ISSN: 3049-8074

Research Article

Journal of Clinical Medicine & Health Care

County-Level Adult Obesity Disparities in Illinois and Indiana: A Comparative Analysis of Prevalence, Patterns, And Physical Inactivity (2025)

Prince Kwaku Asamoah[1] and Theophilus Junior Yankey[2]

[1]Master of Arts in Community & Economic Development, Master of Science in Applied Statistics & Decision Analytics, Bachelor of Science in Business Administration (Accounting), Researcher, Data Analyst, Development Economist, and Auditor, USA

[2]Master of Public Health; Bachelor of Science in Physician Assistant Studies, Researcher, Data Analyst, Emergency Medical Technician, and Community Health Worker, USA

***Corresponding author**

Theophilus Junior Yankey, Master of Public Health; Bachelor of Science in Physician Assistant Studies, Researcher, Data Analyst, Emergency Medical Technician, and Community Health Worker, USA.

Received: July 17, 2025; **Accepted:** July 24, 2025; **Published:** August 01, 2025

ABSTRACT

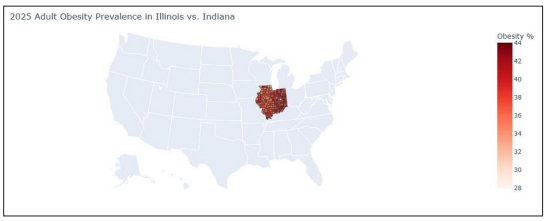
Adult obesity remains a pressing public health concern in both Illinois and Indiana. This research brief compares county-level obesity prevalence across both states and explores the role of physical inactivity as a key predictor. Findings reveal that Indiana counties exhibit a higher average obesity rate (39.1%) compared to Illinois (37.1%). A strong positive correlation exists between physical inactivity and adult obesity (r = 0.77 overall), underscoring the need for targeted, county-level interventions. Geographic analysis highlights specific high-outlier counties where focused policy actions could yield significant public health benefits.

Keywords: Adult Obesity, Physical Inactivity, County-Level Analysis, Illinois, Indiana, Public Health Disparities

Introduction

The prevalence of adult obesity poses significant challenges for public health systems, economies, and communities. Given its well-documented association with chronic diseases, reducing obesity remains a priority at state and local levels. This research brief aims to compare obesity prevalence in Illinois and Indiana at the county level, identify geographic disparities, and quantify the relationship between obesity and physical inactivity. The objective is to generate actionable insights for public health policymakers and community stakeholders.

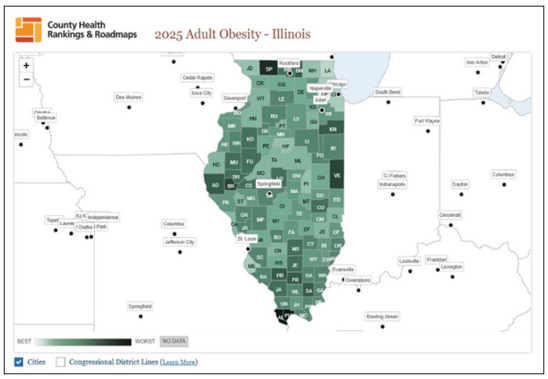
In 2025, Illinois counties reported an average adult obesity rate of 37.1%, with prevalence ranging from 29% to 43%. Southern counties exhibit higher obesity levels, contributing to Illinois ranking 24th highest in the nation for adult obesity prevalence. Targeted interventions are especially critical in high-burden counties such as Alexander and Pulaski, where obesity rates exceed 43%.

