The data set (and description) can be downloaded here:
http://lib.stat.cmu.edu/datasets/Plasma_Retinol

Description:

Determinants of Plasma Retinol and Beta-Carotene Levels

Summary:
Observational studies have suggested that low dietary intake or low plasma concentrations of retinol, beta-carotene, or other carotenoids might be associated with increased risk of developing certain types of cancer. However, relatively few studies have investigated the determinants of plasma concentrations of these micronutrients. We designed a cross-sectional study to investigate the relationship between personal characteristics and dietary factors, and plasma concentrations of retinol, beta-carotene and other carotenoids. Study subjects (N = 315) were patients who had an elective surgical procedure during a three-year period to biopsy or remove a lesion of the lung, colon, breast, skin, ovary or uterus that was found to be non-cancerous. We display the data for only two of the analytes. Plasma concentrations of the micronutrients varied widely from subject to subject. While plasma retinol levels varied by age and sex, the only dietary predictor was alcohol consumption (R^2 = .38). Plasma beta-carotene levels were log-transformed prior to the analyses due to severe asymmetry of the residuals on the original scale. For log beta-carotene, dietary intake, regular use of vitamins, and intake of fiber were associated with higher plasma concentrations, while Quetelet Index (defined as weight/height^2 in the units kg/m^2) and cholesterol intake were associated with lower plasma levels, adjusting for the other factors (R^2 = .50). There was one extremely high leverage point in alcohol consumption that was deleted prior to the analyses. Plasma concentrations of retinol and beta-carotene were not correlated. We conclude that there is wide variability in plasma concentrations of these micronutrients in humans, and that much of this variability is associated with dietary habits and personal characteristics. A better understanding of the physiological relationship between some personal characteristics and plasma concentrations of these micronutrients will require further study.

Authorization: Contact Authors

Reference: These data have not been published yet but a related reference is Nierenberg DW, Stukel TA, Baron JA, Dain BJ, Greenberg ER. Determinants of plasma levels of beta-carotene and retinol. American Journal of Epidemiology 1989;130:511-521.

Description: This datafile contains 315 observations on 14 variables. This data set can be used to demonstrate multiple regression, transformations, categorical variables, outliers, pooled tests of significance and model building strategies.

Variable Names in order from left to right:
    AGE: Age (years)
    SEX: Sex (1=Male, 2=Female).
    SMOKSTAT: Smoking status (1=Never, 2=Former, 3=Current Smoker)
    QUETELET: Quetelet (weight/(height^2))
    VITUSE: Vitamin Use (1=Yes, fairly often, 2=Yes, not often, 3=No)
    CALORIES: Number of calories consumed per day.
    FAT: Grams of fat consumed per day.
    FIBER: Grams of fiber consumed per day.
    ALCOHOL: Number of alcoholic drinks consumed per week.
    CHOLESTEROL: Cholesterol consumed (mg per day).
    BETADIET: Dietary beta-carotene consumed (mcg per day).
    RETDIET: Dietary retinol consumed (mcg per day)
    BETAPLASMA: Plasma beta-carotene (ng/ml)
    RETPLASMA: Plasma Retinol (ng/ml)

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Descriptive statistics:

Dataset= plasma-retinol_MvsF : n= 315 , d= 13

Class1: n= 273

Covariance matrix:

