Weight Trends Among Children and Adolescents within Central Indiana 2023 data addendum

> INDIANA UNIVERSITY INDIANAPOLIS FAIRBANKS SCHOOL OF PUBLIC HEALTH

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Executive Summary

This addendum provides updated data and analysis on obesity trends among children and adolescents in central Indiana, supplementing the full report issued in 2023. The updated data includes an additional 389.000 patient encounters, offering a more comprehensive longitudinal analysis. Key findings indicate a 6.4% overall increase in obesity prevalence from 2014 to 2023, with significant variations across demographics such as age, sex, race/ethnicity, and county of residence. The COVID-19 pandemic years (2020-2022) saw a sharp 5.3% increase in obesity rates, highlighting the impact of reduced physical activity and changes in dietary habits during this period. The youngest age group (2-5 years) exhibited the highest increase in obesity prevalence, with an 83% rise. Racial and ethnic disparities were evident, with Hispanic and African American children showing higher increases in obesity rates. County-level analysis revealed Marion County with the highest obesity rates, while Boone County males experienced the greatest increase. These findings underscore the need for targeted public health interventions and policies to address the multifaceted nature of obesity.

The 2024 addendum to the full report on obesity trends among children and adolescents in central Indiana presents updated data and insights, reflecting changes observed over the past year. This addendum incorporates an additional 389,000 patient encounters, enhancing the robustness of the longitudinal analysis. The updated findings reveal a continued increase in obesity prevalence, with notable demographic variations and significant impacts from the COVID-19 pandemic. This report aims to provide a deeper understanding of the evolving obesity trends and inform targeted public health strategies to mitigate this growing concern.

Results

The descriptive characteristics of the data that were analyzed, in table 1. below, giving frequencies and percentages by characteristics which included county of residence, age categories, and race/ ethnicity stratifying by sex. The total percent reflects the characteristic divided by the N and multiplied by 100.

Table 1. Descriptive Statistics N= 1,238,762 Encounters among children and adolescents in central Indiana

County	Female	Male	Total
Boone	21,916 (50.6%)	21,372 (49.4%)	43,288 (3.49%)
Hamilton	114,000 (51.2%)	108,659 (48.8%)	222,659 (17.97%)
Hancock	22,686 (50.3%)	22,412 (49.7%)	45,098 (3.64%)
Hendricks	43,497 (50.0%)	43,466 (50.0%)	86,963 (7.02%)
Johnson	38,585 (50.0%)	38,605 (50.0%)	77,190 (6.23%)
Marion	354,273 (50.7%)	344,340 (49.3%)	698,613 (56.40%)
Morgan	27,489 (50.3%)	27,110 (49.7%)	54,599 (4.41%)
Shelby	5,203 (50.3%)	5,149 (49.7%)	10,352 (0.84%)
Age Groups			
2-5 years	133,138 (47.3%)	148,556 (52.7%)	281,694 (22.74%)
6-11 years	194,728 (48.1%)	209,761 (51.9%)	404,489 (32.65%)
12-19 years	299,783 (54.3%)	252,796 (45.7%)	552,579 (44.61%)
Race/Ethnicity			
Asian	18,182 (49.8%)	18,352 (50.2%)	36,534 (2.95%)
Hispanic	92,030 (50.8%)	89,129 (49.2%)	181,159 (14.62%)
African American	122,145 (50.7%)	118,559 (49.3%)	240,704 (19.43%)
Caucasian	274,312 (50.5%)	268,472 (49.5%)	542,784 (43.82%)
Other/Unknown	120,980 (50.9%)	116,601 (49.1%)	237,581 (19.18%)
Total	627,649 (50.7%)	611,113 (49.3%)	1,238,762 (100.0%)

Obesity among children and adolescents in central Indiana has increased by 6.4% between 2014-2023 as seen in **figure 1** below. The largest increase occurred between 2020-2021 with a 5.3% increase. There are variations by sex as seen in **figure 2** (females) and **figure 3** (males).