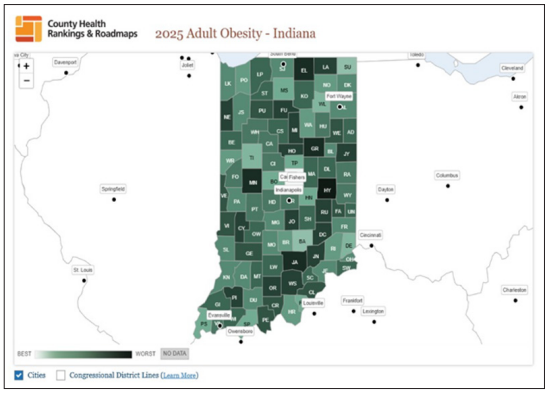


*County-level adult obesity rates in Illinois and Indiana (2025); map created by Prince Kwaku Asamoah using Jupyter Python.

In 2025, Indiana counties reported an average adult obesity rate of 39.1%, ranging from 28% to 44%. Several central and southern counties display elevated obesity levels, positioning Indiana among the top 20 states nationwide for adult obesity prevalence. Counties like Henry, Grant, and Elkhart stand out as highpriority areas for focused intervention.

Citation: Rohina Aggarwal, Chhabi Kothari, Sumesh Chaudhery, Kunur Shah. Case Report on an Unusual Presentation of a Corpus Luteum Hematoma. J Clin Med Health Care. 2025. 2(3): 1-3. DOI: doi.org/10.61440/JCMHC.2025.v2.31





Methodology

Data were sourced from the 2025 County Health Rankings and Altas of Rural and Small-Town America data from the U.S Department of Agriculture (USDA) for both Illinois and Indiana. Variables included adult obesity prevalence (%) and physical inactivity (%). Analytical techniques comprised descriptive statistics, outlier detection, spatial mapping, Pearson correlation analysis, and simple linear regression modeling. The econometric model used is:

$$Obesity\_Rate_i = \alpha + \beta \times Physical\_Inactivity_i + \varepsilon_i$$

where β represents the change in obesity percentage associated with a one-percentage-point change in physical inactivity.

Results and Exhibits

Obesity Overview:

Table 1: Summary Table (Mean, Median, Min, Max, SD) State.

	count	mean	median	min	max	std
State						
IL	103	37.13	37.0	29.0	43.0	2.19
IN	93	39.14	39.0	28.0	44.0	2.54

In 2025, county-level analysis revealed that adult obesity prevalence varied notably across both Illinois and Indiana. As shown in table 1, the mean obesity rate in Indiana counties was 39.1%, which is approximately 2 percentage points higher than the average in Illinois counties (37.1%). The median values mirror this pattern, with Indiana at 39% and Illinois at 37%, indicating that the higher prevalence in Indiana is consistent across the distribution, not driven by extreme values alone. Both states exhibited wide ranges in obesity rates: from a low of 28% to a high of 44% in Indiana, and from 29% to 43% in Illinois. The standard deviation was slightly higher in Indiana (2.54) than Illinois (2.19), suggesting greater variability in obesity levels across Indiana counties.

Outlier Counties:

Table 2: Table of high-obesity counties in both states.

Illinois High Outliers:

	County	Obesity_Percent
2	Alexander	43.0
5	Brown	41.0
77	Pulaski	43.0
89	Stephenson	42.0
92	Vermilion	41.0

Indiana High Outliers:

	County	Obesity_Percent
20	Elkhart	43.0
27	Grant	43.0
33	Henry	44.0
36	Jackson	43.0
54	Montgomery	43.0

The analysis in table 2 identified several counties in both Illinois and Indiana with notably high adult obesity rates, classifying them as statistical outliers warranting priority for intervention.

In Illinois, five counties emerged as high-obesity outliers: Alexander and Pulaski counties each recorded the highest rate of 43%, followed by Stephenson at 42%, and both Brown and Vermilion counties at 41%. These counties are predominantly rural, with limited access to healthcare and recreational infrastructure—factors commonly linked to elevated obesity prevalence.

In Indiana, five counties also stood out with obesity rates at or above 43%. Henry County reported the highest prevalence at 44%, while Elkhart, Grant, Jackson, and Montgomery counties each recorded obesity rates of 43%. The presence of these high-outlier counties highlights the unequal distribution of obesity within states and underscores the need for tailored, localized public health strategies. Interventions in these areas could include enhancing access to physical activity opportunities, improving nutritional environments, and addressing broader socioeconomic determinants of health.

