








Supplements & Labs

SWAN Dataset Analysis

Northeastern / Hey Freya
Summer 2022



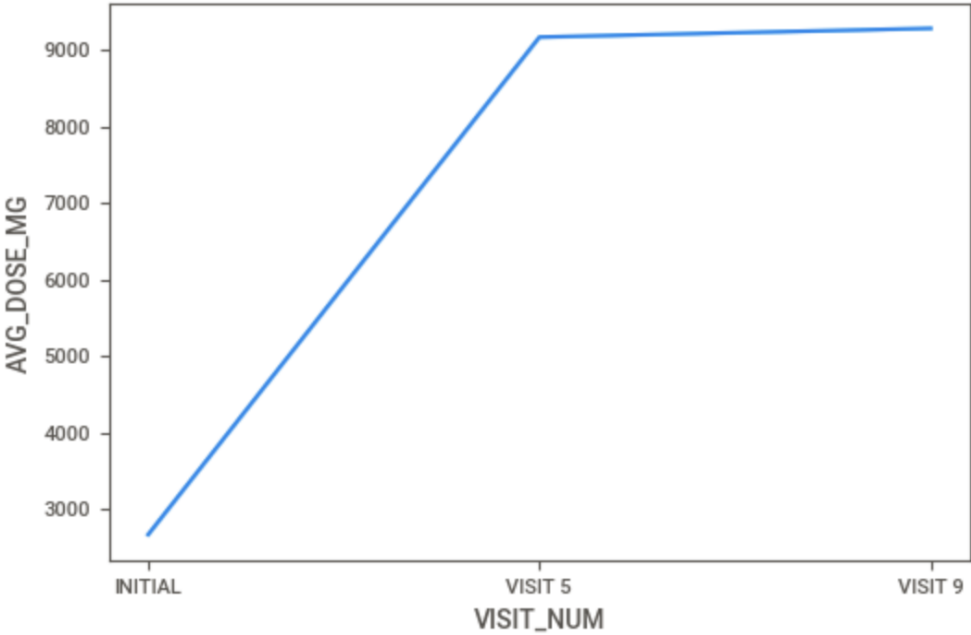
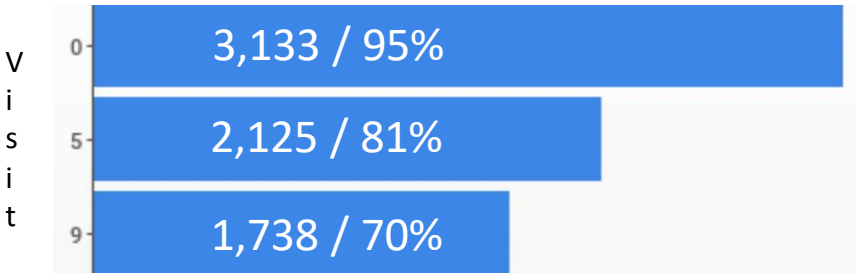
Supplement data is largely missing across SWAN

 ALLARE VALUES: 6,996 (24%) MISSING: 21,793 (76%) DISTINCT: 6,969 (24%) ZEROES: ---	 ALLB12 VALUES: 3,860 (13%) MISSING: 24,929 (87%) DISTINCT: 1,105 (4%) ZEROES: ---	 ALLVITC VALUES: 6,996 (24%) MISSING: 21,793 (76%) DISTINCT: 6,444 (22%) ZEROES: ---
 ALLVITD VALUES: 3,860 (13%) MISSING: 24,929 (87%) DISTINCT: 3,726 (13%) ZEROES: ---	 ALLB1 VALUES: 6,996 (24%) MISSING: 21,793 (76%) DISTINCT: 401 (1%) ZEROES: ---	
 ALLVITE VALUES: 6,996 (24%) MISSING: 21,793 (76%) DISTINCT: 3,918 (14%) ZEROES: ---	 ALLB6 VALUES: 6,996 (24%) MISSING: 21,793 (76%) DISTINCT: 475 (2%) ZEROES: ---	

- Difficult to make longitudinal inference about impact of supplements because:
 - Supplements were tracked on visits 0, 5, 9 (in some cases, just visits 5 & 9), but they are tracked from the beginning, and infrequently, making it hard to discern if they were used as an intervention.
- Units of measurement vary between supplements.
- The percentage of patients reporting supplement usage is oddly the *EXACT* same number across many supplements. We would usually expect even slight variance. Another way to say this is that every individual taking one supplement is taking them all. Strange. Or maybe a multi-v?

ALLARE – Diet + Supp Vit A, retinol equiv. | Visits 0,5,9

Number of patients taking ALLARE by visit / percent of patients who report taking ALLARE when ALLARE is tracked



Reported dosage unit unclear

MOST FREQUENT VALUES

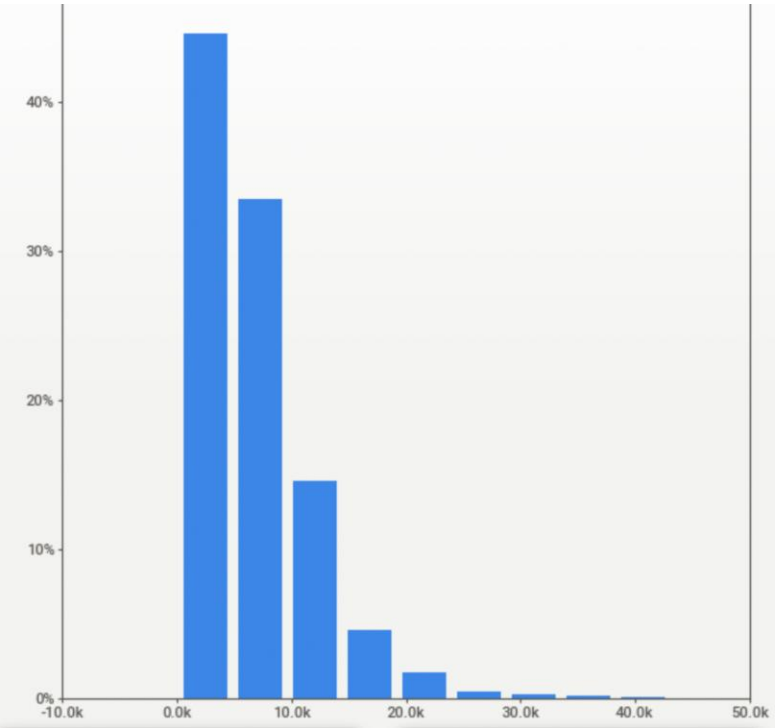
8473.67	2	<0.1%
1804.62	2	<0.1%
1022.27	2	<0.1%
6209.82	2	<0.1%
1562.04	2	<0.1%
5846.88	2	<0.1%
423.69	2	<0.1%
453.66	2	<0.1%
1197.75	2	<0.1%
733.59	2	<0.1%
5467.84	2	<0.1%
6116.27	2	<0.1%
642.13	2	<0.1%
957.58	2	<0.1%
803.31	2	<0.1%

SMALLEST VALUES

125.62	1	<0.1%
173.35	1	<0.1%
181.86	1	<0.1%
194.23	1	<0.1%
196.15	1	<0.1%
204.63	1	<0.1%
207.39	1	<0.1%
213.79	1	<0.1%
216.28	1	<0.1%
223.12	1	<0.1%
224.26	1	<0.1%
236.46	1	<0.1%
246.09	1	<0.1%
248.99	1	<0.1%
251.32	1	<0.1%