Figure 2. Childhood Obesity Prevalence, Females, Central Indiana, 2014–2023







The overall increases in obesity can be seen in overall as well as stratified by gender between 2014-2023 in **table 2**. All obesity rates increased in central, Indiana.

Table 2 Absolute Change in Childhood Obesity Prevalence between 2014 and 2023 and by Sex,Central Indiana

Population	Change (percentage points)
Overall	6.4 🔶
Females	6.6 🔶
Males	6.2

Obesity increased between 2014-2023 by 41% with 20% of that increase occurring between 2020-2022, which covers the 3 years of the SARS-CoV-2 (COVID-19) pandemic and subsequent shutdowns, school closures, fewer medical follow-ups, and potential decreases in physical activity. These trends are similar when stratifying by sex and can be observed in **figure 4**. Between 2014-2023, obesity in males increased by 38% and among females there was a 44% increase.

Figure 4. Components of Relative Change in Childhood Obesity Prevalence between 2014 and 2023 by Sex, Central Indiana



When assessing the four different weight status categories (underweight, healthy weight, overweight, and obese), stratifying by sex and year, there are differences across the categories that can be explained by increases in weight among the population over time. As seen in **figure 5**, there is a decline in the healthy weight category, among females, beginning in 2020 with a corresponding increase in over and obese weight categories. Changes in the prevalence in the underweight categories are negligible.

Figure 5. Childhood Weight Status Prevalence, Females, Central Indiana, 2014–2023



Year	Underweight	Healthy Weight	Overweight	Obesity
2014	0.0	66.5	18.6	14.9
2015	0.3	67.5	18.3	13.9
2016	0.3	67.6	18.4	13.7
2017	0.5	63.8	19.5	16.2
2018	0.1	62.9	19.1	17.9
2019	0.3	64.8	17.6	17.3
2020	0.7	64.4	18.3	16.6
2021	0.0	59.5	19.0	21.5
2022	0.1	59.7	20.4	19.7
2023	3.1	58.2	17.2	21.5

Table 3. Childhood Weight Status Prevalence (%), Females, Central Indiana, 2014–2023

Percent changes in weight status prevalence among females by weight categories can be observed by percentages in **figure 6**, in which decreases among under and healthy weight categories can be explained by increases in overweight and obese weight categories. These changes in percentages are also categorized by the year range of 2014-2023 as well as the pandemic years of 2020-2022. Among females, from 2014 to 2023, there was a decrease of just over 12% of healthy weight and overweight by 7.5% and an increase in obesity (44.3%).

As seen in **table 4**, the absolute rate change among females, shows increases in two of the four categories, underweight and obese rates. Those in the "underweight" category, having an increase in their weight which may be perceived as a positive, however as long as they move into a "healthy" weight category.

Table 4. Absolute Change in Childhood Weight Status Prevalence between 2014 and 2023, Female	es,
Central Indiana.	

Weight Status	Change (percentage points)
Underweight	2.8 🔶
Healthy weight	-8.3 🔶
Overweight	-1.4 🔶
Obese	6.6 🔶

Figure 6. Components of Relative Change in Childhood Weight Status Prevalence between 2014 and 2023, Females, Central Indiana*



^{*}Note: the underweight category was deleted from this figure due to small values

Similarly, among males, declines in prevalence of underweight and healthy weight corresponds to increases in prevalence of overweight and obesity. These can be observed in **figure 7**. Among males, there was a 13% decrease in healthy weight males and a decrease in overweight (6.9%) and an increase in obese (38%) males between 2014-2023. Approximately 20% of the 39.3% increase in obesity among males occurred between 2020-2022 as seen in **figure 8**.

Figure 7. Childhood Weight Status Prevalence, Males, Central Indiana, 2014–2023



Table 5. shows the absolute rate change among males stratified by the four weight categories. As in the overall stratification, the unhealthy and obese show increases while the healthy and overweight show a decrease. These decreases can be interpreted as individuals moving into a different weight category. For example, a "healthy" weight male may move into either underweight, overweight, or even obese category.