	[,1]	[,2]	[,3]	[,4]	[,5]	[,6]	[,7]	[,8]	[,9]	[,10]
[1,]	198.6165	-1.7723	-0.1018	-1.0551	-2327.8064	-102.6980	0.0233	-1.5406	-322.5220	1526.1570
[2,]	-1.7723	0.5047	-0.6205	0.1040	17.8470	1.8199	-0.5001	0.4249	4.9416	-70.5348
[3,]	-0.1018	-0.6205	39.1130	0.4658	1.4730	8.3709	-2.6376	-5.3413	94.2549	-167.7267
[4,]	-1.0551	0.1040	0.4658	0.7141	-48.0791	-0.3902	-0.5429	0.4741	-2.9684	-162.1270
[5,]	-2327.8064	17.8470	1.4730	-48.0791	384734.9411	18384.1563	1855.4537	324.7755	53391.5092	256822.6177
[6,]	-102.6980	1.8199	8.3709	-0.3902	18384.1563	1099.7870	55.9192	7.5028	3015.9140	8289.3930
[7,]	0.0233	-0.5001	-2.6376	-0.5429	1855.4537	55.9192	29.1920	-0.3492	153.9204	4017.5313
[8,]	-1.5406	0.4249	-5.3413	0.4741	324.7755	7.5028	-0.3492	16.9483	30.1570	72.6635
[9,]	-322.5220	4.9416	94.2549	-2.9684	53391.5092	3015.9140	153.9204	30.1570	15616.3131	25652.9034
[10,]	1526.1570	-70.5348	-167.7267	-162.1270	256822.6177	8289.3930	4017.5313	72.6635	25652.9034	2334476.5390
[11,]	-385.9968	-23.1077	141.7150	-13.9023	156365.6332	8290.7587	677.7018	48.1411	29829.0351	33579.1176
[12,]	362.1767	-17.7194	-271.4428	-37.1832	1341.3399	-479.0535	261.5437	57.3050	-2168.2339	73055.9977
[13,]	558.2885	-1.5186	-27.7054	-11.4306	-8707.6677	-728.7558	-44.1735	100.3261	-1846.5768	-2200.2381

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             [,11]        [,12]         [,13]
 [1,]    -385.9968     362.1767      558.2885
 [2,]     -23.1077     -17.7194       -1.5186
 [3,]     141.7150    -271.4428      -27.7054
 [4,]     -13.9023     -37.1832      -11.4306
 [5,]  156365.6332    1341.3399    -8707.6677
 [6,]    8290.7587    -479.0535     -728.7558
 [7,]     677.7018     261.5437      -44.1735
 [8,]      48.1411      57.3050      100.3261
 [9,]   29829.0351   -2168.2339    -1846.5768
[10,]   33579.1176   73055.9977    -2200.2381
[11,]  336491.1723   -3199.0205    -5048.8771
[12,]   -3199.0205   35667.1654     2444.9332
[13,]   -5048.8771    2444.9332    34384.5399

Correlation matrix:
         [,1]    [,2]    [,3]    [,4]    [,5]    [,6]    [,7]    [,8]    [,9]   [,10]   [,11]   [,12]   [,13]
 [1,]  1.0000 -0.1770 -0.0012 -0.0886 -0.2663 -0.2197  0.0003 -0.0266 -0.1831  0.0709 -0.0472  0.1361  0.2136
 [2,] -0.1770  1.0000 -0.1397  0.1733  0.0405  0.0772 -0.1303  0.1453  0.0557 -0.0650 -0.0561 -0.1321 -0.0115
 [3,] -0.0012 -0.1397  1.0000  0.0881  0.0004  0.0404 -0.0781 -0.2075  0.1206 -0.0176  0.0391 -0.2298 -0.0239
 [4,] -0.0886  0.1733  0.0881  1.0000 -0.0917 -0.0139 -0.1189  0.1363 -0.0281 -0.1256 -0.0284 -0.2330 -0.0729
 [5,] -0.2663  0.0405  0.0004 -0.0917  1.0000  0.8937  0.5537  0.1272  0.6888  0.2710  0.4346  0.0115 -0.0757
 [6,] -0.2197  0.0772  0.0404 -0.0139  0.8937  1.0000  0.3121  0.0550  0.7277  0.1636  0.4310 -0.0765 -0.1185
 [7,]  0.0003 -0.1303 -0.0781 -0.1189  0.5537  0.3121  1.0000 -0.0157  0.2280  0.4867  0.2162  0.2563 -0.0441
 [8,] -0.0266  0.1453 -0.2075  0.1363  0.1272  0.0550 -0.0157  1.0000  0.0586  0.0116  0.0202  0.0737  0.1314
 [9,] -0.1831  0.0557  0.1206 -0.0281  0.6888  0.7277  0.2280  0.0586  1.0000  0.1344  0.4115 -0.0919 -0.0797
[10,]  0.0709 -0.0650 -0.0176 -0.1256  0.2710  0.1636  0.4867  0.0116  0.1344  1.0000  0.0379  0.2532 -0.0078
[11,] -0.0472 -0.0561  0.0391 -0.0284  0.4346  0.4310  0.2162  0.0202  0.4115  0.0379  1.0000 -0.0292 -0.0469
[12,]  0.1361 -0.1321 -0.2298 -0.2330  0.0115 -0.0765  0.2563  0.0737 -0.0919  0.2532 -0.0292  1.0000  0.0698
[13,]  0.2136 -0.0115 -0.0239 -0.0729 -0.0757 -0.1185 -0.0441  0.1314 -0.0797 -0.0078 -0.0469  0.0698  1.0000

