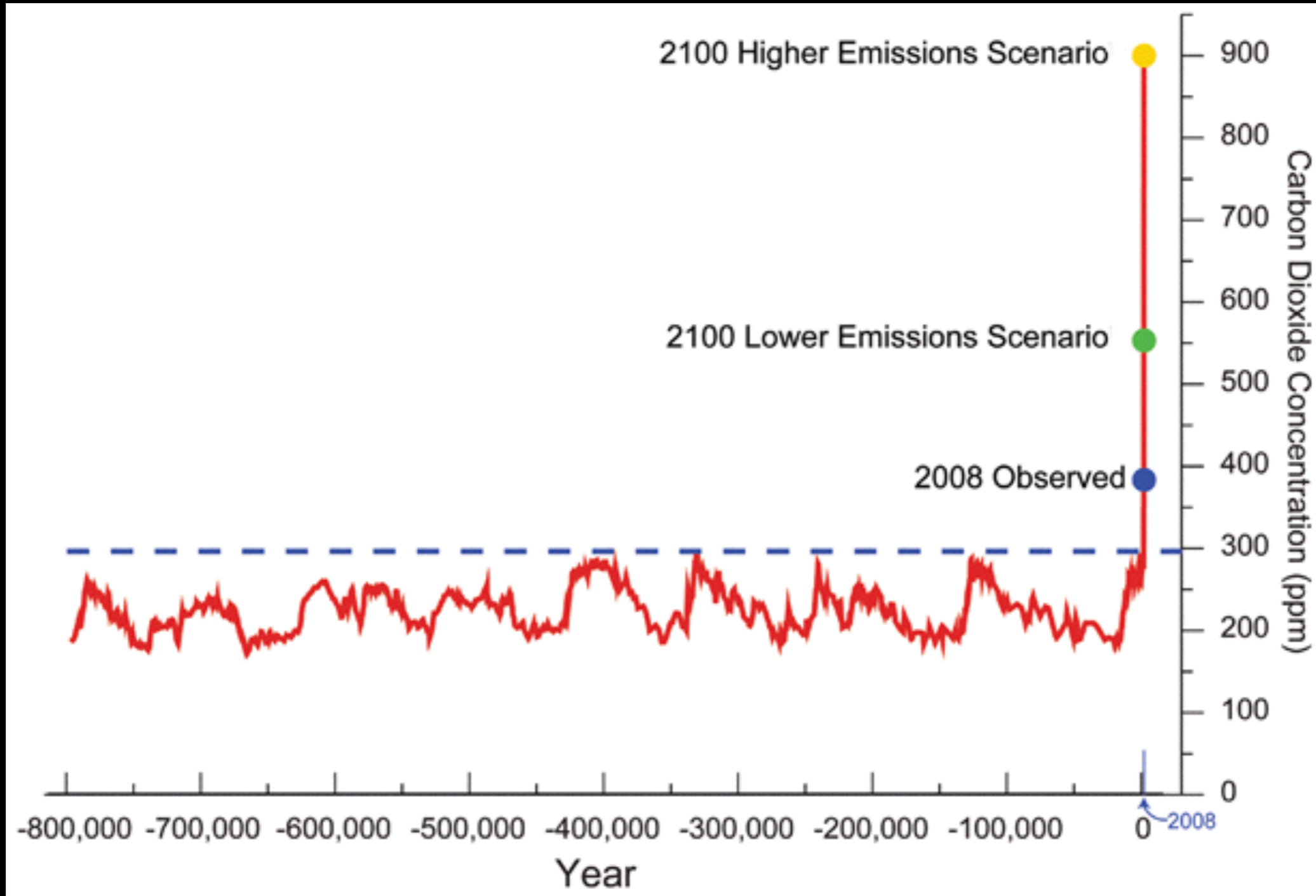


Presenting Data

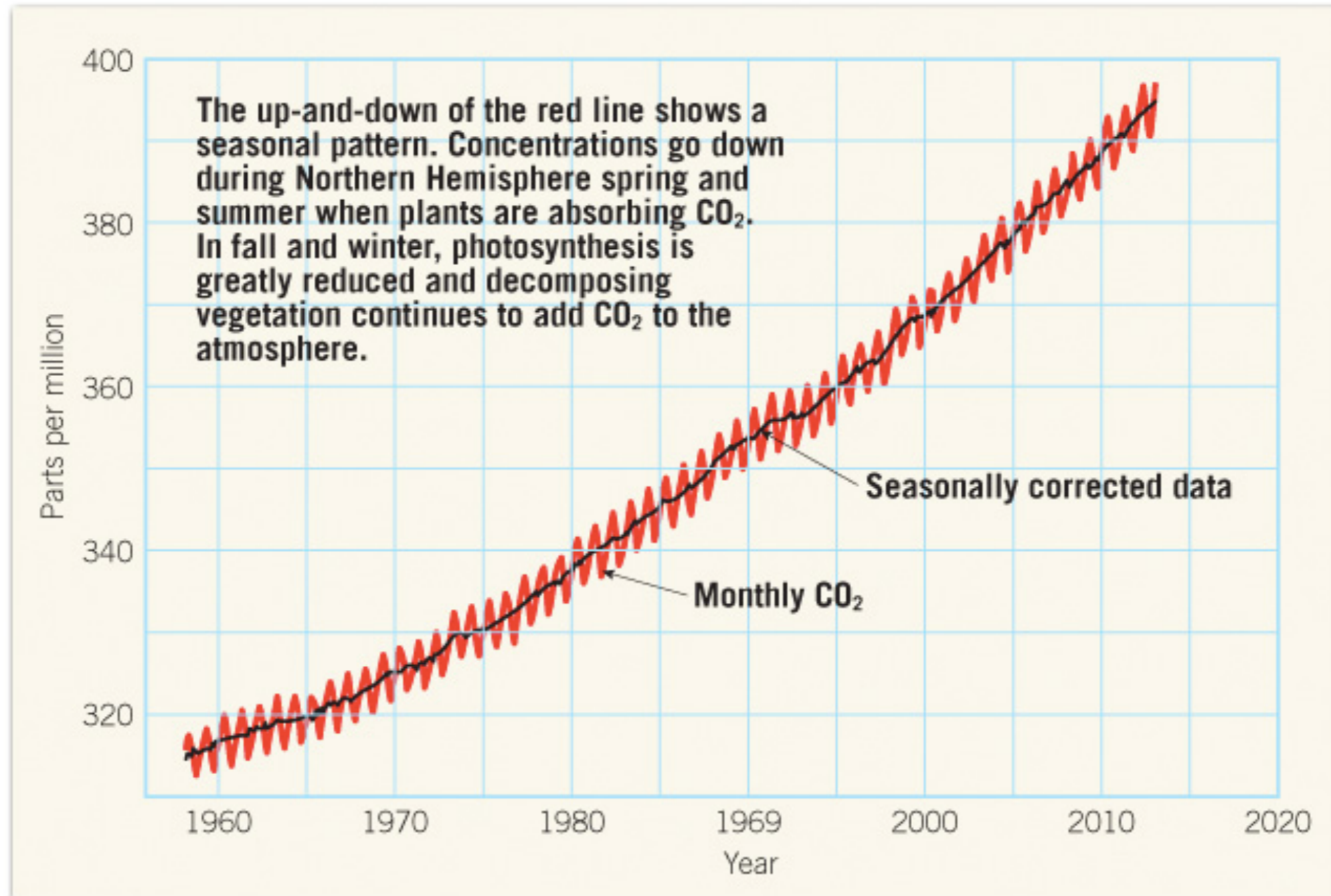
(It's hard.)

If you need to
make a point,
a good plot
goes a long way.....