Table 5. Absolute Change in Childhood Weight Status Prevalence between 2014 and 2023, Males,Central Indiana

Weight Status	Change (percentage points)	
Underweight	3.5 🔶	
Healthy weight	-8.7 🔶	
Overweight	-1.1 🔶	
Obese	6.2 🔶	

Year	Underweight	Healthy Weight	Overweight	Obesity
2014	0.7	67.0	16.0	16.3
2015	1.2	67.5	15.8	15.4
2016	1.2	68.2	15.7	15.0
2017	1.5	64.2	16.3	18.0
2018	0.9	63.2	16.5	19.4
2019	1.2	64.6	15.3	19.0
2020	1.6	63.7	16.0	18.7
2021	0.5	58.6	16.6	24.4
2022	0.8	59.6	17.0	22.7
2023	4.2	58.3	14.9	22.5

Figure 8. Components of Relative Change in Childhood Weight Status Prevalence between 2014 and 2023, Males, Central Indiana*



*Note: the underweight category was deleted from this figure due to small values

Obesity prevalence increases over time between 2014-2023 among all age groups. The largest increases occurred among those between the ages of 2-5 years. Some of these increases can be explained by normal growth patterns, however the figures below focus on those individuals classified as obese. Increases as seen in **figure 9** focus on those individuals by the differing age categories. Among those 2-5 years of age, there was more than an 83% increase in obesity from 2014-2023, of which 61% occurred between 2020-2022. Smaller increases were seen among the other age categories as seen in **figure 10**.





Table 7. is the absolute rate difference among all children and adolescents in the sample between 2014 to 2023 stratifying by the three different age categories. All three categories saw an increase by an average of 6.0 percent.

Table 7. Absolute Change in Childhood Obesity Prevalence between 2014 and 2023 by Age Group,Central Indiana

Population	Change (percentage points)	
2-5 years old	6.6 🔶	
6–11 years old	5.9 🔶	
12–19 years old	5.5 🔶	

Table 8. Childhood Obesity Prevalence by Age Group, Central Indiana, 2014–2023

Year	2-5 years	6-11 years	12-19 years
2014	7.9	16.9	19.4
2015	4.7	16.1	19.4
2016	4.3	15.7	19.3
2017	8.5	19.8	19.5
2018	7.7	20.0	23.0
2019	8.9	21.8	20.5
2020	9.0	22.8	18.4
2021	13.7	25.8	24.9
2022	15.0	23.0	22.5
2023	14.5	22.8	24.9

Figure 10. Components of Relative Change in Childhood Obesity Prevalence between 2014 and 2023 by Age Group, Central Indiana



Similar increases among the different age groups were observed when stratifying by sex as seen in **figure 11**. Among the 2–5-year-old female population, there was an 74% increase in obesity from 2014-2023 with approximately 47% occurring between 2020-2022. Smaller increases were seen in the 6-11 age group which increased 34% and among 12–19-year old's, there was a more than a 38% increase between 2014-2023 as seen in **figure 12**.



Figure 11. Childhood Obesity Prevalence by Age Group, Females, Central Indiana, 2014–2023

In **Table 9**, the absolute rate difference among female children and adolescents between 2014-2023 shows increases in all three weight categories, with an average increase in females of 6.03%.

