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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

Treatable Mortality in Illinois Counties, "them that has, gets"

Adee Athiyaman[1]

Abstract

This paper explores mortality caused by diseases that are amenable to medical care. Of the 40+ causes of diseases that were explored, the highest mortality rate was associated with 'atherosclerotic cardiovascular disease' or heart attack; Union County in the nonmetro had the largest crude mortality rate for the disease, for both the 2018 and 2024 calendar years.

Introduction

Treatable mortality refers to deaths that could have been prevented through timely and effective healthcare interventions[2]. The concept, treatable mortality, is not only an indicator of the efficacy of a healthcare system, it is also an indicator of economic development; premature mortality represents capital loss and thus GDP loss[3].

The title of this paper, the second part, "them that has, gets", implies a 'path dependency' model of treatable mortality in Illinois counties – path dependency implies that mortality numbers at time *t* will be the same as the previous period, time *t-1*. What are the 'dynamics' of treatable mortality in Illinois? This paper addresses this question for Illinois counties using mortality data from the CDC Wonder database[4].

1 Professor of Marketing and Economic Development, Illinois Institute for Rural Affairs, Western Illinois University

2 Rutstein DD, Berenberg W, et al. (1976). Measuring the quality of medical care, *New England Journal of Medicine*, 294(11):7.

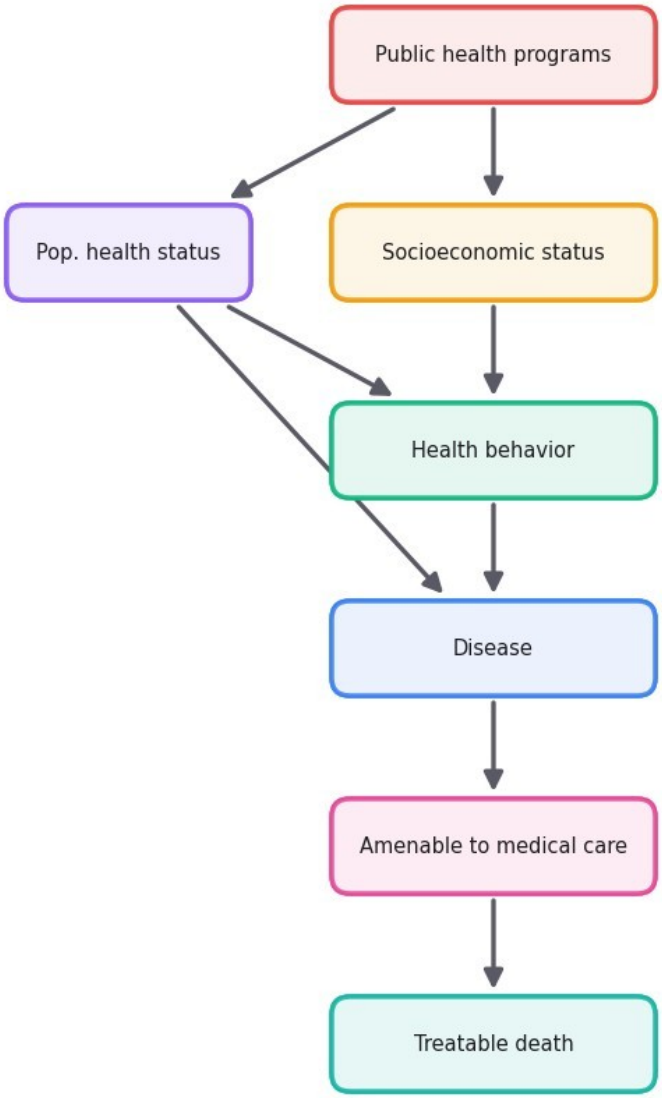
3 The productive potential of the economy is a function of the utilization rates of factors of production including labor; see Athiyaman, A. (2021). Unused Human Resources in Rural Illinois: A Profile of "Not in the Labor Force" Population, January – October 2021, *Research Brief*, 3(19), October 28. Available: https://iira.org/wp-content/uploads/2023/07/Unused-human-resources.pdf.

4 https://wonder.cdc.gov/deaths-by-underlying-cause.html.

Concepts and Nomological Net

Figure 1 shows the health production process; the concept of treatable mortality spans diseases that are both amenable and not amenable to public policies or programs. Public health policies influence one's health behavior indirectly through factors such as one's socioeconomic status and/or population's health status. Disease is a consequence of not engaging in preventive behavior. If the contracted disease is amenable to medical care, then a death from the disease is labeled 'treatable mortality'.

Figure 1: Health Production and Treatable Mortality



Methodology

Leading causes of death, diseases and accidents, coded as per the International Classification of Diseases (ICD-10-CM) methodology[5], were examined for treatable mortality[6] (Appendix 1).

Mortality rates for the years 2018 and 2024 were extracted for Illinois counties using the CDC Wonder database[7] and county-level influences on mortality were assessed using the expression:

$$ESj = [(Mbij - Mpij)/Mbij]_t - [(Mbij - Mpij)/Mbij]c \qquad (EQ\ 1)$$

where, ESj = effect size for county "j"; Mbij = Mortality rate for 2024 for cause "i" and county "j"; Mpij = 2018 mortality rate for cause "i" and county "j"; t = treatment, county; and c = control, the crude mortality rate of cause "i" for metro / nonmetro IL.

Exploratory data analysis procedures and schematic plots were employed to summarize mortality rates by year for metro / nonmetro counties.

Findings

Of the 40+ causes of death listed in Appendix 1, the largest mortality rate was associated with 'atherosclerotic cardiovascular disease' or heart attack; Union County in the nonmetro had the largest crude mortality rate for the disease, for both the 2018 and 2024 calendar years (Table 1).

Table 1: Crude Mortality Rates by Metro / Nonmetro Counties: the Largest, Minimum, and The Median

2018

Region	Stat	Rate	Cause	ICD	County
Nonmetro	Highest	166.3	Acute myocardial infarction, unspecified	I21.9	Union County, IL
	Lowest	9.1	Esophagus, unspecified - Malignant neoplasms	C15.9	LaSalle County, IL
	Median	50.6	Acute myocardial infarction, unspecified	I21.9	Shelby County, IL
Metro	Highest	128.2	Chronic obstructive pulmonary disease, unspecified	J44.9	Ford County, IL
	Lowest	0.2	Gastroenteritis and colitis of unspecified origin	A09.9	Cook County, IL
	Median	5.5	Unspecified diabetes mellitus, without complications	E14.9	McHenry County, IL

2024

Region	Stat	Rate	Cause	ICD	County
Nonmetro	Highest	165.8	Acute myocardial infarction, unspecified	I21.9	Union County, IL
	Lowest	9.2	Cerebral atherosclerosis	I67.2	LaSalle County, IL
	Median	49.25	Atherosclerotic heart disease	I25.1	Bureau County, IL
Metro	Highest	111.2	Bronchus or lung, unspecified - Malignant neoplasms	C34.9	Mercer County, IL
	Lowest	0.2	Staphylococcal infection, unspecified	A49.0	Cook County, IL
	Median	5.55	Brain, unspecified - Malignant neoplasms	C71.9	DuPage County, IL

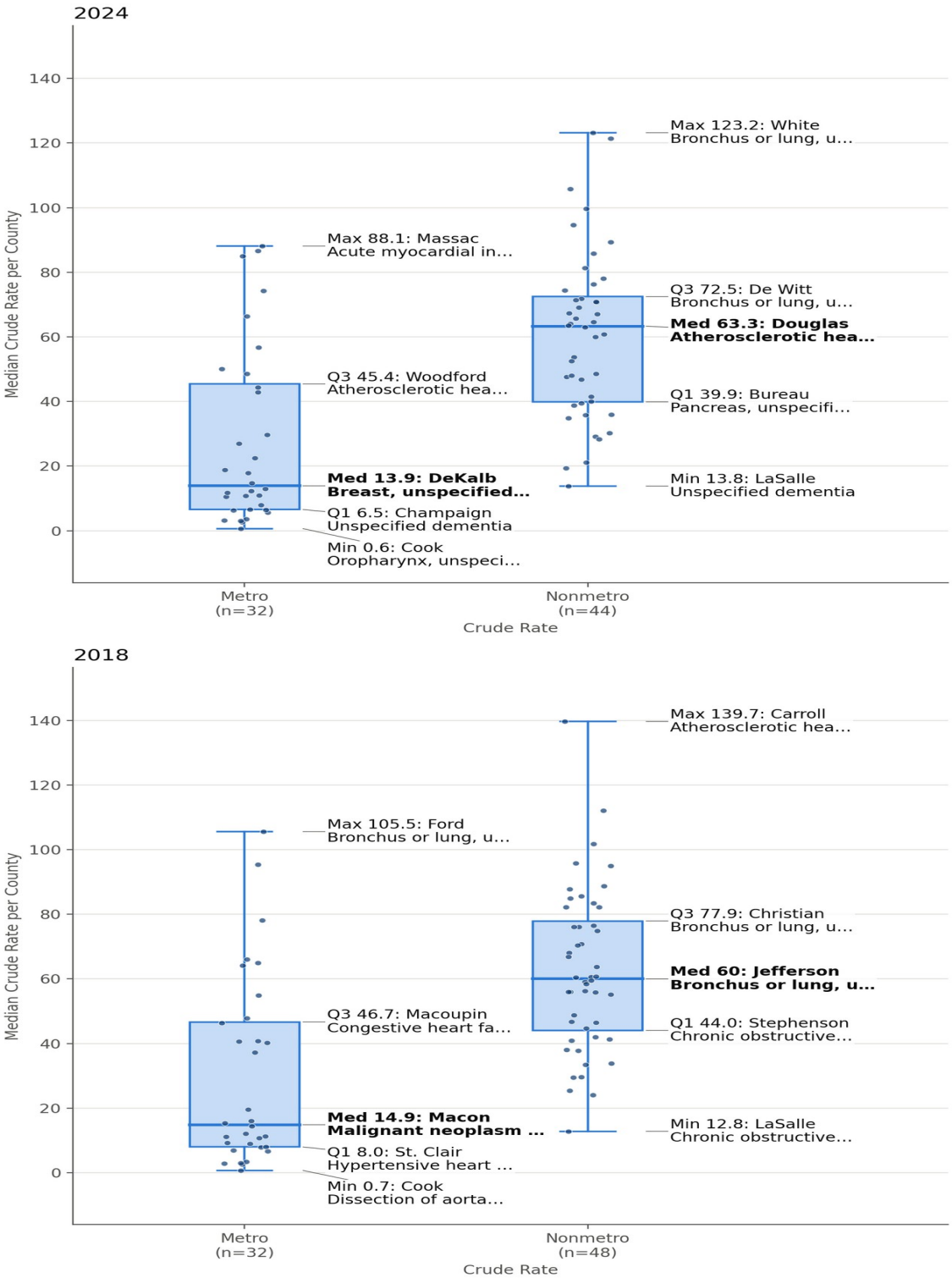
5 https://www.cdc.gov/nchs/icd/icd-10-cm/index.html