A famous plot: CO2 with year



A famous plot: CO₂ with year

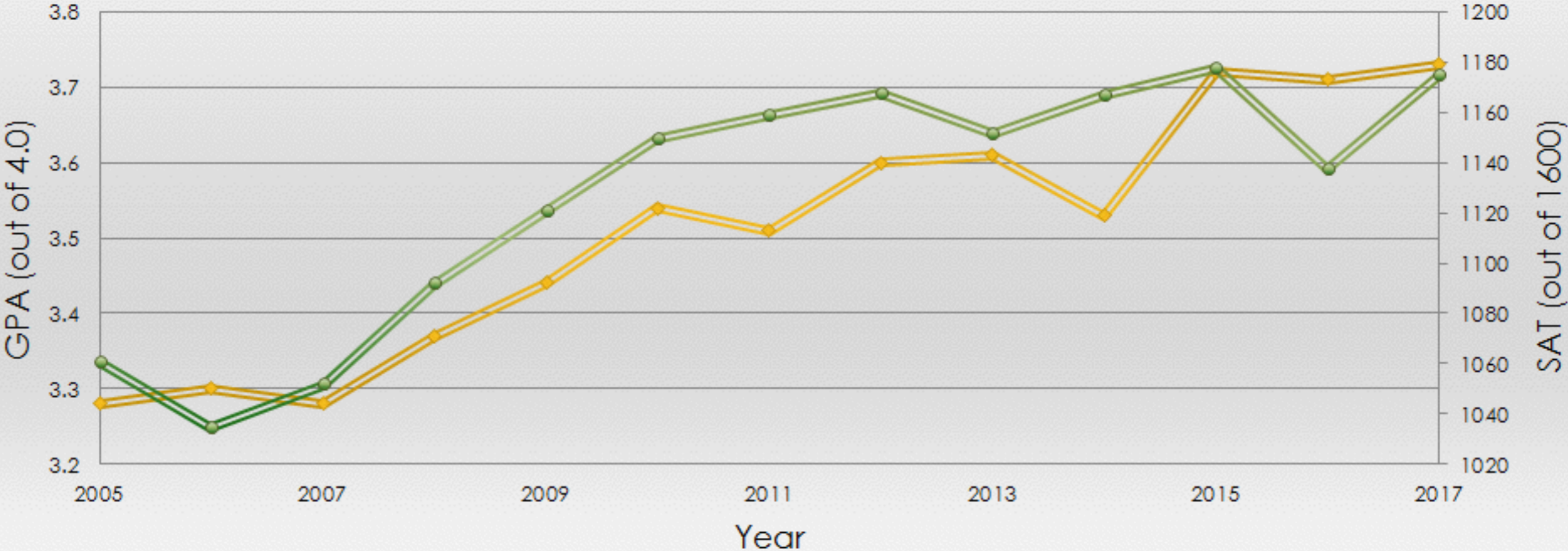


SmartFigure 16.5 Monthly CO₂ Concentrations

Our incoming freshman

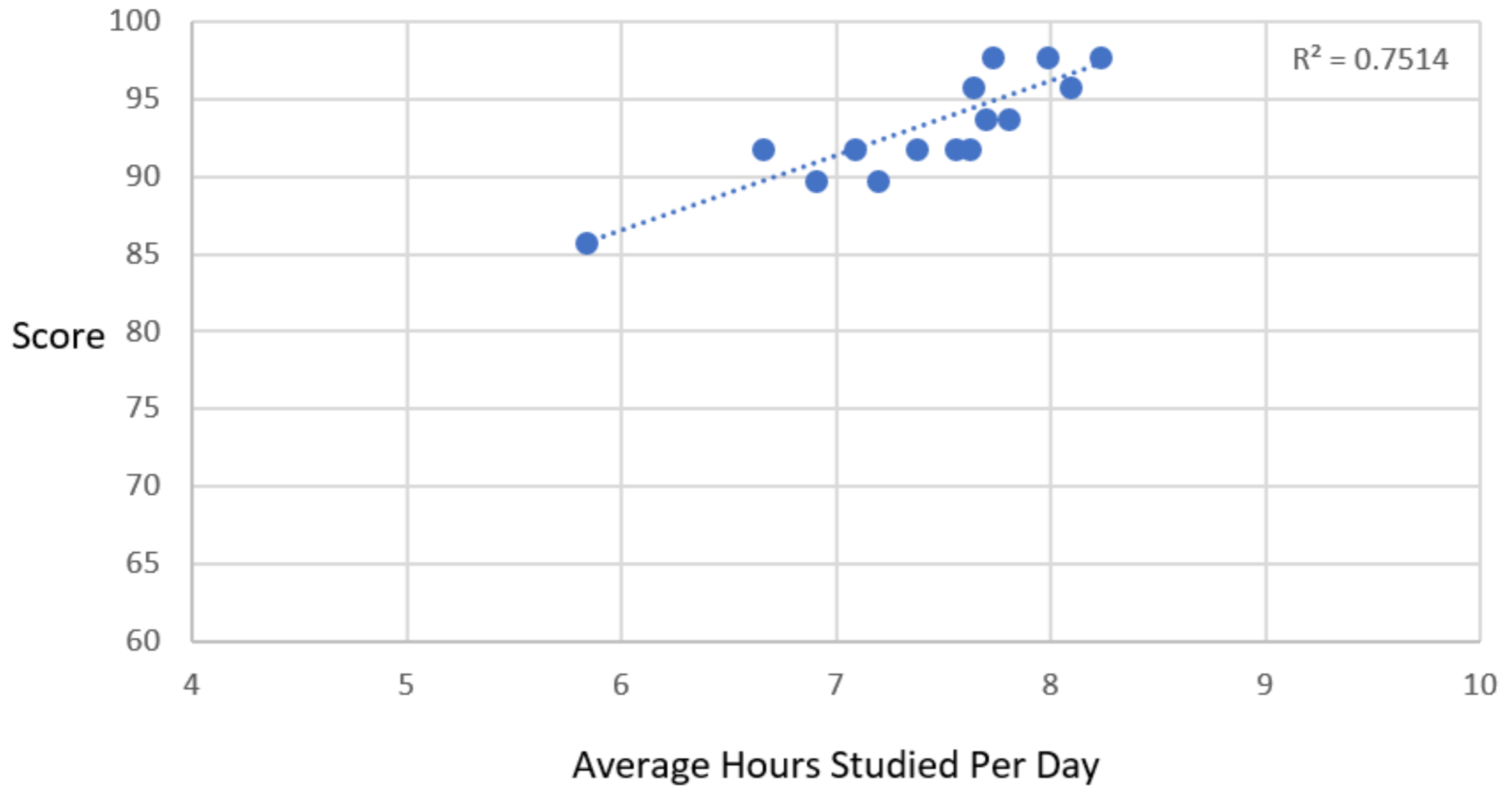
Cal Poly Engineering Freshmen Stats

Unweighted average GPA (out of 4.0) Average SAT (out of 1600)



Does studying help?

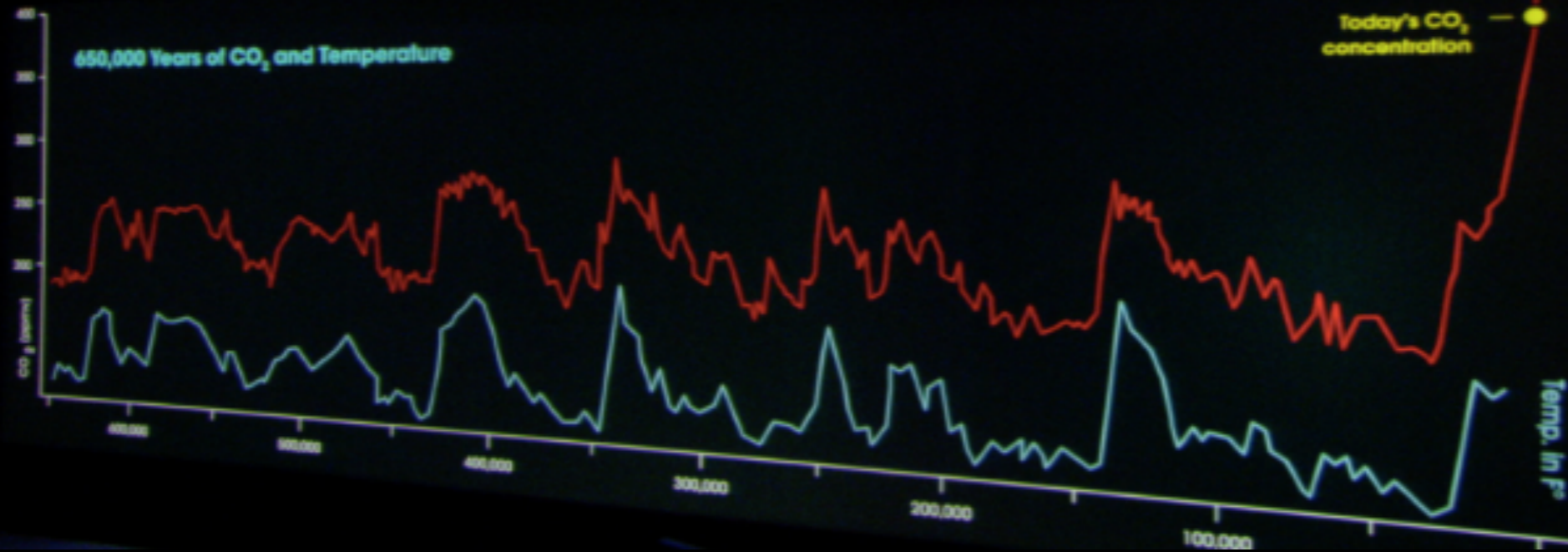
Average Hours Per Day vs Exam Score



Plotting Data: Goal

- Plots are not just a “here’s what it looks like, I’m done, I did it” item
- Don’t make your audience have to: work, squint, wonder, stand-back, ask their neighbor, ask you, say “huh?”
- **Easily** convince us of trends in your data.