Median:      48.4121 1.6079 26.1474 1.9592 1660.241 71.0967 11.9867 2.1168 218.8946 1845.257 762.5358 179.1529 585.5008

Mean:        48.5458 1.6044 26.1398 1.9194 1741.404 74.4399 12.6923 2.1802 229.2817 2183.385 815.5714 196.2344 587.7216

MCD-estimated:
0.975-Mean:  50.375  1      26.8033 1.7986 1696.199 71.2604 13.0132 1.5514 222.8243 2177.993 837.3333 210.5694 582.6875
0.750-Mean:  50.375  1      26.8033 1.7986 1696.199 71.2604 13.0132 1.5514 222.8243 2177.993 837.3333 210.5694 582.6875
0.500-Mean:  50.375  1      26.8033 1.7986 1696.199 71.2604 13.0132 1.5514 222.8243 2177.993 837.3333 210.5694 582.6875
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Class2: n= 42

Covariance matrix:

	[,1]	[,2]	[,3]	[,4]	[,5]	[,6]	[,7]	[,8]	[,9]	[,10]
[1,]	181.4245	-0.9443	-12.4492	2.1702	-2396.8749	-165.9288	18.8383	-6.6621	-587.3524	1522.0598
[2,]	-0.9443	0.4669	0.3744	0.0139	245.3296	9.7547	-0.5613	6.0645	30.4523	-71.1916
[3,]	-12.4492	0.3744	17.4570	-0.1883	52.3534	18.1485	-4.0964	-6.7845	33.3975	662.5698
[4,]	2.1702	0.0139	-0.1883	0.8322	153.2136	4.1440	-0.2502	4.1692	18.0107	47.9448
[5,]	-2396.8749	245.3296	52.3534	153.2136	840091.9042	24558.1660	352.7373	23800.6013	62769.7074	159125.0174
[6,]	-165.9288	9.7547	18.1485	4.1440	24558.1660	1132.6428	-1.6284	400.8875	2559.7627	-510.9510
[7,]	18.8383	-0.5613	-4.0964	-0.2502	352.7373	-1.6284	23.4593	-13.0869	-254.8901	2375.2923
[8,]	-6.6621	6.0645	-6.7845	4.1692	23800.6013	400.8875	-13.0869	990.2048	1346.9528	4880.3214
[9,]	-587.3524	30.4523	33.3975	18.0107	62769.7074	2559.7627	-254.8901	1346.9528	21150.8345	638.6726
[10,]	1522.0598	-71.1916	662.5698	47.9448	159125.0174	-510.9510	2375.2923	4880.3214	638.6726	1149452.4628
[11,]	558.6028	60.4843	-85.1862	4.9373	151185.9997	5712.7355	584.2369	1239.3355	54979.8160	126991.1916
[12,]	169.8943	-5.5610	-126.9544	-34.3008	-12573.6854	-345.6764	58.0293	-415.6333	-5546.3772	-19639.1626
[13,]	27.7567	17.6690	297.0079	-9.2224	-63623.7233	-2038.6172	-158.2669	-1154.8765	-12491.0595	-18998.4082

	[,11]	[,12]	[,13]
[1,]	558.6028	169.8943	27.7567
[2,]	60.4843	-5.5610	17.6690
[3,]	-85.1862	-126.9544	297.0079
[4,]	4.9373	-34.3008	-9.2224
[5,]	151185.9997	-12573.6854	-63623.7233
[6,]	5712.7355	-345.6764	-2038.6172
[7,]	584.2369	58.0293	-158.2669
[8,]	1239.3355	-415.6333	-1154.8765
[9,]	54979.8160	-5546.3772	-12491.0595
[10,]	126991.1916	-19639.1626	-18998.4082
[11,]	412507.7352	-11450.6098	-38613.1080
[12,]	-11450.6098	17848.9593	9508.4715
[13,]	-38613.1080	9508.4715	94746.2468