LARGEST VALUES

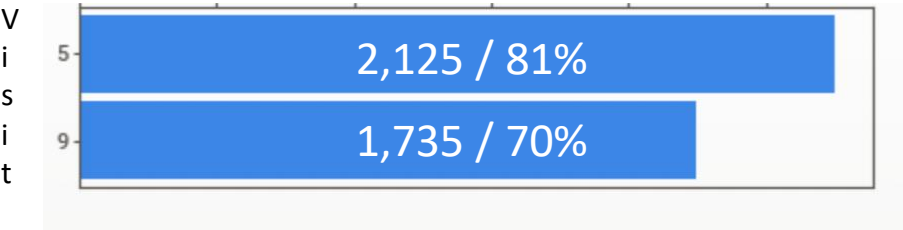
47919.17	1	<0.1%
43477.67	1	<0.1%
43272.7...	1	<0.1%
42843.85	1	<0.1%
42796.6...	1	<0.1%
39566.53	1	<0.1%
38630.71	1	<0.1%
38476.04	1	<0.1%
36662.32	1	<0.1%
35688.48	1	<0.1%
35664.12	1	<0.1%
35430.29	1	<0.1%
35294.82	1	<0.1%
35143.83	1	<0.1%
35039.51	1	<0.1%



Reported dosage unit unclear

ALLVITD – Diet + Supplement Vitamin D (IU) | Visits 5 & 9

Number of patients taking ALLVITD by visit / percent of patients who report taking ALLVITD when ALLVITD is tracked



Reported dose in International Units

MOST FREQUENT VALUES

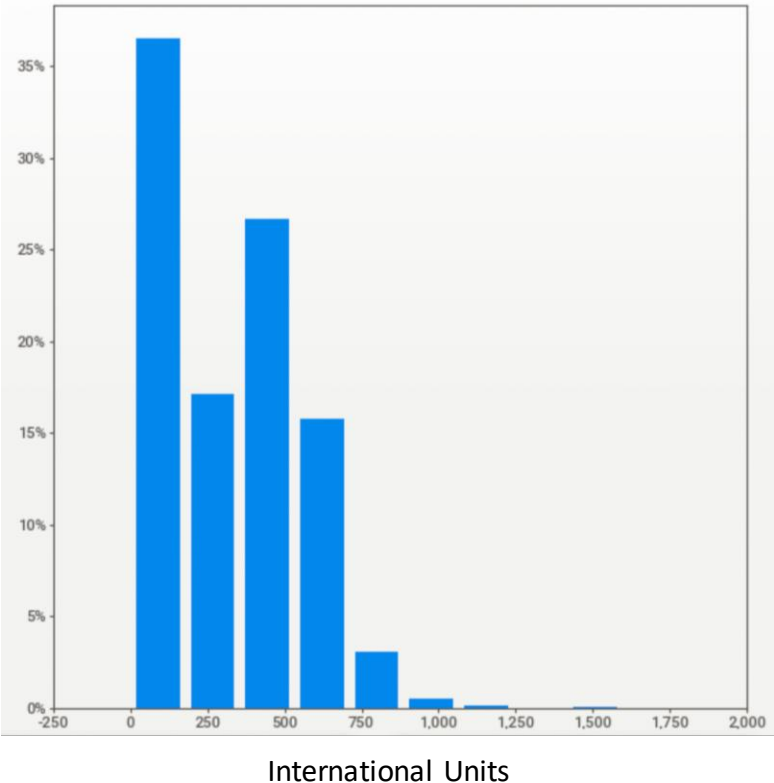
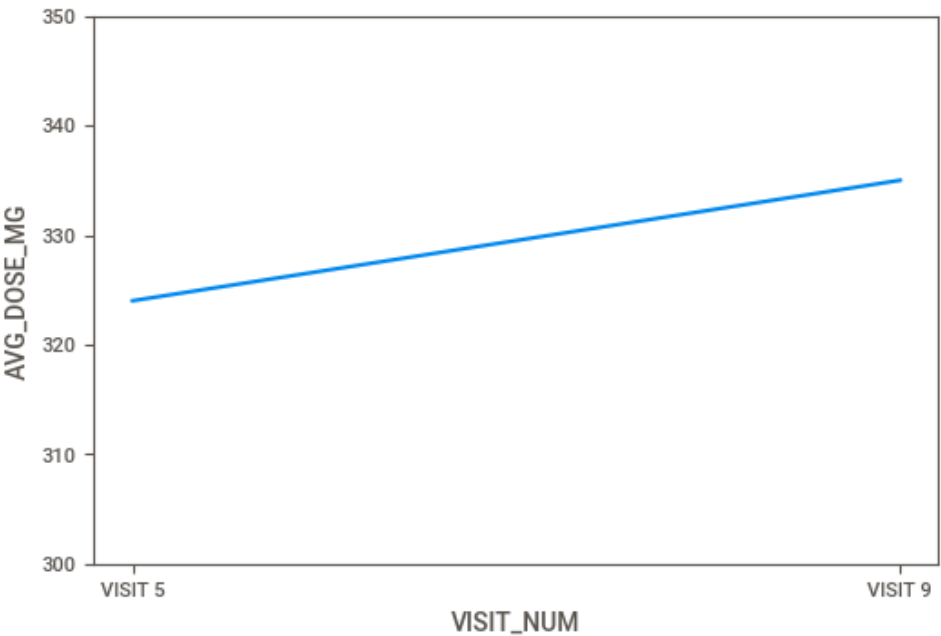
442.28	3	<0.1%
60.8	2	<0.1%
139.27	2	<0.1%
79.51	2	<0.1%
407.3	2	<0.1%
73.41	2	<0.1%
138.89	2	<0.1%
213.82	2	<0.1%
46.06	2	<0.1%
158.07	2	<0.1%
466.98	2	<0.1%
129.99	2	<0.1%
552.680...	2	<0.1%
65.9	2	<0.1%
183.2	2	<0.1%

SMALLEST VALUES

0.19	1	<0.1%
1.94	1	<0.1%
2.14	1	<0.1%
2.6	1	<0.1%
4.06	1	<0.1%
6.68	1	<0.1%
7.58	1	<0.1%
8.59	1	<0.1%
8.64	1	<0.1%
8.66	1	<0.1%
9.09	1	<0.1%
9.39	1	<0.1%
10.32	1	<0.1%
10.52	1	<0.1%
10.78	1	<0.1%

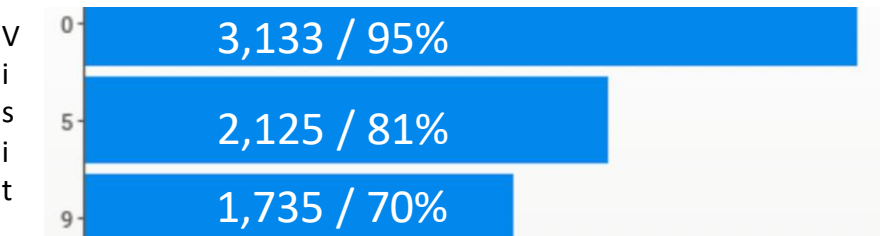
LARGEST VALUES

1775.24	1	<0.1%
1429.92	1	<0.1%
1425.14...	1	<0.1%
1410.54	1	<0.1%
1206.79	1	<0.1%
1139.23	1	<0.1%
1103.44	1	<0.1%
1088.16	1	<0.1%
1083.08	1	<0.1%
1081.11	1	<0.1%
1075.15	1	<0.1%
1049.8	1	<0.1%
1045.15	1	<0.1%
1026.33	1	<0.1%
1017.14	1	<0.1%



ALLVITE – Diet + Supplement Vit. E, a-TE| Visits 0,5,9

Number of patients taking ALLVITE by visit / percent of patients who report taking ALLVITE when ALLVITE is tracked