6 Number of deaths per 100,000 people were explored.

7 Same reference as footnote 4.

In general, the nonmetro registered higher rates for all causes of treatable mortalities; median for the nonmetro was about five times more than the metro, for both 2018 and 2024 (Figure 2).

Figure 2: Box Plots, Summary of Treatable Mortality, Metro vs. Nonmetro



Appendix 2 shows county-wise treatable mortality metrics; five-number summary is presented. Bronchus or lung, malignant neoplasms, were the most frequently cited treatable mortality in the state, modal statistic for counties.

County Effects on Treatable Mortality

The top five treatable mortalities in the metro/nonmetro geographies were explored for county-level effects; the median crude rates in Table 2 were used to calibrate the second part of EQ 1.

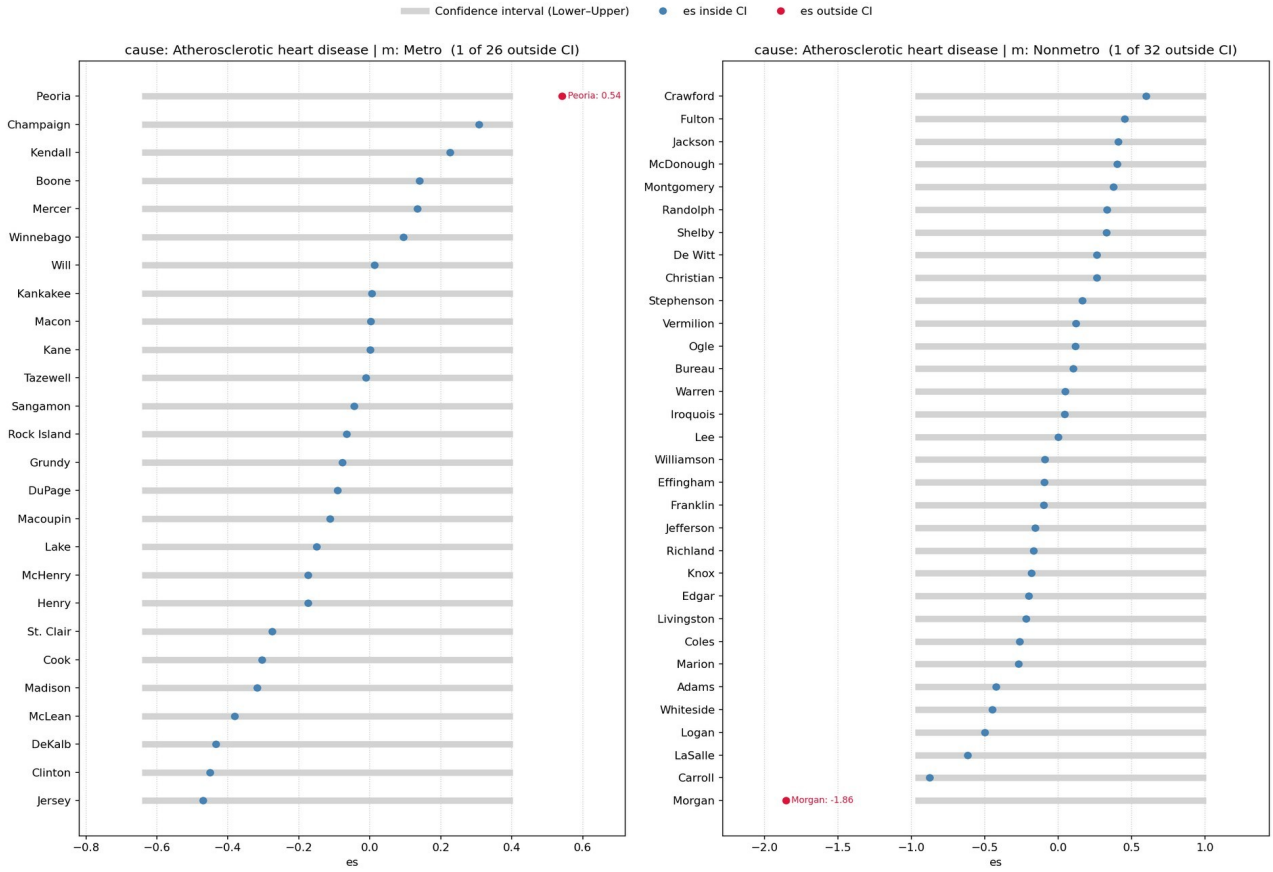
Table 2: Control Groups, Metro / Nonmetro Mortality Rates, 2024

	Median crude rate
Metro	
Congestive heart failure	29.8
Chronic obstructive pulmonary disease, unspecified	35.6
Atherosclerotic heart disease	45.3
Bronchus or lung, unspecified - Malignant neoplasms	49.4
Other ill-defined heart diseases	85.8
Nonmetro	
Atherosclerotic heart disease	61.4
Other ill-defined heart diseases	64.6
Chronic obstructive pulmonary disease, unspecified	65.4
Bronchus or lung, unspecified - Malignant neoplasms	69.1
Cardiac arrhythmia, unspecified	77.7

Appendix 3 lists the effects. For example, in the metro geography, Peoria, Champaign, and Kankakee counties decreased the prevalence of atherosclerotic heart disease. The opposite is true for Jersey, Clinton, and DeKalb counties – the disease prevalence increased in these counties. Although changes in the county effect sizes are large and merit policy intervention, only Peoria demonstrated a statistically significant effect for reducing atherosclerotic heart disease (Figure 3).