Table 9. Absolute Change in Childhood Obesity Prevalence between 2014 and 2023 by Age Group,Females, Central Indiana

Population	Change (percentage points)
2-5 years old	5.7 🔶
6-11 years old	5.6 🔶
12-19 years old	6.8 🔶

Table 10. Childhood Obesity Prevalence by Age Group, Females, Central Indiana, 2014–2023

Year	2-5 years	6-11 years	12-19 years
2014	7.7	16.5	17.7
2015	4.7	15.2	17.7
2016	3.9	14.8	18.0
2017	8.4	18.6	17.9
2018	8.0	18.9	21.3
2019	8.3	20.4	19.5
2020	9.1	21.6	16.8
2021	13.4	24.4	22.7
2022	14.6	21.2	20.6
2023	13.4	22.0	24.5

Figure 12. Components of Relative Change in Childhood Obesity Prevalence between 2014 and 2023 by Age Group, Females, Central Indiana



Among males, from 2014-2023, there was 95% increase in obesity prevalence among those aged 2-5 years, of which approximately 74% occurred between 2020-2022. Among the 6–11-year old's there was a 35.8% increase and among 12–19-year old's saw a 18.8% increase as seen in **figures 13 and 14**.

Figure 13. Childhood Obesity Prevalence by Age Group, Males, Central Indiana, 2014–2023



When calculating the absolute rate difference among male children and adolescents between 2014-2023, in **Table 11**. there were increases in all three age categories, and an overall average among males of 5.93%. It should be noted that among 2-5 year old males showed the largest increase of 7.6%.

Table 11. Absolute Change in Childhood Obesity Prevalence between 2014 and 2023 by Age Group,Males, Central Indiana

Population	Change (percentage points)
2-5 years old	7.6 🔶
6-11 years old	6.2 🔶
12-19 years old	4.0 🔶

Table 12. Childhood Obesity Prevalence by Age Group, Males, Central Indiana, 2014–2023

Year	2-5 years	6-11 years	12-19 years
2014	8.0	17.3	21.3
2015	4.7	16.9	21.3
2016	4.6	16.5	20.9
2017	8.5	20.9	21.4
2018	7.4	20.9	25.2
2019	9.4	23.0	21.8
2020	9.0	24.0	20.5
2021	14.2	27.2	27.6
2022	15.7	24.6	24.8
2023	15.6	23.5	25.3

Figure 14. Components of Relative Change in Childhood Obesity Prevalence between 2014 and 2023 by Age Group, Males, Central Indiana



Race and ethnicity are predictors for weight status trends among the population and our results are parallel to U.S. trends in the population. In **figure 15**, obesity is trending upward in all races/ethnicities. The largest increase occurred in Hispanic and African American populations. These increases resulted in an overall 46% and 43% increase respectively in those population as seen in **figure 16**.

Figure 15. Childhood Obesity Prevalence by Race/Ethnicity, Central Indiana, 2014–2023



The absolute percent change in obesity can be seen in **table 13** stratifying by Race/ Ethnicity in central Indiana. The largest percent increases occurred in the Hispanic and African American populations; 8.2 and 7.8% respectively. In **table 14**, obesity prevalence rates are stratified by year and race/ethnicity.

Table 13. Absolute Change in Childhood Obesity Prevalence between 2014 and 2023 by Race/Ethnicity, Central Indiana

Population	Change (percentage points)
Asian	2.4 🔶
Hispanic	7.2 🔶
African American	8.0 🔶
White	5.9 🔶
Other/Unknown	5.8 🔶

 Table 14. Childhood Obesity Prevalence by Race/Ethnicity, Central Indiana, 2014–2023

Year	Asian	Hispanic	African American	White	Other/ Unknown
2014	10.4	23.6	18.0	13.7	14.1
2015	11.1	22.6	17.2	12.9	13.2
2016	10.9	23.0	17.1	12.8	12.4
2017	12.8	25.3	18.2	13.7	15.4
2018	12.7	28.1	20.5	15.0	16.3
2019	12.6	28.0	20.2	14.6	15.5
2020	12.3	28.9	20.3	13.8	15.8
2021	15.7	35.3	26.9	17.8	20.0
2022	16.5	30.5	23.7	16.5	18.9
2023	15.2	31.8	25.8	19.2	19.2





In **figures 17 and 18**, among females, we observed that those that identify as Hispanic have the highest rates of obesity between 2014-2023 with a 33.5% increase in that time period. This is followed by African American females with more than a 24.2% increase in the same time period. Females that identify as White had the highest increase in obesity rates with a more than 46.1% increase between 2014-2023.

