Potentially Preventable Hospitalizations Program
Surveillance Report – Angelina County
June 2016

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Introduction

Potentially Preventable Hospitalizations (PPH) are hospital admissions for certain acute illnesses and chronic conditions that may be avoided with appropriate outpatient treatment and disease management. Lack of access to healthcare and poor-quality care lead to increases in these types of hospitalizations. PPHs are also referred to as *Ambulatory Care Sensitive Conditions*, *Prevention Quality Indicators* (PQIs), and *Potentially Preventable Admissions/Events*.

Methodology to identify PPHs was developed by the Agency for Healthcare Research and Quality (AHRQ). AHRQ is the lead federal agency responsible for research on healthcare quality costs, outcomes and patient safety. The hospitalizations are geographically identified by the residence of the patient—not the location where they were hospitalized.

PPH illnesses and conditions are identified by their primary diagnosis in the hospital. The most common chronic conditions that result in preventable hospitalizations are: angina, congestive heart failure (CHF), hypertension, chronic obstructive pulmonary disease (COPD) and asthma in older adults, diabetes short-term complications, and diabetes long-term complications. The most common acute illnesses that result in preventable hospitalizations are: bacterial pneumonia, dehydration, and urinary tract infection (UTI).

This report analyzes **adult** potentially preventable hospitalizations data. Hospitalizations of children are not included. Not all of the PPH conditions identified by AHRQ are included in this report. For a complete list, please visit the AHRQ website. (See page 18) PPH chart and table totals appearing in this report are not meant to be utilized as composite indicators.

PPH data and trends may be used as tools to improve the outpatient healthcare system and population health. Although these indicators are based on hospital inpatient data, they provide insight into community resources and services outside the hospital setting, and are markers of health system efficiency and efficacy. This information is not meant to be used as an evaluation of particular hospitals or other healthcare providers.

The Texas Potentially Preventable Hospitalizations Program

DSHS approved a Project Charter in January 2008 to support community assessment projects using PPH data. An Exceptional Item proposal was developed in 2010 to provide resources to reduce PPH rates. In June of 2011, the 82nd Texas Legislature approved $2 million for preventative hospitalization projects through a rider to the appropriations bill.

In August of 2011, DSHS sent a Request for Information to the county governments of Texas announcing funding to reduce hospitalizations and costs for adult PPH conditions by implementing interventions through a community coordinated approach. The 92 counties eligible to respond were those that had a hospitalization rate more than 50% higher than the state rate for at least one PPH condition from 2005-2009; and had a population of less than 100,000 residents between the ages of 18 and 64. DSHS was able to provide funding to 16 of the applicants: Angelina, Brooks, Ector, Grayson, Hunt, Liberty, Limestone, Nacogdoches, Orange, Polk, Red River, San Augustine, Tom Green, Trinity, Victoria, and Walker. The first contract period was January 1, 2012 – August 31, 2013.

DSHS re-contracted with 13 of the 16 counties for the period of September 1, 2013 – August 31, 2015. (Hunt, Liberty and Nacogdoches counties dropped out of the project.) With $2 million available in Fiscal Years 2013 and 2014, the reduced number of funded counties added a condition of focus. The chart below shows conditions targeted by each of the 13 counties by August 2015:

Counties Contracting with DSHS	PPH Conditions County Projects Targeted prior to 9/1/15
Angelina	Bacterial Pneumonia, Dehydration, Hypertension, UTI
Brooks	Bacterial Pneumonia, Dehydration
Ector	Asthma, COPD, Diabetes
Grayson	Bacterial Pneumonia, COPD, Dehydration, UTI,
Limestone	Bacterial Pneumonia, CHF,COPD
Orange	Angina, Bacterial Pneumonia, CHF, COPD
Polk	Bacterial Pneumonia, CHF, COPD, Dehydration
Red River	CHF, COPD, Diabetes
San Augustine	Bacterial Pneumonia, Hypertension
Tom Green	Bacterial Pneumonia, COPD, Dehydration, UTI
Trinity	Bacterial Pneumonia, COPD, Hypertension, UTI
Victoria	Angina, Bacterial Pneumonia, CHF, Diabetes
Walker	Asthma, Hypertension, Diabetes

The PPH Initiative transferred from the Center for Policy and External Affairs to the Health Promotion and Chronic Disease Prevention Section in September 2015. The PPH Program operates with a funding level of $2 million available for the 24-month period of September 1, 2015- August 31, 2017. The previously funded 13 counties continue participating. To make the greatest impact with limited resources, all counties are currently focusing on the highest-cost PPH conditions in Texas: CHF, COPD, and short and long-term diabetes complications. Each county is implementing four interventions to address the conditions: patient education, patient case management, healthcare provider education, and community education. Cross-cutting activities include immunizations, medication access, smoking

cessation, nutrition, physical activity, weight reduction, glycemic control, and blood pressure control.