Figure 3: Statistically Significant Effect Sizes

(i) Atherosclerotic heart disease



(ii) Congestive heart failure

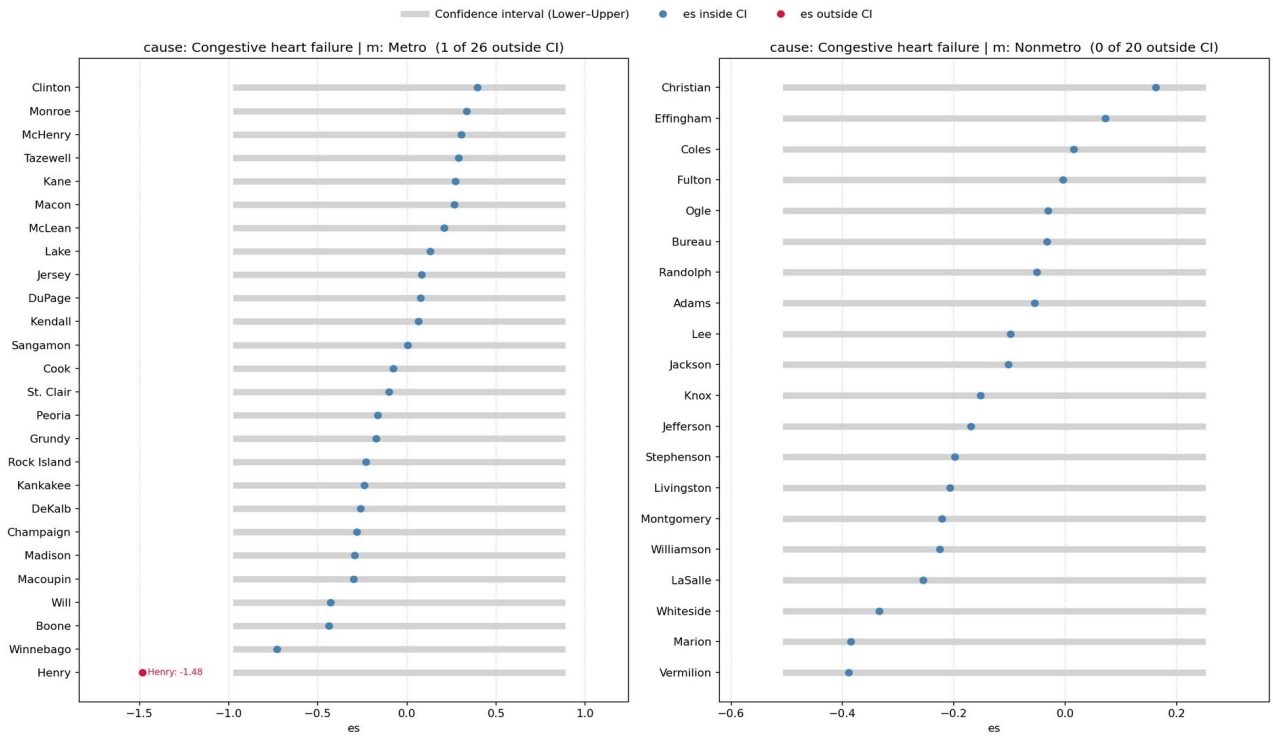
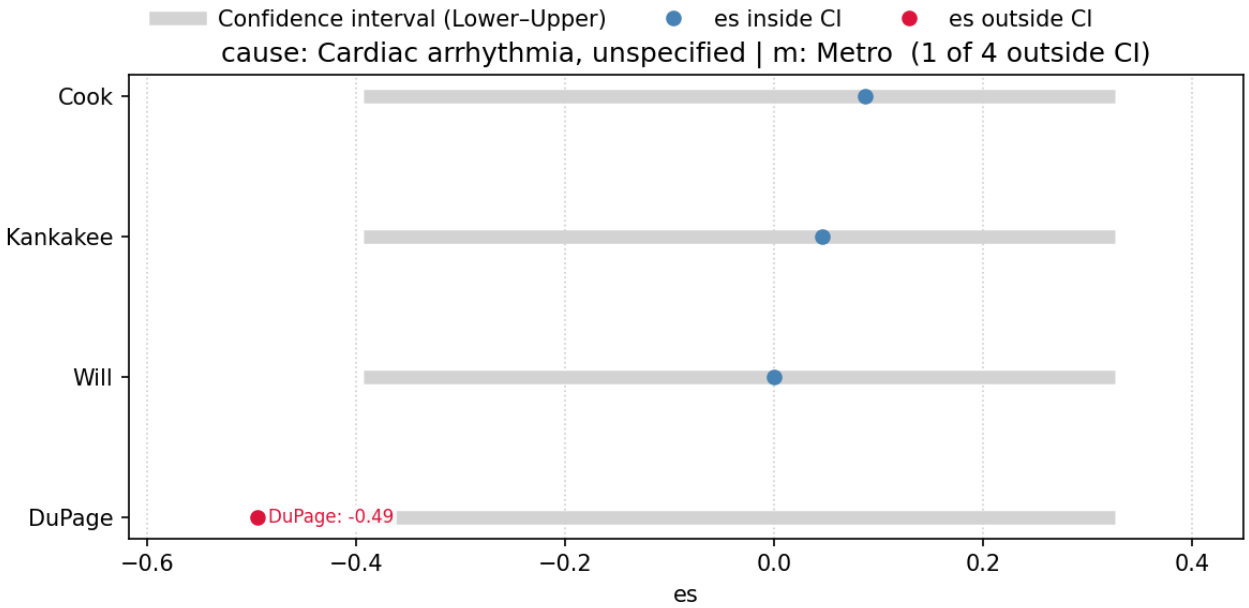


Figure 3: Statistically Significant Effect Sizes (Continued)

(iii) Cardiac Arrhythmia



(iv). Bronchus, Unspecified Malignant Neoplasms

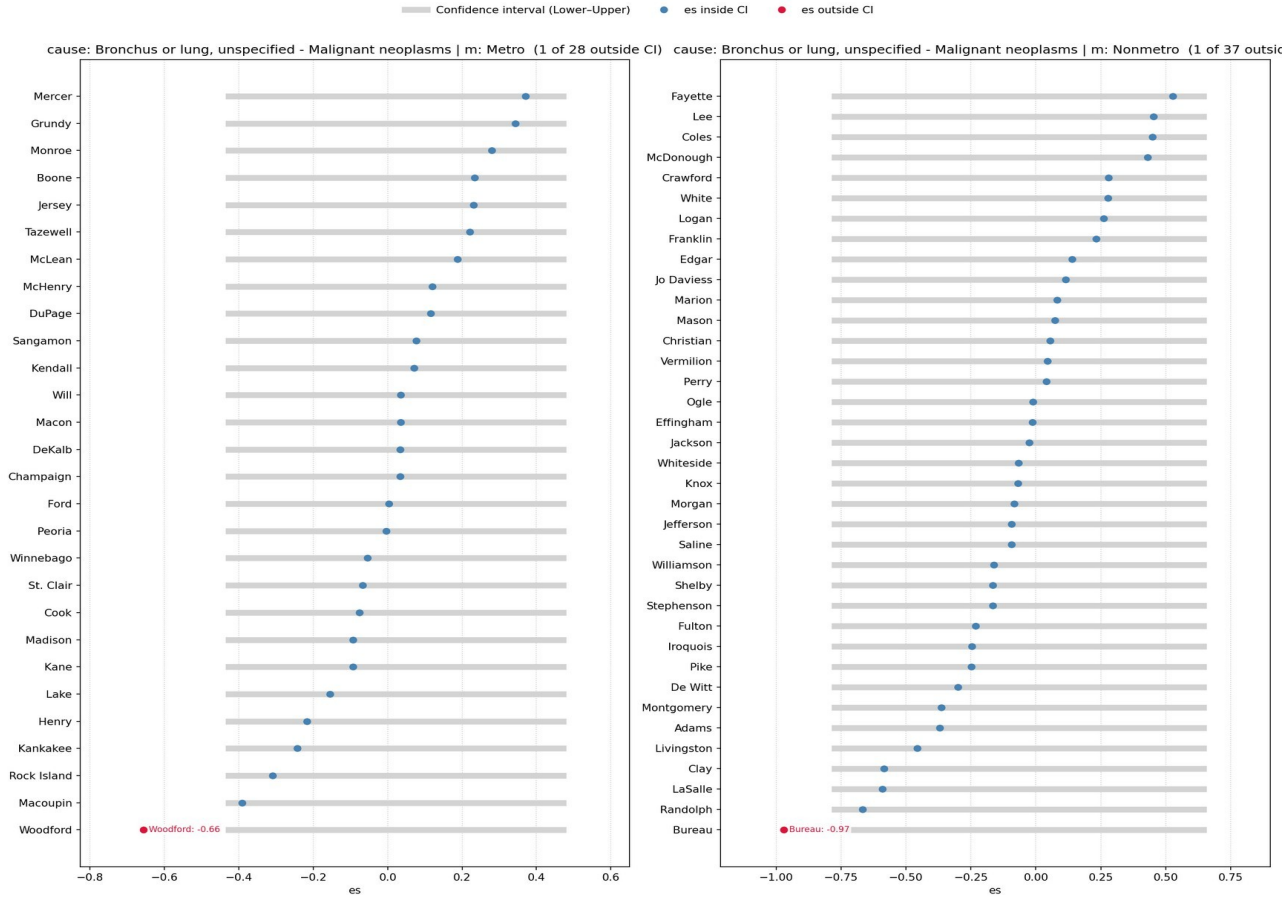
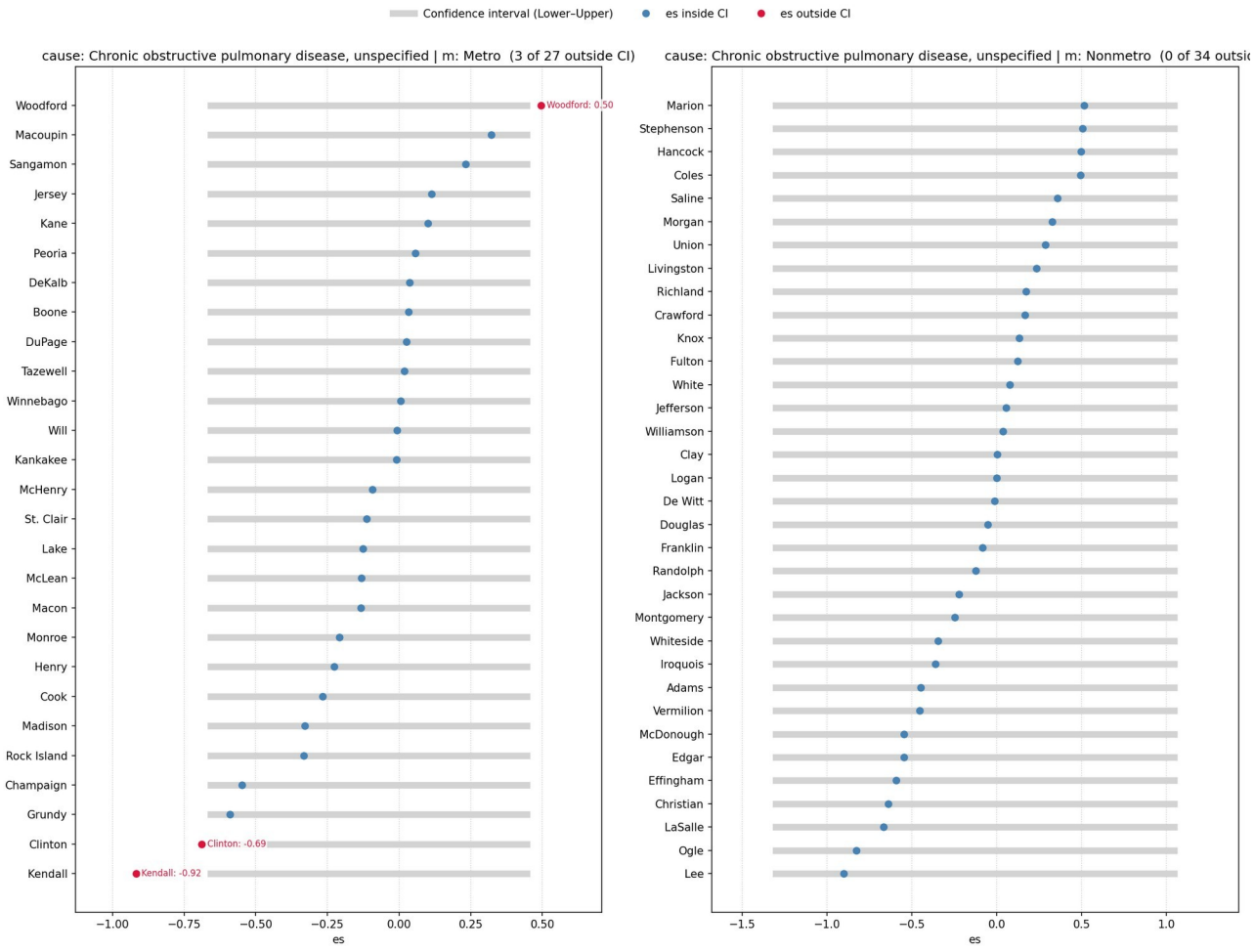


