

Episode 56PM January 23, 2024. Raw data from CSV Downloads from up to 40 monitors of 3 days of data from PurpleAir monitors, up to 40 monitor RAWSEP Excel Template Auto-calculations to get % above NAAQS in a 3 day period. 25 slides. Slide 1) This is the raw data downloaded for 20 to 40 monitors, saved as a CSV file.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1	DateTime	Average	950 Claret	950 Claret	Dudgeon-I	Dudgeon-I	Elinor and	Elinor and	Elmside C	Elmside C	LaFollette	LaFollette	LAWD2 A	LAWD2 B	LAWD4 A	LAWD4 B	LAWD5 A	LAWD5 B	LAWD6 A	LAWD6 B	LAWD 7 A	LAWD 7 B	GoPackOu	GoPackOu	SASY1A A	SASY1A B	
2	1/20/2024 6:30	50	23	11	34	25	21	22	5	6	0	0	31	34	20	21	28	31	31	32	27	31	10	5	21	8	
3	1/20/2024 6:40		21	9	33	23	20	19	3	6	0	0	27	35	18	21	27	28	32	33	28	33	7	5	20	9	
4	1/20/2024 6:50		25	11	29	23	19	19	5	5	0	0	29	33	19	21	27	29	30	34	28	29	8	5	17	9	
5	1/20/2024 7:00		27	10	29	23	20	20	4	7	0	0	31	31	17	19	27	29	31	34	25	32	10	5	19	8	
6	1/20/2024 7:10		25	11	28	21	18	20	4	7	0	0	32	34	15	20	26	28	33	32	26	32	8	6	19	8	
7	1/20/2024 7:20		27	9	24	22	20	20	4	5	0	0	31	36	18	18	25	28	32	32	25	31	6	4	18	8	
8	1/20/2024 7:30		25	9	30	20	17	21	2	4	0	0	29	33	17	19	26	27	31	33	27	32	7	4	17	7	
9	1/20/2024 7:40		18	8	28	22	18	22	3	5	0	0	28	36	17	21	28	26	30	35	24	32	8	5	21	8	
10	1/20/2024 7:50		15	8	29	23	20	22	3	4	0	0	35	33	16	17	24	27	33	34	25	31	8	4	19	6	
11	1/20/2024 8:00		19	7	28	24	18	19	3	6	0	0	33	35	14	21	24	27	32	35	25	32	7	4	19	9	
12	1/20/2024 8:10		21	8	24	20	18	20	3	5	0	0	31	35	16	20	22	25	31	33	33	42	6	4	18	7	
13	1/20/2024 8:20		19	10	28	22	21	21	3	6	0	0	28	37	16	19	23	27	30	35	34	40	10	5	19	8	
14	1/20/2024 8:30		19	9	29	24	19	20	3	6	0	0	28	32	35	20	22	24	29	34	30	33	7	7	17	9	
15	1/20/2024 8:40		23	8	29	22	19	20	2	7	0	0	30	32	30	19	21	23	27	31	29	32	11	4	19	9	
16	1/20/2024 8:50		13	6	24	18	18	21	4	6	0	0	30	31	16	18	19	23	26	29	23	28	8	3	38	10	
17	1/20/2024 9:00		24	8	23	20	16	17	3	6	0	0	25	30	16	18	21	22	25	27	20	26	8	4	33	10	
18	1/20/2024 9:10		20	6	24	19	17	18	2	9	0	0	27	29	18	19	21	21	29	30	21	23	8	5	18	10	
19	1/20/2024 9:20		13	6	26	19	17	18	2	25	0	0	27	27	18	18	20	21	20	24	24	25	7	4	16	7	
20	1/20/2024 9:30		16	6	27	23	18	19	1	26	0	0	24	27	15	18	20	21	24	22	21	27	9	5	13	8	
21	1/20/2024 9:40		16	5	34	34	17	15	4	15	0	0	24	27	14	17	21	25	23	22	19	24	10	6	19	12	
22	1/20/2024 9:50		19	7	26	43	14	18	4	8	0	0	22	27	13	18	25	22	23	25	23	27	8	6	23	10	
23	1/20/2024 10:00		23	10	25	65	16	18	4	5	0	0	22	21	16	19	24	24	24	26	26	27	11	6	18	9	
24	1/20/2024 10:10		22	8	26	57	15	18	4	4	0	0	23	22	18	20	22	22	28	28	23	26	11	8	24	11	
25	1/20/2024 10:20		24	12	27	22	18	20	6	4	0	0	22	22	19	19	19	23	27	31	22	23	11	7	22	13	
26	1/20/2024 10:30		18	10	26	23	25	22	5	4	0	0	21	23	19	18	21	23	29	31	22	23	10	8	21	13	
27	1/20/2024 10:40		24	13	25	22	24	26	7	5	0	0	20	23	19	20	22	21	32	28	22	25	13	7	22	13	
28	1/20/2024 10:50		20	11	28	23	26	23	6	6	0	0	20	22	20	18	25	23	32	30	25	28	13	11	24	17	
29	1/20/2024 11:00		27	14	26	21	25	26	6	6	0	1	27	27	18	20	23	24	26	30	24	26	13	12	23	12	
30	1/20/2024 11:10		23	11	26	20	25	25	6	5	0	0	40	42	20	22	21	21	37	37	24	27	14	9	20	12	
31	1/20/2024 11:20		22	11	25	24	24	22	8	6	0	1	63	63	21	23	23	23	43	46	24	26	12	10	22	14	
32	1/20/2024 11:30		19	14	28	25	28	27	6	6	0	1	64	64	26	26	24	22	52	54	22	23	14	11	26	19	

Slide 3) This is the RAWSEP Excel Template where the data will be auto-calculated. This is for 3 days between January 20 and January 23, 2024. The CSV data is copied from the CSV 18 monitor File's A1 to S434 and is pasted into A1 of the RAWSEP Excel Template.

