

Nutrient Density for the Twelve Most Common Mineral and Vitamin Insufficiencies in the U.S. Diet

Mean Nutrient/ (100 kcal)	% population not meeting DRI		Seafood		Veggies		Fruits		Lean Meats		Hard boiled Eggs		Legumes		Starchy Roots		Whole Milk		Whole Grains		Nuts Seeds	
		DRI	n=20	% DRI	n=16	% DRI	n=20	% DRI	n=4	% DRI	n=1	% DRI	n=8	% DRI	n=6	% DRI	n=1	% DRI	n=8	% DRI	n=10	% DRI
Zinc (mg)	73.3	11	7.6	69.09	1.04	9.5	0.25	2.27	1.9	17.27	0.68	6.18	1.07	9.73	0.25	2.27	0.62	5.64	0.67	6.09	0.60	5.45
Calcium (mg)	65.1	1000	43.1	4.31	116.8	11.7	43	4.30	6.1	0.61	32.30	3.23	43.85	4.38	20.9	2.09	194.3	19.43	7.6	0.76	17.5	1.75
Magnesium (mg)	61.6	400	36.1	9.03	54.5	13.6	24.6	6.15	18	4.50	6.50	1.63	43.65	10.91	21.6	5.40	16.4	4.10	29.1	7.28	35.8	8.95
Vitamin A (RE)	56.2	900	32	3.56	687	76.3	94	10.44	1	0.11	100.70	11.19	25.83	2.87	271.3	30.14	50	5.56	2	0.22	2	0.22
Vitamin B6 (mg)	53.6	1.3	0.19	14.62	0.42	32.3	0.20	15.38	0.32	24.62	0.08	6.15	0.13	9.74	0.20	15.38	0.07	5.38	0.09	6.92	0.08	6.15
Iron (mg)	39.1	18	2.07	11.50	2.59	14.4	0.69	3.83	1.1	6.11	0.77	4.28	1.93	10.71	1.29	7.17	0.08	0.44	0.9	5.00	0.86	4.78
Vitamin C (mg)	37.5	90	1.9	2.11	93.6	104.0	74.2	82.44	0.10	0.11	0.00	0.00	4.09	4.54	9.9	11.00	1.5	1.67	0	0.00	0.4	0.44
Folate (µg)	33.2	400	10.8	2.70	208.3	52.1	25	6.25	3.8	0.95	28.40	7.10	86.80	21.70	15.2	3.80	8.1	2.03	9.6	2.40	11	2.75
Vitamin B1 (mg)	30.2	1.2	0.08	6.67	0.26	21.7	0.11	9.17	0.18	15.00	0.04	3.33	0.14	11.58	0.10	8.33	0.06	5.00	0.12	10.00	0.12	10.00
Vitamin B2 (mg)	30.0	1.3	0.09	6.92	0.33	25.4	0.09	6.92	0.14	10.77	0.33	25.38	0.10	8.02	0.06	4.62	0.26	20.00	0.05	3.85	0.04	3.08
Vitamin B3 (mg)	25.9	16	3.19	19.94	2.73	17.1	0.89	5.56	4.73	29.56	0.04	0.25	0.91	5.66	0.86	5.38	0.14	0.88	1.12	7.00	0.35	2.19
Vitamin B12 (µg)	17.2	2.4	7.42	309.17	0	0.0	0	0.00	0.63	26.25	0.72	30.00	0	0.00	0	0.00	0.58	24.17	0	0.00	0	0.00
Sum % DRI				459.6		378.0		152.7		135.9		98.7		99.9		95.6		94.3		49.5		45.8
Selenium (µg)	na	55	39.669	72.13	5.056	9.2	0.782	1.42	13.817	25.12	19.88	36.15	2.291	4.17	0.709	1.29	6.065	11.03	6.219	11.31	31.092	56.53
Manganese (mg)	na	2.3	0.067	2.91	0.604	26.3	0.241	10.48	0.006	0.26	0.017	0.74	0.529	23.00	0.363	15.78	0.007	0.30	0.57	24.78	0.486	21.13

	Items	Items	Items	Items	Items	Items	Items	Items	Items	Items
	Blue Crab	Asparagus	Apple	Beef sirloin roast	Chicken eggs	Black eyed peas	Cassava	Milk (3.3 %)	Barley	Almonds
	Catfish	Bell pepper	Avocado	Chicken breast		Garbanzo beans	Potato		Corn	Brazil nuts
	Clam	Broccoli	Banana	Pork loin		Green peas	Rutabagas		Millet	Coconut
	Cod	Carrot	Cantaloupe	Turkey breast		Kidney beans	Sweet Potato		Oats	Filberts
	Flounder	Cauliflower	Grape			Lentils	Taro		Rice	Macadamia nuts
	Haddock	Celery	Grapefruit			Lima beans	Yams		Rye	Pecans
	Halibut	Cucumber	Honeydew melon			Mung beans			Sorghum	Pistachio nuts
	Lobster	Green cabbage	Kiwi fruit			Soybeans			Wheat	Pumpkin seeds
	Mackerel	Green onion	Lemon							Sunflower seeds
Legend:										
Green - Paleo-Friendly Food Groups	Ocean Perch	Iceberg lettuce	Lime							
Red - Paleo-Eliminated Food Groups	Orange Roughy	Leaf lettuce	Nectarine							
	Oyster	Mushroom	Orange							
	Pollock	Onion	Peach							
	Rainbow trout	Radish	Pear							
	Rockfish	Summer squash	Pineapple							
	Salmon	Tomato	Plum							
	Scallop		Strawberry							
	Shrimp		Sweet cherry							
	Sole		Tangerine							
	Whiting		Watermelon							

Key and Notes: All micronutrient (vitamin and mineral) data was derived from the USDA Standard Reference Database via the nutritional software, Nutritionist Pro (52). DRI values were obtained from The National Academies, Dietary Reference Intakes (53). When DRI values differed between genders, the highest value for 19-30 year old adults was used to calculate % DRI for each micronutrient. All foods were separated into one of ten specific categories (whole grains, milk, fresh fruits, fresh non-starchy vegetables, fresh fish and seafood, fresh lean meats, nuts and seeds, legumes and beans, starchy root vegetables and eggs). Foods listed for each category represented the most frequently commonly consumed items in the U.S. diet. Values for individual micronutrients represent mean 100 kcal value for the entire category of foods. For instance, the zinc value (6.09 mg) for whole grains represents the average (mean) 100 kcal value for all whole grains (barley, corn, millet, oats, rice, rye, sorghum and wheat). The % DRI values were calculated by dividing the actual value; for example, zinc (0.67 mg) by the DRI (11 mg) for zinc times 100 = % DRI (6.09 %). All food category % DRI values were summed to obtain interval level data in order to compare the sum total micronutrient density for any food category. The most nutrient dense food categories in rank order are: [#1] seafood (sum score: 459.6), [#2] fresh vegetables (sum score: 378), [#3] fruits (sum score: 152.7), [#4] lean meats (sum score: 135.9), [#5] legumes (sum score: 99.9), [#6] eggs (sum score: 98.7), [#7] starchy roots (sum score: 95.6), [#8] whole milk (sum score: 94.3), [#9] whole grains (sum score: 49.5), [#10] nuts and seeds (sum score: 45.8). Micronutrient values for all food categories were also calculated for selenium and manganese but were not included in the sum total evaluation of each food category, as the percentage of the population lacking in these two micronutrients is not available.