Extreme way of 'convincing us'

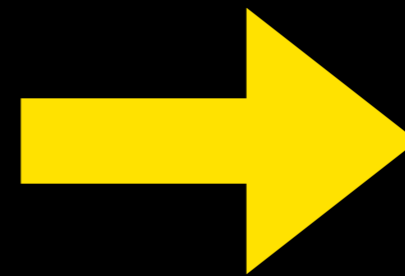


Projected concentration after 50 more years of unrestricted fossil fuel burning

Today's CO₂ concentration

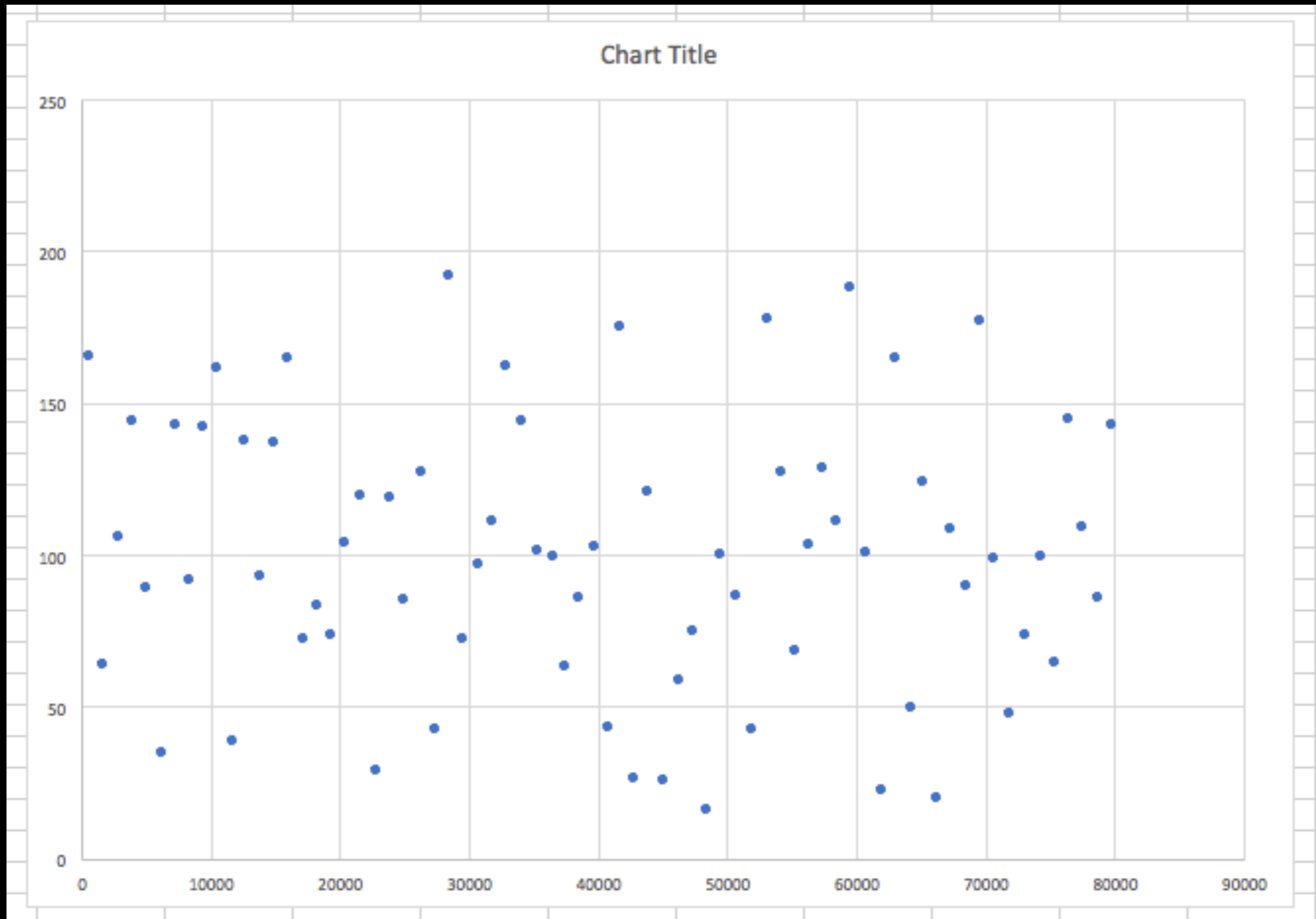


Our project...



	A	B	C
1	554	69.0563318	
2	1630.56459	-0.8135608	
3	2743.68728	-51.839429	
4	3816.04786	4.73792938	
5	5046.35067	74.4847011	
6	6176.51935	9.45167785	
7	7194.04552	-2.5174879	
8	8296.33654	18.6737126	
9	9519.74319	40.2729126	
10	10523.2993	-53.86585	
11	11600.2948	92.5658082	
12	12783.0444	8.28214558	
13	13973.8013	-0.2529834	
14	15125.068	79.0966792	
15	16247.2561	-41.90339	
16	17291.441	7.08341086	
17	18455.6626	84.7392105	
18	19566.3323	33.6435583	
19	20636.7881	28.6648522	
20	21809.9422	23.5474967	
21	22839.9482	52.7762763	
22	24031.9436	-2.7788927	
23	25258.6369	14.8509435	
24	26499.2582	2.75964782	
25	27515.3462	84.8659861	
26	28714.3409	7.33623789	
27	29898.5389	-0.0872975	
28	30955.4269	-67.336865	
29	32049.1606	-62.630028	
30	33235.7648	-74.05213	
31	34338.2916	34.5240018	
32	35488.1329	25.7630234	
33	36663.3845	3.30310068	
34	37729.0056	-75.812671	
35	38794.936	53.3849362	
36	39958.0929	-3.5339097	
37	40988.9071	-43.143348	
38	42154.6692	23.0450889	
39	43394.0779	46.1015795	
40	44394.9661	-58.33436	

A very raw plot (no good for showing anyone)