U1

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	DateTime	950 Claren	Dudgeon-M	Elinor and	Elmside Ci	LaFollette	LAWD2 A	LAWD4 A	LAWD5 A	LAWD6 A	LAWD 7 A	GoPackOu	SASY1A A	SASY 3b
2	1/20/2024 6:30	23	34	21	5	0	31	20	28	31	27	10	21	
3	1/20/2024 6:40	21	33	20	3	0	27	18	27	32	28	7	20	
4	1/20/2024 6:50	25	29	19	5	0	29	19	27	30	28	8	17	
5	1/20/2024 7:00	27	29	20	4	0	31	17	27	31	25	10	19	
6	1/20/2024 7:10	25	28	18	4	0	32	15	26	33	26	8	19	
7	1/20/2024 7:20	27	24	20	4	0	31	18	25	32	25	6	18	
8	1/20/2024 7:30	25	30	17	2	0	29	17	26	31	27	7	17	
9	1/20/2024 7:40	18	28	18	3	0	28	17	28	30	24	8	21	
10	1/20/2024 7:50	15	29	20	3	0	35	16	24	33	25	8	19	
11	1/20/2024 8:00	19	28	18	3	0	33	14	24	32	25	7	19	
12	1/20/2024 8:10	21	24	18	3	0	31	16	22	31	33	6	18	
13	1/20/2024 8:20	19	28	21	3	0	28	16	23	30	34	10	19	1
14	1/20/2024 8:30	19	29	19	3	0	28	35	22	29	30	7	17	
15	1/20/2024 8:40	23	29	19	2	0	30	30	21	27	29	11	19	
16	1/20/2024 8:50	13	24	18	4	0	30	16	19	26	23	8	38	
17	1/20/2024 9:00	24	23	16	3	0	25	16	21	25	20	8	33	
18	1/20/2024 9:10	20	24	17	2	0	27	18	21	29	21	8	18	
19	1/20/2024 9:20	13	26	17	2	0	27	18	20	20	24	7	16	
20	1/20/2024 9:30	16	27	18	1	0	24	15	20	24	21	9	13	
21	1/20/2024 9:40	16	34	17	4	0	24	14	21	23	19	10	19	
22	1/20/2024 9:50	19	26	14	4	0	22	13	25	23	23	8	23	
23	1/20/2024 10:00	23	25	16	4	0	22	16	24	24	26	11	18	
24	1/20/2024 10:10	22	26	15	4	0	23	18	22	28	23	11	24	

3rd try

Slide 4) Copy the raw data from the CSV file. When closing the CSV file choose **Don't Save** because you may want the raw data including monitor B data in the future.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	DateTime	950 Clarer	Dudgeon-I	Elinor and	Elmside C	LaFollette	LAWD2 A	LAWD4 A	LAWD5 A	LAWD6 A	LAWD 7 A	GoPackOu	SASY1A A	
2	1/20/2024 6:30	23	34	21	5	0	31	20	28	31	27	10	21	
3	1/20/2024 6:40	21	33	20	3	0	27	18	27	32	28	7	20	
4	1/20/2024 6:50	25	29	19	5	0	29	19	27	30	28	8	17	
5	1/20/2024 7:00	27	29	20	4	0	31	17	27	31	25	10	19	
6	1/20/2024 7:10	25	28	18	4	0	32	15	26	33	26	8	19	
7	1/20/2024 7:20	27	24	20	4	0	31	18	25	32	25	6	18	
8	1/20/2024 7:30	25	30	17	2	0	29	17	26	31	27	7	17	
9	1/20/2024 7:40	18	28	18	3	0	28	17	28	30	24	8	21	
10	1/20/2024 7:50	15	29	20	3	0	35	16	24	33	25	8	19	
11	1/20/2024 8:00	19	28	18	3	0	33	14	24	32	25	7	19	
12	1/20/2024 8:10	21	24	18	3	0	31	16	22	31	33	6	18	
13	1/20/2024 8:20	19	28	21	3	0	28	16	23	30	34	10	19	
14	1/20/2024 8:30	19	29	19	3	0	28	35	22	29	30	7	17	
15	1/20/2024 8:40	23	29	19	2	0	30	30	21	27	29	11	19	
16	1/20/2024 8:50	13	24	18	4	0	30	16	19	26	23	8	38	
17	1/20/2024 9:00	24	23	16	3	0	25	16	21	25	20	8	33	
18	1/20/2024 9:10	20	24	17	2	0	27	18	21	29	21	8	18	
19	1/20/2024 9:20	13	26	17	2	0	27	18	20	20	24	7	16	
20	1/20/2024 9:30	16	27	18	1	0	24	15	20	24	21	9	13	
21	1/20/2024 9:40	16	34	17	4	0	24	14	21	23	19	10	19	
22	1/20/2024 9:50	19	26	14	4	0	22	13	25	23	23	8	23	
23	1/20/2024 10:00	23	25	16	4	0	22	16	24	24	26	11	18	
24	1/20/2024 10:10	22	26	15	4	0	23	18	22	28	23	11	24	
25	1/20/2024 10:20	24	27	18	6	0	22	19	19	27	22	11	22	
26	1/20/2024 10:30	18	26	25	5	0	21	19	21	29	22	10	21	
27	1/20/2024 10:40	24	25	24	7	0	20	19	22	32	22	13	22	
28	1/20/2024 10:50	20	28	26	6	0	20	20	25	32	25	13	24	
29	1/20/2024 11:00	27	26	25	6	0	27	18	23	26	24	13	23	
30	1/20/2024 11:10	23	26	25	6	0	40	20	21	37	24	14	20	
31	1/20/2024 11:20	22	25	24	8	0	63	21	23	43	24	12	22	
32	1/20/2024 11:30	19	28	28	6	0	64	26	24	52	22	14	26	

Microsoft Excel

Want to save your changes to '1 of 2 us-epa-pm25-aqi.csv'?