Figure 3: Statistically Significant Effect Sizes (Continued)

(v). Chronic Obstructive Pulmonary Disease, Unspecified



Summary and Conclusion

This paper explores mortality in IL counties caused by diseases that are amenable to medical care. The geographical unit of analysis is Illinois county. The focus is on number of deaths per 100,000 people, crude rate of treatable mortality.

Mortality data were extracted from the CDC Wonder database, for 2018 and 2024, and analyzed using exploratory data analysis procedures. Results show:

1) that the largest mortality rate was for atherosclerotic cardiovascular disease, or heart attack, 165 to 166 deaths in 2018 and 2024.

2) Nonmetro Illinois registered higher rates of treatable mortality in 2024; median was 63.3 for the nonmetro compared to 13.9 for the metro.

3) County effects, in comparison with their metro / nonmetro geography, were positive for Peoria County in controlling atherosclerotic cardiovascular disease among its population; and negative for the nonmetro county "Morgan".

4) For lung cancer, county effects were negative for the metro county "Woodford" and the nonmetro county "Bureau".

This research is a first step in modeling 'treatable mortality' in Illinois counties; the counties are profiled on the 'level' of the criterion variable. There is a positive association between nonmetro geography and treatable mortality. Future research should explore the association between the criterion and the provision of healthcare in Illinois' counties.

Appendix 1: Leading Causes of Death and Relevant ICD Codes

Malignant neoplasms (C00-C97)

- Malignant neoplasms of lip, oral cavity and pharynx (C00-C14)
- Malignant neoplasms of esophagus (C15)
- Malignant neoplasms of stomach (C16)
- Malignant neoplasms of colon, rectum and anus (C18-c21)
- Malignant neoplasms of liver and intrahepatic bile ducts (C22)
- Malignant neoplasms of pancreas (C25)
- Malignant neoplasms of larynx (C32)
- Malignant neoplasms of trachea, bronchus and lung (C33-C34)
- Malignant neoplasms of skin (C43)
- Malignant neoplasms of breast (C50)
- Malignant neoplasms of cervix uteri (C53)
- Malignant neoplasms of corpus uteri and uterus, part unspecified (C54-C55)
- Malignant neoplasms of ovary (C56)
- Malignant neoplasms of prostate (C61)
- Malignant neoplasms of kidney and renal pelvis (C64-C65)
- Malignant neoplasms of bladder (C67)
- Malignant neoplasms of meninges, brain and other parts of central nervous system (C70-C72)
- Malignant neoplasms of lymphoid, hematopoietic and related tissue (C81-C96)
    - Hodgkin disease (C81)
    - Non-Hodgkin lymphoma (C82-C85)
    - Leukemia (C91-C95)
    - Multiple myeloma and immunoproliferative neoplasms (C88, C90)
    - Other and unspecified malignant neoplasms of lymphoid, hematopoietic and related tissue (C96)
- All other and and unspecified malignant neoplasms (C17, C23-C24, C26-C31, C37-C41, C44-C49, C51-C52, C57-C60, C62-C63, C66, C68-C69, C73-C80, C97)

Diseases of heart (I00-I09, I11, I13, I20-I51)

- Acute rheumatic fever and chronic rheumatic heart disease (I00-I09)
- Hypertensive heart disease (I11)
- Hypertensive heart and renal disease (I13)
- Ischemic heart diseases (I20-I25)
- Acute myocardial infraction (I21-I22)
- Other acute ischemic heart diseases (I24)
- Other forms of chronic ischemic heart disease (I20, I25)
- Atherosclerotic cardiovascular disease, so described (I25.0)
- All other forms of chronic ischemic heart disease (I20, I25.1-I25.9)
- Other heart diseases (I26-I51)
- Acute and subacute endocarditis (I33)
- Diseases of pericardium and acute myocarditis (I30 – I31, I40)
- Heart failure (I50)
- All other forms of heart disease (I26-I28, I34-I38, I42-I49, I51)

Chronic lower respiratory diseases (J40-J47)

- Bronchitis, chronic and unspecified (J40-J42)
- Emphysema (J43)
- Asthma (J45-J46)
- Other chronic lower respiratory diseases (J44, J47)

Accidents (unintentional injuries) (V01-X59, Y85-Y86)

- Transport accidents (V01-V99, Y85)
- Motor vehicle accidents
- Other land transport accidents
- Water, air and space, and other and unspecified transport accidents and their sequelae IV90-V99, Y85)

Appendix 2: Treatable Mortality, Metro vs. Nonmetro Counties, 2024, Crude Rates

Metro

County			Cause of Death
Bond	Max	66.1	Acute myocardial infarction, unspecified
	Q3	66.1	Acute myocardial infarction, unspecified
	Median	66.1	Acute myocardial infarction, unspecified
	Q1	66.1	Acute myocardial infarction, unspecified
	Min	66.1	Acute myocardial infarction, unspecified
Boone	Max	44.8	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	43.85	Acute myocardial infarction, unspecified
	Median	37.3	Chronic obstructive pulmonary disease, unspecified
	Q1	27.05	Heart failure, unspecified
	Min	20.5	Pancreas, unspecified - Malignant neoplasms
Champaign	Max	30	Chronic obstructive pulmonary disease, unspecified
	Q3	11.4	Pancreas, unspecified - Malignant neoplasms
	Median	9	Atrial fibrillation and flutter
	Q1	7.6	Malignant neoplasm of prostate
	Min	4.8	Cardiomyopathy, unspecified
Clinton	Max	74.4	Acute myocardial infarction, unspecified
	Q3	53.8	Bronchus or lung, unspecified - Malignant neoplasms
	Median	47.8	Atherosclerotic heart disease
	Q1	39.85	Congestive heart failure
	Min	29.2	Stroke, not specified as haemorrhage or infarction
Cook	Max	44.8	Atherosclerotic heart disease
	Q3	2.33	Chronic ischaemic heart disease, unspecified
	Median	0.7	Dissection of aorta [any part]
	Q1	0.3	Chronic viral hepatitis C
	Min	0.2	Gastroenteritis and colitis of unspecified origin
DeKalb	Max	36.5	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	29.5	Chronic obstructive pulmonary disease, unspecified
	Median	14.4	Pancreas, unspecified - Malignant neoplasms
	Q1	10.6	Colon, unspecified - Malignant neoplasms
	Min	9.6	Unspecified dementia
DuPage	Max	39.4	Atherosclerotic heart disease
	Q3	4.4	Alzheimer disease, unspecified
	Median	2.65	Vascular dementia, unspecified
	Q1	1.58	Acute subendocardial myocardial infarction
	Min	1.1	Malignant neoplasm of uterus, part unspecified
Ford	Max	128.2	Chronic obstructive pulmonary disease, unspecified
	Q3	116.88	Chronic obstructive pulmonary disease, unspecified
	Median	105.55	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	94.23	Bronchus or lung, unspecified - Malignant neoplasms
	Min	82.9	Bronchus or lung, unspecified - Malignant neoplasms
Grundy	Max	49	Acute myocardial infarction, unspecified
	Q3	44.63	Atherosclerotic heart disease
	Median	40.25	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	31.38	Unspecified diabetes mellitus, without complications
	Min	25.5	Congestive heart failure
Henry	Max	67.2	Atherosclerotic heart disease
	Q3	61.1	Bronchus or lung, unspecified - Malignant neoplasms
	Median	40.7	Acute myocardial infarction, unspecified