Figure 17. Childhood Obesity Prevalence by Race/Ethnicity, Females, Central Indiana, 2014–2023



As seen in **table 15**, the absolute rate difference increased among in all races/ ethnicities among females between 2014-2023. The overall average increase among females stratifying by race/ethnicity was 5.86 % with African American female children and adolescents experiencing the largest percent increase (8.0%).

Table 15. Absolute Change in Childhood Obesity Prevalence between 2014 and 2023 by Race/Ethnicity, Females, Central Indiana

Population	Change (percentage points)
Asian	2.4 🔶
Hispanic	7.2 🔶
African American	8.0 🔶
White	5.9 🔶
Other/Unknown	5.8 🔶

Table 16. Childhood Obesity Prevalence (%) by Race/Ethnicity, Females, Central Indiana,2014–2023

Year	Asian	Hispanic	African American	White	Other/ Unknown
2014	9.9	21.5	19.1	12.8	13.1
2015	9.9	19.9	18.7	12.1	12.0
2016	9.9	20.4	18.1	12.0	11.7
2017	9.8	22.2	19.4	12.6	14.8
2018	9.7	25.0	22.3	14.1	15.6
2019	9.4	24.4	22.0	13.7	15.0
2020	9.6	25.1	21.3	12.9	15.1
2021	12.6	31.1	28.2	16.4	18.4
2022	13.6	26.8	24.3	15.1	17.2
2023	12.3	28.7	27.1	18.7	18.9





Among the male population, again obesity prevalence is highest among those that identify as Hispanic as seen in figures 19 and 20. Hispanic males experienced a 36.2% increase in obesity prevalence between 2014-2023. However, those that identify as Asian had the greatest increase in obesity between 2014-2023 of approximately 63.3%.

Figure 19. Childhood Obesity Prevalence by Race/Ethnicity, Males, Central Indiana, 2014–2023



Table 17. Absolute Change in Childhood Obesity Prevalence between 2014 and 2023 by Race/Ethnicity, Males, Central Indiana

Population	Change (percentage points)
Asian	6.9 🔶
Hispanic	9.3 🔶
African American	7.4 🔶
White	5.3 🔶
Other/Unknown	4.3 🔶

Table 18. Childhood Obesity Prevalence (%) by Race/Ethnicity, Males, Central Indiana, 2014–2023.

Year	Asian	Hispanic	African American	White	Other/ Unknown
2014	10.9	25.7	16.9	14.5	15.1
2015	12.5	25.2	15.6	13.8	14.4
2016	12.0	25.5	16.1	13.6	13.1
2017	15.8	28.3	16.9 14.8		16.0
2018	15.9	31.4	18.7	15.9	17.0
2019	15.9	31.9	18.4	15.4	16.0
2020	15.0	33.0	19.1	14.8	16.5
2021	18.9	39.9	25.5	19.2	21.7
2022	19.0	34.3	23.1	17.9	20.6
2023	17.8	35.0	24.3	19.8	19.4



Figure 20. Components of Relative Change in Childhood Obesity Prevalence between 2014 and 2013 by Race/Ethnicity, Males, Central Indiana

When stratifying by primary county of residence, there is an overall upward trend, and the effects of the pandemic are evident as seen in **figure 21**. Marion, Morgan, and Shelby counties experienced the highest overall increases within central Indiana. In **figure 22** the relative change increased the most in Boone County by nearly 77% of which nearly 28% occurred during the pandemic.

Figure 21. Childhood Obesity Prevalence by County, Central Indiana, 2014-2023



There were increases in the absolute percent change in the all the counties assessed as seen in **table 19**. Shelby county had the highest percentage increase with 7.5% between 2014 and 2023, followed by Marion and Morgan counties. Johnson county experienced the lowest increase with 4.8% between 2014 and 2023.