Save Don't Save Cancel

Slide 5) If you paste 20 monitors' data into A1 the data will take up cells A1 to T434. Allow two columns between the raw data and the space in the Template where you want to autocalculate. The autocalculate area will then be W1 to AP434. Do not touch or type in the autocalculate area. **Do not disturb the formulas in the autocalculate area.**

U1

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	DateTime	950 Claren	Dudgeon-T	Elinor and	Elmside Ci	LaFollette	LAWD2 A	LAWD4 A	LAWD5 A	LAWD6 A	LAWD 7 A	GoPackOu	SASY1A A	SASY 3b
2	1/20/2024 6:30	23	34	21	5	0	31	20	28	31	27	10	21	
3	1/20/2024 6:40	21	33	20	3	0	27	18	27	32	28	7	20	
4	1/20/2024 6:50	25	29	19	5	0	29	19	27	30	28	8	17	
5	1/20/2024 7:00	27	29	20	4	0	31	17	27	31	25	10	19	
6	1/20/2024 7:10	25	28	18	4	0	32	15	26	33	26	8	19	
7	1/20/2024 7:20	27	24	20	4	0	31	18	25	32	25	6	18	
8	1/20/2024 7:30	25	30	17	2	0	29	17	26	31	27	7	17	
9	1/20/2024 7:40	18	28	18	3	0	28	17	28	30	24	8	21	
10	1/20/2024 7:50	15	29	20	3	0	35	16	24	33	25	8	19	
11	1/20/2024 8:00	19	28	18	3	0	33	14	24	32	25	7	19	
12	1/20/2024 8:10	21	24	18	3	0	31	16	22	31	33	6	18	
13	1/20/2024 8:20	19	28	21	3	0	28	16	23	30	34	10	19	1
14	1/20/2024 8:30	19	29	19	3	0	28	35	22	29	30	7	17	
15	1/20/2024 8:40	23	29	19	2	0	30	30	21	27	29	11	19	
16	1/20/2024 8:50	13	24	18	4	0	30	16	19	26	23	8	38	
17	1/20/2024 9:00	24	23	16	3	0	25	16	21	25	20	8	33	
18	1/20/2024 9:10	20	24	17	2	0	27	18	21	29	21	8	18	
19	1/20/2024 9:20	13	26	17	2	0	27	18	20	20	24	7	16	
20	1/20/2024 9:30	16	27	18	1	0	24	15	20	24	21	9	13	
21	1/20/2024 9:40	16	34	17	4	0	24	14	21	23	19	10	19	
22	1/20/2024 9:50	19	26	14	4	0	22	13	25	23	23	8	23	
23	1/20/2024 10:00	23	25	16	4	0	22	16	24	24	26	11	18	
24	1/20/2024 10:10	22	26	15	4	0	23	18	22	28	23	11	24	

Slide 6) There were 18 monitors raw data pasted into the template in A1:S434 and the autocalculate area with 2 columns between is V1:AM434 for the auto-calculation correlating PurpleAir monitors to EPA regulatory monitors, which is **the simple mathematical formula used by the Wisconsin Department of Revenue on AirNow Maps of Smoke and Fire for Wisconsin (PA x 0.514)+1.8304** you can see in the Formula Box that the formula for V2 is **=IF(B2<>"", (B2*0.514)+1.8304, "")** (the IF statement allows cells that are blank in the raw data to remain blank in the autocalculate area)

Formula Bar: V2 =IF(B2<>"", (B2*0.514)+1.8304, "")

	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM
1	N. Third	Wexford V	MNA WilMar	Location A		950 Clarenc	Dudgeon-M	Elinor and	Elmside Cit	LaFollette	LAWD2 A	LAWD4 A	LAWD5 A	LAWD6 A	LAWD 7 A	GoPackOu	SASY1A A	SASY 3b A	SASY 6 A	Sasy7a A	9 N. Third	Wexford V	MNA WilMar
2	15	16	29			14	19	13	4	2	18	12	16	18	16	7	13	4		2	10	10	17
3	13	18	26			13	19	12	3	2	16	11	16	18	16	5	12	6		3	9	11	15
4	14	15	26			15	17	12	4	2	17	12	16	17	16	6	11	5		3	9	10	15
5	14	17	26			16	17	12	4	2	18	11	16	18	15	7	12	5		2	9	11	15
6	14	18	23			15	16	11	4	2	18	10	15	19	15	6	12	6		2	9	11	14
7	12	17	26			16	14	12	4	2	18	11	15	18	15	5	11	5		3	8	11	15
8	12	19	25			15	17	11	3	2	17	11	15	18	16	5	11	6		3	8	12	15
9	13	17	25			11	16	11	3	2	16	11	16	17	14	6	13	5		2	9	11	15
10	15	18	25			10	17	12	3	2	20	10	14	19	15	6	12	6		2	10	11	15
11	14	19	28			12	16	11	3	2	19	9	14	18	15	5	12	5		3	9	12	16
12	12	17	30			13	14	11	3	2	18	10	13	18	19	5	11	6		2	8	11	17
13	15	17	27			12	16	13	3	2	16	10	14	17	19	7	12	8		3	10	11	16
14	13	18	23			12	17	12	3	2	16	20	13	17	17	5	11	6		2	9	11	14
15	12	18	29			14	17	12	3	2	17	17	13	16	17	7	12	6		2	8	11	17
16	14	17	44			9	14	11	4	2	17	10	12	15	14	6	21	6		3	9	11	24
17	13	15	53			14	14	10	3	2	15	10	13	15	12	6	19	5		3	9	10	29
18	13	17	32			12	14	11	3	2	16	11	13	17	13	6	11	5		2	9	11	18
19	15	17	19			9	15	11	3	2	16	11	12	12	14	5	10	5		3	10	11	12
20	16	15	22			10	16	11	2	2	14	10	12	14	13	6	9	5		2	10	10	13
21	16	15	23			10	19	11	4	2	14	9	13	14	12	7	12	6		2	10	10	14
22	16	14	22			12	15	9	4	2	13	9	15	14	14	6	14	5		3	10	9	13
23	19	15	25			14	15	10	4	2	13	10	14	14	15	7	11	5	4	2	12	10	15
24	17	14				13	15	10	4	2	14	11	13	16	14	7	14	6		3	11	9	