Reported dose in mg

MOST FREQUENT VALUES

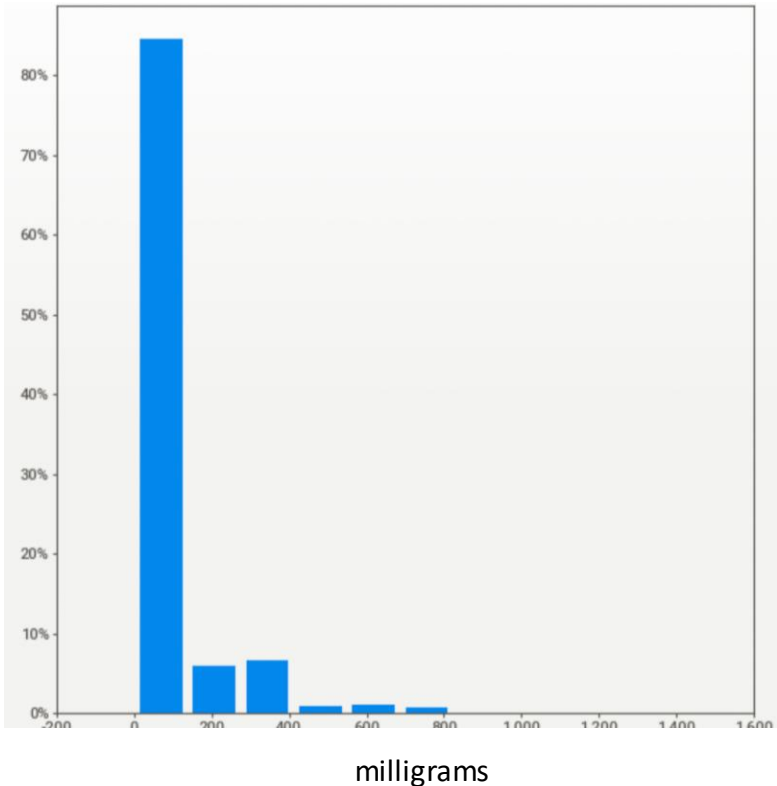
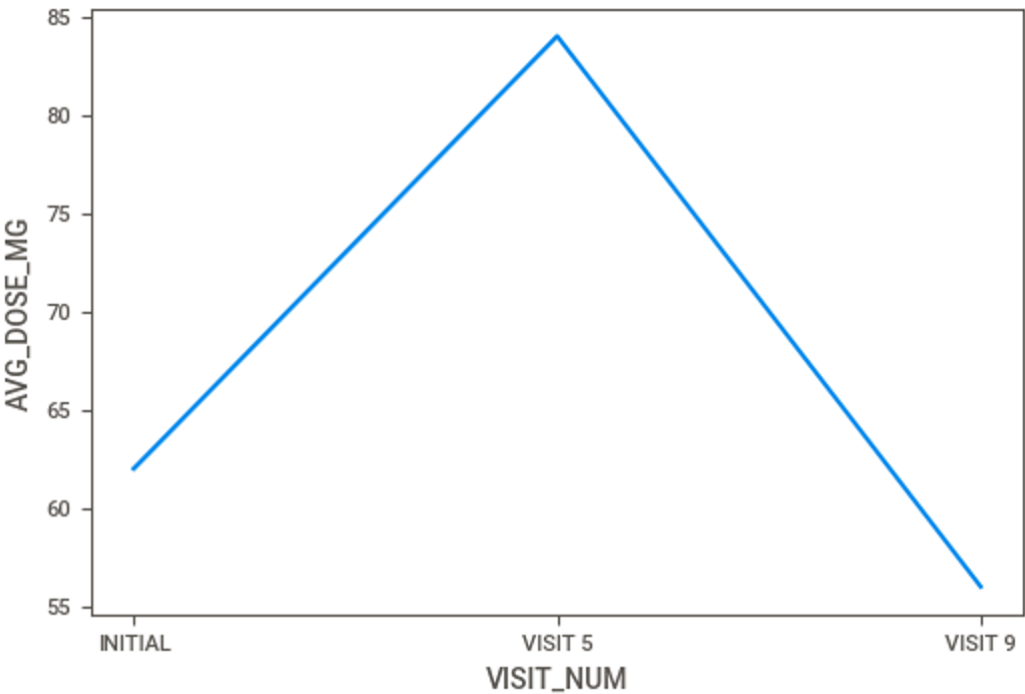
10.85	10	0.1%
6.92	10	0.1%
9.69	9	0.1%
6.87	9	0.1%
7.16	9	0.1%
7.34	9	0.1%
5.84	8	0.1%
5.7	8	0.1%
9.03	8	0.1%
5.94	8	0.1%
9.92	8	0.1%
6.06	8	0.1%
8.16	8	0.1%
9.82	8	0.1%
6.59	8	0.1%

SMALLEST VALUES

1.15	1	<0.1%
1.78	1	<0.1%
2.06	1	<0.1%
2.17	2	<0.1%
2.27	2	<0.1%
2.33	1	<0.1%
2.51	1	<0.1%
2.56	1	<0.1%
2.58	1	<0.1%
2.6	1	<0.1%
2.61	1	<0.1%
2.62	2	<0.1%
2.69	1	<0.1%
2.72	1	<0.1%
2.74	1	<0.1%

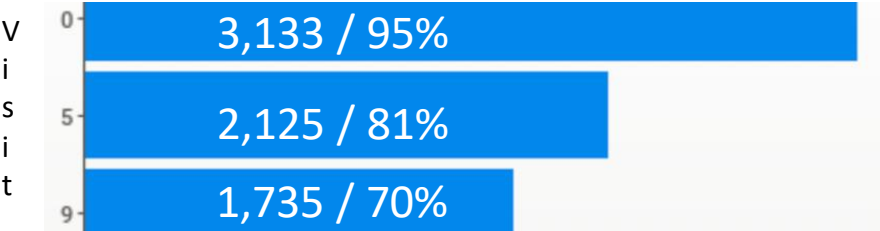
LARGEST VALUES

1373.16	1	<0.1%
1372.34	1	<0.1%
1364.21	1	<0.1%
1349.15	1	<0.1%
1343.26	1	<0.1%
981.78	1	<0.1%
980.11	1	<0.1%
972.1	1	<0.1%
832.190...	1	<0.1%
831.36	1	<0.1%
821.900...	1	<0.1%
820.18	1	<0.1%
812.85	1	<0.1%
777.24	1	<0.1%
708.16	1	<0.1%



ALLVITC – Diet + Supplement Vit. C, mg| Visits 0,5,9

Number of patients taking ALLVITC by visit / percent of patients who report taking ALLVITC when ALLVITC is tracked