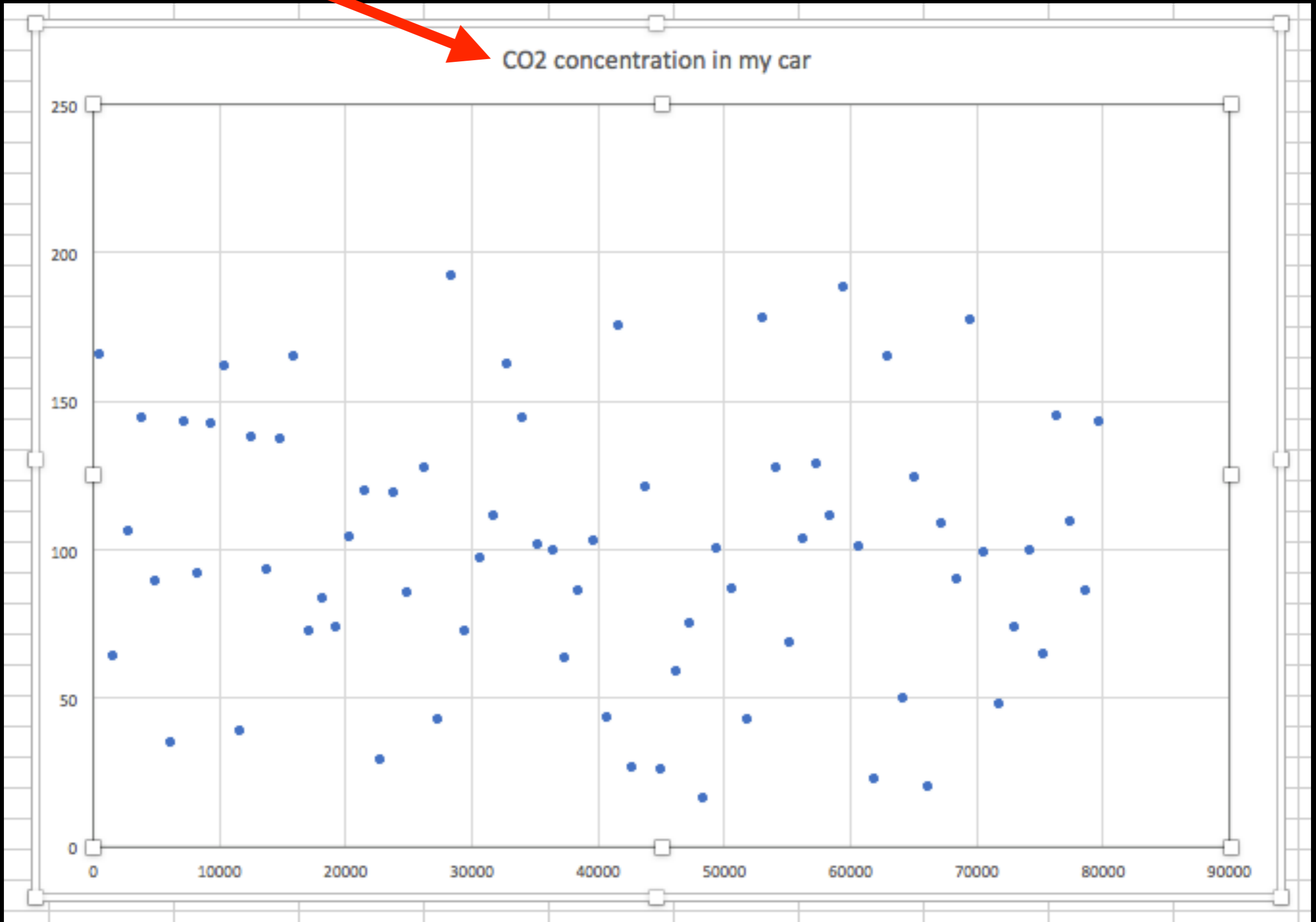


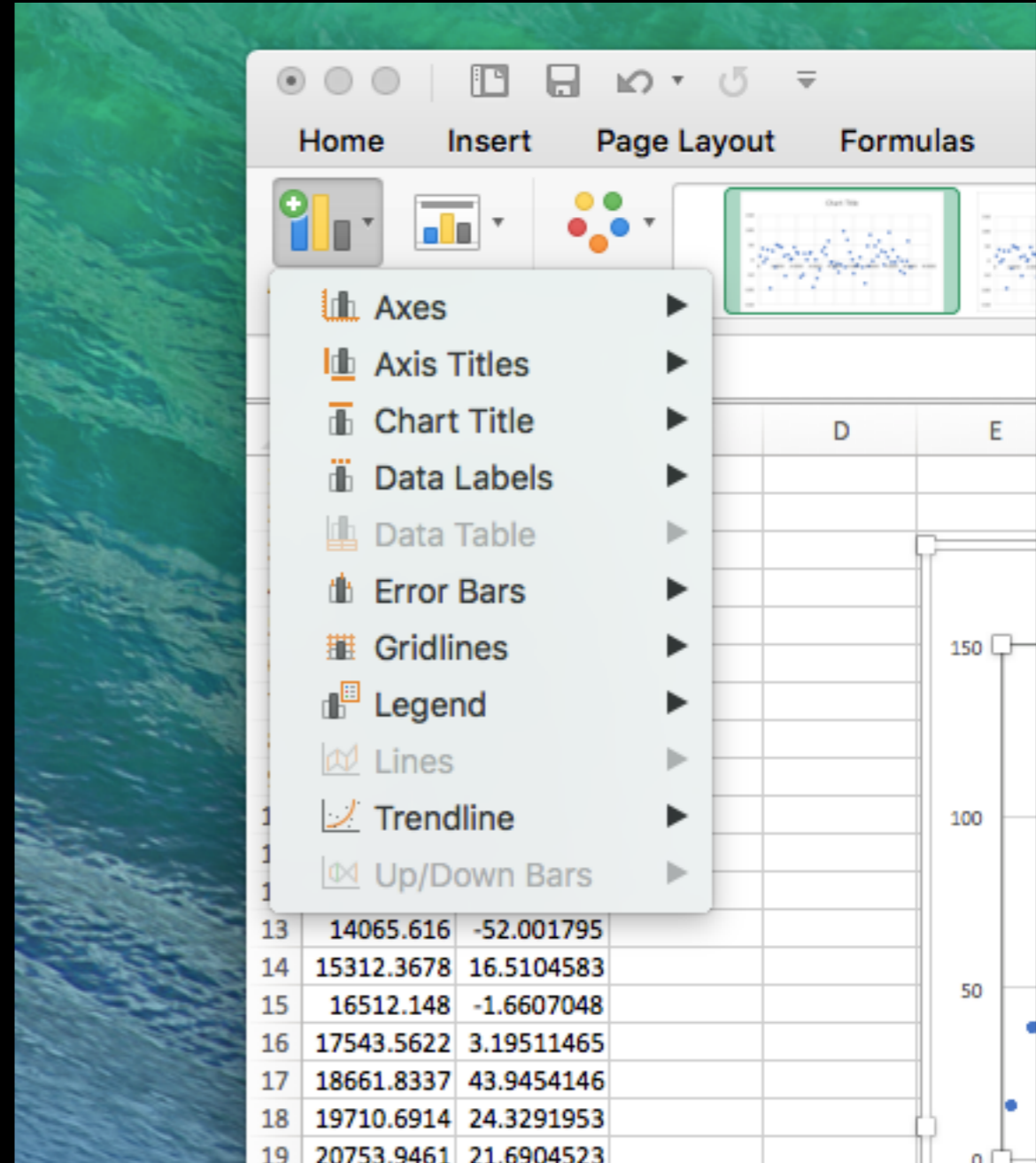
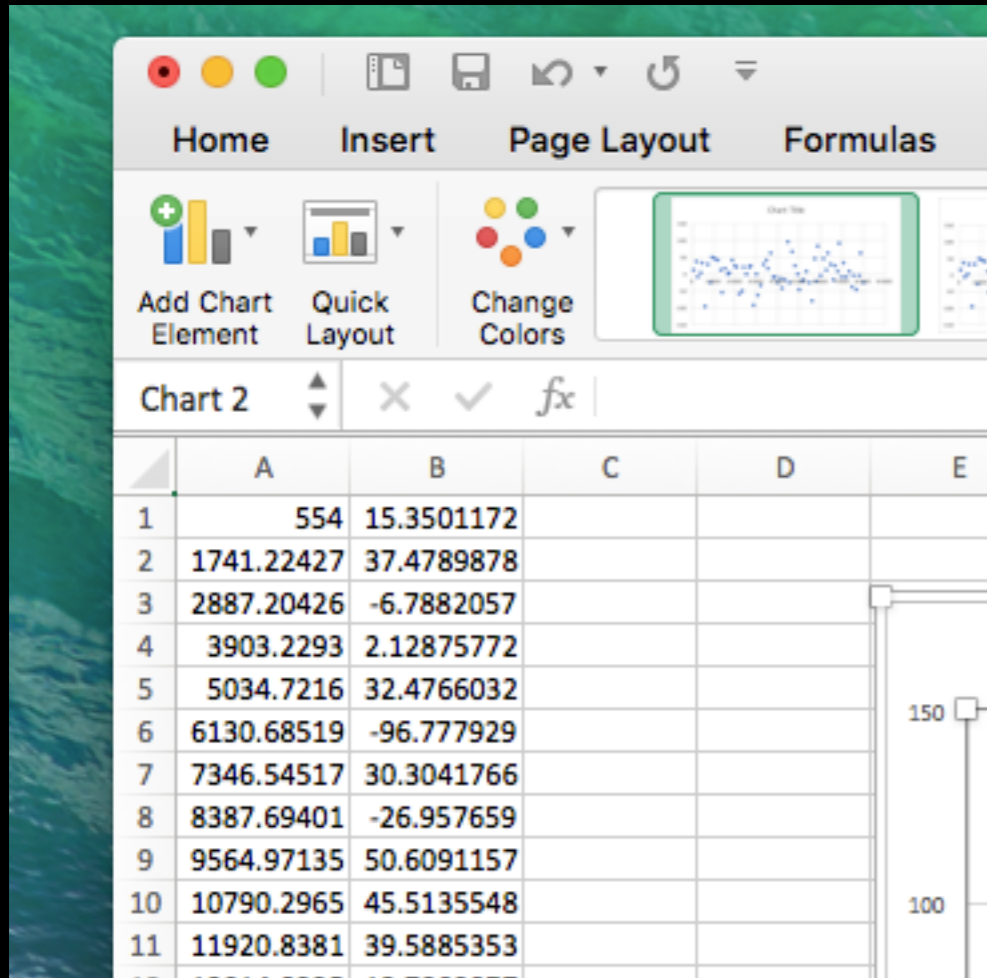
We can do better...

Title!