Appendix 2: Treatable Mortality, Metro vs. Nonmetro Counties, 2024, Crude Rates (Continued)

County			Cause of Death
Metro			
	Q1	22.4	Breast, unspecified - Malignant neoplasms
	Min	20.4	Cardiac arrest, unspecified
Jersey	Max	82.4	Acute myocardial infarction, unspecified
	Q3	77.8	Atherosclerotic heart disease
	Median	54.9	Chronic obstructive pulmonary disease, unspecified
	Q1	50.4	Bronchus or lung, unspecified - Malignant neoplasms
	Min	50.4	Bronchus or lung, unspecified - Malignant neoplasms
Kane	Max	42.3	Atherosclerotic heart disease
	Q3	6.4	Atrial fibrillation and flutter
	Median	3.4	Vascular dementia, unspecified
	Q1	2.2	Septicaemia, unspecified
	Min	1.9	Stomach, unspecified - Malignant neoplasms
Kankakee	Max	70.9	Atherosclerotic heart disease
	Q3	36.83	Chronic obstructive pulmonary disease, unspecified
	Median	19.55	Breast, unspecified - Malignant neoplasms
	Q1	13.83	Cardiac arrest, unspecified
	Min	10	Malignant neoplasm of prostate
Kendall	Max	26.6	Chronic obstructive pulmonary disease, unspecified
	Q3	17.95	Atherosclerotic heart disease
	Median	11.35	Acute myocardial infarction, unspecified
	Q1	8	Pancreas, unspecified - Malignant neoplasms
	Min	7.8	Pancreas, unspecified - Malignant neoplasms
Lake	Max	35.8	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	5.4	Unspecified diabetes mellitus, without complications
	Median	2.9	Intrahepatic bile duct carcinoma – Malignant neoplasms
	Q1	2.05	Liver cell carcinoma - Malignant neoplasms
	Min	1.4	Malignant neoplasm of rectum
Macon	Max	75.4	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	28.2	Acute myocardial infarction, unspecified
	Median	15.3	Malignant neoplasm without specification of site
	Q1	11.95	Colon, unspecified - Malignant neoplasms
	Min	9.6	Pancreas, unspecified - Malignant neoplasms
Macoupin	Max	86.1	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	61.8	Atherosclerotic heart disease
	Median	46.3	Congestive heart failure
	Q1	44.1	Acute myocardial infarction, unspecified
	Min	22.1	Malignant neoplasm without specification of site
Madison	Max	73.7	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	15.5	Atrial fibrillation and flutter
	Median	7.9	Malignant neoplasm of kidney, except renal pelvis
	Q1	5.7	Oesophagus, unspecified - Malignant neoplasms
	Min	3.8	Aortic (valve) stenosis
Marshall	Max	95.4	Other ill-defined heart diseases
	Q3	95.4	Other ill-defined heart diseases
	Median	95.4	Other ill-defined heart diseases
	Q1	95.4	Other ill-defined heart diseases
	Min	95.4	Other ill-defined heart diseases
Massac	Max	78.1	Atherosclerotic heart disease
	Q3	78.1	Atherosclerotic heart disease
	Median	78.1	Atherosclerotic heart disease
	Q1	78.1	Atherosclerotic heart disease

Appendix 2: Treatable Mortality, Metro vs. Nonmetro Counties, 2024, Crude Rates (Continued)

County			Cause of Death
Metro			
	Min	78.1	Atherosclerotic heart disease
McHenry	Max	46.3	Atherosclerotic heart disease
	Q3	10.25	Stroke, not specified as haemorrhage or infarction
	Median	6.65	Malignant neoplasm without specification of site
	Q1	4.5	Malignant neoplasm of kidney, except renal pelvis
	Min	3.2	Non-insulin-dependent diabetes mellitus, without complications
McLean	Max	45.7	Atherosclerotic heart disease
	Q3	18.35	Acute myocardial infarction, unspecified
	Median	10.7	Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified
	Q1	7.95	Stroke, not specified as haemorrhage or infarction
	Min	5.8	Malignant neoplasm without specification of site
Mercer	Max	83.3	Bronchus or lung, unspecified- Malignant neoplasms
	Q3	73.7	Colon, unspecified - Malignant neoplasms
	Median	64.1	Colon, unspecified - Malignant neoplasms
	Q1	64.1	Colon, unspecified - Malignant neoplasms
	Min	64.1	Colon, unspecified - Malignant neoplasms
Monroe	Max	67	Acute myocardial infarction, unspecified
	Q3	50.95	Chronic obstructive pulmonary disease, unspecified
	Median	40.8	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	33.5	Breast, unspecified - Malignant neoplasms
	Min	29.1	Breast, unspecified - Malignant neoplasms
Peoria	Max	62.6	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	19.65	Stroke, not specified as haemorrhage or infarction
	Median	11.1	Accidental poisoning by

County			Cause of Death
Metro			
			and exposure to other and unspecified drugs, medicaments and biological substances
	Q1	6.9	Malignant neoplasm without specification of site
	Min	5.5	Vascular dementia, unspecified
Rock Island	Max	69	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	21.25	Heart disease, unspecified
	Median	16	Malignant neoplasm without specification of site
	Q1	8.4	Oesophagus, unspecified - Malignant neoplasms
	Min	7.7	Malignant neoplasm of prostate
Sangamon	Max	58.9	Atherosclerotic heart disease
	Q3	20.5	Breast, unspecified - Malignant neoplasms
	Median	9.2	Hypertensive heart disease without (congestive) heart failure
	Q1	5.6	Bladder, unspecified - Malignant neoplasms
	Min	5.1	Alzheimer disease, unspecified
St. Clair	Max	60.1	Atherosclerotic heart disease
	Q3	13.05	Unspecified diabetes mellitus, without complications
	Median	8	Hypertensive heart disease with (congestive) heart failure
	Q1	5	Parkinson disease
	Min	3.8	Liver cell carcinoma - Malignant neoplasms
Tazewell	Max	58.9	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	19.25	Unspecified dementia
	Median	12.1	Atherosclerotic cardiovascular disease, so described
	Q1	8.3	Vascular dementia, unspecified
	Min	7.6	Septicaemia, unspecified
Will	Max	40.4	Atherosclerotic heart disease
	Q3	6.35	Unspecified dementia
	Median	3	Stomach, unspecified - Malignant neoplasms
	Q1	2.2	Septicaemia, unspecified

Appendix 2: Treatable Mortality, Metro vs. Nonmetro Counties, 2024, Crude Rates (Continued)

County			Cause of Death
Metro			
	Min	1.4	Malignant neoplasm of uterus, part unspecified
Winnebago	Max	59.5	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	15.1	Colon, unspecified - Malignant neoplasms
	Median	7	Malignant neoplasm of ovary
	Q1	4.9	Malignant neoplasm of kidney, except renal pelvis
	Min	3.5	Multiple myeloma - Malignant neoplasms
Woodford	Max	72.8	Acute myocardial infarction, unspecified
	Q3	68.9	Acute myocardial infarction, unspecified
	Median	65	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	45.5	Bronchus or lung, unspecified - Malignant neoplasms
	Min	26	Chronic obstructive pulmonary disease, unspecified
Nonmetro			
Adams	Max	74.6	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	55.55	Acute myocardial infarction, unspecified
	Median	33.5	Stroke, not specified as haemorrhage or infarction
	Q1	19	Pancreas, unspecified - Malignant neoplasms
	Min	15.2	Malignant neoplasm without specification of site
Bureau	Max	142.5	Acute myocardial infarction, unspecified
	Q3	66.7	Chronic obstructive pulmonary disease, unspecified
	Median	60.6	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	48.5	Atherosclerotic heart disease
	Min	39.4	Congestive heart failure
Carroll	Max	139.7	Atherosclerotic heart disease
	Q3	139.7	Atherosclerotic heart disease
	Median	139.7	Atherosclerotic heart disease

County			Cause of Death
Nonmetro			
	Q1	139.7	Atherosclerotic heart disease
	Min	139.7	Atherosclerotic heart disease
Christian	Max	76.5	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	76.5	Bronchus or lung, unspecified - Malignant neoplasms
	Median	76.5	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	64.3	Atherosclerotic heart disease
	Min	36.7	Congestive heart failure
Clark	Max	83.4	Chronic obstructive pulmonary disease, unspecified
	Q3	83.4	Chronic obstructive pulmonary disease, unspecified
	Median	83.4	Chronic obstructive pulmonary disease, unspecified
	Q1	83.4	Chronic obstructive pulmonary disease, unspecified
	Min	83.4	Chronic obstructive pulmonary disease, unspecified
Clay	Max	135.8	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	113.15	Cardiac arrest, unspecified
	Median	101.85	Atherosclerotic heart disease
	Q1	96.2	Atherosclerotic heart disease
	Min	90.5	Chronic obstructive pulmonary disease, unspecified
Coles	Max	78.6	Atherosclerotic heart disease
	Q3	45.2	Stroke, not specified as haemorrhage or infarction
	Median	41.3	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	31.45	Essential (primary) hypertension
	Min	19.7	Unspecified dementia
Crawford	Max	95.7	Acute myocardial infarction, unspecified
	Q3	75.75	Atherosclerotic heart disease
	Median	63.8	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	57.18	Bronchus or lung, unspecified - Malignant neoplasms
	Min	53.2	Chronic obstructive pulmonary disease, unspecified
De Witt	Max	107.8	Acute myocardial infarction, unspecified