Reported dose in mg

MOST FREQUENT VALUES

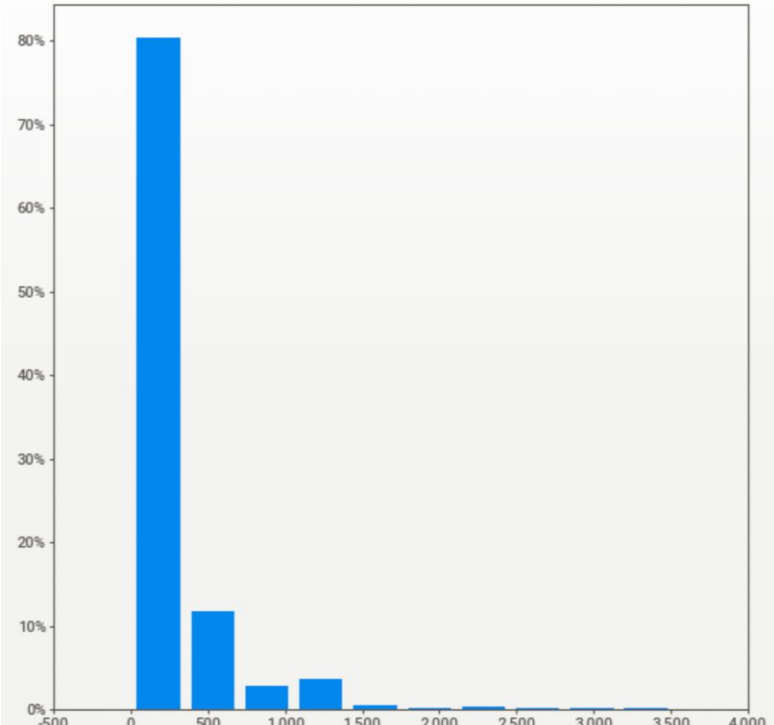
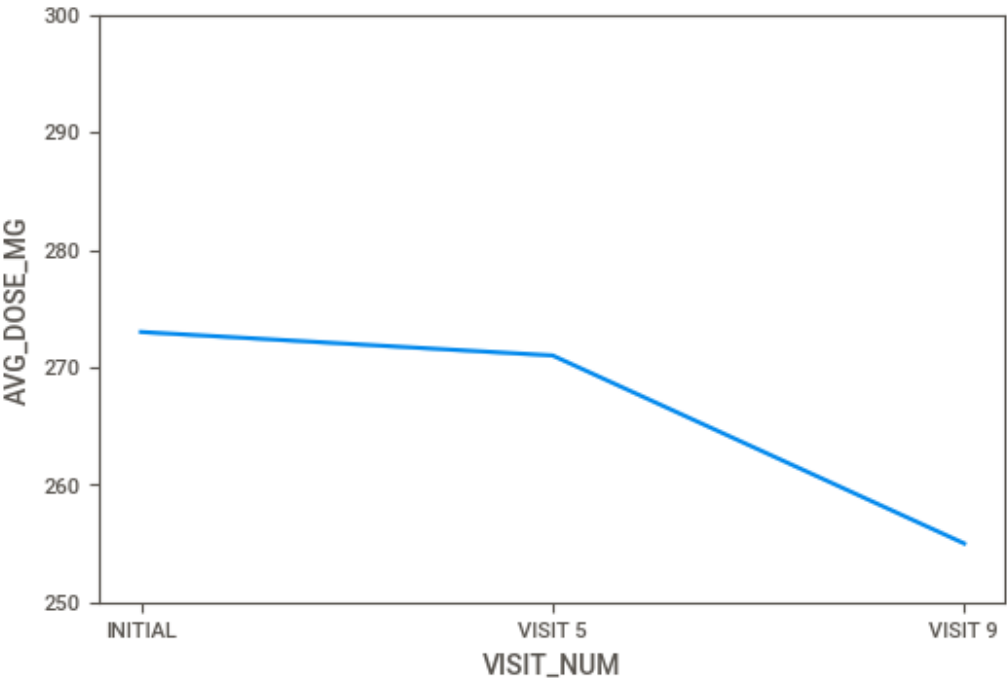
94.5	4	<0.1%
137.32	4	<0.1%
131.07	3	<0.1%
105.61	3	<0.1%
119.68	3	<0.1%
108.180...	3	<0.1%
72.7900...	3	<0.1%
93.56	3	<0.1%
145.43	3	<0.1%
61.39	3	<0.1%
128.72	3	<0.1%
53.67	3	<0.1%
87.67	3	<0.1%
68.71	3	<0.1%
96.97	3	<0.1%

SMALLEST VALUES

5.48	1	<0.1%
6.48	1	<0.1%
9.61	1	<0.1%
10.56	1	<0.1%
10.84	1	<0.1%
11.1	1	<0.1%
11.28	1	<0.1%
11.85	1	<0.1%
11.95	1	<0.1%
11.98	1	<0.1%
12.45	1	<0.1%
13.02	1	<0.1%
13.47	1	<0.1%
14.05	1	<0.1%
14.4	1	<0.1%

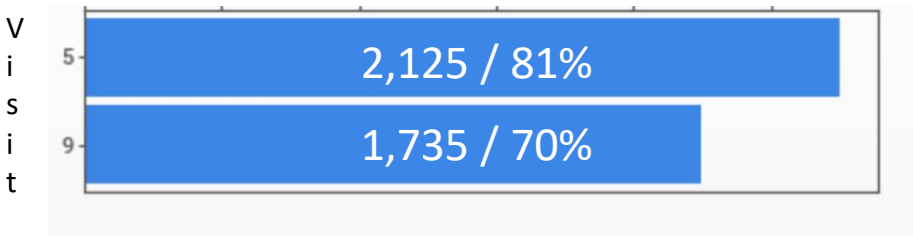
LARGEST VALUES

3515.05	1	<0.1%
3371.21	1	<0.1%
3340.45	1	<0.1%
3276.94	1	<0.1%
3241.06	1	<0.1%
3203.78...	1	<0.1%
3196.91	1	<0.1%
3196.55	1	<0.1%
3190.58	1	<0.1%
3190.21	1	<0.1%
3161.31	1	<0.1%
3136.11	1	<0.1%
3131.29	1	<0.1%
3120.08	1	<0.1%
3115.72	1	<0.1%



ALLB12 – Diet + Supplement Vit. B12 (mcg) | Visits 5 & 9

Number of patients taking ALLB12 by visit / percent of patients who report taking ALLB12 when ALLB12 is tracked



Reported dose in mcg

MOST FREQUENT VALUES

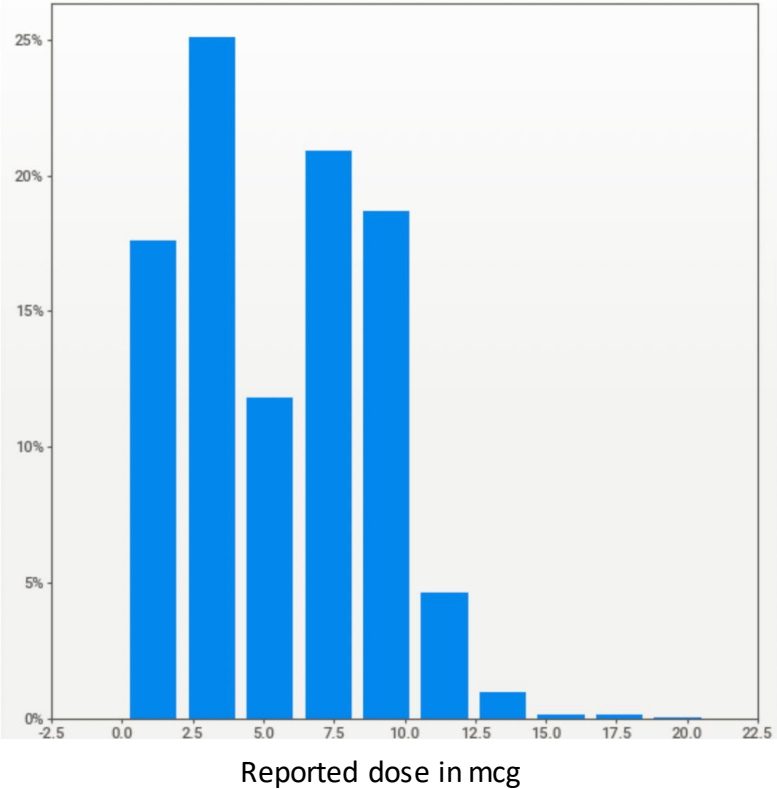
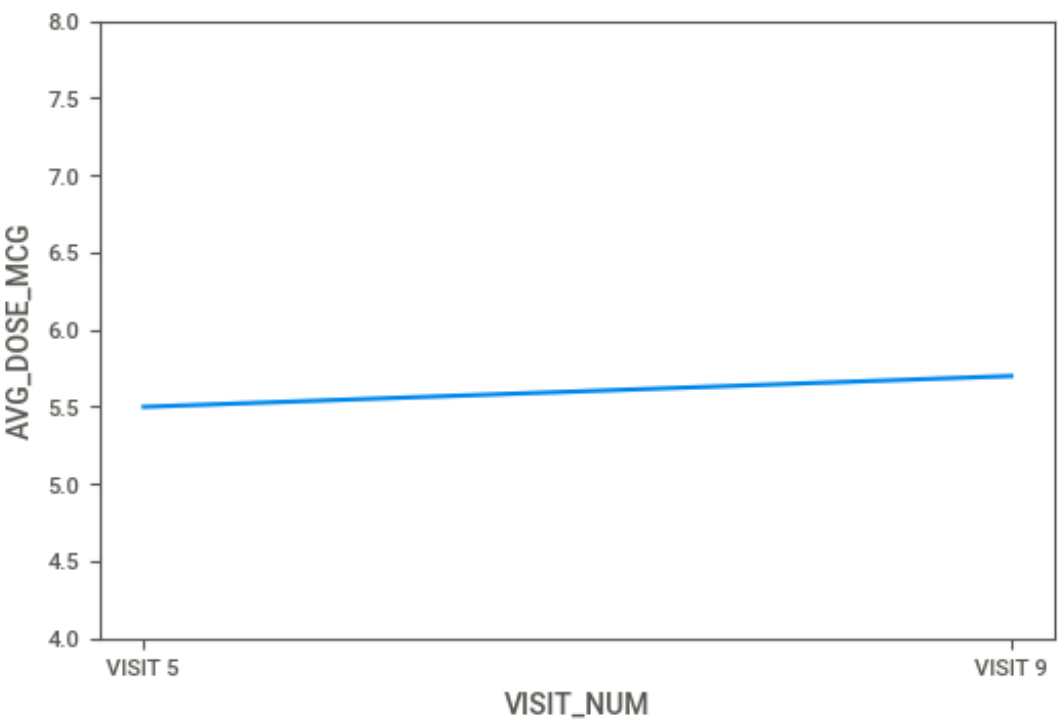
3.28	13	0.3%
2.98	13	0.3%
1.77	12	0.3%
2.38	12	0.3%
2.55	11	0.3%
2.48	11	0.3%
3.07	11	0.3%
8.34	11	0.3%
3.24	11	0.3%
8.9	11	0.3%
8.56	11	0.3%
1.8	11	0.3%
8.86	10	0.3%
7.98	10	0.3%
5.64	10	0.3%