Slide 7) In Cell V435 the calculation =Sum(V2:V433) is made for the first column. (The calculation would be =Sum(W2:W433 for the 2nd column, and on and on to column AM433)

	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
424	85	63	82			57	61	52	30	27	55	48	55
425	85	64	82			55	59	51	30	26	55	49	55
426	79	65	82			51	57	48	30	25	54	48	55
427	80	63	79			52	57	45	29	22	53	46	52
428	75	62	75			55	57	44	29	19	52	44	53
429	75	61	75			49	55	46	28	17	51	44	52
430	76	61	77			46	55	44	29	17	51	43	50
431	76	60	78			43	53	44	28	17	52	40	47
432	73	62	75			43	51	44	29	18	52	41	44
433	75	63	74			42	51	44	29	17	54	40	45
434		0	22								6	13	11
435						12702	14156	17307	8193	3313	14197	11442	12855
436					Average	29	33	40	19	8	33	26	30
437					count blan	0	0	0	0	0	0	0	0
438					count num	432	432	432	432	432	432	432	432
439					count >12	417	428	406	228	101	429	384	422
440					count >25	285	337	351	135	36	344	186	286
441					count >35	109	135	260	34	0	134	96	105
442					count >45	44	60	166	24	0	65	37	48
443					count >55	5	36	73	16	0	25	1	18
444					count >65	0	0	40	9	0	5	0	1
445					count >75	0	0	21	6	0	3	0	0
446					Average P	29	33	40	19	8	33	26	30
447					%>= 12 ug	97%	99%	94%	53%	23%	99%	89%	98%

Slide 8) In Cell V436 the calculation =V435/432 is made for the first column. (The calculation would be =W435/432 for the 2nd column, and on and on to column AM433)

	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
424	85	63	82			57	61	52	30	27	55	4
425	85	64	82			55	59	51	30	26	55	4
426	79	65	82			51	57	48	30	25	54	4
427	80	63	79			52	57	45	29	22	53	4
428	75	62	75			55	57	44	29	19	52	4
429	75	61	75			49	55	46	28	17	51	4
430	76	61	77			46	55	44	29	17	51	4
431	76	60	78			43	53	44	28	17	52	4
432	73	62	75			43	51	44	29	18	52	4
433	75	63	74			42	51	44	29	17	54	4
434		0	22								6	1
435						12702	14156	17307	8193	3313	14197	1144
436					Average	29	33	40	19	8	33	2
437					count blan	0	0	0	0	0	0	
438					count num	432	432	432	432	432	432	43
439					count >12	417	428	406	228	101	429	38
440					count >25	285	337	351	135	36	344	18
441					count >35	109	135	260	34	0	134	9
442					count >45	44	60	166	24	0	65	3
443					count >55	5	36	73	16	0	25	
444					count >65	0	0	40	9	0	5	
445					count >75	0	0	21	6	0	3	
446					Average P	29	33	40	19	8	33	2
447					%>= 12 ug	97%	99%	94%	53%	23%	99%	89%

Slide 9) 1) In Cell V437 the calculation =COUNTBLANK(V2:V433) is made for the first column. (The calculation would be =COUNTBLANK(W2:W433) for the 2nd column, and on and on to column AM433) 2)COUNTBLANK counted the cells in a column that are blank, which happens when there is a power outage or the owner of a monitor turns it off for that 10 minute period.

V437 : =COUNTBLANK(V2:V433)

	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
424	85	63	82			57	61	52	30	27	55	48	55
425	85	64	82			55	59	51	30	26	55	49	55
426	79	65	82			51	57	48	30	25	54	48	55
427	80	63	79			52	57	45	29	22	53	46	52
428	75	62	75			55	57	44	29	19	52	44	53
429	75	61	75			49	55	46	28	17	51	44	52
430	76	61	77			46	55	44	29	17	51	43	50
431	76	60	78			43	53	44	28	17	52	40	47
432	73	62	75			43	51	44	29	18	52	41	44
433	75	63	74			42	51	44	29	17	54	40	45
434		0	22								6	13	11
435						12702	14156	17307	8193	3313	14197	11442	12855
436					Average	29	33	40	19	8	33	26	30
437					count blan	0	0	0	0	0	0	0	0
438					count num	432	432	432	432	432	432	432	432
439					count >12	417	428	406	228	101	429	384	422
440					count >25	285	337	351	135	36	344	186	286
441					count >35	109	135	260	34	0	134	96	105
442					count >45	44	60	166	24	0	65	37	48
443					count >55	5	36	73	16	0	25	1	18
444					count >65	0	0	40	9	0	5	0	1
445					count >75	0	0	21	6	0	3	0	0
446					Average P	29	33	40	19	8	33	26	30
447					%>= 12 ug	97%	99%	94%	53%	23%	99%	89%	98%

< > 3rd try +

Slide 10) In cell V438 the auto-calculation is made =432-V437 so that the average is calculated by dividing the sum of all 10 minute periods only by the number of periods when the monitor was turned on.