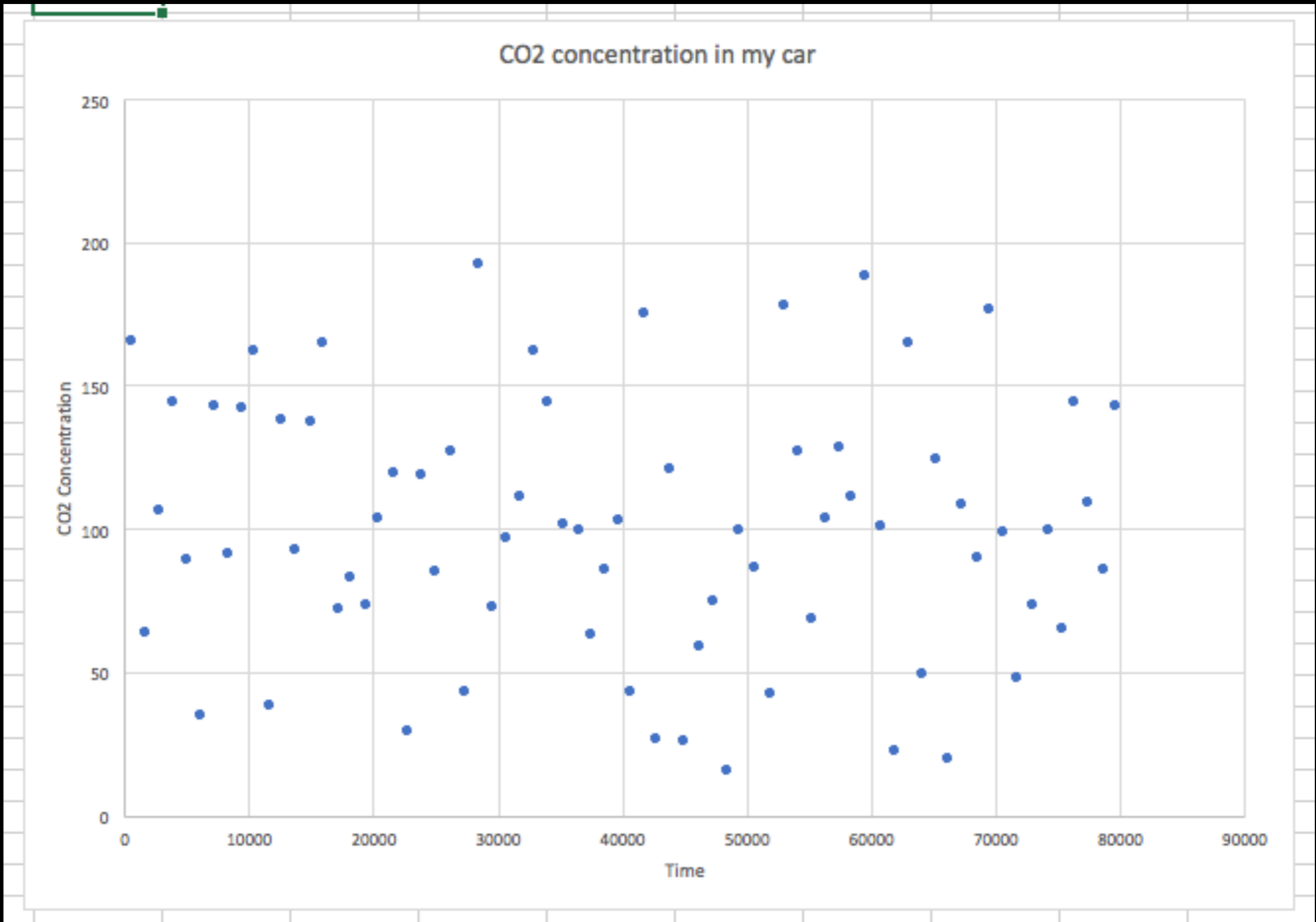


CO2 concentration in my car

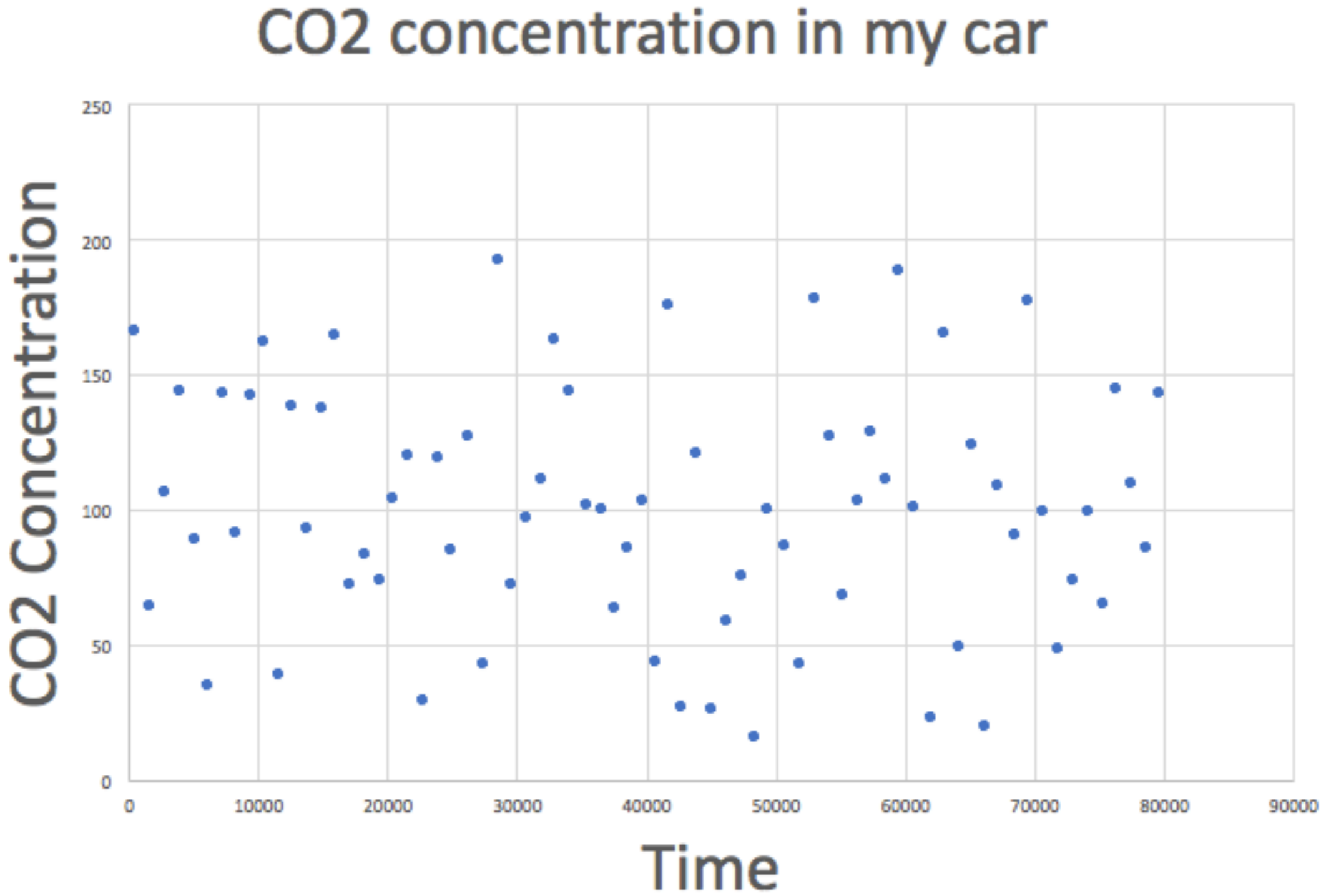




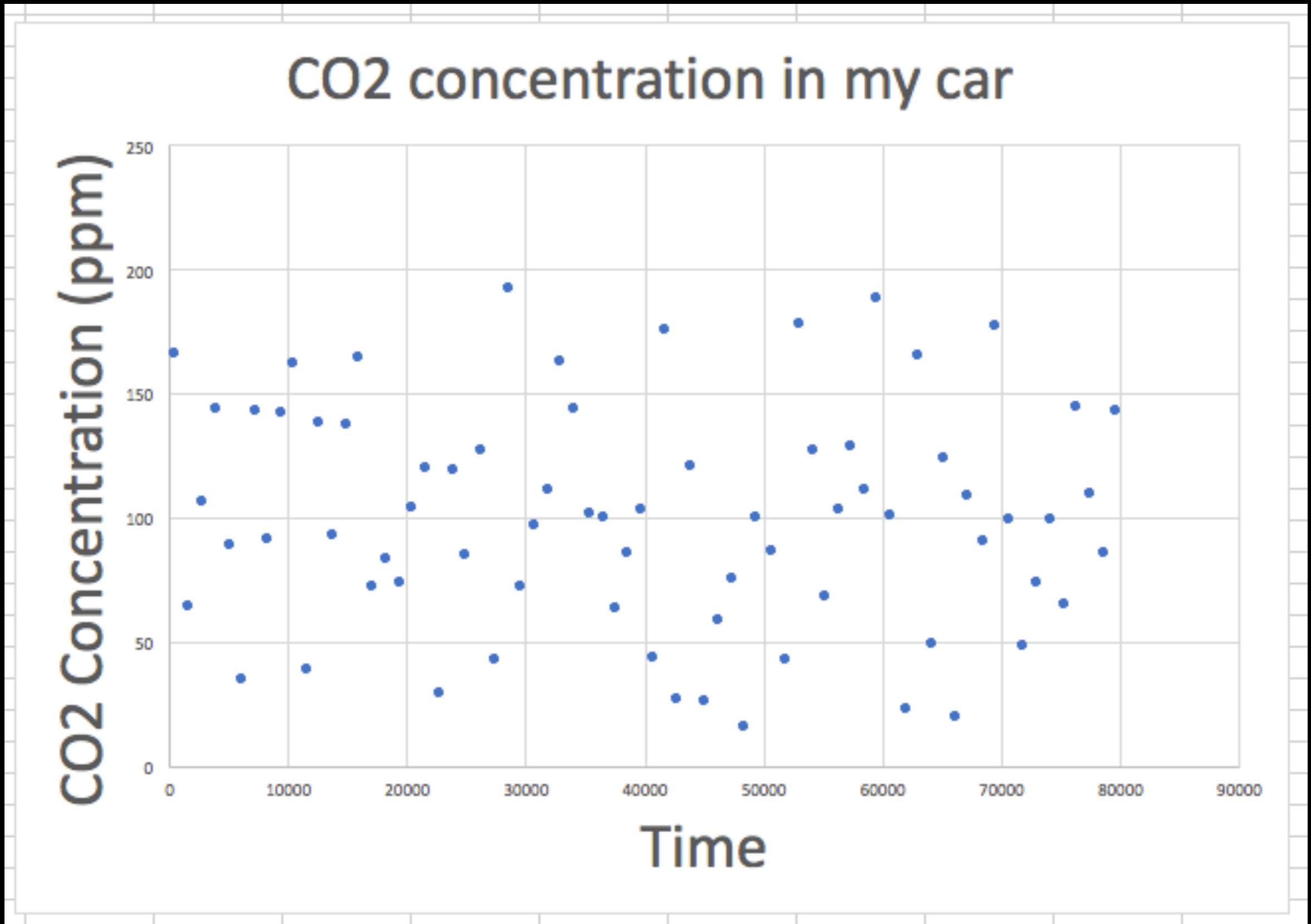
Axes labels



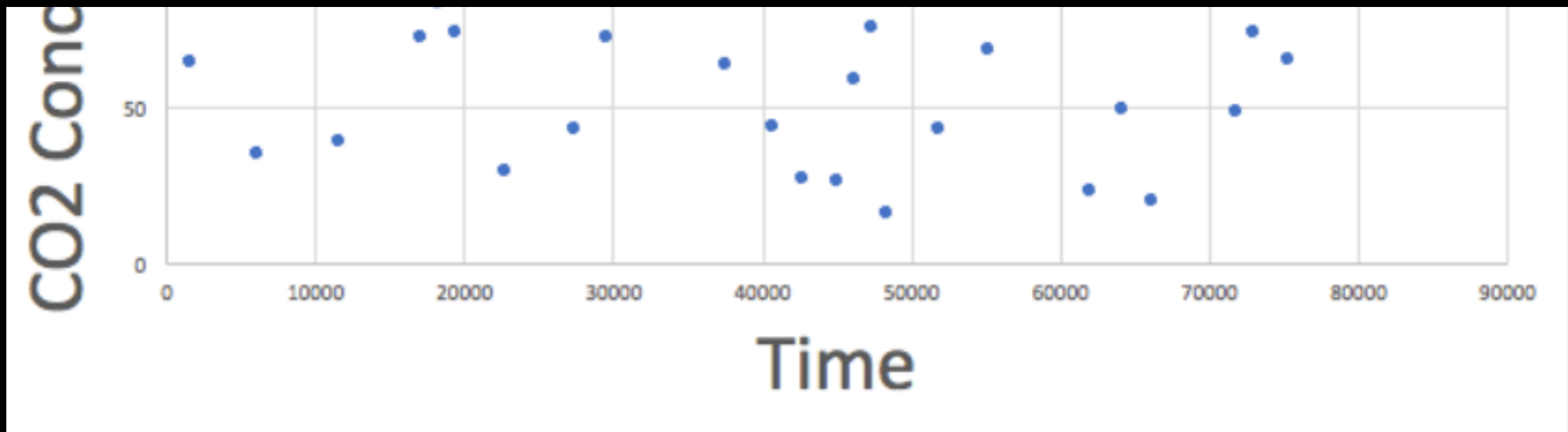
Larger fonts



Units (on y-axis)



Time is a problem....