Boxplot Distribution of IL vs. IN Counties:

The boxplot in Exhibit 1 illustrates the distribution of county-level adult obesity rates in Illinois and Indiana. Indiana not only exhibits a higher median obesity rate but also displays greater variability in obesity levels across counties, as evidenced by the wider interquartile range and the presence of higher outliers. In contrast, Illinois counties show a tighter clustering of obesity rates around the median.

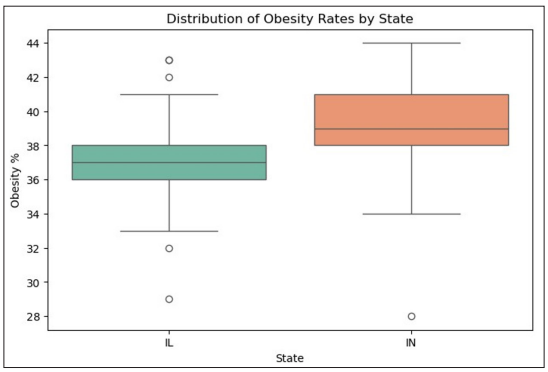


Exhibit 1: Distribution of obesity rate: IL vs. IN

Physical Inactivity as a Key Predictor of Adult Obesity

In this section of the research brief, we examine physical inactivity as a key predictor variable to better understand how reduced levels of physical activity contribute to adult obesity rates across counties in both Illinois and Indiana. By quantifying this relationship, we aim to move beyond descriptive statistics and provide insight into one of the behavioral drivers of the observed obesity patterns. To achieve this, we applied both correlation analysis and simple linear regression modeling to assess the strength and direction of the association between county-level physical inactivity and obesity prevalence.

Table 3: Correlation Coefficients Between Obesity & Physical Inactivity as A Predictor Variable.

Correlation coefficients:	
Overall:	r = 0.77
Illinois:	r = 0.78
Indiana:	r = 0.69

The analysis revealed a strong positive correlation between physical inactivity and adult obesity in both states, indicating that counties with higher levels of physical inactivity consistently experience higher obesity rates. Specifically, the correlation coefficient (Pearson's r) was calculated at 0.77 overall, with Illinois counties showing a slightly stronger association (r = 0.78) compared to Indiana (r = 0.69). These findings emphasize that increasing physical activity within communities could serve as a strategic lever for reducing obesity rates, particularly in high-burden counties identified earlier in this analysis.

To further explore the role of physical inactivity in shaping adult obesity prevalence, I extracted and analyzed county-level data for both Illinois and Indiana. The table below summarizes the key variables used in this analysis: adult obesity percentage, physical inactivity percentage, and state designation for each county.

Table 4: Illinois and Indiana Counties with High Physical Inactivity Percentage.

Extraction of Physical Inactivity Data: IL vs. IN				
	County	Obesity_Percent	Physical_Inactivity	State
0	FIPS	% Adults with Obesity	% Physically Inactive	Illinois
1	17000	33	22.1	Illinois
2	17001	39.5	22.5	Illinois
3	17003	43	30.9	Illinois
4	17005	37.6	27.3	Illinois
. .	. . .	. . .	. . .	. . .
193	18175	41.7	28.9	Indiana
194	18177	39.4	31.3	Indiana
195	18179	40.7	28.8	Indiana
196	18181	39.3	28.7	Indiana
197	18183	34.6	25.9	Indiana

[198 rows x 4 columns]

The dataset consists of 198 county observations across both states. This extract highlights the variation in physical inactivity levels alongside corresponding obesity rates, which formed the basis of the correlation and regression analyses detailed in this section. The inclusion of both high-obesity counties and lower-obesity counties ensures that the predictive relationship is grounded in a diverse range of county profiles. The full extract of the data can be found in Appendix A on the last page.