SMALLEST VALUES

0.08	1	<0.1%
0.1	1	<0.1%
0.16	1	<0.1%
0.23	1	<0.1%
0.25	1	<0.1%
0.31	1	<0.1%
0.36	1	<0.1%
0.37	1	<0.1%
0.38	2	<0.1%
0.4	2	<0.1%
0.43	3	<0.1%
0.44	1	<0.1%
0.45	2	<0.1%
0.46	1	<0.1%
0.5	2	<0.1%

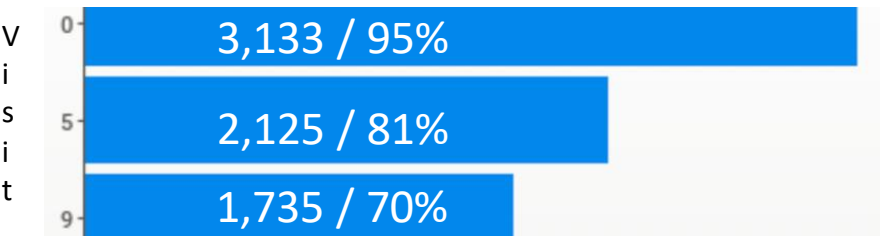
LARGEST VALUES

20.7	1	<0.1%
18.07	1	<0.1%
17.75	1	<0.1%
17.02	1	<0.1%
16.92	1	<0.1%
16.75	1	<0.1%
16.48	1	<0.1%
15.92	1	<0.1%
15.67	1	<0.1%
15.31	1	<0.1%
14.71	1	<0.1%
14.41	1	<0.1%
14.27	2	<0.1%
13.93	1	<0.1%
13.88	1	<0.1%



ALLB1 – Diet + Supplement Vitamin B1, mg | Visits 0,5,9

Number of patients taking ALLB1 by visit / percent of patients who report taking ALLB1 when ALLB1 is tracked



Reported dose in mg

MOST FREQUENT VALUES

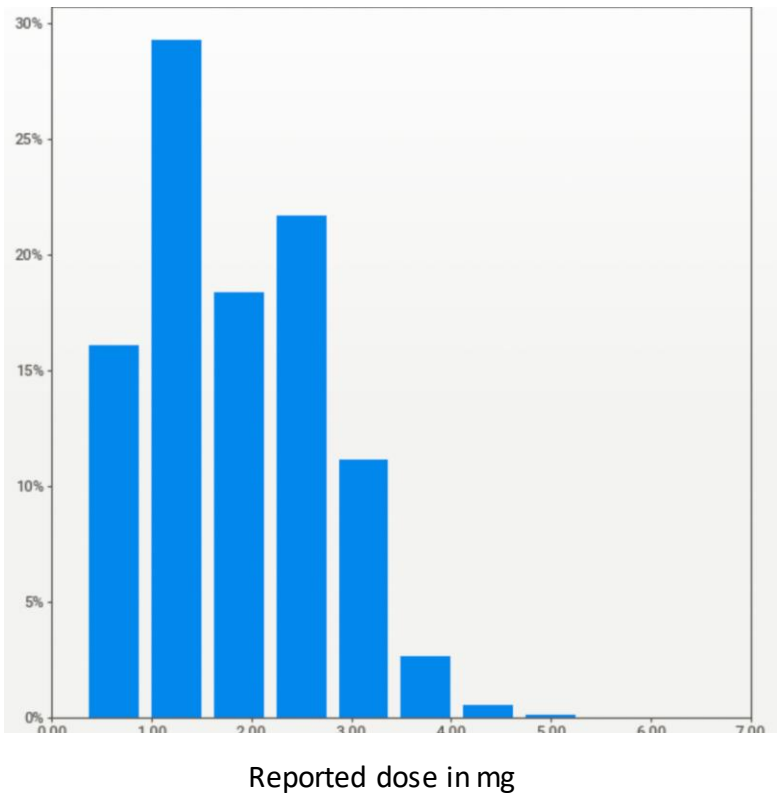
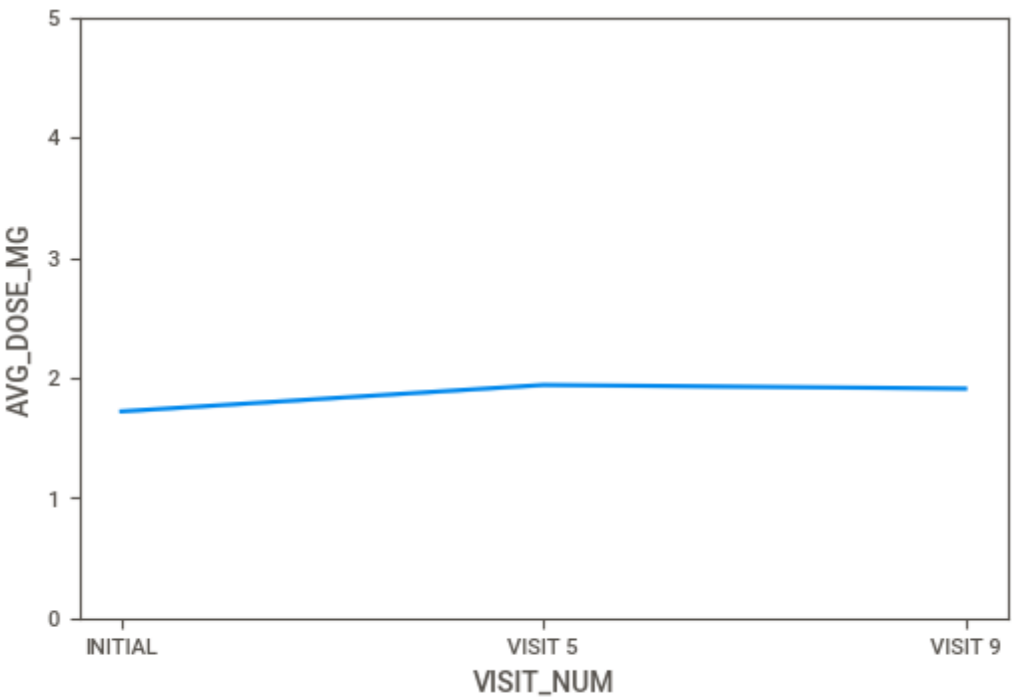
1.17	54	0.8%
1.16	48	0.7%
1.03	47	0.7%
1.13	45	0.6%
1.09	44	0.6%
0.88	43	0.6%
0.87	41	0.6%
1.21	41	0.6%
1.45	40	0.6%
1.01	40	0.6%
1.2	40	0.6%
1.24	39	0.6%
1.06	39	0.6%
0.91	38	0.5%
0.9	38	0.5%