Appendix 2: Treatable Mortality, Metro vs. Nonmetro Counties, 2024, Crude Rates (Continued)

County			Cause of Death
Nonmetro			
	Q3	103.075	Bronchus or lung, unspecified -Malignant neoplasms
	Median	85.65	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	69.8	Atherosclerotic heart disease
	Min	69.8	Atherosclerotic heart disease
Douglas	Max	61.6	Chronic obstructive pulmonary disease, unspecified
	Q3	60.325	Chronic obstructive pulmonary disease, unspecified
	Median	59.05	Congestive heart failure
	Q1	57.775	Congestive heart failure
	Min	56.5	Congestive heart failure
Edgar	Max	97.9	Chronic obstructive pulmonary disease, unspecified
	Q3	89.275	Atherosclerotic heart disease
	Median	74.9	Atherosclerotic heart disease
	Q1	61.95	Unspecified dementia
	Min	57.6	Bronchus or lung, unspecified - Malignant neoplasms
Effingham	Max	90.6	Chronic obstructive pulmonary disease, unspecified
	Q3	61.4	Atherosclerotic heart disease
	Median	38	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	35.1	Congestive heart failure
	Min	29.2	Alzheimer disease, unspecified
Fayette	Max	65.4	Acute myocardial infarction, unspecified
	Q3	63.05	Acute myocardial infarction, unspecified
	Median	60.7	Chronic obstructive pulmonary disease, unspecified
	Q1	53.7	Bronchus or lung, unspecified - Malignant neoplasms
	Min	46.7	Bronchus or lung, unspecified - Malignant neoplasms
Franklin	Max	80.1	Atherosclerotic heart disease
	Q3	71.05	Bronchus or lung, unspecified - Malignant neoplasms
	Median	46.5	Acute myocardial infarction, unspecified
	Q1	36.15	Septicaemia, unspecified
	Min	28.4	Congestive heart failure

County			Cause of Death
Nonmetro			
Fulton	Max	109.1	Acute myocardial infarction, unspecified
	Q3	74.6	Chronic obstructive pulmonary disease, unspecified
	Median	48.8	Atherosclerotic heart disease
	Q1	28.7	Colon, unspecified - Malignant neoplasms
	Min	28.7	Colon, unspecified - Malignant neoplasms
Hancock	Max	67.2	Acute myocardial infarction, unspecified
	Q3	61.6	Bronchus or lung, unspecified - Malignant neoplasms
	Median	56	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	56	Bronchus or lung, unspecified - Malignant neoplasms
	Min	56	Bronchus or lung, unspecified - Malignant neoplasms
Iroquois	Max	108.7	Acute myocardial infarction, unspecified
	Q3	83.35	Bronchus or lung, unspecified - Malignant neoplasms
	Median	76.1	Atherosclerotic heart disease
	Q1	41.65	Alzheimer disease, unspecified
	Min	36.2	Congestive heart failure
Jackson	Max	55.7	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	44.4	Atherosclerotic heart disease
	Median	29.6	Congestive heart failure
	Q1	23.5	Breast, unspecified - Malignant neoplasms
	Min	19.2	Heart failure, unspecified
Jefferson	Max	97.8	Acute myocardial infarction, unspecified
	Q3	71.38	Cardiac arrest, unspecified
	Median	59.5	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	39.68	Atherosclerotic heart disease
	Min	29.1	Congestive heart failure
Jo Daviess	Max	65.5	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	60.85	Bronchus or lung, unspecified - Malignant neoplasms
	Median	56.2	Congestive heart failure

Appendix 2: Treatable Mortality, Metro vs. Nonmetro Counties, 2024, Crude Rates (Continued)

County			Cause of Death
Nonmetro			
	Q1	53.85	Acute myocardial infarction, unspecified
	Min	51.5	Acute myocardial infarction, unspecified
Knox	Max	91.8	Acute myocardial infarction, unspecified
	Q3	65.83	Bronchus or lung, unspecified - Malignant neoplasms
	Median	33.9	Congestive heart failure
	Q1	31.9	Colon, unspecified - Malignant neoplasms
	Min	22	Pancreas, unspecified - Malignant neoplasms
LaSalle	Max	89.6	Atherosclerotic heart disease
	Q3	21	Breast, unspecified - Malignant neoplasms
	Median	12.8	Chronic obstructive pulmonary disease with acute lower respiratory infection
	Q1	11	Atherosclerotic cardiovascular disease, so described
	Min	9.1	Oesophagus, unspecified - Malignant neoplasms
Lawrence	Max	114.2	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	95.15	Bronchus or lung, unspecified - Malignant neoplasms
	Median	76.1	Atherosclerotic heart disease
	Q1	69.75	Atherosclerotic heart disease
	Min	63.4	Chronic obstructive pulmonary disease, unspecified
Lee	Max	70.1	Chronic obstructive pulmonary disease, unspecified
	Q3	51.15	Acute myocardial infarction, unspecified
	Median	40.9	Acute myocardial infarction, unspecified
	Q1	36.55	Atrial fibrillation and flutter
	Min	29.2	Bronchus or lung, unspecified - Malignant neoplasms
Livingston	Max	103.5	Atherosclerotic heart disease
	Q3	69.9	Bronchus or lung, unspecified - Malignant neoplasms
	Median	41.95	Acute myocardial infarction, unspecified
	Q1	35	Malignant neoplasm without specification of site
	Min	28	Alzheimer disease, unspecified
Logan	Max	86.4	Atherosclerotic heart disease
	Q3	67.375	Chronic obstructive pulmonary disease, unspecified
	Median	60.5	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	48.375	Stroke, not specified as haemorrhage or infarction
	Min	34.6	Unspecified dementia
Marion	Max	119.6	Acute myocardial infarction, unspecified
	Q3	90.4	Bronchus or lung, unspecified - Malignant neoplasms
	Median	58.5	Stroke, not specified as haemorrhage or infarction
	Q1	31.9	Hypertensive heart disease with (congestive) heart failure
	Min	26.6	Chronic obstructive pulmonary disease with acute lower respiratory infection
Mason	Max	95.8	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	95.8	Bronchus or lung, unspecified - Malignant neoplasms
	Median	95.8	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	95.8	Bronchus or lung, unspecified - Malignant neoplasms
	Min	95.8	Bronchus or lung, unspecified - Malignant neoplasms
McDonough	Max	63.4	Acute myocardial infarction, unspecified
	Q3	60.1	Chronic obstructive pulmonary disease, unspecified
	Median	46.7	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	33.4	Atherosclerotic heart disease
	Min	33.4	Atherosclerotic heart disease
Montgomery	Max	83.9	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	81.275	Chronic obstructive pulmonary disease, unspecified
	Median	68.15	Chronic obstructive pulmonary disease, unspecified
	Q1	51.55	Congestive heart failure

Appendix 2: Treatable Mortality, Metro vs. Nonmetro Counties, 2024, Crude Rates (Continued)

Nonmetro

County			Cause of Death
	Min	38.5	Atherosclerotic heart disease
Morgan	Max	135.4	Atherosclerotic heart disease
	Q3	97.15	Hypertensive heart disease without (congestive) heart failure
	Median	55.9	Chronic obstructive pulmonary disease, unspecified
	Q1	32.4	Hypertensive heart disease with (congestive) heart failure
	Min	29.4	Atherosclerotic cardiovascular disease, so described
Moultrie	Max	101.9	Atherosclerotic heart disease
	Q3	93.4	Atherosclerotic heart disease
	Median	84.9	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	76.4	Bronchus or lung, unspecified - Malignant neoplasms
	Min	67.9	Bronchus or lung, unspecified - Malignant neoplasms
Ogle	Max	55	Chronic obstructive pulmonary disease,unspecified
	Q3	45.2	Bronchus or lung, unspecified - Malignant neoplasms
	Median	29.5	Chronic ischaemic heart disease,unspecified
	Q1	21.6	Colon, unspecified - Malignant neoplasms
	Min	19.6	Breast, unspecified - Malignant neoplasms
Perry	Max	75.6	Chronic obstructive pulmonary disease, unspecified
	Q3	73.2	Acute myocardial infarction, unspecified
	Median	70.8	Acute myocardial infarction, unspecified
	Q1	68.45	Bronchus or lung, unspecified - Malignant neoplasms
	Min	66.1	Bronchus or lung, unspecified Malignant neoplasms
Pike	Max	128.1	Acute myocardial infarction, unspecified
	Q3	120.1	Acute myocardial infarction, unspecified
	Median	112.1	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	104.1	Bronchus or lung, unspecified - Malignant neoplasms