** Scatterplot created by Prince Kwaku Asamoah using Jupyter python.

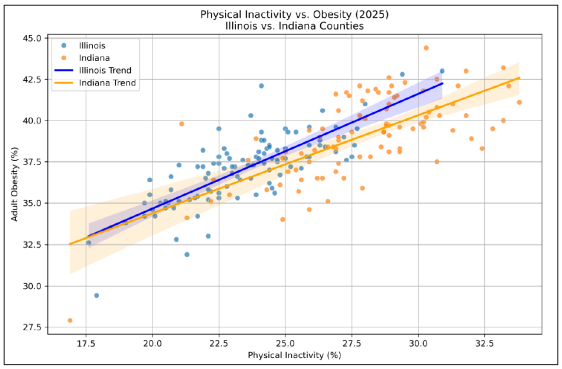


Exhibit 2: Relationship Between Physical Inactivity and Adult Obesity (2025)

The scatterplot presented in **Exhibit 2** illustrates the relationship between physical inactivity and adult obesity prevalence across counties in Illinois and Indiana. Each point represents a county, with separate regression trendlines plotted for both states. The analysis reveals **a strong positive linear relationship:** as the percentage of physically inactive adults in a county increase, the corresponding adult obesity rate also tends to rise.

The overall **correlation coefficient (r = 0.77)** indicates a robust association between these two variables. When examined separately, the strength of the relationship remains high in both **Illinois (r = 0.78) and Indiana (r = 0.69)**, though slightly stronger in Illinois. These results highlight physical inactivity as a **powerful behavioral predictor of obesity** at the county level.

Notably, a few **outlier counties** deviate from this general trend:

- In **Illinois**, counties such as **Pulaski** and **Alexander** exhibit **exceptionally high obesity rates (43%)**, aligning with higher-than-average inactivity levels.
- In **Indiana, Henry** County stands out with the highest obesity rate **(44%)**, while counties like **Elkhart** and **Grant** also display obesity rates exceeding **43%**, consistent with elevated physical inactivity.

These outlier counties represent critical intervention points where targeted policies aimed at increasing physical activity could yield measurable reductions in obesity prevalence. The consistent upward pattern across both states further underscores the need for community-based initiatives that promote active lifestyles, particularly in counties identified as high-risk through this analysis.

Discussion & Policy Implications

The findings highlight the need for county-level, data-driven interventions to combat the rising prevalence of adult obesity in both Illinois and Indiana. The strong positive association between physical inactivity and obesity suggests that increasing physical activity within communities could significantly reduce obesity rates, particularly in counties identified as high-risk through this analysis.

Policymakers should consider integrating programs that expand access to recreational facilities, community health education, and support for behavior change initiatives. In addition, incorporating socioeconomic factors such as income, education, and rurality into future analyses can further refine intervention strategies to ensure they are equitable and targeted.

Beyond traditional policy actions, this brief recommends exploring community-led social engagement strategies to foster a culture of physical activity. For example, local organizations, schools, workplaces, and even groups of friends could implement exercise leaderboard challenges using existing platforms such as Apple Health or other fitness tracking apps. These challenges could track, and reward points based on steps taken, active minutes, or calories burned, encouraging friendly competition and consistent engagement in physical activity.

To amplify the impact of such initiatives, it is also recommended that technology companies, particularly those with existing health and fitness ecosystems like Apple, Fitbit, or Garmin, develop systems that allow accumulated exercise points from group challenges to be converted into tangible rewards. This could include cashback on purchases, gift cards, or discounts on wellness-related products or services. By aligning financial incentives with health behavior change, tech companies could play a transformative role in shaping healthier communities while simultaneously driving engagement with their platforms.

References

1. Prince Kwaku Asamoah, Master of Arts in Community & Economic Development (USA); Master of Science in Applied Statistics & Decision Analytics (USA); Bachelor of Science in Business Administration (Accounting). Researcher, Data Analyst, Development Economist, and Auditor.
2. Theophilus Junior Yankey, Master of Public Health; Bachelor of Science in Physician Assistant Studies. Researcher, Data Analyst, Emergency Medical Technician, and Community Health Worker.