



**Research Brief,
Short Paper**

ISSN 2687-8844

Editorial Review Board

- Christopher Connor PhD
- Tim Collins PhD
- Kim Pierce
- Andrea Runge
- Allan Buttery, PhD
- Mehryar Nooriafshar, PhD
- Owen Stanley PhD
- Salvador Garza
- Matt Johnson

The Illinois Institute for Rural Affairs (IIRA) works to improve the quality of life for rural residents by partnering with public and private agencies on local development and enhancement efforts.



**Western Illinois
University**

Pharmaceuticalization of Obesity: Empirical Analysis of Metro and Nonmetro Populations, Cognitions and Behavior

Adee Athiyaman¹

Abstract

This research uses microdata from the Kaiser Family Foundation’s Health Tracking Poll, 2023, to explore residents’ perceptions, attitude, and behavioral intentions toward new prescription weight loss drugs. Results of data analysis indicate that a majority of the current users of prescription weight loss drugs are from the metro, 84%. A typical new category user of prescription weight loss drugs is a White male, age 65 and above, with a college education.

Introduction

Obesity is a common chronic disease of children and adults². Table 1 shows the prevalence of the disease in the nation’s metro and nonmetro geographies; nonmetro has a higher prevalence of obesity, population with BMI greater than 30.

Table 1: Prevalence of Obesity in the Metro and the Nonmetro

BMI	Metro	Nonmetro
Less than 18.5	2%	2%
GTE18.5 and LT 25	31%	26%
GTE 25 and LT 30	34%	34%
GTE 30	33%	38%
N, weighted	200.5mil	14.13mil

Note: $\chi^2 = 261,044, p < .01$; data are from the Behavioral Risk Factor Surveillance System, 2021.

¹ Professor, Illinois Institute for Rural Affairs, Western Illinois University.

² See, <https://www.cdc.gov/obesity/index.html>.

Lifestyle and behavior modifications such as eating less and exercising could be insufficient for weight loss; pharmacotherapy and / or bariatric surgery are also recommended³. The process by which bodily conditions are treated with pharmaceuticals by doctors and patients, is labeled

‘pharmaceuticalization’⁴; it is a component of ‘medicalization’, that the growth in medical conditions reflects the society’s treatment of nonmedical problems as medical ones⁵. Table 2 lists the prescription weight loss drugs that one can use for more than 12 weeks, “long-term” drugs⁶.

Table 2: FDA Approved Weight-Loss Drugs, Long-Term Use

Drug Name	Brand Name
Bupropion-naltrexone	Contrave
Liraglutide	Saxenda
Orlistat	Xenical, Alli
Phentermine-topiramate	Qsymia
Semaglutide	Wegovy
Setmelanotide	Imcivree
Trizepatide	Zepbound

Note: The FDA approved Trizepatide on November 8, 2023. The drug will be available in the marketplace on or after Thanksgiving day, 2023.

What proportion of the metro and the nonmetro populations are aware of prescription weight loss drugs? What are the characteristics of the current and past users of these drugs? Who are the likely new category users? What are the purchase determinants of prescription weight loss drugs? This paper addresses these and other related questions.

representative sample of 1,327 adults⁷; 88% of the respondents were from the metro.

Microdata from the survey were tabulated to address the research questions. Statistical analysis includes measures of central tendency and variability, measures of relations, and analysis of differences. Table 3 lists the operational definitions of the variables used in data analysis.

Methodology

Data are from the Kaiser Family Foundation’s Health Tracking Poll. The survey was conducted during July 11-19, 2023 and involved a nationally

⁴ Abraham, J. (2010). The Sociological Concomitants of the Pharmaceutical Industry and Medications. *Handbook of Medical Sociology*, 6, 290-308.

⁵ Conrad, P. (2007). *The medicalization of society: on the transformation of human conditions into treatable disorders* (Vol. 14). Baltimore: Johns Hopkins University Press.

⁶ See, <https://www.mayoclinic.org/healthy-lifestyle/weight-loss/in-depth/weight-loss-drugs/art-20044832>.

⁷ <https://ropercenter.cornell.edu/ipoll/study/31120468>.

³ Thomas, C. E., Mauer, E. A., Shukla, A. P., Rathi, S., & Aronne, L. J. (2016). Low adoption of weight loss medications: A comparison of prescribing patterns of antiobesity pharmacotherapies and SGLT 2s. *Obesity*, 24(9), 1955-1961.