The PPH Program is dedicated to providing technical assistance and support to local governments and other entities seeking to improve health care quality, reduce health care costs, and lower preventable hospitalization rates in order to improve the quality of life, health and wellbeing for Texans and their families. The PPH Surveillance Report is one of the tools available to advance our mission.

Definitions

1. **Bacterial Pneumonia** is an infection of the lungs that can cause mild to severe illness. It can often be prevented with vaccines and can usually be treated with antibiotics or specific drug therapies.
2. **Dehydration** means the body does not have enough fluid to function normally. Dehydration impacts older adults or institutionalized individuals who have a limited ability to communicate thirst. The condition commonly results from diarrhea and vomiting due to illness. People working outdoors in extreme heat conditions are also susceptible. Vulnerable people need to drink extra non-caffeinated fluids to keep from getting dehydrated. Mild fluid loss can most often be treated at home, but severe dehydration must be treated in the hospital.
3. **Urinary Tract Infection (UTI)** is usually caused when bacteria enter the bladder and cause inflammation and infection. UTIs are among the most common infections in people, and is usually treated with antibiotics. UTIs are the most common type of healthcare-associated infection. Among UTIs acquired in the hospital, approximately 75% are associated with a urinary catheter.
4. **Angina** (without procedures) is a symptom of coronary artery disease. Pain or discomfort in the chest, shoulders, arms, neck, jaw, or back; or a feeling like indigestion occurs because the heart muscle is not getting enough blood. Angina and other heart diseases can be prevented and treated by healthy lifestyle improvements and managing health conditions.
5. **Congestive Heart Failure (CHF)** happens when the heart cannot pump enough blood and oxygen to support other organs in the body. Early diagnosis and treatment can improve quality and length of life for people who have heart failure. Treatment usually involves **taking medications**, **reducing sodium** in the diet, and getting **daily physical activity**.
6. **Hypertension** (High Blood Pressure) is measured by the force of blood against your artery walls as it circulates through your body. Blood pressure normally rises and falls throughout the day, but it can cause health problems if it stays high for a long time such as heart disease and stroke. Hypertension can be controlled with prescribed medications and lifestyle changes.
7. **Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults (age 40+)** refers to a group of diseases that cause airflow blockage and breathing-related problems. It includes emphysema, chronic bronchitis, and some cases of asthma. COPD treatment requires an individualized plan with multiple components that may include smoking cessation, medication, pulmonary rehabilitation, vaccination, oxygen supplements, etc.
8. **Diabetes** is a disease in which blood glucose levels are above normal. The pancreas makes a hormone called insulin to help glucose get into the body's cells. With diabetes, the body either doesn't make enough insulin or can't use its own insulin as well as it should, causing sugar to build up in the blood. A healthy food intake balanced by daily physical activities is the basic therapy for diabetes. Blood glucose levels must be closely monitored through frequent blood glucose testing. Insulin injections and/or oral medication are needed as well.

a. **Short-term Complications** occur as a result of uncontrolled blood sugar levels. Ketoacidosis and hyperosmolarity occur from excessively high blood sugar levels. Dangerously high blood sugar (hyperglycemia) or dangerously low blood sugar (hypoglycemia) can lead to a coma.
b. **Long-term Complications** are when renal, eye, neurological, circulatory, or not otherwise specified complications occur due to poor control of blood sugar levels over a period of time.

Note: definition sources are the Centers for Disease Control website and the Agency for Healthcare Research and Quality website. See **Related Links** on page 18.

Key Findings

- Females were disproportionally affected by hospitalizations for urinary tract infections. In Angelina County, females make up 51.3% of the population but accounted for 70.1% of potentially preventable hospitalizations for urinary tract infections.
- More than half (62.5%) of hospitalizations for diabetes short-term complications occurred among adults in the youngest age category (age 18 to 44 years).
- COPD or asthma in older adults had the highest risk-adjusted hospitalization rate compared to each of the other PPH conditions in Angelina County.
- Bacterial pneumonia had the highest charge per adult Angelina County resident at $195.
- Medicare was the most common primary payer source for each potentially preventable hospitalization condition with reportable data except for diabetes short-term complications.