V438 :

	Q	R	S	T	U	V	W	X	Y	Z	AA
424	85	63	82			57	61	52	30	27	5
425	85	64	82			55	59	51	30	26	5
426	79	65	82			51	57	48	30	25	5
427	80	63	79			52	57	45	29	22	5
428	75	62	75			55	57	44	29	19	5
429	75	61	75			49	55	46	28	17	5
430	76	61	77			46	55	44	29	17	5
431	76	60	78			43	53	44	28	17	5
432	73	62	75			43	51	44	29	18	5
433	75	63	74			42	51	44	29	17	5
434		0	22								
435						12702	14156	17307	8193	3313	1419
436					Average	29	33	40	19	8	3
437					count blank	0	0	0	0	0	
438					count number	432	432	432	432	432	43
439					count >12	417	428	406	228	101	42
440					count >25	285	337	351	135	36	34
441					count >35	109	135	260	34	0	13
442					count >45	44	60	166	24	0	6
443					count >55	5	36	73	16	0	2
444					count >65	0	0	40	9	0	
445					count >75	0	0	21	6	0	
446					Average PM	29	33	40	19	8	3
447					%>= 12 ug	97%	99%	94%	53%	23%	99

3rd try +

Slide 11) The auto-calculation in cell V439 is =COUNTIF(V\$2-V434,">=12") This counts the number of 10 minute periods when the EPA number of PM2.5 micrograms per cubic meter (already correlated to an EPA regulatory number) is equal to or above 12 micrograms per cubic meter (12 ug/m3 is the EPA limit for **annual** average “safe” PM2.5 according to the Environmental Protection Agency National Ambient Air Quality Standards (EPA NAAQS))

V439 : *fx* =COUNTIF(V\$2:V\$434,">= 12")

	Q	R	S	T	U	V	W	X	Y	Z
424	85	63	82			57	61	52	30	
425	85	64	82			55	59	51	30	
426	79	65	82			51	57	48	30	
427	80	63	79			52	57	45	29	
428	75	62	75			55	57	44	29	
429	75	61	75			49	55	46	28	
430	76	61	77			46	55	44	29	
431	76	60	78			43	53	44	28	
432	73	62	75			43	51	44	29	
433	75	63	74			42	51	44	29	
434		0	22							
435						12702	14156	17307	8193	33
436					Average	29	33	40	19	
437					count blan	0	0	0	0	
438					count num	432	432	432	432	4
439					count >12	417	428	406	228	1
440					count >25	285	337	351	135	
441					count >35	109	135	260	34	
442					count >45	44	60	166	24	
443					count >55	5	36	73	16	
444					count >65	0	0	40	9	
445					count >75	0	0	21	6	
446					Average PM	29	33	40	19	
447					%>= 12 ug	97%	99%	94%	53%	23

< > 3rd try +

Slide 12) The auto-calculation in cell V440 is =COUNTIF(V\$2-V\$434,">=25") This counts the number of 10 minute periods when the EPA number of PM2.5 micrograms per cubic meter (already correlated to an EPA regulatory number) is equal to or above 25 micrograms per cubic meter

```
V440  fx  =COUNTIF(V$2:V$434,">= 25")
```

	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
424	85	63	82			57	61	52	30	27	55	48
425	85	64	82			55	59	51	30	26	55	49
426	79	65	82			51	57	48	30	25	54	48
427	80	63	79			52	57	45	29	22	53	46
428	75	62	75			55	57	44	29	19	52	44
429	75	61	75			49	55	46	28	17	51	44
430	76	61	77			46	55	44	29	17	51	43
431	76	60	78			43	53	44	28	17	52	40
432	73	62	75			43	51	44	29	18	52	41
433	75	63	74			42	51	44	29	17	54	40
434		0	22								6	13
435						12702	14156	17307	8193	3313	14197	11442
436					Average	29	33	40	19	8	33	26
437					count blan	0	0	0	0	0	0	0
438					count num	432	432	432	432	432	432	432
439					count >12	417	428	406	228	101	429	384
440					count >25	285	337	351	135	36	344	186
441					count >35	109	135	260	34	0	134	96
442					count >45	44	60	166	24	0	65	37
443					count >55	5	36	73	16	0	25	1
444					count >65	0	0	40	9	0	5	0
445					count >75	0	0	21	6	0	3	0
446					Average P	29	33	40	19	8	33	26
447					%>= 12 ug	97%	99%	94%	53%	23%	99%	89%

Slide 13) The auto-calculation in cell V441 is =COUNTIF(V\$2-V434,">=35") This counts the number of 10 minute periods when the EPA number of PM2.5 micrograms per cubic meter (already correlated to an EPA regulatory number) is equal to or above 35 micrograms per cubic meter (35 ug/m3 is the EPA limit for **24 hour** average “safe” PM2.5 according to the Environmental Protection Agency National Ambient Air Quality Standards (EPA NAAQS))