Table 3: Operational Definitions of Salient Variables

Variable	Definition, survey question and response options
Awareness	How much have you heard, if anything, about a new class of drugs being used for weight loss, such as Wegovy ... 1 = A lot; 2 = Some; 3 = A little; 4 = Nothing
Behavior	Are you currently or have you ever used a prescription drug to lose weight. 1 = Yes, currently; 2 = Yes, but not currently using; 3 = No, never. If you heard that a prescription weight loss drug was safe and effective, how interested would you be in using that prescription drug to lose weight? 1 = Very interested; 2 = Somewhat interested; 3 = Not too interested; 4 = Not at all interested.
Beliefs / Behavioral intention, weight loss drugs	How interested, if at all, would you be in using a prescription drug to lose weight if ... (a) you had to administer it yourself as a weekly injection; (b) you could take it as a pill; (c) it was not covered by your insurance; (d) it was not approved by the FDA for weight loss, but was approved for another use? 1 = Very interested; 2 = Somewhat interested; 3 = Not too interested; 4 = Not at all interested. What if you heard you may gain the weight back if you stopped using the prescription drug, would you still be interested in using it or would you no longer be interested? 1 = Still be interested; 2 = No longer be interested.
Health status	How would you describe your own (a) physical health (b) mental health and emotional wellbeing? 1 = Excellent; 2 = Very Good; 3 = Good; 4 = Fair; 5 = Poor.
Evaluation of prescription drugs	Do you think that prescription drugs developed over the past 20 years have generally made the lives of people in the US? 1 = Better; 2 = Worse; 3 = Haven't made much difference

Findings

A typical respondent was a college educated White male, 65 years of age or older, has a college education, and an annual income of less than \$40,000. The metro differs from the nonmetro in gender

and race – metro has more males and non-White respondents; also, 58% of the metro respondents earned more than \$40,000 (Table 4).

Table 4: Typical Respondent, Metro versus Nonmetro

Variable	Modal Value	
	Metro (n = 1,005)	Nonmetro (n = 126)
Sex	Male (51%)	Female (54%)
Race	White (52%)	White (79%)
Age	≥65 (24%)	≥65 (28%)
Education	College degree (33%)	High School (38%)
Income	≤ 40,000 (42%)	≤ 40,000 (50%)
Home Ownership	Own home (52%)	Own home (62%)
Political affiliation	Democrat (30%)	Republican (38%)

Note: Other than sex and age, all variables were statistically dependent on the metro / nonmetro geographies; χ^2 statistics were significant at the conventional $p < .05$ level.

Awareness about New Prescription Weight Loss Drugs

One-in-three respondents in the nonmetro and 31% in the metro have heard “nothing at all” about new weight loss medicines such as Wegovy (Figure 1). Although the responses do not differ statistically between the geographies, proportionally more in the nonmetro have heard “a lot” about new weight loss drugs, 22% in the nonmetro compared to 19% in the metro (Table 5).

Figure 1: Unaware about New Prescription Weight Loss Drugs, Metro versus Nonmetro

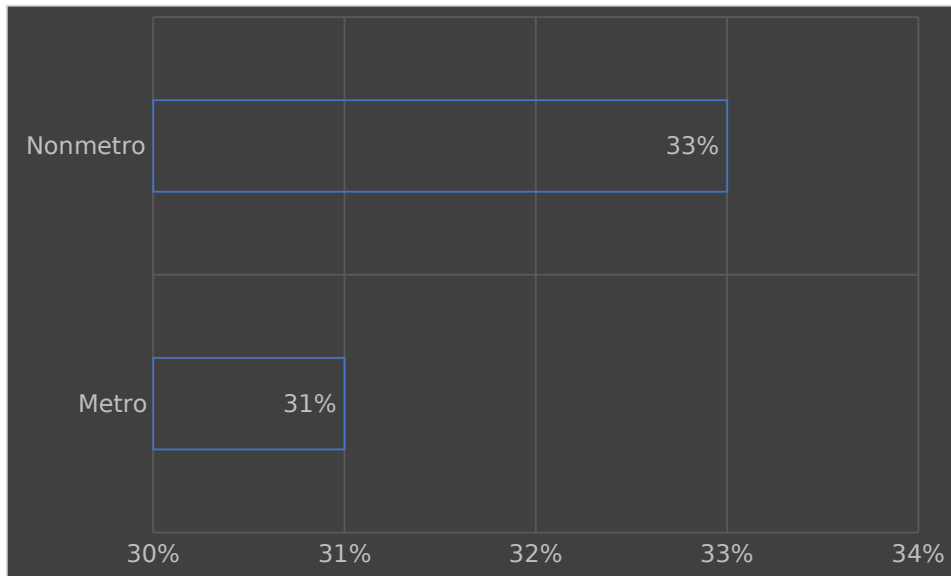


Table 5: Awareness of Prescription Weight Loss Drugs, Metro versus Nonmetro

Level of Awareness	Metro	Nonmetro
A little	26%	25%
Some	24%	21%
A lot	19%	22%
n	1164	159