Table 19. Absolute Change in Childhood Obesity Prevalence between 2014 and 2023 by County,Central Indiana

Population	Change (percentage points)
Boone	6.6 🔶
Hamilton	6.0 🔶
Hancock	4.9 🔶
Hendricks	5.0 🔶
Johnson	4.8 🔶
Marion	7.3
Morgan	7.3 🔶
Shelby	7.5 🔶

Year	Boone	Hamilton	Hancock	Hendricks	Johnson	Marion	Morgan	Shelby
2014	8.6	9.8	14.1	15.3	14.1	17.9	15.6	16.9
2015	8.1	9.3	13.7	13.7	13.5	16.8	16.7	14.1
2016	9.4	9.1	12.7	13.5	13.2	16.7	16.3	15.0
2017	8.8	10.1	15.7	14.5	14.6	19.7	17.0	15.3
2018	10.5	11.3	16.5	16.1	16.6	22.0	20.0	18.9
2019	9.8	11.4	16.4	15.6	16.0	21.8	19.6	20.4
2020	8.6	10.8	16.0	15.2	15.9	21.7	18.0	22.7
2021	11.7	13.8	20.3	20.0	20.9	27.9	23.5	23.0
2022	11.0	12.6	17.1	18.1	17.9	24.6	20.4	22.2
2023	15.2	15.8	19.0	20.3	18.9	25.2	22.9	24.4

Table 20. Childhood Obesity Prevalence by County, Central Indiana, 2014–2023

Figure 22. Components of Relative Change in Childhood Obesity Prevalence between 2014 and 2023 by County, Central Indiana



When assessing obesity prevalence by sex and county of residence, the anticipated increases are evident and can be observed in **figures 23 and 24**. Among females, Marion County has the highest obesity prevalence and experienced a greater than 40.9% increase in rates between 2014-2023, of which more than 19% occurred between 2020- 2022.





When stratifying the female population by county of residence, table 21. shows increases in all 8 counties, with an overall increase in central Indiana female children and adolescents being 6.6%. Morgan county females experienced the largest increase (8.0%) during that time period.

Table 21. Absolute Change in Childhood Obesity Prevalence between 2014 and 2023 by County,Females, Central Indiana

Population	Change (percentage points)
Boone	6.6
Hamilton	6.7
Hancock	5.2 🔶
Hendricks	4.8
Johnson	6.2
Marion	7.2
Morgan	8.0
Shelby	6.0

Year	Boone	Hamilton	Hancock	Hendricks	Johnson	Marion	Morgan	Shelby
2014	8.0	8.5	13.3	14.2	12.0	17.6	13.7	17.0
2015	6.5	7.9	12.4	13.0	12.0	16.4	15.7	15.1
2016	7.5	7.7	11.5	12.6	11.6	16.5	16.2	14.0
2017	7.8	8.4	13.6	13.1	12.6	19.1	15.6	14.2
2018	9.2	9.7	16.6	15.7	16.1	21.6	19.4	17.5
2019	8.7	9.9	15.0	14.3	15.4	21.2	19.9	21.0
2020	7.7	9.7	15.7	14.5	13.8	20.7	17.7	21.7
2021	11.1	12.3	19.6	18.8	18.7	26.6	21.9	20.0
2022	10.3	10.5	16.3	16.6	16.7	23.1	19.7	18.3
2023	14.6	15.2	18.5	19.0	18.2	24.8	21.7	23.0

Table 22: Childhood Obesity Prevalence (%) by County, Females, Central Indiana, 2014–2023

Figure 24. Components of Relative Change in Childhood Obesity Prevalence between 2014 and 2023 by County, Females, Central Indiana



When assessing the male population by county of residence, Marion and Shelby County males typically have the highest rates of obesity between 2014-2023 as seen in **figure 25**. Marion County male obesity prevalence increased by more than 40% between 2014-2023, with more than 11% occurring between 2020-2022, which can be seen in **figure 26**. Boone County males experienced the greatest increase during the data period (72.8%). The males experienced an increase of more than 67.4% during the pandemic years (2020-2022).