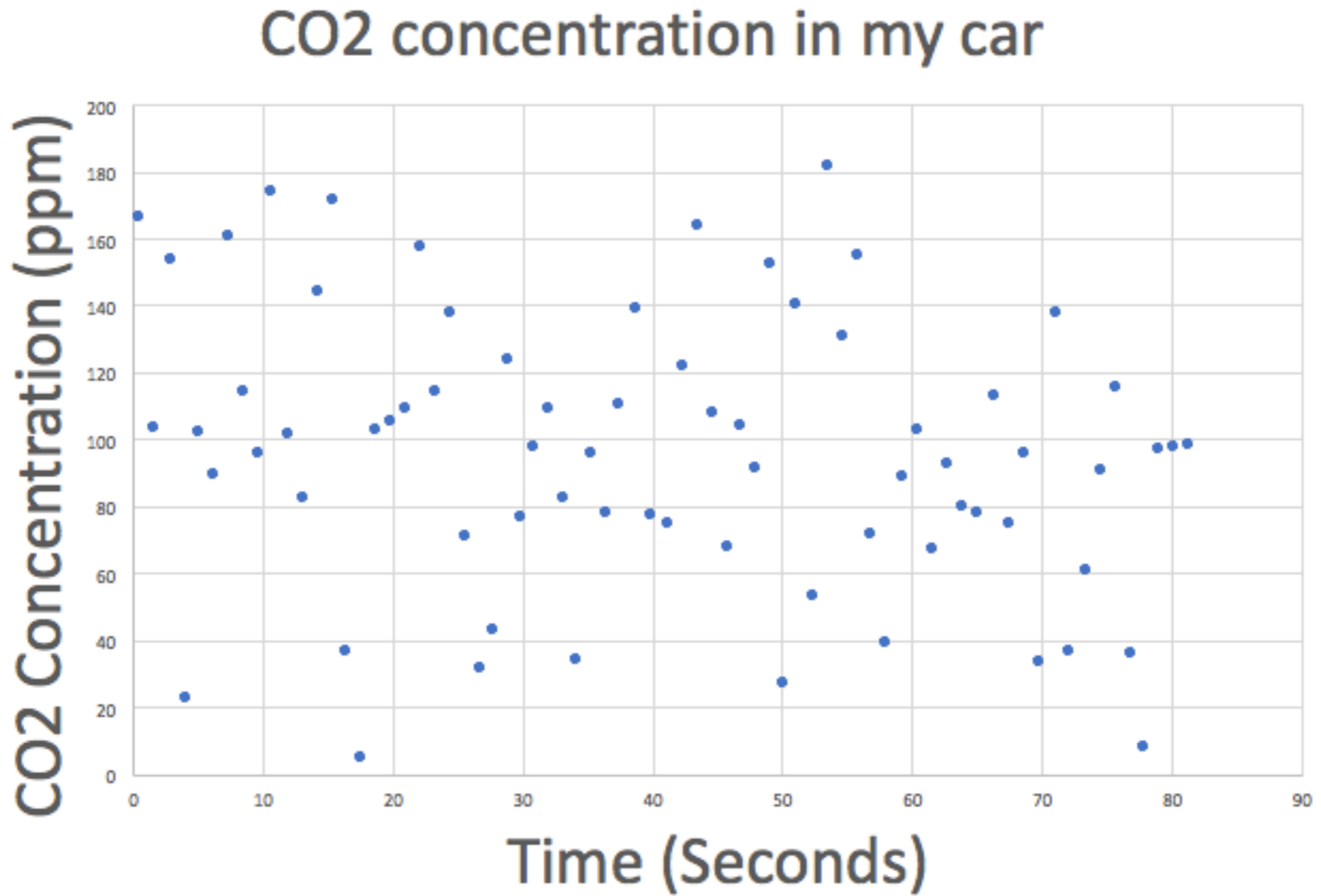
...Who 'thinks' in milliseconds?

Use 'power' of
Excel to
convert to
seconds (or minutes,
or hours, etc)

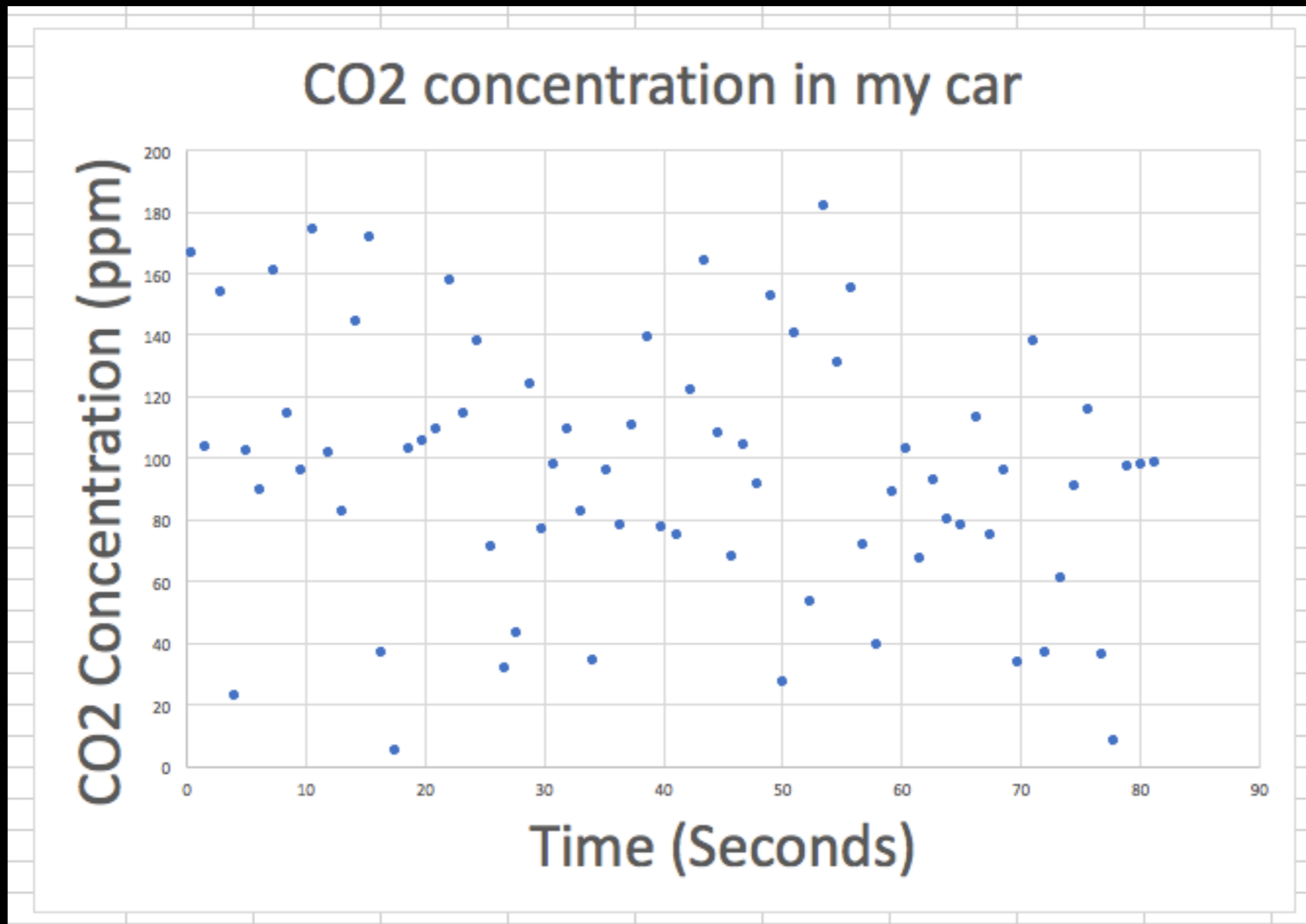
The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D
1	554	0.554	166.405616	
2	1661.65684	1.66165684	103.245871	
3	2911.36904	2.91136904	153.450808	
4	4019.22112	4.01922112	22.5373618	
5	5092.48383	5.09248383	102.116911	
6	6156.48091	6.15648091	89.3751254	
7	7366.27034	7.36627034	160.375823	
8	8583.09452	8.58309452	114.247183	
9	9701.03606	9.70103606	96.0360087	
10	10732.646	10.732646	174.112832	
11	11982.119	11.982119	101.472893	
12	13181.5815	13.1815815	82.243981	
13	14345.9369	14.3459369	144.01818	
14	15363.3624	15.3633624	171.161476	
15	16478.4522	16.4784522	36.7553157	
16	17584.9843	17.5849843	4.63660318	
17	18749.1821	18.7491821	103.002704	
18	19912.6065	19.9126065	105.150439	
19	21017.6153	21.0176153	109.107646	
20	22087.3057	22.0873057	157.726659	
21	23243.6847	23.2436847	114.401087	
22	24410.602	24.410602	137.960879	
23	25534.4049	25.5344049	70.9403178	
24	26753.0162	26.7530162	31.7655427	
25	27813.2748	27.8132748	43.2086898	
26	28817.5573	28.8175573	123.591971	
27	29893.2851	29.8932851	76.6717417	
28	30925.7327	30.9257327	97.8283695	
29	32050.707	32.050707	108.990469	
30	33116.6376	33.1166376	82.741639	
31	34179.1142	34.1791142	34.0465618	
32	35284.5859	35.2845859	95.5112548	

Getting better...