Note: The columns of the table will sum to 100% if the “unaware” proportions are added from Figure 1; $\chi^2 = 1.4$; $p > .5$

Characteristics of Current Weight Loss Drug Users

Five percent of the respondents, $n = 62$, said that they currently use a prescription drug to lose weight. A typical user is a White female, 45 to 54 years of age, with “some college” education, and an annual

income of less than \$40,000 (Table 6). A majority of them are from the metro, 84%, of which 37% rate their physical health as fair or poor. Slightly more than one-in-five respondents state their mental health and emotional wellbeing as fair or poor.

Table 6: Current and Past Users of Prescription Weight Loss Drugs

Variable	Current User (n=62)		Past User (n=134)	
	Metro	Nonmetro	Metro	Nonmetro
Sex				
☐ Male	27%	50%	14%	0%
☐ Female	73%	50%	86%	100%
Age				
☐ 18-24	10%	0%	11%	8%
☐ 25-34	15%	10%	20%	25%
☐ 35-44	13%	60%	18%	17%
☐ 45-54	25%	10%	15%	21%
☐ 55-64	19%	10%	13%	12%
☐ Greater than or eq to 65	17%	10%	24%	17%
Race				
☐ White	50%	70%	45%	83%
☐ Black	27%	10%	20%	4%
☐ Hispanic	23%	20%	28%	8%
☐ Other	0%	0%	7%	5%
Education				
☐ No High School	12%	30%	12%	0%
☐ High School Grad	33%	10%	22%	50%
☐ Some College	35%	30%	38%	29%
☐ College Degree	21%	30%	28%	21%
Income				
☐ Less than \$40,000	39%	50%	55%	50%
☐ \$40,000 to \$89,999	35%	30%	28%	33%
☐ \$90,000 or more	27%	20%	17%	17%

Note: For the current users, the χ^2 test was significant for the 'age' variable; for the past users, χ^2 was significant for 'race' and 'education' variables.

New Category Users

Early in the product category lifecycle, new category users offer good sales potential, but if they harbor negative

attitude towards prescription drugs, then their sales potential will be small. Figure 2 shows respondents' overall assessment or evaluation of the contribution of prescription drugs to the betterment of

mankind. Although three out of five respondents harbor positive views about prescription medicines, their assessment is contingent upon their physical and

mental health; people with poor health have negative attitude towards prescription drugs (Table 7).

Figure 2: Did Prescription Drugs Developed Over the Past 20 Years Made People’s Lives Better?