V441 : X ✓ fx =COUNTIF(V\$2:V\$434,">=35")

	Q	R	S	T	U	V	W	X	Y	Z	AA
424	85	63	82			57	61	52	30	27	
425	85	64	82			55	59	51	30	26	
426	79	65	82			51	57	48	30	25	
427	80	63	79			52	57	45	29	22	
428	75	62	75			55	57	44	29	19	
429	75	61	75			49	55	46	28	17	
430	76	61	77			46	55	44	29	17	
431	76	60	78			43	53	44	28	17	
432	73	62	75			43	51	44	29	18	
433	75	63	74			42	51	44	29	17	
434		0	22								
435						12702	14156	17307	8193	3313	14
436					Average	29	33	40	19	8	
437					count blan	0	0	0	0	0	
438					count num	432	432	432	432	432	4
439					count >12	417	428	406	228	101	4
440					count >25	285	337	351	135	36	3
441					count >35	109	135	260	34	0	:
442					count >45	44	60	166	24	0	
443					count >55	5	36	73	16	0	
444					count >65	0	0	40	9	0	
445					count >75	0	0	21	6	0	
446					Average Pl	29	33	40	19	8	
447					%>= 12 ug	97%	99%	94%	53%	23%	9

3rd try +

Ready Accessibility: Good to go

Slide 14) The auto-calculation in cell V442 is =COUNTIF(V\$2-V434,">=45") This counts the number of 10 minute periods when the EPA number of PM2.5 micrograms per cubic meter (already correlated to an EPA regulatory number) is equal to or above 45 micrograms per cubic meter

V442 *fx* =COUNTIF(V\$2:V\$434,">=45")

	Q	R	S	T	U	V	W	X	Y
424	85	63	82			57	61	52	3
425	85	64	82			55	59	51	3
426	79	65	82			51	57	48	3
427	80	63	79			52	57	45	2
428	75	62	75			55	57	44	2
429	75	61	75			49	55	46	2
430	76	61	77			46	55	44	2
431	76	60	78			43	53	44	2
432	73	62	75			43	51	44	2
433	75	63	74			42	51	44	2
434		0	22						
435						12702	14156	17307	819
436				Average		29	33	40	1
437				count blan		0	0	0	
438				count num		432	432	432	43
439				count >12		417	428	406	22
440				count >25		285	337	351	13
441				count >35		109	135	260	3
442				count >45		44	60	166	2
443				count >55		5	36	73	1
444				count >65		0	0	40	
445				count >75		0	0	21	
446				Average PM		29	33	40	1
447				%>= 12 ug		97%	99%	94%	53%

< > 3rd try +

Slide 15) The auto-calculation in cell V443 is =COUNTIF(V\$2-V434,">=55") This counts the number of 10 minute periods when the EPA number of PM2.5 micrograms per cubic meter (already correlated to an EPA regulatory number) is equal to or above 55 micrograms per cubic meter

V443 : ✕ ✓ fx =COUNTIF(V\$2:V\$434,">= 55")

	Q	R	S	T	U	V	W	X	Y
424	85	63	82			57	61	52	
425	85	64	82			55	59	51	
426	79	65	82			51	57	48	
427	80	63	79			52	57	45	
428	75	62	75			55	57	44	
429	75	61	75			49	55	46	
430	76	61	77			46	55	44	
431	76	60	78			43	53	44	
432	73	62	75			43	51	44	
433	75	63	74			42	51	44	
434		0	22						
435						12702	14156	17307	8:
436					Average	29	33	40	
437					count blan	0	0	0	
438					count num	432	432	432	:
439					count >12	417	428	406	:
440					count >25	285	337	351	:
441					count >35	109	135	260	
442					count >45	44	60	166	
443					count >55	5	36	73	
444					count >65	0	0	40	
445					count >75	0	0	21	
446					Average PM	29	33	40	
447					%>= 12 ug	97%	99%	94%	5

< > 3rd try +

Slide 16) The auto-calculation in cell V444 is =COUNTIF(V\$2-V434,">=65") This counts the number of 10 minute periods when the EPA number of PM2.5 micrograms per cubic meter (already correlated to an EPA regulatory number) is equal to or above 65 micrograms per cubic meter

	Q	R	S	T	U	V	W	X	Y	Z
124	85	63	82			57	61	52	30	27
125	85	64	82			55	59	51	30	26
126	79	65	82			51	57	48	30	25
127	80	63	79			52	57	45	29	22
128	75	62	75			55	57	44	29	19
129	75	61	75			49	55	46	28	17
130	76	61	77			46	55	44	29	17
131	76	60	78			43	53	44	28	17
132	73	62	75			43	51	44	29	18
133	75	63	74			42	51	44	29	17
134		0	22							
135						12702	14156	17307	8193	3313
136					Average	29	33	40	19	8
137					count blank	0	0	0	0	0
138					count number	432	432	432	432	432
139					count >12	417	428	406	228	101
140					count >25	285	337	351	135	36
141					count >35	109	135	260	34	0
142					count >45	44	60	166	24	0
143					count >55	5	36	73	16	0
144					count >65	0	0	40	9	0
145					count >75	0	0	21	6	0
146					Average PM	29	33	40	19	8

Slide 17) The auto-calculation in cell V445 is =COUNTIF(V\$2-V434,">=75") This counts the number of 10 minute periods when the EPA number of PM2.5 micrograms per cubic meter (already correlated to an EPA regulatory number) is equal to or above 75 micrograms per cubic meter

V445 : X ✓ fx =COUNTIF(V\$2:V\$434,">= 75")

