

## Changes in BMI during the COVID-19 Pandemic Period

### Supplemental Materials

#### Sensitivity Analyses

- 1) Because our study inclusion criteria required completing an in-person or virtual cohort study visit during the pandemic period, we explored whether children who returned for a study visit had different sociodemographic attributes than those who were not seen during the COVID-19 pandemic. It is possible that children who were able to complete a study visit during the pandemic were less adversely affected and thus less likely to gain weight than children who were not seen during that time. We evaluated this possibility in two different ways. First, we created an expanded “Comparison Sample” of 10,349 children from 51 cohorts that contributed at least one BMI measure before the pandemic (October 2017 through February 2020), and compared core sociodemographic characteristics between this group and the primary analytic sample (Supplement Table 1).
- 2) Second, we conducted a sensitivity analysis comparing BMI change across two pre-pandemic periods, to explore whether changes in BMI in the pandemic period might be attributable secular increases in BMI associated with the US obesity epidemic rather than pandemic-related factors. We defined the “sensitivity baseline” period as the 20-month period from October 2017 through May 2019, and the “sensitivity comparison” period from June 2019 through February 2020. We repeated the same analytic models as the main analysis, comparing the “sensitivity baseline” to the “sensitivity comparison” periods and found no statistically significant increase in BMI in the sensitivity comparison period (Supplement Table 2).
- 3) Last, to explore the effect of the method of ascertainment of height and weight on the results given that study-measured heights and weights are more accurate than those done during clinical

visits or self-reported measures, we also repeated the main analysis among only those children who had study-measured heights and weights in both the pre-pandemic and during-pandemic period (Supplement Table 2).

Prepublication Release

**Supplement Table 1: Characteristics of the Primary Analytic Sample Compared to Pre-Pandemic Trends, Study Measure Sample, and Comparison Sample**

	<b>Primary Analytic Sample<sup>1</sup></b>	<b>Pre-Pandemic Trends Sample<sup>2</sup></b>	<b>Study Measure Sample<sup>3</sup></b>	<b>Comparison Sample<sup>4</sup></b>
	(n = 1996)	(n = 1516)	(n = 1052)	(n = 10349)
Child age in 2018	5.9 ± 3.4	5.2 ± 2.8	5.4 ± 2.5	5.9 ± 3.7
Gender, Female	975 (49%)	745 (49%)	516 (49%)	4939 (48%)
<b>Race &amp; Ethnicity</b>				
Missing	8 (0.4%)	8 (0.5%)	5 (0.5%)	179 (1.7%)
Non-Hispanic white, n(%)	1067 (53%)	653 (43%)	557 (53%)	5095 (49%)
Non-Hispanic black, n(%)	299 (15%)	260 (17%)	193 (18%)	1485 (14%)
Non-Hispanic other, n(%)	294 (15%)	233 (15%)	140 (13%)	1379 (13%)
Hispanic, all races, n(%)	328 (16%)	362 (24%)	157 (15%)	2211 (21%)
<b>Maternal Education</b>				
Missing	42 (2.1%)	46 (3.0%)	20 (1.9%)	360 (3.5%)
Less than High School	70 (3.5%)	90 (5.9%)	53 (5.0%)	461 (4.5%)
High school degree, GED or equivalent	178 (8.9%)	202 (13%)	128 (12%)	1176 (11%)
Some college and above <sup>1</sup>	1706 (85%)	1178 (78%)	851 (81%)	8352 (81%)
<b>Income</b>				
Missing	294 (15%)	242 (16%)	137 (13%)	2878 (28%)
<= \$ 30,000	248 (12%)	267 (18%)	178 (17%)	1520 (15%)
\$30,000 - \$49,999	228 (11%)	194 (13%)	138 (13%)	936 (9.0%)
\$50,000 - \$74,999	255 (13%)	212 (14%)	141 (13%)	1073 (10%)
\$75,000 or more	971 (49%)	601 (40%)	458 (44%)	3942 (38%)
<b>BMI Category</b>				
Underweight(<5 pct)	120 (6%)	91 (6.0%)	63 (6.0%)	557 (5.4%)
Healthy weight(5-85 pct)	1400 (70%)	1050 (69%)	736 (70%)	7161 (69%)
Overweight(85-95 pct)	244 (12%)	182 (12%)	123 (12%)	1329 (13%)
Obese(>=95 pct)	232 (12%)	193 (13%)	130 (12%)	1302 (13%)
BMI, mean (SD), Pre-Pandemic	17.051 ± 3.307	16.926 ± 2.995	16.700 ± 2.994	17.264 ± 3.586
BMI, mean (SD), During Pandemic	18.296 ± 4.676	N/A	18.169 ± 4.608	18.297 ± 4.672