Nonmetro

County			Cause of Death
	Min	96.1	Bronchus or lung, unspecified - Malignant neoplasms
Randolph	Max	77.9	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	59.2	Acute myocardial infarction, unspecified
	Median	56.05	Atherosclerotic heart disease
	Q1	45.925	Congestive heart failure
	Min	34.3	Unspecified dementia
Richland	Max	114.2	Atherosclerotic heart disease
	Q3	101.5	Atherosclerotic heart disease
	Median	88.8	Chronic obstructive pulmonary disease, unspecified
	Q1	76.1	Chronic obstructive pulmonary disease, unspecified
	Min	63.4	Chronic obstructive pulmonary disease, unspecified
Saline	Max	92	Chronic obstructive pulmonary disease, unspecified
	Q3	87.8	Cardiac arrest, unspecified
	Median	66.9	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	50.2	Congestive heart failure
	Min	46	Acute myocardial infarction, unspecified
Shelby	Max	73.6	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	64.4	Bronchus or lung, unspecified - Malignant neoplasms
	Median	55.2	Atherosclerotic heart disease
	Q1	52.9	Atherosclerotic heart disease
	Min	50.6	Acute myocardial infarction, unspecified
Stephenson	Max	64.8	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	53.6	Acute myocardial infarction, unspecified
	Median	44.7	Chronic obstructive pulmonary disease, unspecified
	Q1	22.3	Atrial fibrillation and flutter
	Min	22.3	Atrial fibrillation and flutter
Union	Max	166.3	Acute myocardial infarction, unspecified
	Q3	130.65	Bronchus or lung, unspecified -

Appendix 2: Treatable Mortality, Metro vs. Nonmetro Counties, 2024, Crude Rates (Continued)

County Nonmetro			Cause of Death
			Malignant neoplasms
	Median	95	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	77.2	Bronchus or lung, unspecified - Malignant neoplasms
	Min	59.4	Chronic obstructive pulmonary disease, unspecified
Vermilion	Max	89.8	Bronchus or lung, unspecified - Malignant neoplasms
	Q3	63.8	Atherosclerotic heart disease
	Median	24.05	Stroke, not specified as haemorrhage or infarction
	Q1	17.875	Atrial fibrillation and flutter
	Min	13	Septicaemia, unspecified
Warren	Max	93.9	Acute myocardial infarction, unspecified
	Q3	88.05	Acute myocardial infarction, unspecified
	Median	82.2	Bronchus or lung, unspecified - Malignant neoplasms
	Q1	76.35	Atherosclerotic heart disease
	Min	70.5	Atherosclerotic heart disease
Washington	Max	92.9	Acute myocardial infarction, unspecified
	Q3	87.55	Acute myocardial infarction, unspecified
	Median	82.2	Acute myocardial infarction, unspecified
	Q1	76.85	Chronic obstructive pulmonary disease,
			unspecified
	Min	71.5	Chronic obstructive pulmonary disease, unspecified
Wayne	Max	79.6	Chronic obstructive pulmonary disease, unspecified
	Q3	75	Chronic obstructive pulmonary disease, unspecified
	Median	70.4	Chronic obstructive pulmonary disease, unspecified
	Q1	65.8	Atherosclerotic heart disease
	Min	61.2	Atherosclerotic heart disease
White	Max	131.7	Chronic obstructive pulmonary disease, unspecified
	Q3	109.75	Chronic obstructive pulmonary disease, unspecified
	Median	87.8	Heart failure, unspecified
	Q1	84.15	Heart failure, unspecified
	Min	80.5	Bronchus or lung, unspecified - Malignant neoplasms
Whiteside	Max	89.9	Atherosclerotic heart disease
	Q3	70.1	Bronchus or lung, unspecified - Malignant neoplasms
	Median	37.8	Congestive heart failure
	Q1	25.2	Stroke, not specified as haemorrhage or infarction
	Min	19.8	Malignant neoplasm of prostate
Williamson	Max	76.1	Chronic obstructive pulmonary disease, unspecified
	Q3	31.3	Congestive heart failure
	Median	25.4	Colon, unspecified - Malignant neoplasms
	Q1	20.9	Pancreas, unspecified - Malignant neoplasms
	Min	14.9	Breast, unspecified - Malignant neoplasms

Appendix 3: County Effects, Calibration of EQ1

Cause of Death	County	2024	2018	Effect Size	IQR	Lower	Upper	Status
Metro								
Atherosclerotic heart disease	Boone	50.6	44.8	0.1400	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Champaign	25.9	18.6	0.3072	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Clinton	32.4	47.8	-0.4499	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Cook	33.7	44.8	-0.3040	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	DeKalb	23.7	34.6	-0.4345	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	DuPage	35.3	39.4	-0.0908	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Grundy	40.9	45.1	-0.0773	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Henry	56	67.2	-0.1746	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Jersey	52	77.8	-0.4708	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Kane	41.3	42.3	0.0012	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Kankakee	69.5	70.9	0.0052	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Kendall	24.4	19.5	0.2262	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Lake	27.3	32.1	-0.1504	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Macon	48.6	49.7	0.0028	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Macoupin	52.4	59.6	-0.1120	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Madison	33.5	45	-0.3179	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	McHenry	38.6	46.3	-0.1741	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	McLean	32.5	45.7	-0.3808	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Mercer	71.9	64.1	0.1339	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Peoria	76.8	37.1	0.5423	0.2612	-0.6421	0.4028	HT_Q3
Atherosclerotic heart disease	Rock Island	57.5	62.7	-0.0650	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Sangamon	55.1	58.9	-0.0436	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	St. Clair	46.2	60.1	-0.2755	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Tazewell	53.9	55.9	-0.0117	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Will	39.9	40.4	0.0129	0.2612	-0.6421	0.4028	Within CI
Atherosclerotic heart disease	Winnebago	61.7	57.4	0.0951	0.2612	-0.6421	0.4028	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Boone	50.6	44.8	0.2341	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Champaign	25.4	27.6	0.0328	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Cook	30.7	36.7	-0.0760	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	DeKalb	33.6	36.5	0.0331	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	DuPage	29.6	29.7	0.1161	0.2291	-0.4365	0.4800	Within CI

Appendix 3: County Effects, Calibration of EQ1 (Continued)

Cause of Death	County	2024	2018	Effect	IQR	Lower	Upper	Status
Bronchus or lung, unspecified - Malignant neoplasms	Ford	74.3	82.9	0.0037	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Grundy	55.7	43.2	0.3438	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Henry	45.7	61.1	-0.2175	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Jersey	56.7	50.4	0.2305	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Kane	27.3	33.1	-0.0930	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Kankakee	50.7	69.1	-0.2435	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Kendall	22.4	23.5	0.0703	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Lake	28.1	35.8	-0.1546	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Macon	69.5	75.4	0.0345	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Macoupin	57	86.1	-0.3911	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Madison	60.8	73.7	-0.0927	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	McHenry	41.8	41.8	0.1194	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	McLean	45.9	42.8	0.1870	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Mercer	111.2	83.3	0.3703	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Monroe	48.6	40.8	0.2799	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Peoria	55.7	62.6	-0.0044	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Rock Island	48.3	69	-0.3091	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Sangamon	53	55.3	0.0760	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	St. Clair	49.4	58.6	-0.0668	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Tazewell	65.5	58.9	0.2202	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Will	35.6	38.6	0.0352	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Winnebago	50.7	59.5	-0.0541	0.2291	-0.4365	0.4800	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Woodford	36.6	65	-0.6565	0.2291	-0.4365	0.4800	LT_Q1
Cardiac arrhythmia, unspecified	Cook	1	1.6	0.0875	0.1796	-0.3930	0.3255	Within CI

Appendix 3: County Effects, Calibration of EQ1 (Continued)

Cardiac arrhythmia, unspecified	DuPage	1.1	2.4	-0.4943	0.1796	-0.3930	0.3255	LT_Q1
Cardiac arrhythmia, unspecified	Kankakee	31	50.9	0.0456	0.1796	-0.3930	0.3255	Within CI
Cardiac arrhythmia, unspecified	Will	1.6	2.7	0.0000	0.1796	-0.3930	0.3255	Within CI
Chronic obstructive pulmonary disease, unspecified	Boone	35.6	37.3	0.0337	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Champaign	18.4	30	-0.5490	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Clinton	27	47.8	-0.6889	0.2817	-0.6691	0.4575	LT_Q1
Chronic obstructive pulmonary disease, unspecified	Cook	17.2	23.2	-0.2674	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	DeKalb	26.6	27.8	0.0363	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	DuPage	19.7	20.8	0.0256	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Grundy	22.3	37.3	-0.5912	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Henry	43.6	57	-0.2259	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Jersey	56.7	54.9	0.1132	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Kane	21.7	21.3	0.0999	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Kankakee	36.7	40	-0.0085	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Kendall	13.3	26.6	-0.9185	0.2817	-0.6691	0.4575	LT_Q1
Chronic obstructive pulmonary disease, unspecified	Lake	20.7	25	-0.1263	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Macon	56.6	68.8	-0.1341	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Macoupin	84.3	64	0.3223	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Madison	34.6	48.8	-0.3289	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	McHenry	28.2	33.1	-0.0923	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	McLean	32	38.8	-0.1310	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Monroe	42.9	55.3	-0.2076	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Peoria	37.3	38.2	0.0573	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Rock Island	48.3	68.3	-0.3326	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Sangamon	42.2	35.8	0.2331	0.2817	-0.6691	0.4575	Within CI

Appendix 3: County Effects, Calibration of EQ1 (Continued)