SMALLEST VALUES

0.32	3	<0.1%
0.34	2	<0.1%
0.35	1	<0.1%
0.36	1	<0.1%
0.37	1	<0.1%
0.38	3	<0.1%
0.39	6	<0.1%
0.4	5	<0.1%
0.41	2	<0.1%
0.42	8	0.1%
0.43	6	<0.1%
0.44	2	<0.1%
0.45	4	<0.1%
0.46	8	0.1%
0.47	1	<0.1%

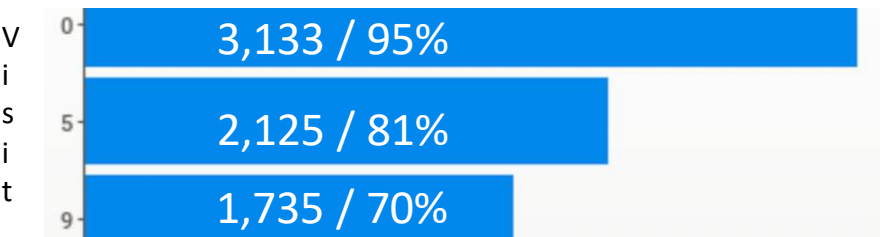
LARGEST VALUES

6.55	1	<0.1%
5.32	1	<0.1%
5.13	2	<0.1%
5.1	1	<0.1%
4.91	1	<0.1%
4.84	1	<0.1%
4.73	1	<0.1%
4.72	1	<0.1%
4.7	1	<0.1%
4.66	1	<0.1%
4.64	1	<0.1%
4.6	1	<0.1%
4.59	2	<0.1%
4.54	1	<0.1%
4.53	1	<0.1%



ALLB6 – Diet + Supplement Vitamin B6, mg | Visits 0,5,9

Number of patients taking ALLB6 by visit / percent of patients who report taking ALLB6 when ALLB6 is tracked



Reported dose in mg

MOST FREQUENT VALUES

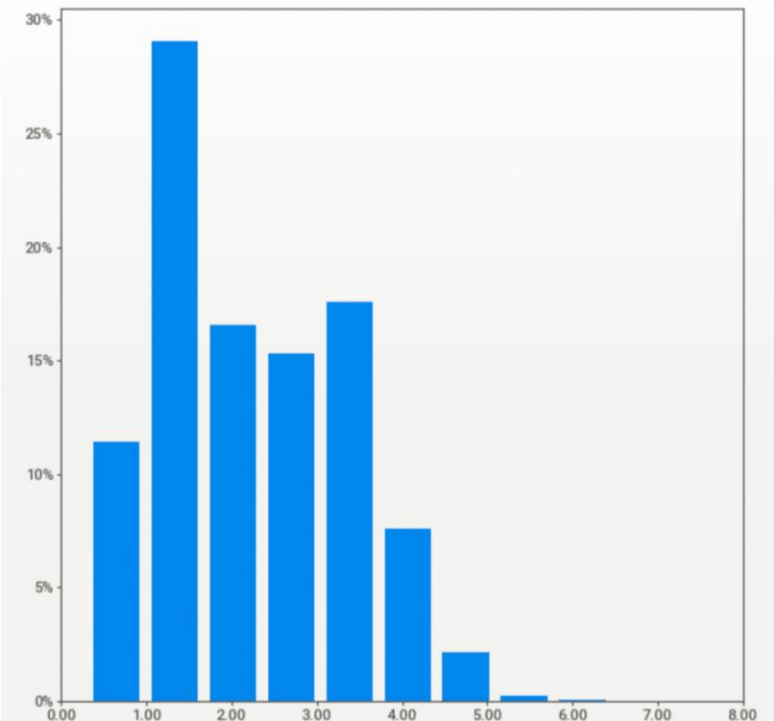
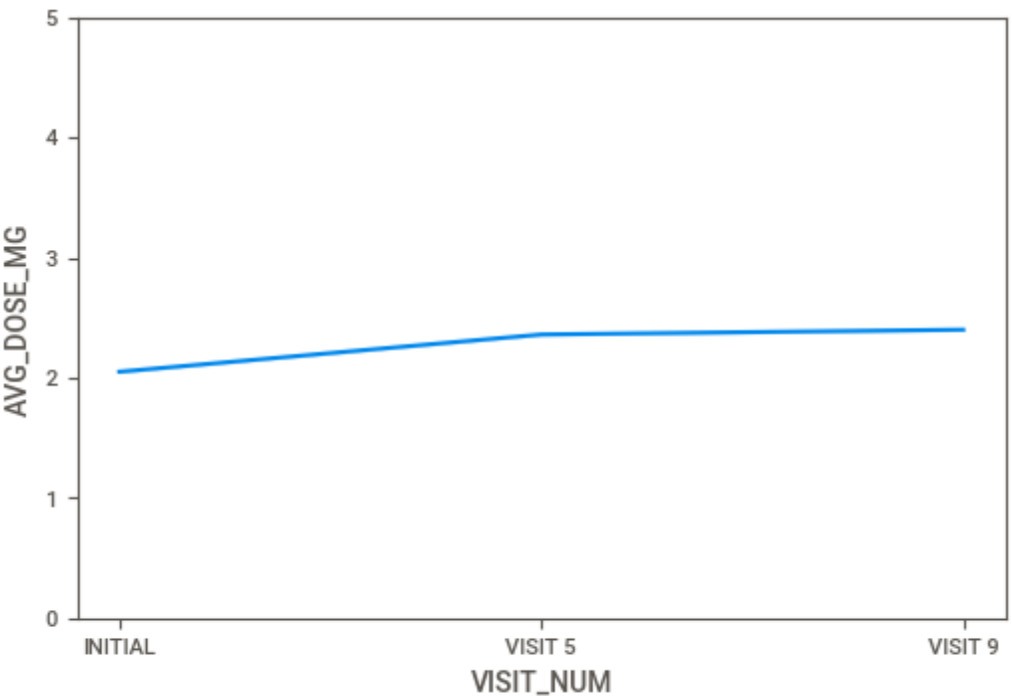
1.42	45	0.6%
1.09	43	0.6%
1.22	41	0.6%
1.43	40	0.6%
1.56	39	0.6%
1.26	39	0.6%
1.37	39	0.6%
1.24	37	0.5%
1.03	37	0.5%
1.15	36	0.5%
1.29	35	0.5%
1.27	35	0.5%
1.49	34	0.5%
1.16	34	0.5%
1.17	34	0.5%

SMALLEST VALUES

0.31	1	<0.1%
0.33	1	<0.1%
0.42	2	<0.1%
0.43	2	<0.1%
0.44	1	<0.1%
0.46	3	<0.1%
0.48	3	<0.1%
0.49	1	<0.1%
0.5	2	<0.1%
0.51	7	0.1%
0.52	4	<0.1%
0.53	7	0.1%
0.54	4	<0.1%
0.55	6	<0.1%
0.56	7	0.1%




