology. *Science and Education*, DOI 10.1007/s11191-013-9588-3.
- (27) Briggs, WM, 2012. On Probability Leakage. arxiv.org/abs/1201.3611.
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- (30) Briggs, WM, and R Zaretzki, 2009. Induction and falsifiability in statistics. arxiv.org/abs/math/0610859.
- (31) Briggs, WM, 2011. Discussion to A Gelman. Why Tables are Really Much Better than Graphs. *Journal Computational and Graphical Statistics*. Volume 20, 16–17.
- (32) Zaretzki R, Gilchrist MA, Briggs WM, and Armagan A, 2010. Bias correction and Bayesian analysis of aggregate counts in SAGE libraries. *BMC Bioinformatics*, 11:72doi:10.1186/1471-2105-11-72.
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3.0.4. Applications.

(1) Jamorabo, Daniel, Renelus, Benjamin, Briggs, WM, 2019. "Comparative outcomes of EUS-guided cystogastrostomy for peripancreatic fluid collections (PFCs): A systematic review and meta-analysis, 2019. Therapeutic Advances in Gastrointestinal Endoscopy, in press.

- (2) Benjamin Renelus, S Paul, S Peterson, N Dave, D amorabo, W Briggs, P Kancharla, 2019. Racial disparities with esophageal cancer mortality at a high-volume university affiliated center: An All ACCESS Invitation, *Journal of the National Medical Association*, in press.
- (3) Mehta, Bella, S Ibrahim, WM Briggs, and P Efthimiou, 2019. Racial/Ethnic variations in morbidity and mortality in Adult Onset Still's Disease: An analysis of national dataset", *Seminars in Arthritis and Rheumatism*, doi: 10.1016/j.semarthrit.2019.04.0044.
- (4) Ivanov A, Dabiesingh DS, Bhumireddy GP, Mohamed A, Asfour A, Briggs WM, Ho J, Khan SA, Grossman A, Klem I, Sacchi TJ, Heitner JF. Prevalence and Prognostic Significance of Left Ventricular Noncompaction in Patients Referred for Cardiac Magnetic Resonance Imaging. Circ Cardiovasc Imaging. 2017 Sep;10(9). pii: e006174. doi: 10.1161/CIRCIMAGING.117.006174.
- (5) Ivanov A, Kaczkowska BA, Khan SA, Ho J, Tavakol M, Prasad A, Bhumireddy G, Beall AF, Klem I, Mehta P, Briggs WM, fpaSacchi TJ, Heitner JF, 2017. Review and Analysis of Publication Trends over Three Decades in Three High Impact Medicine Journals. *PLoS One*. 2017 Jan 20;12(1):e0170056. doi: 10.1371/journal.pone.0170056.
- (6) A. Ivanova, G.P. Bhumireddy, D.S. Dabiesingh, S.A. Khana, J. Hoa N. Krishna, N. Dontineni, J.A Socolow, W.M. Briggs, I. Klem, T.J. Sacchi, J.F. Heitner, 2016. Importance of papillary muscle infarction detected by cardiac magnetic resonance imaging in predicting cardiovascular events. *International Journal of Cardiology*. Volume 220, 1 October 2016, Pages 558–563. PMID: 27390987.
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- and the Medical Knowledge Core Competency. *J Grad Med Educ.* 2013 Sep;5(3):464-7. PMID: 24404311.
- (11) Annika Krystyna, D Kumari, R Tenney, R Kosanovic, T Safi, WM Briggs, K Hennessey, M Skelly, E Enriquez, J Lajeune, W Ghani and MD Schwalb, 2013. Hepatitis c antibody testing in African American and Hispanic men in New York City with prostate biopsy. *Oncology Discovery*, Vol 1. DOI: 10.7243/2052-6199-1-1.
- (12) Ziad Y. Fayad, Elie Semaan, Bashar Fahoum, W. Matt Briggs, Anthony Tortolani, and Marcus D'Ayala, 2013. Aortic mural thrombus in the normal or minimally atherosclerotic aorta: A systematic review and metaanalysis of the available literature. Ann Vasc Surg., Apr;27(3):282-90. DOI:10.1016/j.avsg.2012.03.011.
- (13) Elizabeth Haines, Gerardo Chiricolo, Kresimir Aralica, William Briggs, Robert Van Amerongen, Andrew Laudenbach, Kevin O'Rourke, and Lawrence Melniker MD, 2012. Derivation of a Pediatric Growth Curve for Inferior Vena Caval Diameter in Healthy Pediatric Patients. Crit Ultrasound J. 2012 May 28;4(1):12. doi: 10.1186/2036-7902-4-12.
- (14) Wei Li, Piotr Gorecki, Elie Semaan, William Briggs, Anthony J. Tortolani, Marcus D'Ayala, 2011. Concurrent Prophylactic Placement of Inferior Vena Cava Filter in gastric bypass and adjustable banding operations: An analysis of the Bariatric Outcomes Longitudinal Database (BOLD). *J. Vascular Surg.* 2012 Jun;55(6):1690-5. doi: 10.1016/j.jvs.2011.12.056.
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3.1. Talks (I am years behind updating these).

