

Supplemental Table 1 – Vitamin D insufficiency and current asthma or current wheeze by race/ethnicity and current smoking status in adults, NHANES 2001-2010

	Current smoker (n=5176)	Not current smoker (n=16891)
Vitamin D insufficiency 25(OH)D < 30 ng/ml	OR (95% CI), P-value	OR (95% CI), P-value
Current asthma		
All participants ¹	0.96 (0.73, 1.26), 0.77	1.09 (0.91, 1.31), 0.36
Non-Hispanic whites	1.07 (0.74, 1.39), 0.93	1.08 (0.89, 1.31), 0.44
Non-Hispanic blacks	0.96 (0.23, 4.07), 0.96	1.74 (0.95, 3.20), 0.07
Mexican American/other Hispanic	0.68 (0.35, 1.35), 0.27	0.96 (0.61, 1.51), 0.85
Current wheeze		
All participants ¹	1.10 (0.90, 1.35), 0.34	1.17 (0.99, 1.38), 0.06
Non-Hispanic whites	1.17 (0.94, 1.45), 0.17	1.20 (1.02, 1.42), 0.03
Non-Hispanic blacks	0.66 (0.31, 1.41), 0.28	1.55 (1.01, 2.38), 0.04
Mexican American/other Hispanic	0.72 (0.42, 1.24), 0.24	1.13 (0.76, 1.68), 0.53

All models adjusted for age, gender, household income, cotinine, C-reactive protein, BMI (in adults) and BMIZ (in children).

¹Additionally adjusted for race/ethnicity

Supplemental Table 2– Vitamin D insufficiency and lung function measures (as percent of predicted values), NHANES 2007-2010

Lung Function Measures	Children (n=2036)	Adults (n=7611)
	β (95% CI), P-value.	β (95% CI), P-value.
% predicted FEV ₁	-2.93 (-4.02, -1.85), <0.01	-0.56 (-1.33, 0.21), 0.15
% predicted FVC	-3.67 (-4.86, -2.47), <0.01	-2.96 (-4.01, -1.90), <0.01
% predicted FEV ₁ /FVC	-0.30 (-1.23, 0.63), 0.52	0.58 (0.14, 1.02), 0.01

All models adjusted for household income, current asthma, cotinine, C-reactive protein, BMI (in adults) and BMIZ (in children).

Supplemental Table 3–Vitamin D insufficiency and lung function measures by current asthma, NHANES 2007-2010

Lung Function Measures	Children (n=3,001)	Adults (n=8,347)
	β (95% CI), P-value.	β (95% CI), P-value.
No current asthma	n=2654	n=7743
Pre-bronchodilator FEV ₁ (ml) ¹	-118.95 (-156.49, -81.42), <0.01	-67.39 (-89.43, -45.35), <0.01
Pre-bronchodilator FVC, (ml) ¹	-133.36 (-180.55, -86.17), <0.01	-116.23 (-148.06, -84.40), <0.01
Pre-bronchodilator FEV ₁ /FVC (%)	0.25 (-0.67, 1.17), 0.58	0.51 (0.12, 0.91), 0.01
Current asthma	n=347	n=604
Pre-bronchodilator FEV ₁ (ml) ¹	-174.40 (-300.13, -48.67), <0.01	-112.73 (-230.65, 5.19), 0.06
Pre-bronchodilator FVC, (ml) ¹	-70.73 (-168.54, 27.08), 0.15	-145.35 (-271.92, -18.78), 0.03
Pre-bronchodilator FEV ₁ /FVC (%)	-2.95 (-4.64, -1.26), <0.01	-0.53 (-2.40, 1.35), 0.57

All models adjusted for age, gender, household income, serum cotinine, C-reactive protein, BMI (in adults) and BMI z-score (in children).

¹Additionally adjusted for height and height square