	Q	R	S	T	U	V	W	X	Y
424	85	63	82			57	61	52	30
425	85	64	82			55	59	51	30
426	79	65	82			51	57	48	30
427	80	63	79			52	57	45	29
428	75	62	75			55	57	44	29
429	75	61	75			49	55	46	28
430	76	61	77			46	55	44	29
431	76	60	78			43	53	44	28
432	73	62	75			43	51	44	29
433	75	63	74			42	51	44	29
434		0	22						
435						12702	14156	17307	8193
436					Average	29	33	40	19
437					count blan	0	0	0	0
438					count num	432	432	432	432
439					count >12	417	428	406	228
440					count >25	285	337	351	135
441					count >35	109	135	260	34
442					count >45	44	60	166	24
443					count >55	5	36	73	16
444					count >65	0	0	40	9
445					count >75	0	0	21	6
446					Average PM	29	33	40	19
447					%>= 12 ug	97%	99%	94%	53%

Slide 18) The auto-calculation in cell V446 is =V435/(432-V437) This finds the average PM2.5 in a 3 day period.

		Q	R	S	T	U	V	W	X	Y	Z	AA
424		85	63	82			57	61	52	30	27	
425		85	64	82			55	59	51	30	26	
426		79	65	82			51	57	48	30	25	
427		80	63	79			52	57	45	29	22	
428		75	62	75			55	57	44	29	19	
429		75	61	75			49	55	46	28	17	
430		76	61	77			46	55	44	29	17	
431		76	60	78			43	53	44	28	17	
432		73	62	75			43	51	44	29	18	
433		75	63	74			42	51	44	29	17	
434			0	22								
435							12702	14156	17307	8193	3313	14
436					Average		29	33	40	19	8	
437					count blan		0	0	0	0	0	
438					count num		432	432	432	432	432	
439					count >12		417	428	406	228	101	
440					count >25		285	337	351	135	36	
441					count >35		109	135	260	34	0	
442					count >45		44	60	166	24	0	
443					count >55		5	36	73	16	0	
444					count >65		0	0	40	9	0	
445					count >75		0	0	21	6	0	
446					Average PM2.5		29	33	40	19	8	
447					%>= 12 ug/m3		97%	99%	94%	53%	23%	

Slide 19) The auto-calculation in cell V447 is =V\$439/V\$438 This finds the % of time in a 3 day period when PM2.5 was at or above 12 micrograms per cubic meter.

V447

	Q	R	S	T	U	V	W	X
424	85	63	82			57	61	52
425	85	64	82			55	59	51
426	79	65	82			51	57	48
427	80	63	79			52	57	45
428	75	62	75			55	57	44
429	75	61	75			49	55	46
430	76	61	77			46	55	44
431	76	60	78			43	53	44
432	73	62	75			43	51	44
433	75	63	74			42	51	44
434		0	22					
435						12702	14156	17307
436					Average	29	33	40
437					count blan	0	0	0
438					count num	432	432	432
439					count >12	417	428	406
440					count >25	285	337	351
441					count >35	109	135	260
442					count >45	44	60	166
443					count >55	5	36	73
444					count >65	0	0	40
445					count >75	0	0	21
446					Average PM	29	33	40
447					%>= 12 ug	97%	99%	94%

3rd try

Slide 20) The auto-calculation in cell V448 is =V\$440/V\$438 This finds the % of time in a 3 day period when PM2.5 was at or above 25 micrograms per cubic meter.

V448 : X ✓ fx =V\$440/V\$438

	Q	R	S	T	U	V	W	X	Y	Z
438					count num	432	432	432	432	432
439					count >12	417	428	406	228	101
440					count >25	285	337	351	135	36
441					count >35	109	135	260	34	0
442					count >45	44	60	166	24	0
443					count >55	5	36	73	16	0
444					count >65	0	0	40	9	0
445					count >75	0	0	21	6	0
446					Average PM	29	33	40	19	8
447					%>= 12 ug	97%	99%	94%	53%	23%
448					%>= 25 ug	66%	78%	81%	31%	8%
449					%>= 35 ug	25%	31%	60%	8%	0%
450					%>= 45 ug	10%	14%	38%	6%	0%
451					%>= 55 ug	1%	8%	17%	4%	0%
452					%>= 65 ug	0%	0%	9%	2%	0%
453					%>= 75 ug	0%	0%	5%	1%	0%
454					950 Clarence Dudgeon-M Elinor and Elmside Cir LaFollette LA					
455										
456					Episode 56PL January 23, 2024. City Snapshot of Madison, WI. PM2.5					
457										
458										
459										
460										
461										

3rd try +

Slide 21) The auto-calculation in cell V449 is =V\$441/V\$438 This finds the % of time in a 3 day period when PM2.5 was at or above 35 micrograms per cubic meter.

V449 =V\$441/V\$438

	Q	R	S	T	U	V	W	X	Y
438					count num	432	432	432	432
439					count >12	417	428	406	228
440					count >25	285	337	351	135
441					count >35	109	135	260	34
442					count >45	44	60	166	24
443					count >55	5	36	73	16
444					count >65	0	0	40	9
445					count >75	0	0	21	6
446					Average PM	29	33	40	19
447					%>= 12 ug	97%	99%	94%	53%
448					%>= 25 ug	66%	78%	81%	31%
449					%>= 35 ug	25%	31%	60%	8%
450					%>= 45 ug	10%	14%	38%	6%
451					%>= 55 ug	1%	8%	17%	4%
452					%>= 65 ug	0%	0%	9%	2%
453					%>= 75 ug	0%	0%	5%	1%
454					950 Clarendon Dudgeon-M Elinor and Elmside Cii L				
455									
456					Episode 56PL January 23, 2024. City Snapshot of Madison				
457									
458									
459									
460									
461									

3rd try +

Slide 22) The auto-calculation in cell V450 is =V\$442/V\$438 This finds the % of time in a 3 day period when PM2.5 was at or above 45 micrograms per cubic meter.