Chronic obstructive pulmonary disease, unspecified	St. Clair	35	41.8	-0.1128	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Tazewell	37.7	40.1	0.0178	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Will	24.8	27	-0.0072	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Winnebago	53.6	57.7	0.0050	0.2817	-0.6691	0.4575	Within CI
Chronic obstructive pulmonary disease, unspecified	Woodford	44.4	26	0.4959	0.2817	-0.6691	0.4575	HT_Q3
Congestive heart failure	Boone	22.5	31.7	-0.4391	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Champaign	19.8	24.8	-0.2827	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Clinton	64.7	37.2	0.3948	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Cook	20.9	21.9	-0.0780	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	DeKalb	10.9	13.4	-0.2596	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	DuPage	28	25	0.0769	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Grundy	22.3	25.5	-0.1737	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Henry	24.9	61.1	-1.4840	0.4658	-0.9757	0.8876	LT_Q1
Congestive heart failure	Jersey	56.7	50.4	0.0809	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Kane	31.3	21.9	0.2701	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Kankakee	22.6	27.3	-0.2382	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Kendall	14.7	13.3	0.0650	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Lake	26.3	22.1	0.1295	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Macon	59.6	42	0.2651	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Macoupin	36.5	46.3	-0.2987	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Madison	40.7	51.4	-0.2931	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	McHenry	34.5	23	0.3031	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	McLean	54	41.1	0.2087	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Monroe	45.8	29.1	0.3344	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Peoria	23.9	27.1	-0.1641	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Rock Island	27.3	32.8	-0.2317	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Sangamon	37.6	36.3	0.0044	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	St. Clair	35.8	38.3	-0.1000	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Tazewell	30	20.4	0.2898	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Will	20.5	28.7	-0.4302	0.4658	-0.9757	0.8876	Within CI
Congestive heart failure	Winnebago	29.6	50.3	-0.7295	0.4658	-0.9757	0.8876	Within CI
Other ill-defined heart diseases	Marshall	86.6	95.4	-1.0037	0.0000	-1.0037	-1.0037	Within CI
Nonmetro								
Atherosclerotic heart disease	Adams	48.4	73.1	-0.4240	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Bureau	49.3	48.5	0.1025	0.4955	-0.9747	1.0074	Within CI

Appendix 3: County Effects, Calibration of EQ1 (Continued)

Atherosclerotic heart disease	Carroll	71.2	139.7	-0.8758	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Christian	78.2	64.3	0.2641	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Coles	58.2	78.6	-0.2642	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Crawford	141.4	69.1	0.5976	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	De Witt	84.9	69.8	0.2642	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Edgar	67.1	86.4	-0.2013	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Effingham	52	61.4	-0.0945	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Franklin	67.5	80.1	-0.1003	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Fulton	76.9	48.8	0.4517	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Iroquois	72.9	76.1	0.0424	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Jackson	56.4	38.3	0.4072	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Jefferson	27.7	34.4	-0.1556	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Knox	47.2	59.9	-0.1827	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	LaSalle	52.6	89.6	-0.6171	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Lee	56.6	61.4	0.0015	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Livingston	79.2	103.5	-0.2205	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Logan	54.5	86.4	-0.4990	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Marion	27.4	37.2	-0.2713	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	McDonough	48.8	33.4	0.4019	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Montgomery	54.3	38.5	0.3773	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Morgan	46	135.4	-1.8572	0.4955	-0.9747	1.0074	LT_Q1
Atherosclerotic heart disease	Ogle	50.6	49.1	0.1160	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Randolph	70.2	52.9	0.3328	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Richland	91.1	114.2	-0.1672	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Shelby	73	55.2	0.3302	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Stephenson	53.4	49.2	0.1650	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Vermilion	66.1	63.8	0.1211	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Warren	67.8	70.5	0.0465	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Whiteside	58.5	89.9	-0.4504	0.4955	-0.9747	1.0074	Within CI
Atherosclerotic heart disease	Williamson	25.3	29.8	-0.0915	0.4955	-0.9747	1.0074	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Adams	54.6	74.6	-0.3692	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Bureau	30.8	60.6	-0.9704	0.3612	-0.7875	0.6574	LT_Q1
Bronchus or lung, unspecified - Malignant neoplasms	Christian	81.2	76.5	0.0550	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Clay	85.8	135.8	-0.5856	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified -	Coles	75.4	41.3	0.4494	0.3612	-0.7875	0.6574	Within CI

Appendix 3: County Effects, Calibration of EQ1 (Continued)

Malignant neoplasms								
Bronchus or lung, unspecified - Malignant neoplasms	Crawford	81.6	58.5	0.2802	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	De Witt	78.3	101.5	-0.2992	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Edgar	67.1	57.6	0.1387	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Effingham	37.6	38	-0.0135	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Fayette	99.3	46.7	0.5268	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Franklin	81	62	0.2317	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Fulton	67.7	83.2	-0.2318	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Iroquois	72.9	90.6	-0.2457	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Jackson	54.5	55.7	-0.0249	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Jefferson	58.2	63.5	-0.0940	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Jo Daviess	74.3	65.5	0.1155	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Knox	63.6	67.8	-0.0689	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	LaSalle	53.5	85	-0.5917	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Lee	53.7	29.2	0.4533	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Livingston	48.1	69.9	-0.4561	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Logan	79.9	58.8	0.2612	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Marion	98.8	90.4	0.0821	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Mason	103.6	95.8	0.0724	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	McDonough	82.5	46.7	0.4310	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Montgomery	61.6	83.9	-0.3649	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Morgan	73.6	79.5	-0.0831	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Ogle	44.8	45.2	-0.0118	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Perry	69.1	66.1	0.0405	0.3612	-0.7875	0.6574	Within CI

Appendix 3: County Effects, Calibration of EQ1 (Continued)

Bronchus or lung, unspecified - Malignant neoplasms	Pike	77.1	96.1	-0.2493	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Randolph	46.8	77.9	-0.6674	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Saline	61.3	66.9	-0.0942	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Shelby	63.3	73.6	-0.1656	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Stephenson	55.7	64.8	-0.1663	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Vermilion	94.2	89.8	0.0438	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	White	112	80.5	0.2784	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Whiteside	65.9	70.1	-0.0666	0.3612	-0.7875	0.6574	Within CI
Bronchus or lung, unspecified - Malignant neoplasms	Williamson	37.3	43.2	-0.1611	0.3612	-0.7875	0.6574	Within CI
Chronic obstructive pulmonary disease, unspecified	Adams	37.4	56.3	-0.4488	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Christian	45.1	76.5	-0.6397	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Clay	85.8	90.5	0.0018	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Coles	73.2	41.3	0.4924	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Crawford	59.8	53.2	0.1669	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	De Witt	65.3	69.8	-0.0123	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Douglas	55.5	61.6	-0.0533	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Edgar	61	97.9	-0.5483	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Effingham	54.9	90.6	-0.5937	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Franklin	70.2	80.1	-0.0845	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Fulton	80	74.6	0.1241	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Hancock	100	56	0.4966	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Iroquois	53.7	76.1	-0.3606	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Jackson	39.5	50.5	-0.2219	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Jefferson	55.4	55.5	0.0548	0.5968	-1.3219	1.0652	Within CI

Chronic obstructive pulmonary disease, unspecified	Knox	84.2	77.8	0.1326	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	LaSalle	28.6	49.3	-0.6672	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Lee	35.8	70.1	-0.9015	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Livingston	84.8	69.9	0.2323	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Logan	65.4	69.1	0.0000	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Marion	112.5	61.1	0.5135	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	McDonough	37.5	60.1	-0.5461	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Montgomery	61.6	80.4	-0.2486	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Morgan	76.6	55.9	0.3268	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Ogle	29.2	55	-0.8270	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Randolph	50.2	59.2	-0.1227	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Richland	71.6	63.4	0.1711	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Saline	131.4	92	0.3564	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Stephenson	81.2	44.7	0.5061	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Union	77	59.4	0.2851	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Vermilion	42.2	63.8	-0.4553	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	White	134.4	131.7	0.0767	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Whiteside	51.2	71.9	-0.3477	0.5968	-1.3219	1.0652	Within CI
Chronic obstructive pulmonary disease, unspecified	Williamson	74.6	76.1	0.0365	0.5968	-1.3219	1.0652	Within CI
Congestive heart failure	Adams	39	36.5	-0.0549	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Bureau	43.1	39.4	-0.0332	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Christian	51.1	36.7	0.1628	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Coles	40.9	35.4	0.0154	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Effingham	43.4	35.1	0.0722	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Fulton	58.4	51.7	-0.0043	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Jackson	30.1	29.6	-0.1024	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Jefferson	27.7	29.1	-0.1696	0.1898	-0.5072	0.2521	Within CI

Appendix 3: County Effects, Calibration of EQ1 (Continued)

Congestive heart failure	Knox	32.8	33.9	-0.1526	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	LaSalle	24.9	28.3	-0.2556	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Lee	38.8	38	-0.0984	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Livingston	28.3	30.8	-0.2074	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Marion	71.4	90.4	-0.3852	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Montgomery	50.7	55.9	-0.2216	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Ogle	40.9	37.3	-0.0310	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Randolph	46.8	43.6	-0.0507	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Stephenson	58	62.6	-0.1984	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Vermilion	26.7	33.9	-0.3887	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Whiteside	31.1	37.8	-0.3345	0.1898	-0.5072	0.2521	Within CI
Congestive heart failure	Williamson	28.3	31.3	-0.2251	0.1898	-0.5072	0.2521	Within CI