Correlation matrix:

	[,1]	[,2]	[,3]	[,4]	[,5]	[,6]	[,7]	[,8]	[,9]	[,10]	[,11]	[,12]	[,13]
[1,]	1.0000	-0.1026	-0.2212	0.1766	-0.1941	-0.3660	0.2888	-0.0157	-0.2998	0.1054	0.0646	0.0944	0.0067
[2,]	-0.1026	1.0000	0.1311	0.0224	0.3917	0.4242	-0.1696	0.2820	0.3064	-0.0972	0.1378	-0.0609	0.0840
[3,]	-0.2212	0.1311	1.0000	-0.0494	0.0137	0.1291	-0.2024	-0.0516	0.0550	0.1479	-0.0317	-0.2274	0.2309
[4,]	0.1766	0.0224	-0.0494	1.0000	0.1832	0.1350	-0.0566	0.1452	0.1358	0.0490	0.0084	-0.2814	-0.0328
[5,]	-0.1941	0.3917	0.0137	0.1832	1.0000	0.7961	0.0795	0.8252	0.4709	0.1619	0.2568	-0.1027	-0.2255
[6,]	-0.3660	0.4242	0.1291	0.1350	0.7961	1.0000	-0.0100	0.3785	0.5230	-0.0142	0.2643	-0.0769	-0.1968
[7,]	0.2888	-0.1696	-0.2024	-0.0566	0.0795	-0.0100	1.0000	-0.0859	-0.3619	0.4574	0.1878	0.0897	-0.1062
[8,]	-0.0157	0.2820	-0.0516	0.1452	0.8252	0.3785	-0.0859	1.0000	0.2943	0.1447	0.0613	-0.0989	-0.1192
[9,]	-0.2998	0.3064	0.0550	0.1358	0.4709	0.5230	-0.3619	0.2943	1.0000	0.0041	0.5886	-0.2855	-0.2790
[10,]	0.1054	-0.0972	0.1479	0.0490	0.1619	-0.0142	0.4574	0.1447	0.0041	1.0000	0.1844	-0.1371	-0.0576
[11,]	0.0646	0.1378	-0.0317	0.0084	0.2568	0.2643	0.1878	0.0613	0.5886	0.1844	1.0000	-0.1334	-0.1953
[12,]	0.0944	-0.0609	-0.2274	-0.2814	-0.1027	-0.0769	0.0897	-0.0989	-0.2855	-0.1371	-0.1334	1.0000	0.2312
[13,]	0.0067	0.0840	0.2309	-0.0328	-0.2255	-0.1968	-0.1062	-0.1192	-0.2790	-0.0576	-0.1953	0.2312	1.0000

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Median:       60.7933 1.77   26.7048 2.3766 2052.904 94.4469 13.0218  5.8379 323.7696 2055.033 861.7127 134.7425 694.0945

Mean:         60.5476 1.8571 26.2714 2.2619 2155.786 93.8905 13.4143 10.4238 328.1238 2200.024 944.1429 148.6667 700.7381

MCD-estimated:
0.975-Mean:   65.1429 1.8571 26.7504 2.3571 1927.593 87.6893 13.875   3.3607 289.8286 2134.036 841.25   132.9286 694.5357
0.750-Mean:   63.75   1.8214 25.8926 2.4643 1975.646 90.1    13.8536  3.5893 308.4857 2108.714 861.6429 126.3214 711.5357
0.500-Mean:   62.9032 1.7419 25.8072 2.3871 2028.552 91.9161 13.9419  5.671  307.3903 2161.129 853.5161 121.1613 708.7419

Measures:
Mah.Dist:                        1.6405
Mah.Dist-MCD-0.975:              3.1499
Mah.Dist-MCD-0.750:              2.8962
Mah.Dist-MCD-0.500:              3.1253

All the MCD estimates have been obtained after a slight perturbation of the data set
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