V450 $\text{=V\$442/V\$438}$

	Q	R	S	T	U	V	W	X	Y	Z	A
438					count num	432	432	432	432	432	
439					count >12	417	428	406	228	101	
440					count >25	285	337	351	135	36	
441					count >35	109	135	260	34	0	
442					count >45	44	60	166	24	0	
443					count >55	5	36	73	16	0	
444					count >65	0	0	40	9	0	
445					count >75	0	0	21	6	0	
446					Average PM	29	33	40	19	8	
447					%>= 12 ug	97%	99%	94%	53%	23%	
448					%>= 25 ug	66%	78%	81%	31%	8%	
449					%>= 35 ug	25%	31%	60%	8%	0%	
450					%>= 45 ug	10%	14%	38%	6%	0%	
451					%>= 55 ug	1%	8%	17%	4%	0%	
452					%>= 65 ug	0%	0%	9%	2%	0%	
453					%>= 75 ug	0%	0%	5%	1%	0%	
454					950 Clarence Dudgeon-M Elinor and Elmside Cii LaFollette	LAW					
455											
456					Episode 56PL January 23, 2024. City Snapshot of Madison, WI. PM2.5 %						
457											
458											
459											
460											
461											

3rd try +

Slide 23) The auto-calculation in cell V451 is =V\$443/V\$438 This finds the % of time in a 3 day period when PM2.5 was at or above 55 micrograms per cubic meter.

V451 $=V\$443/V\438

	Q	R	S	T	U	V	W	X	Y	Z
438					count num	432	432	432	432	432
439					count >12	417	428	406	228	101
440					count >25	285	337	351	135	36
441					count >35	109	135	260	34	0
442					count >45	44	60	166	24	0
443					count >55	5	36	73	16	0
444					count >65	0	0	40	9	0
445					count >75	0	0	21	6	0
446					Average PM	29	33	40	19	8
447					%>= 12 ug	97%	99%	94%	53%	23%
448					%>= 25 ug	66%	78%	81%	31%	8%
449					%>= 35 ug	25%	31%	60%	8%	0%
450					%>= 45 ug	10%	14%	38%	6%	0%
451					%>= 55 ug	1%	8%	17%	4%	0%
452					%>= 65 ug	0%	0%	9%	2%	0%
453					%>= 75 ug	0%	0%	5%	1%	0%
454					950 Clarence Dudgeon - Elinor and Elmside Cir LaFollette					
455					Episode 56PL January 23, 2024. City Snapshot of Madison, WI. PM2.5					
456										
457										
458										
459										
460										
461										

3rd try +

Slide 24) The auto-calculation in cell V452 is =V\$444/V\$438 This finds the % of time in a 3 day period when PM2.5 was at or above 65 micrograms per cubic meter.

V452 \times ✓ f_x =V\$444/V\$438

	Q	R	S	T	U	V	W	X	Y	Z
438					count num	432	432	432	432	
439					count >12	417	428	406	228	
440					count >25	285	337	351	135	
441					count >35	109	135	260	34	
442					count >45	44	60	166	24	
443					count >55	5	36	73	16	
444					count >65	0	0	40	9	
445					count >75	0	0	21	6	
446					Average PM	29	33	40	19	
447					%>= 12 ug	97%	99%	94%	53%	
448					%>= 25 ug	66%	78%	81%	31%	
449					%>= 35 ug	25%	31%	60%	8%	
450					%>= 45 ug	10%	14%	38%	6%	
451					%>= 55 ug	1%	8%	17%	4%	
452					%>= 65 ug	0%	0%	9%	2%	
453					%>= 75 ug	0%	0%	5%	1%	
454					950 Clarendon Dudgeon-M Elinor and Elmside Cir LaFol					
455										
456					Episode 56PL January 23, 2024. City Snapshot of Madison, WI.					
457										
458										
459										
460										
461										

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Slide 25) The auto-calculation in cell V453 is =V\$445/V\$438 This finds the % of time in a 3 day period when PM2.5 was at or above 75 micrograms per cubic meter.

V453 : X ✓ fx =V\$445/V\$438

	Q	R	S	T	U	V	W	X	Y	Z
438					count num	432	432	432	432	432
439					count >12	417	428	406	228	101
440					count >25	285	337	351	135	36
441					count >35	109	135	260	34	0
442					count >45	44	60	166	24	0
443					count >55	5	36	73	16	0
444					count >65	0	0	40	9	0
445					count >75	0	0	21	6	0
446					Average PM	29	33	40	19	8
447					%>= 12 ug	97%	99%	94%	53%	23%
448					%>= 25 ug	66%	78%	81%	31%	8%
449					%>= 35 ug	25%	31%	60%	8%	0%
450					%>= 45 ug	10%	14%	38%	6%	0%
451					%>= 55 ug	1%	8%	17%	4%	0%
452					%>= 65 ug	0%	0%	9%	2%	0%
453					%>= 75 ug	0%	0%	5%	1%	0%
454					950 Clarenc	Dudgeon-M	Elinor and	Elmside Cir	LaFollette	LA
455										
456					Episode 56PL	January 23,	2024. City	Snapshot of	Madison, WI.	PM2.5
457										
458										
459										
460										
461										

3rd try +