©2022 American Academy of Pediatrics

## Prepublication Release

Change in BMI, Pre/During Pandemic	1.143 ± 2.790	N/A	1.465 ± 2.916	1.139 ± 2.788
BMI Ascertainment Method Pre-Pandemic				
Self-report	80 (2.6%)	<35	N/A	584 (4.2%)
Parent-report	113 (3.7%)	<5	N/A	232 (1.7%)
Medical record	423 (14%)	231 (15%)	N/A	2221 (16%)
Study Measure	2431 (80%)	1249 (82%)	1575 (100%)	10997 (78%)
BMI Ascertainment Method During-Pandemic				
Self-report	591 (28%)	N/A	N/A	593 (28%)
Parent-report	433 (20%)	N/A	N/A	434 (20%)
Medical record	27 (1.3%)	N/A	N/A	27 (1.3%)
Study Measure	1092 (51%)	N/A	1089 (100%)	1095 (51%)

<sup>1</sup> Children are included in the primary analytic sample if they had at least one BMI in both the pre-pandemic period (October 2017 through February 2020) and the pandemic-period (March 2020 through May 2021), which includes 1996 children with 5190 BMI measures.

<sup>2</sup> Children are included in the pre-pandemic trends sample if they had with at least one BMI measure in both the first and second half of the Pre-Pandemic periods (Pre-pandemic 1: October 2017 to May 2019, Pre-Pandemic 2: June 2019 to February 2020), which includes 1516 children with 3733 BMI measures.

<sup>3</sup> Children are included in the study measures sample if they were included in the primary analytic sample and BMI measures were study measured in both pre and post pandemic periods, which includes 1052 children with 2664 BMI measures.

<sup>4</sup> The comparison sample includes of 10,349 children from 51 cohorts that contributed at least one BMI measure before the pandemic (October 2017 through February 2020).

Supplement Table 2: Longitudinal Associations with Change in BMI from October 2017 – May 2021

	Primary Analytic Sample (n = 1996)	Pre-Pandemic Trends Sample (n = 1516)	Study Measure Sample (n = 1052)
<b>Year</b>	-0.04 (-0.15, 0.07)	0.07 (-0.26, 0.4)	-0.16 (-0.32, 0.01)
<b>Year x COVID Year</b>	0.24 (0.02, 0.45)	-	0.42 (0.1, 0.74)
<b>Year x Pre 1st/2nd</b>	-	-0.1 (-0.34, 0.14)	-
<b>Constant</b>	14.13 (13.42, 14.84)	13.61 (12.62, 14.6)	14.44 (13.59, 15.3)
<b>Age</b>	0.46 (0.4, 0.51)	0.37 (0.31, 0.42)	0.39 (0.32, 0.46)
<b>Gender, Male</b>	0.01 (-0.17, 0.19)	-0.13 (-0.31, 0.04)	0.1 (-0.14, 0.33)
<b>Race/Ethnicity</b>			
<b>NH White</b>	REF	REF	REF
<b>NH black</b>	0.55 (0.23, 0.88)	0.29 (-0.03, 0.61)	0.72 (0.32, 1.12)
<b>NH other</b>	0.15 (-0.13, 0.43)	0.03 (-0.25, 0.3)	0.1 (-0.27, 0.48)
<b>Hispanic</b>	0.13 (-0.16, 0.41)	0.06 (-0.2, 0.31)	0.34 (-0.04, 0.73)
<b>Income</b>			
<b>&lt;= 30,000</b>	REF	REF	REF
<b>30k-50k</b>	-0.26 (-0.65, 0.13)	-0.14 (-0.46, 0.18)	-0.04 (-0.47, 0.39)
<b>50k-75k</b>	-0.29 (-0.69, 0.11)	0.08 (-0.26, 0.42)	0.1 (-0.36, 0.57)
<b>\$75k or more</b>	-0.68 (-1.04, -0.32)	-0.34 (-0.63, -0.05)	-0.29 (-0.71, 0.13)
<b>Education</b>			
<b>Less than HS</b>	REF	REF	REF
<b>High school degree</b>	-0.74 (-1.33, -0.15)	0.05 (-0.39, 0.49)	-0.93 (-1.57, -0.29)
<b>Some college</b>	-0.69 (-1.22, -0.17)	0.14 (-0.26, 0.55)	-0.77 (-1.37, -0.18)
<b>COVID Year</b>	-0.61 (-1.54, 0.33)	-	-0.97 (-2.31, 0.36)
<b>Pre-Pandemic 1 vs pre-pandemic 2</b>	-	0.35 (-0.36, 1.06)	-
<b>BMI Measurement Type</b>			
<b>Study Measure</b>	REF	REF	-
<b>SR</b>	-0.24 (-0.49, 0)	0.19 (-0.48, 0.86)	-
<b>PR</b>	-0.28 (-0.57, 0.02)	-0.09 (-0.51, 0.34)	-
<b>MR</b>	1.26 (0.88, 1.64)	0.91 (0.59, 1.23)	-
<b>BMI Baseline Cat</b>			
<b>Under/Healthy</b>	REF	REF	REF
<b>Overweight</b>	2.87 (2.59, 3.16)	2.56 (2.28, 2.84)	2.9 (2.53, 3.28)
<b>Obese</b>	6.93 (6.64, 7.23)	6.14 (5.86, 6.42)	6.47 (6.09, 6.84)
<b>N Obs</b>	5190	3733	2664