LARGEST VALUES

7.14	1	<0.1%
6.68	1	<0.1%
6.24	1	<0.1%
6.13	1	<0.1%
5.82	1	<0.1%
5.81	1	<0.1%
5.75	2	<0.1%
5.73	1	<0.1%
5.59	2	<0.1%
5.58	1	<0.1%
5.55	1	<0.1%
5.51	2	<0.1%
5.3	1	<0.1%
5.29	1	<0.1%
5.28	1	<0.1%



Reported dose in mg

Labs data is hit or miss across total SWAN

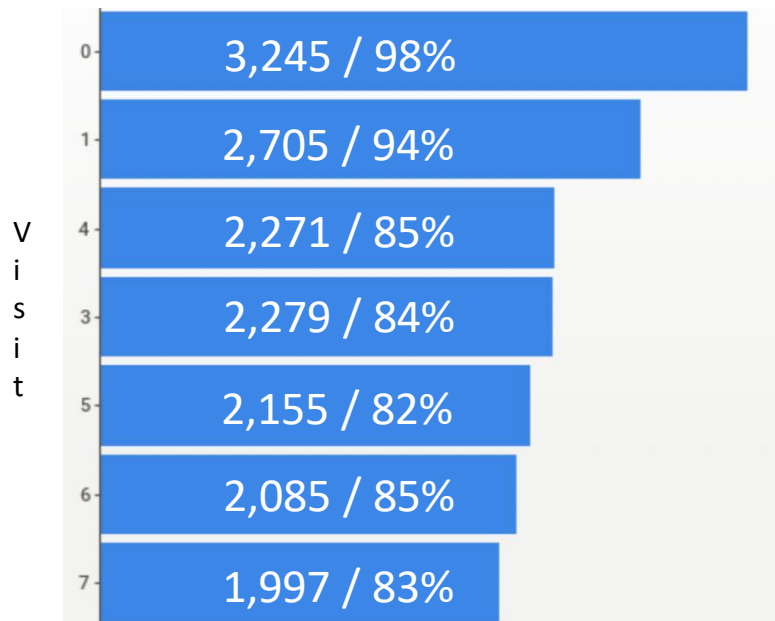
 CRPRESU
VALUES: 16,737 (58%)
MISSING: 12,052 (42%)
DISTINCT: 578 (2%)
ZEROES: ---
 E2AVE
VALUES: 24,733 (86%)
MISSING: 4,056 (14%)
DISTINCT: 5,160 (18%)
ZEROES: ---
 TSH
VALUES: 7,384 (26%)
MISSING: 21,405 (74%)
DISTINCT: 836 (3%)
ZEROES: ---

- Only the Estradiol lab data overlap all the the supplement data.
- C-reactive protein measurements are the next most complete, and is mostly contiguous for the first ten years, but is missing a reading from year 2.
- Vitamin D was only measured in years 5 and 9, so it will only have one corresponding reading for CRP, two for E2AVE and none for TSH.

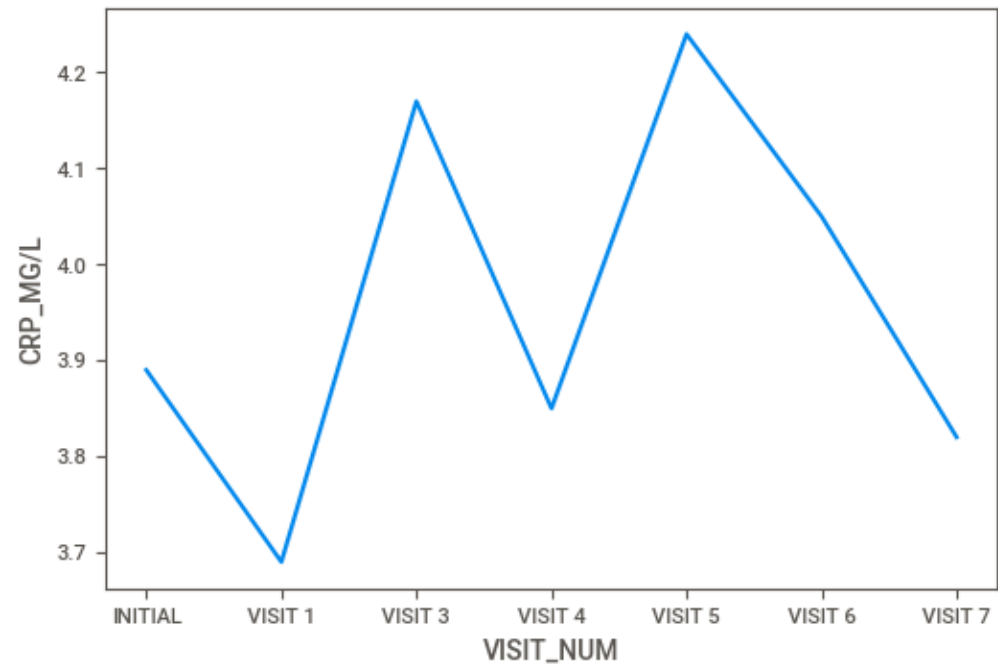
CRPRESU - C-reactive protein (mg/l)

Measured on visits 0,1,3,4,5,6,7 (not 2)

Number of patients w/C-Reactive measurement /
percent of patients per visit with C-reactive measurement



Mean C-reactive Protein per visit



MOST FREQUENT VALUES

0.3	800	4.8%
0.4	763	4.6%
0.5	718	4.3%
0.6	610	3.6%
0.7	563	3.4%
0.2	557	3.3%
0.8	514	3.1%
0.9	473	2.8%
1.0	459	2.7%
1.1	400	2.4%
1.3	360	2.2%
1.2	357	2.1%
1.4	311	1.9%
1.5	271	1.6%
1.7	249	1.5%

SMALLEST VALUES

0.042	2	<0.1%
0.043	1	<0.1%
0.044	4	<0.1%
0.045	2	<0.1%
0.046	2	<0.1%
0.047	1	<0.1%
0.048	2	<0.1%
0.049	3	<0.1%
0.05	4	<0.1%
0.051	3	<0.1%
0.052	2	<0.1%
0.053	4	<0.1%
0.054	5	<0.1%
0.055	5	<0.1%
0.056	1	<0.1%

LARGEST VALUES

138.3	1	<0.1%
135.4	1	<0.1%
128.0	1	<0.1%
113.9	1	<0.1%
111.0	1	<0.1%
105.6	1	<0.1%
100.9	1	<0.1%
94.8	1	<0.1%
93.6	1	<0.1%
84.6	1	<0.1%
83.8	1	<0.1%
76.4	1	<0.1%
74.4	1	<0.1%
72.7	1	<0.1%
72.1	1	<0.1%