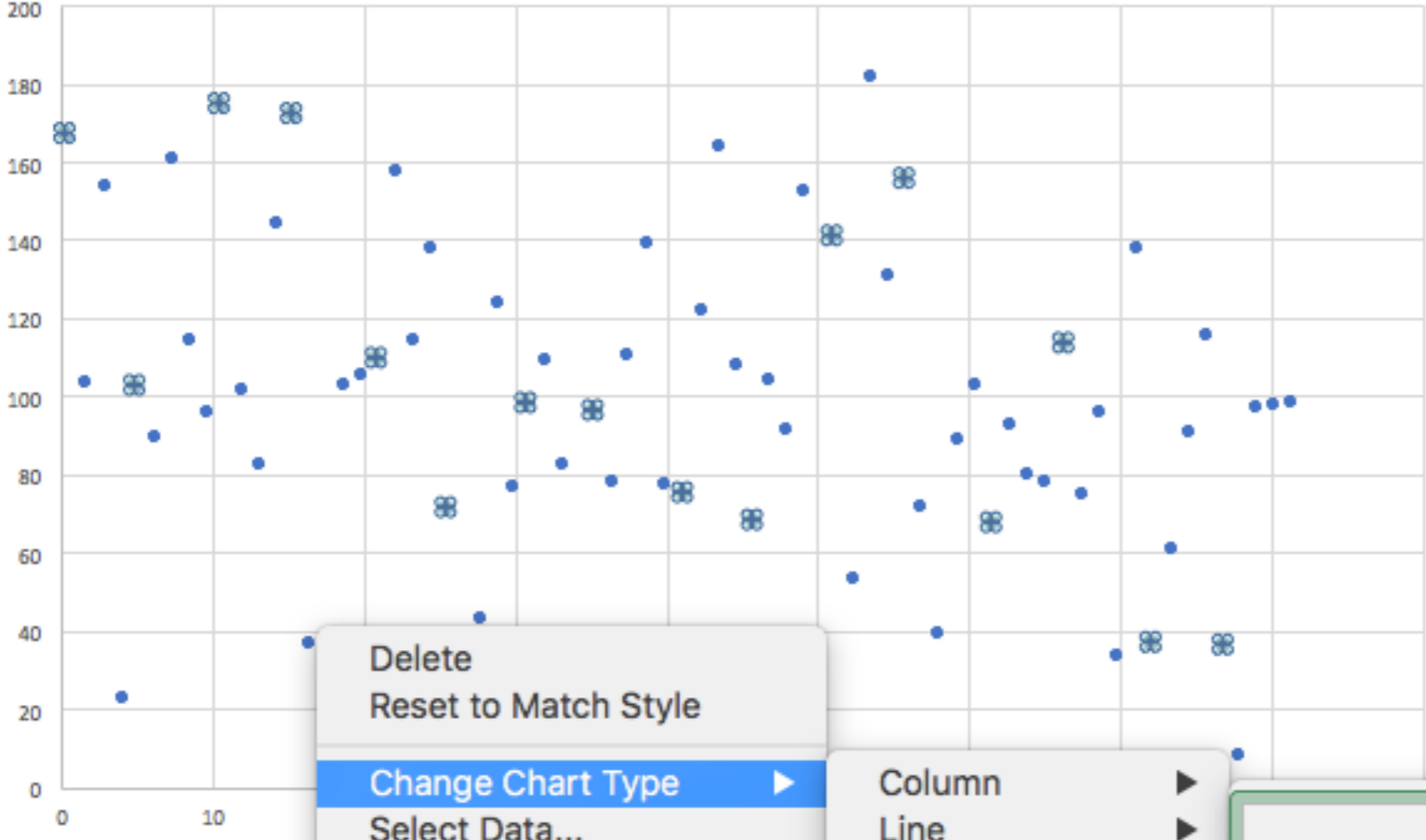


I'm still not getting anything out of the graph though...



CO2 concentration in my car

CO2 Concentration (ppm)



- Delete
- Reset to Match Style
- Change Chart Type**
- Select Data...
- 3-D Rotation...
- Add Data Labels
- Add Trendline...
- Format Data Series...

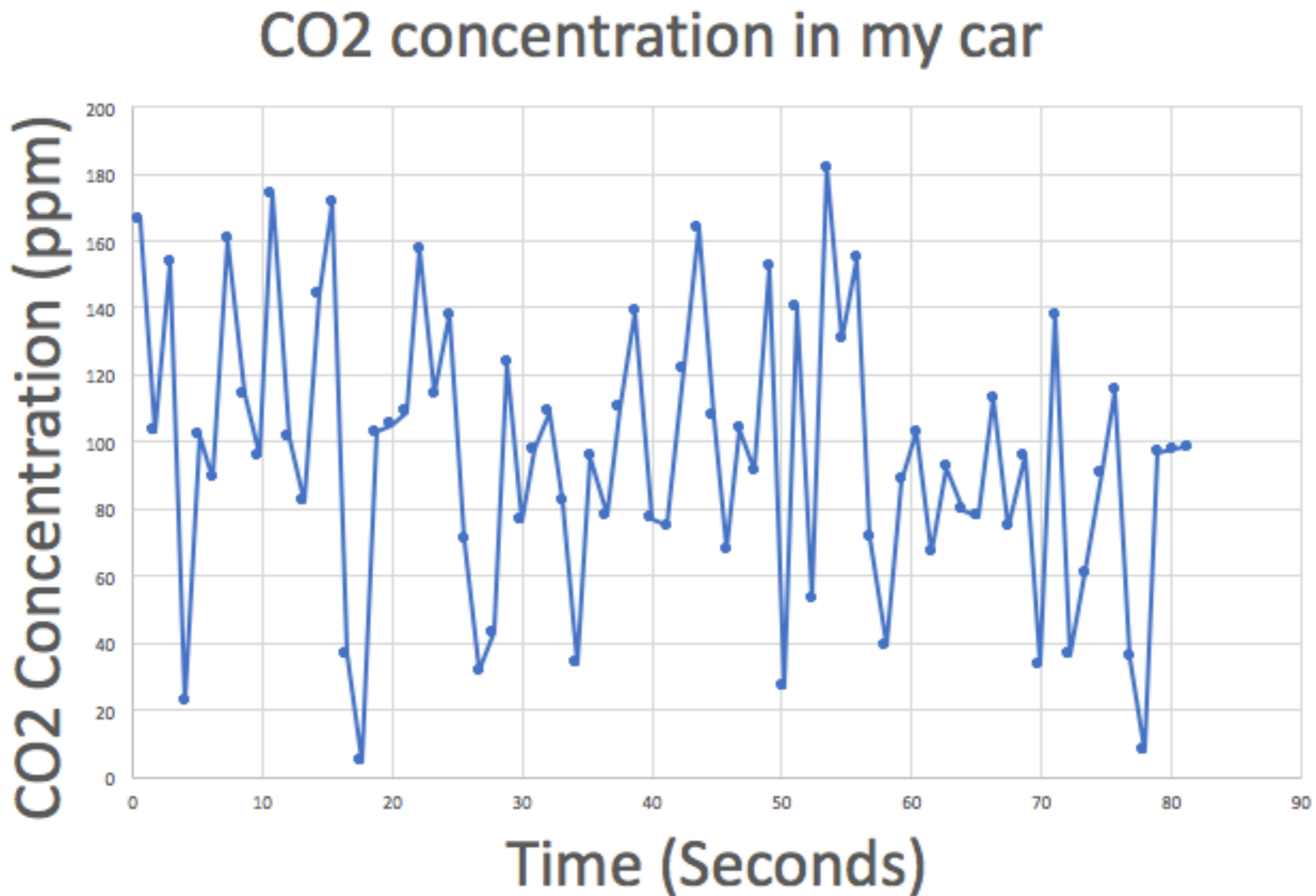
- Column
- Line
- Pie
- Bar
- Area
- X Y (Scatter)**
- Stock
- Surface
- Radar

Chart style selection panel:

- Scatter
- Scatter with Smooth Lines and Markers
- Scatter with Smooth Lines
- [Unlabeled]
- [Unlabeled]
- [Unlabeled]

- Fill
- Line
 - No line
 - Solid
 - Gradient

Now I'm seeing some trends...



The 'data story' is becoming clearer...