Figure 25. Childhood Obesity Prevalence by County, Males, Central Indiana, 2014–2023

In **table 23**, when stratifying by county of residence, there was an overall increase of 6.6% among male children and adolescents in central Indiana between 2014-2023. The largest increase occurred in Shelby County Indiana during that time.

Table 23. Absolute Change in Childhood Obesity Prevalence between 2014 and 2023 by County,Males, Central Indiana

Population	Change (percentage points)
Boone	6.7 🔶
Hamilton	5.2 🔶
Hancock	4.4
Hendricks	5.0 🔶
Johnson	3.1 🔶
Marion	7.3 🔶
Morgan	6.8 🔶
Shelby	9.0 🔶

Year	Boone	Hamilton	Hancock	Hendricks	Johnson	Marion	Morgan	Shelby
2014	9.2	11.2	15.0	16.5	16.4	18.2	17.4	16.8
2015	9.9	10.6	15.0	14.4	14.9	17.3	17.6	13.1
2016	11.2	10.5	13.9	14.4	14.9	16.9	16.4	16.0
2017	9.9	11.7	17.7	15.9	16.5	20.2	18.4	16.4
2018	11.9	13.1	16.4	16.5	17.1	22.5	20.5	20.3
2019	11.0	13.1	17.8	16.8	16.7	22.3	19.2	19.7
2020	9.5	12.0	16.2	16.0	18.0	22.8	18.3	23.6
2021	12.4	15.4	21.0	21.2	23.0	29.3	25.2	26.3
2022	11.7	14.6	17.8	19.6	19.1	26.2	21.1	26.0
2023	15.9	16.4	19.4	21.5	19.5	25.5	24.2	25.8

Table 24. Childhood Obesity Prevalence (%) by County, Males, Central Indiana, 2014–2023

Figure 26. Components of Relative Change in Childhood Obesity Prevalence between 2014 and 2023 by County, Males, Central Indiana



Discussion

Based on the report issued in 2023, there were nominal changes in the overall obesity trends among children and adolescents in central Indiana. The decline experienced by most in 2023 has leveled or increased slightly, indicating that the rapid increases seen during the pandemic aren't declining any longer and are either leveling off or increasing. The number of patient encounters between the 2023 and this addendum also increased, as expected by more than 389,000, which provides more longitudinal data for analysis and is responsible for changes in trends from the 2023 report.

The analysis of obesity trends among children and adolescents in central Indiana from 2014 to 2023 reveals several significant findings. The overall prevalence of obesity has increased by 6.4% over this period, with notable variations across different demographics such as age, sex, race/ethnicity, and county of residence.

Impact of the COVID-19 Pandemic

One of the most striking observations is the sharp increase in obesity rates during the COVID-19 pandemic years (2020-2022). This period saw a 5.3% increase in obesity prevalence, accounting for a substantial portion of the overall rise. The pandemic likely contributed to this trend through factors such as reduced physical activity due to lockdowns, school closures, and limited access to recreational facilities, as well as changes in dietary habits.

Gender Differences

The data indicates a slight difference in obesity trends between males and females. Females experienced a 6.6% increase in obesity rates, while males saw a 6.2% increase. This suggests that while both genders were affected, the impact was marginally higher among females. The reasons for this disparity could be multifaceted, including differences in physical activity levels, dietary patterns, and social factors.

Age Group Analysis

When stratified by age, the youngest age group (2-5 years) exhibited the highest increase in obesity prevalence, with an 83% rise from 2014 to 2023. This age group also showed the most significant increase during the pandemic years, highlighting the vulnerability of younger children to rapid changes in lifestyle and environment. The 6-11 and 12-19 age groups also saw increases, though to a lesser extent, indicating that obesity is a growing concern across all childhood and adolescent stages.