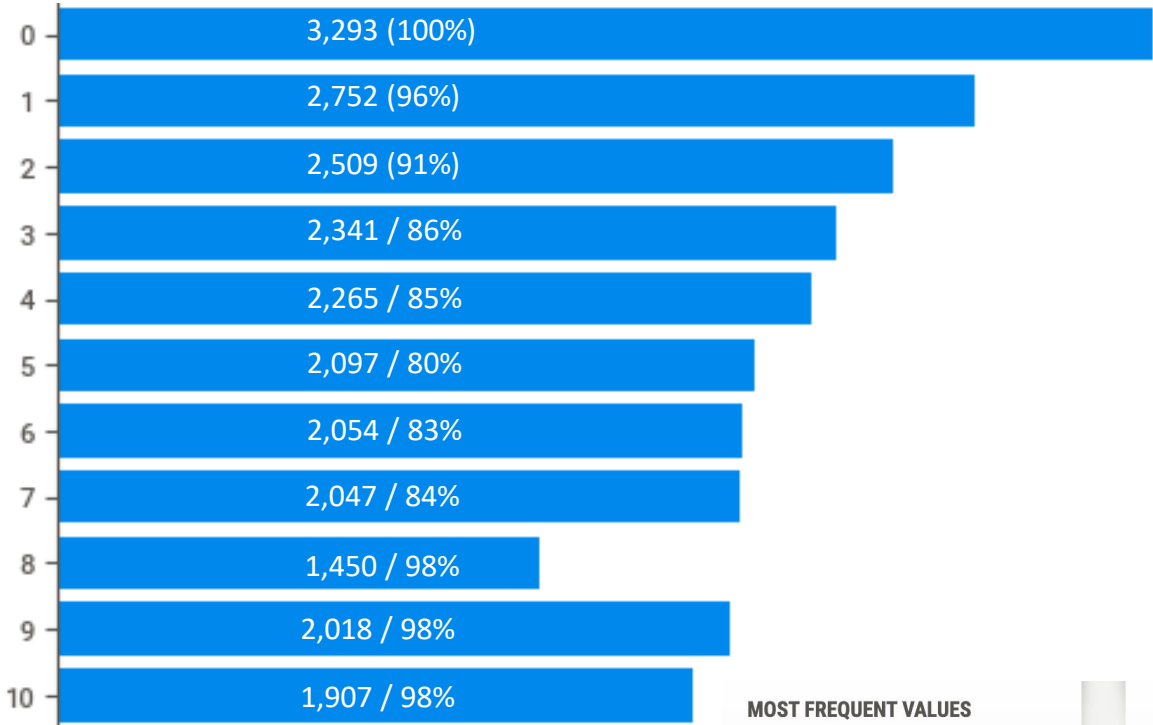
For the future: if we knew what a problematic case might look like, we could parse and track those, but nonetheless, would be hard to determine supplement impact b/c only a few measurements.

E2AVE - Estradiol (average, pg/mL)

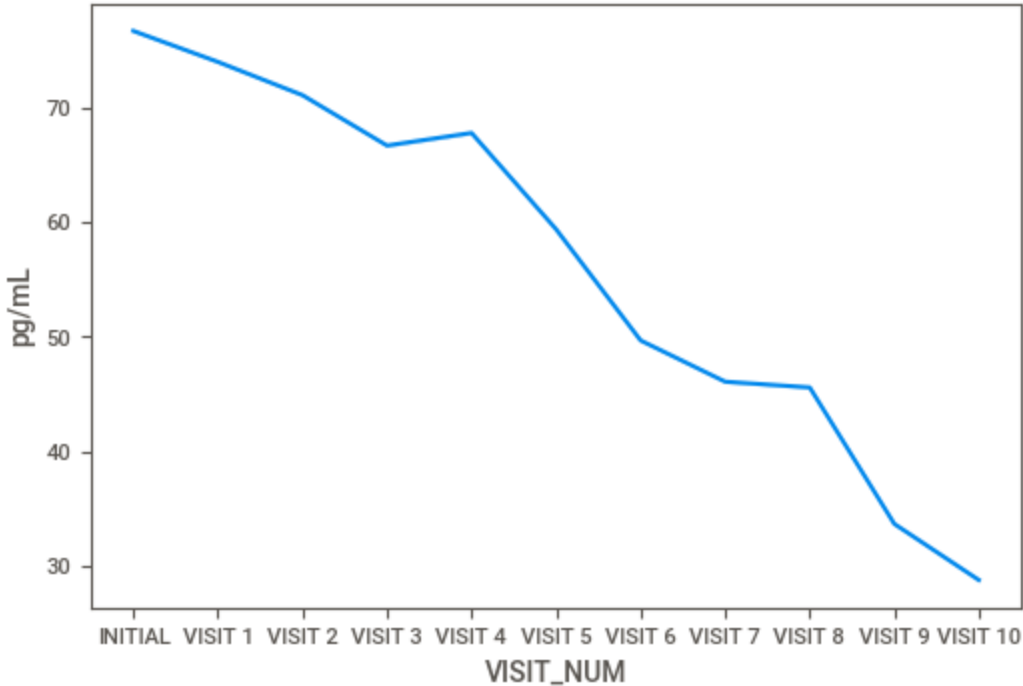
Measured on visits 0 – 10

Number of patients w/ Estradiol measurement /
percent of patients per visit with Estradiol measurement

V
i
s
i
t



Mean Estradiol per visit



MOST FREQUENT VALUES

13.55	50	0.2%
16.0	45	0.2%
15.5	45	0.2%
13.5	44	0.2%
14.85	43	0.2%
13.65	42	0.2%
11.2	41	0.2%
12.55	40	0.2%
11.4	40	0.2%
16.3	39	0.2%
14.45	39	0.2%
26.35	39	0.2%
13.25	39	0.2%
14.95	39	0.2%
12.25	38	0.2%

SMALLEST VALUES

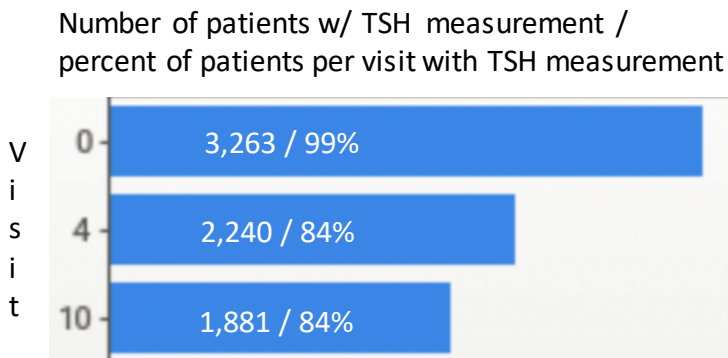
1.95	1	<0.1%
2.3	2	<0.1%
2.65	1	<0.1%
2.7	1	<0.1%
2.75	2	<0.1%
2.9	1	<0.1%
2.95	2	<0.1%
3.05	1	<0.1%
3.1	2	<0.1%
3.25	1	<0.1%
3.4	1	<0.1%
3.5	2	<0.1%
3.65	1	<0.1%
3.7	1	<0.1%
3.75	2	<0.1%

LARGEST VALUES

6987.20...	1	<0.1%
4071.0	1	<0.1%
1565.8	1	<0.1%
1493.55...	1	<0.1%
1321.85	1	<0.1%
1224.5	1	<0.1%
1182.05...	1	<0.1%
1146.8	1	<0.1%
1032.5	1	<0.1%
945.35	1	<0.1%
924.6	1	<0.1%
914.75	1	<0.1%
871.45	1	<0.1%
867.85	1	<0.1%
860.95	1	<0.1%

TSH - Thyroid-stimulating hormone (uIU/mL)

Measured on visits 0,4,10



MOST FREQUENT VALUES		
2.25	46	0.6%
1.74	42	0.6%
1.26	41	0.6%
1.42	38	0.5%
1.31	37	0.5%
1.32	37	0.5%
1.83	37	0.5%
1.78	36	0.5%
1.33	36	0.5%
1.43	36	0.5%
1.67	36	0.5%
1.64	36	0.5%
1.45	35	0.5%
1.38	35	0.5%
1.44	35	0.5%

SMALLEST VALUES		
0.03	3	<0.1%
0.04	3	<0.1%
0.06	1	<0.1%
0.07	2	<0.1%
0.08	1	<0.1%
0.09	3	<0.1%
0.1	2	<0.1%
0.11	1	<0.1%
0.12	3	<0.1%
0.13	6	<0.1%
0.14	7	<0.1%
0.15	2	<0.1%
0.16	2	<0.1%
0.17	3	<0.1%
0.18	4	<0.1%

LARGEST VALUES		
244.45	1	<0.1%
166.7	1	<0.1%
125.74	1	<0.1%
116.02	1	<0.1%
110.25	1	<0.1%
100.93	1	<0.1%
81.73	1	<0.1%
72.32	1	<0.1%
61.52	1	<0.1%
58.86	1	<0.1%
49.42	1	<0.1%
48.6	1	<0.1%
40.19	1	<0.1%
36.26	1	<0.1%
32.99	1	<0.1%