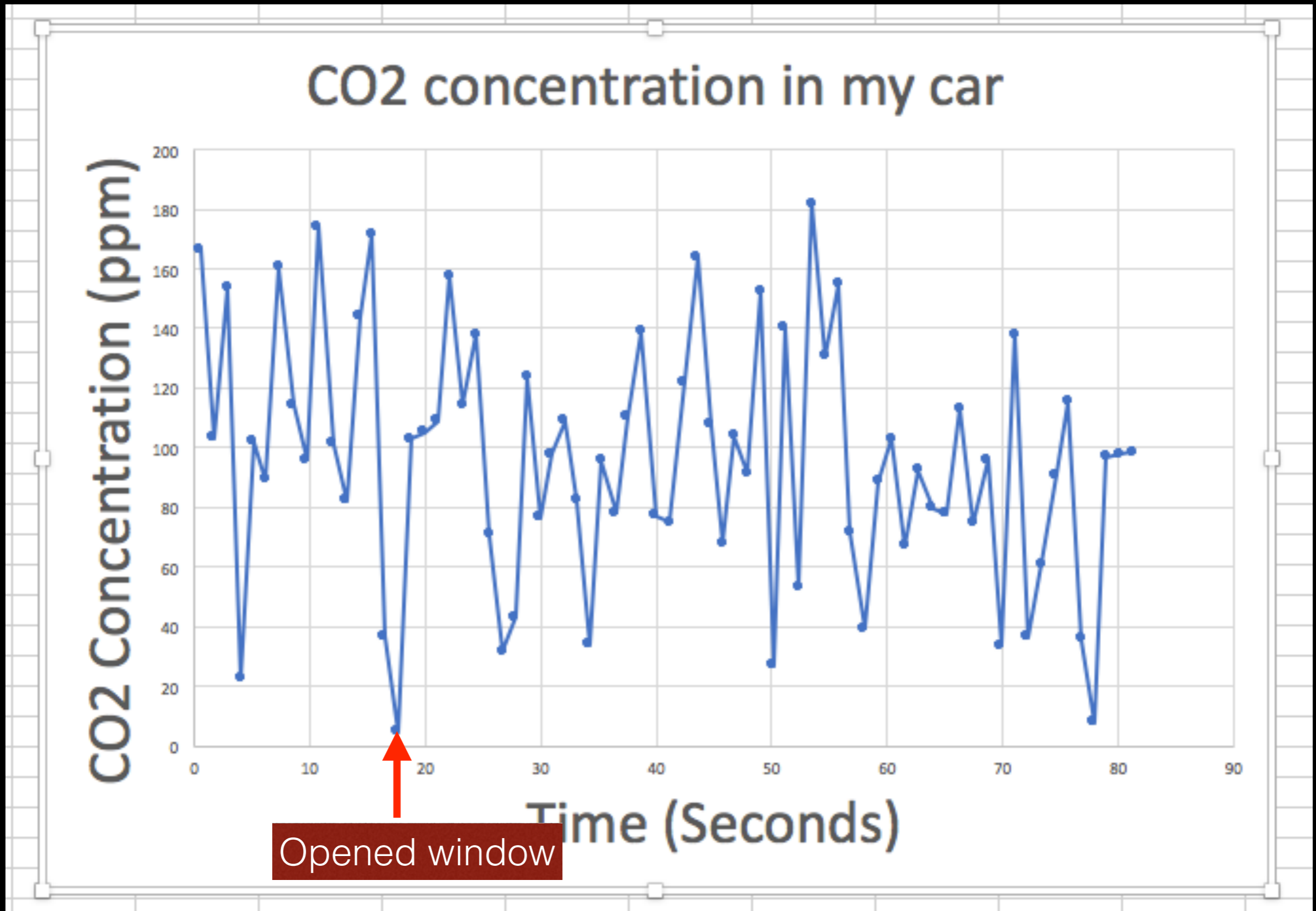
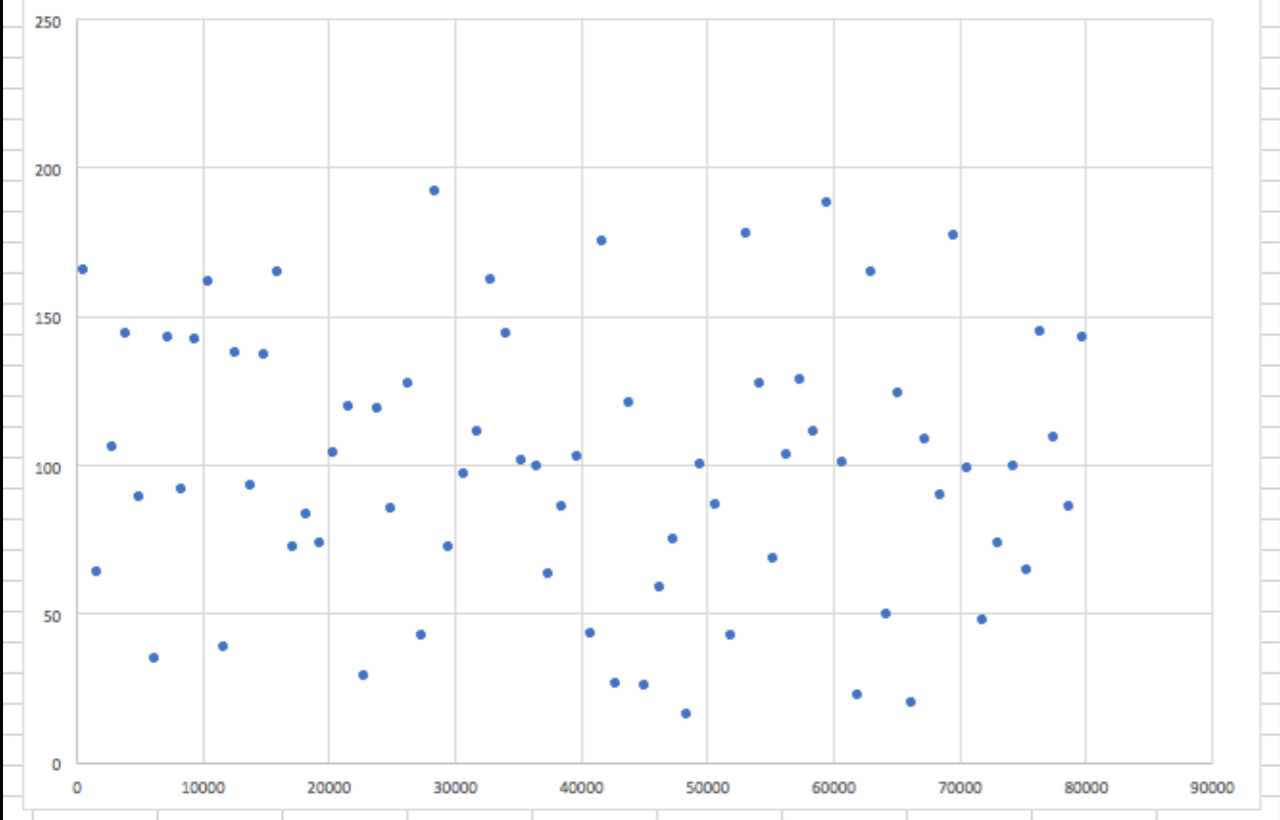
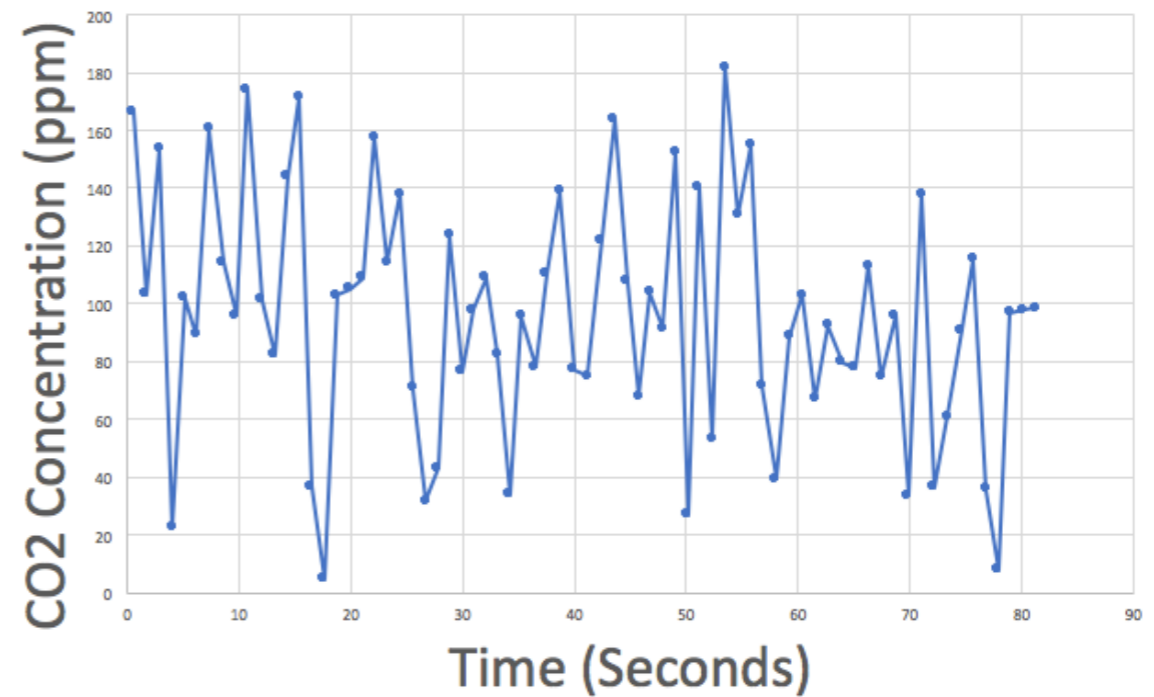


Chart Title



VS.

CO2 concentration in my car



See the difference a little work on your part makes?