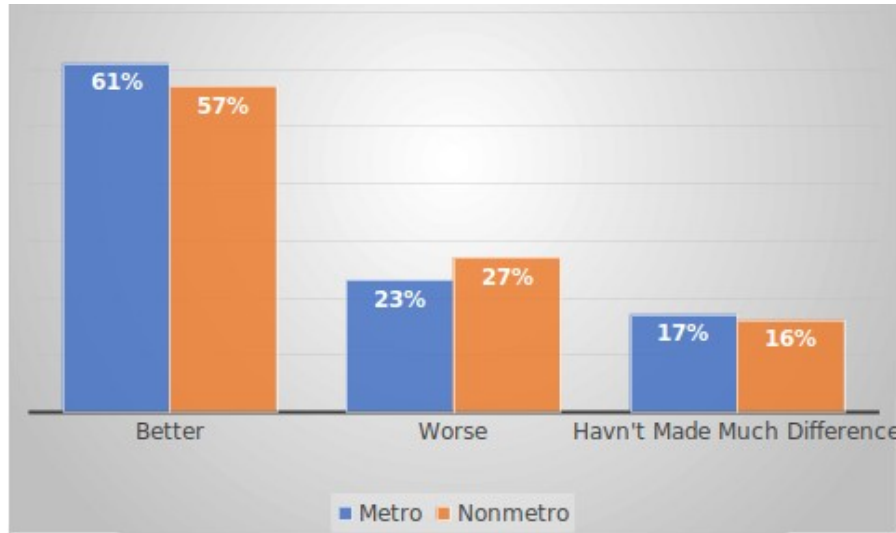


Table 7: The Impact of Physical Health on Attitude towards Prescription Drugs

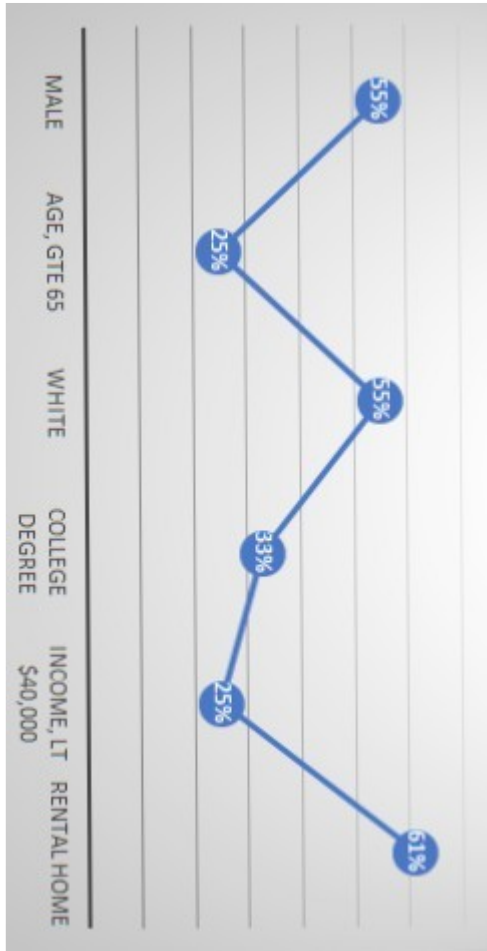
Evaluation ⁸	Physical Health		Mental Health and Emotional Wellbeing	
	Poor	Fair	Poor	Fair
Better	25%	50%	40%	38%
Worse	75%	28%	60%	50%
Not too much	0%	22%	0%	12%
χ^2	15.43, p < .05			

Price or the cost of prescription drugs is a major correlate of one’s attitude towards prescription drugs; 87% of the people with negative attitude towards prescription drugs believe that the cost of prescription drugs is unreasonable. Furthermore, 88% believe that profits made by

pharmaceutical companies are contributing to the price of prescription drugs. Figure 3 portrays the demographics of a typical new category user of prescription weight loss drugs.

⁸ The question read, “Do you think that prescription drugs developed over the past 20 years have generally made the live of people in the US...”.

Figure 3: Typical New Category User



Purchase Determinants of Prescription Weight Loss Drugs

An empirical generalization in marketing is that one's attitude towards a product predicts one's purchase intentions for the product; meta-analyses suggest an attitude-behavior correlation of 0.42⁹. In

⁹ See, for example, Bechler, C. J., Tormala, Z. L., & Rucker, D. D. (2021). The attitude-behavior relationship revisited. *Psychological science*, 32(8), 1285-1297.

learning theory terminology, behavioral intention can be expressed as:

$$PI = VH \times D,$$

where, PI = purchase intention; V = stimulus intensity dynamism, or awareness of the concept; H = habit strength or attitude, and D = drive or motivation¹⁰.

¹⁰ Athiyaman, A. (2022). Youth e-cigarette use in Illinois and the Midwest: Insights from a panel study. *Research Brief*, 4(18). Available: http://iira.org/wp-content/uploads/2023/07/Youth-E-Cigarette-Use-_-RB418.pdf.

Drive is measured using the variable, “physical health status” (Table 3); poor physical health will drive a person to seek remedy, a ‘problem removal’ motive. Attitude towards prescription weight loss drugs was measured using four components or items; the ‘stem’ of the question read, “how interested would you be in using a prescription drug to lose weight if”: you had to administer it yourself as a weekly injection; take it as a pill; it was not covered by your insurance, and it was not approved by the FDA for weight loss, but was approved for another use. The ‘leaves’ were verbal descriptors, “very interested”, “somewhat interested”, “not too interested”, and “not at all interested”. The componential, attitude measure was

the sum of all four components and had scores in the range of 4 to 12. The “awareness” measure listed in Table 3 was used to assess stimulus intensity dynamism and PI was assessed using the indicator, “if you heard that a prescription weight loss drug was safe and effective, how interested would you be in using the drug to lose weight”; response options ranged from “very interested” to “not at all interested”.