Racial and Ethnic Disparities

The report highlights significant racial and ethnic disparities in obesity trends. Hispanic and African American children and adolescents showed higher increases in obesity rates compared to their white and Asian counterparts. For instance, Hispanic males experienced a 36.2% increase in obesity prevalence, while Asian males saw the highest relative increase of 63.3%. These disparities underscore the need for targeted public health interventions that address the specific needs and challenges faced by different racial and ethnic groups.

County-Level Variations

Obesity prevalence also varied significantly by county. Marion County consistently showed the highest obesity rates among both males and females, with increases of over 40% from 2014 to 2023. Boone County males experienced the greatest increase during the data period, with a 72.8% rise. These countylevel variations suggest that local environmental and socioeconomic factors play a crucial role in influencing obesity trends.

Strengths and Limitations:

The use of actual anthropometric measures rather than self-reported data enhances the accuracy of the findings. The large sample size and longitudinal nature of the data provide robust insights into trends over time. The study is limited to individuals who engage with the medical community, potentially excluding those who do not seek medical care. The observational nature of the study means causality cannot be definitively established.

The findings from this report highlight the growing concern of obesity among children and adolescents in central Indiana, exacerbated by the COVID-19 pandemic. The data underscores the need for comprehensive public health strategies that address the multifaceted nature of obesity, including promoting physical activity, improving dietary habits, and addressing socioeconomic and environmental factors. Targeted interventions are particularly crucial for the most affected groups, including younger children, females, and certain racial and ethnic communities. Based on the findings from the report on obesity trends among children and adolescents in central Indiana, several policy recommendations can be made to address the rising prevalence of obesity and its associated health risks:

Policy Recommendations

Enhanced Physical Activity Programs

Schools: Implement and expand physical education programs in schools, ensuring that all students have access to daily physical activity. Encourage active play and sports participation.

Community Centers: Develop communitybased programs that provide safe and accessible spaces for physical activities, such as parks, recreational centers, and sports facilities.

Nutrition Education and Access

School Nutrition Programs: Improve the nutritional quality of school meals by incorporating more fruits, vegetables, whole grains, and lean proteins. Limit the availability of sugary drinks and highcalorie snacks.

Public Awareness Campaigns: Launch educational campaigns to raise awareness about healthy eating habits, focusing on the importance of balanced diets and the risks associated with obesity.

Healthcare Interventions

Regular Screenings: Encourage healthcare providers to conduct regular screenings for obesity and related health conditions during routine check-ups for children and adolescents. Counseling and Support: Provide resources for healthcare professionals to offer counseling and support to families on healthy lifestyle choices, including diet and physical activity.

Targeted Interventions for High-Risk Groups

Racial and Ethnic Minorities: Develop culturally tailored interventions to address the specific needs of racial and ethnic minority groups that are disproportionately affected by obesity.

Low-Income Families: Increase access to affordable healthy foods and physical activity opportunities for low-income families through subsidies, food assistance programs, and community initiatives.

Policy and Environmental Changes

Urban Planning: Promote urban planning policies that create walkable communities with safe sidewalks, bike lanes, and parks to encourage physical activity.

Food Environment: Regulate the marketing of unhealthy foods and beverages to children and adolescents. Encourage the availability of healthy food options in schools, workplaces, and public spaces.

Monitoring and Evaluation

Data Collection: Establish systems for ongoing monitoring and evaluation of obesity trends and the effectiveness of interventions. Use this data to inform policy adjustments and improvements. Research Funding: Increase funding for research on obesity prevention and treatment, focusing on identifying effective strategies and understanding the underlying causes of obesity.

Conclusion

Addressing the obesity epidemic among children and adolescents in central Indiana requires a multifaceted approach that includes enhancing physical activity, improving nutrition, providing healthcare support, targeting highrisk groups, implementing policy and environmental changes, and ensuring continuous monitoring and evaluation. By adopting these policy recommendations, stakeholders can work together to create a healthier environment and reduce the prevalence of obesity in this population.