- (1) Briggs, 2016. The Crisis Of Evidence: Probability & The Nature Of Cause. Institute of Statistical Science, Academia Sinica, Taipei, Taiwan.
- (2) Wei Li, Piotr Gorecki, Robert Autin, William Briggs, Elie Semaan, Anthony J. Tortolani, Marcus D'Ayala, 2011. Concurrent Prophylactic Placement of

- Inferior Vena Cava Filter (CPPOIVCF) in Gastric Bypass and Adjustable Banding Operations: An analysis of the Bariatric Outcomes Longitudinal Database. Eastern Vascular Society 25th Annual Meeting, 2011.
- (3) Wei Li, Jo Daniel, James Rucinski, Syed Gardezi, Piotr Gorecki, Paul Thodiyil, Bashar Fahoum, William Briggs, Leslie Wise, 2010. FACSFactors affecting patient disposition after ambulatory laparoscopic cholecystectomy (ALC) cheanalysis of the National Survey of Ambulatory Surgery (NSAS). American College of Surgeons.
- (4) Wei Li, Marcus D'Ayala, et al., William Briggs, 2010. Coronary bypass and carotid endarterectomy (CEA): does a combined operative approach offer better outcome? - Outcome of different management strategies in patients with carotid stenosis undergoing coronary artery bypass grafting (CABG). Vascular Annual Meeting.
- (5) Briggs, WM, 2007. On equi-probable priors, MAX ENT 2007, Saratoga Springs, NY.
- (6) Briggs, WM, and RA Zaretzki, 2006. On producing probability forecasts (from ensembles). 18th Conf. on Probability and Statistics in the Atmospheric Sciences, Atlanta, GA, Amer. Meteor. Soc.
- (7) Briggs, WM, and RA Zaretzki, 2006. Improvements on the ROC Curve: Skill Plots for Forecast Evaluation. *Invited*. Joint Research Conference on Statistics in Quality Industry and Technology, Knoxville, TN.
- (8) Briggs, WM, and RA Zaretzki, 2005. Skill Curves and ROC Curves for Diagnoses, or Why Skill Curves are More Fun. Joint Statistical Meetings, American Stat. Soc., Minneapolis, MN.
- (9) Briggs W.M., 2005. On the optimal combination of probabilistic forecasts to maximize skill. *International Symposium on Forecasting* San Antonio, TX. International Institute of Forecasters.
- (10) Briggs, WM, and D Ruppert, 2004. Assessing the skill of yes/no forecasts for Markov observations. 17th Conf. on Probability and Statistics in the Atmospheric Sciences, Seattle, WA, Amer. Meteor. Soc.
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- (16) Briggs, WM, and RA Levine, 1998. Comparison of forecasts using the bootstrap. 14th Conf. on Probability and Statistics in the Atmospheric Sciences Phoenix, AZ, Amer. Meteor. Soc., 1-4.
- (17) Briggs, WM, and R Zaretzki, 1998. The effect of randomly spaced observations on field forecast error scores. 14th Conf. on Probability and Statistics in the Atmospheric Sciences Phoenix, AZ, Amer. Meteor. Soc., 5-8.
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