Table 8 shows the correlations among the variables; all coefficients are significant and the signs of the coefficients are in the expected direction. Attitude is the best predictor of purchase or behavioral intention.

Table 8: Zero-Order Correlations Among Variables, p values are listed below the coefficients

	PI	Awareness	Attitude	Drive
PI	1.00	0.14268 <.0001	0.60343 <.0001	-0.14251 <.0001
Awareness	0.14268 <.0001	1.00	0.11406 0.0063	0.06626 0.0159
Attitude	0.60343 <.0001	0.11406 0.0063	1.00	-0.01698 0.6853
Drive	-0.14251 <.0001	0.06626 0.0159	-0.01698 0.6853	1.00

Summary and Conclusion

Obesity afflicts one-in-three Americans. Lifestyle and behavior modifications such as eating less and exercising could be insufficient for weight loss; pharmacotherapy and / or bariatric surgery are also recommended. Research shows that people who take weight loss drugs, alongside a standard diet and exercise intervention, shed an average of about 15% of their body weight¹¹.

This research uses microdata from the Kaiser Family Foundation's Health Tracking Poll, 2023, to explore metro and nonmetro residents' perceptions, attitude, and behavioral intentions to use prescription weight loss drugs. Research questions that guided data analysis and their results are summarized below.

- (i) What proportion of the metro and nonmetro population are aware of prescription weight loss drugs?

More than two in three respondents, both in the metro and the nonmetro, are aware of prescription weight loss drugs.

- (ii) What are the characteristics of the current and past users of these drugs?

A majority of the current users of prescription weight loss drugs is from the metro, 84%. A typical user is a White female, 45 to 54 years of age, with "some college" education, and an annual income of less than \$40,000.

- (iii) Who are the likely new category users of prescription weight loss drugs?

A typical new category user is a White male, age 65 and above, with a college education.

- (iv) What are the purchase determinants of weight loss drugs?

One's attitude towards weight loss drugs is the best predictor for one's intention to use prescription weight loss drugs. Three out of five respondents harbor positive views about weight loss prescription drugs

The most important takeaway from this research is that people's attitude towards prescription weight loss drugs is contingent upon their physical and mental health; respondents with poor physical / mental health harbor negative attitude towards prescription weight loss drugs. Since people with poor health constitute a major portion of the new category users of prescription weight loss drugs, it is recommended that they be educated about the value of these drugs to combat obesity.

¹¹ Berkovic, M. C., & Strollo, F. (2023). Semaglutide-eye-catching results. *World Journal of Diabetes*, 14(4), 424.

References

- [1] Athiyaman, A. (2023). Dental Care Use in the Midwest: Metro vs. Nonmetro. *Research Brief*, 5(6). Mar. 16. Available: http://iira.org/wp-content/uploads/2023/07/RB5_6-oral-health-disparities-in-the-Midwest.pdf
- [2] Athiyaman, A. (2023). Health Policy for Rural Illinois, Data for Policy Development. *Research Brief*, 5(4). Feb. 25. Available: http://iira.org/wp-content/uploads/2023/07/RB5_4-Health-Policy-for-Rural-Illinois-Data-for-Policy-Development.pdf
- [3] Athiyaman, A. (2023). Health and Healthcare Disparities in Illinois, Metro vs. Nonmetro. *Research Brief*, 5(3). Feb. 16. Available: http://iira.org/wp-content/uploads/2023/07/RB5_3-Health-and-Healthcare-Disparities-in-Illinois-Metro-vs-Nonmetro.pdf
- [4] Athiyaman, A. (2023). Physical Activity of Illinoisans in the Metro and the Nonmetro. *Research Brief*, 5(2). Jan. 31. Available: http://iira.org/wp-content/uploads/2023/07/RB5_2-Physical-Activity-of-Illinoisans-in-the-Metro-and-the-Nonmetro.pdf
- [5] Athiyaman, A. (2022). Rural Illinois in Numbers: Content-Valid Indicators for Governance. *Research Brief*, 4(11). Jun. 17. Available: http://iira.org/wp-content/uploads/2023/07/Rural-Illinois-in-Numbers-Content-Valid-Indicators-for-governance_RB4_11_2.pdf