Demographics (Race/Ethnicity and Gender), Angelina County and Potentially Preventable Hospitalizations (PPH), 2014

Table 1 –Angelina County Demographics by Race/Ethnicity and Gender, 2014

	White Non-Hispanic		Black Non-Hispanic		Hispanic		Other		Total	
	N	%	N	%	N	%	N	%	N	%
Angelina	43,043	65.0	9,665	14.6	12,048	18.2	1,415	2.1	66,171	100.0

	Male		Female		Total	
	N	%	N	%	N	%
Angelina	32,245	48.7	33,926	51.3	66,171	100.0

Table 2 – PPH Demographics by Race/Ethnicity and Gender, 2014

PPH Conditions	White Non-Hispanic		Black Non-Hispanic		Hispanic		Other		Male		Female	
	N	%	N	%	N	%	N	%	N	%	N	%
Diabetes Short-term	--	--	13	20.3	--	--	40	62.5	27	42.2	37	57.8
Diabetes Long-term	28	35.0	15	18.8	--	--	34	42.5	50	61.7	31	38.3
COPD/Asthma in Older Adults	102	43.6	15	6.4	--	--	114	48.7	90	38.5	144	61.5
Hypertension	--	--	--	--	--	--	14	43.8	--	--	24	72.7
CHF	100	39.4	40	15.8	12	4.7	102	40.2	130	51.2	124	48.8
Dehydration	42	53.2	--	--	--	--	25	31.7	32	40.5	47	59.5
Bacterial Pneumonia	99	39.8	18	7.2	--	--	131	52.6	113	45.2	137	54.8
UTI	64	46.7	--	--	--	--	60	43.8	41	29.9	96	70.1
Angina	--	--	--	--	--	--	--	--	--	--	--	--

Note: The four highlighted conditions were selected for FY 2016 - 2017.
-- indicates less than 12 hospitalizations.
Please refer to the limitation section regarding reporting of race/ethnicity.

Figure 1 - Percentage of Angelina County Demographics by Race/Ethnicity, 2014

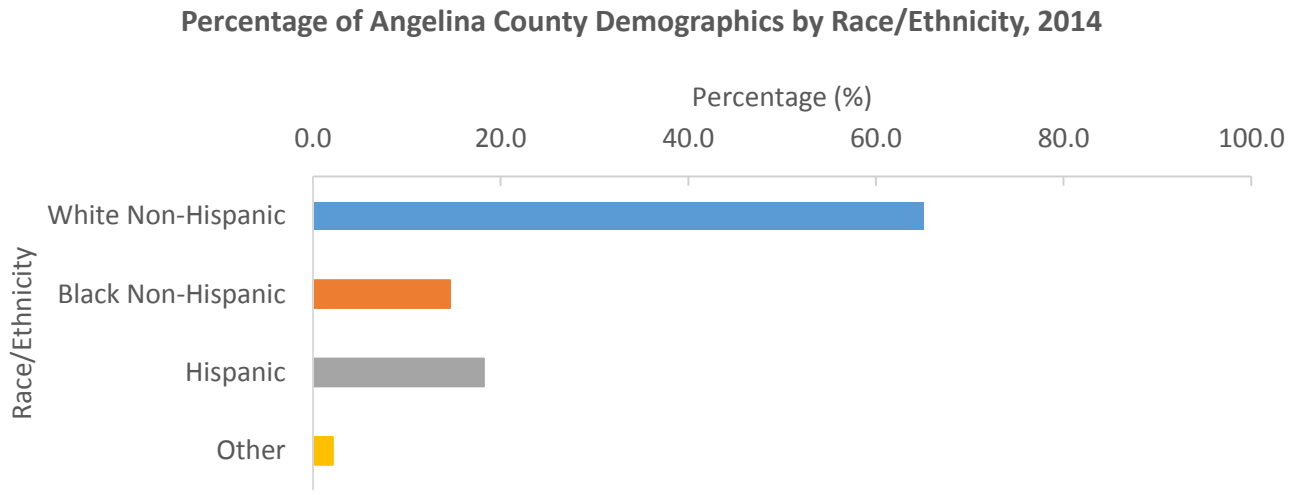
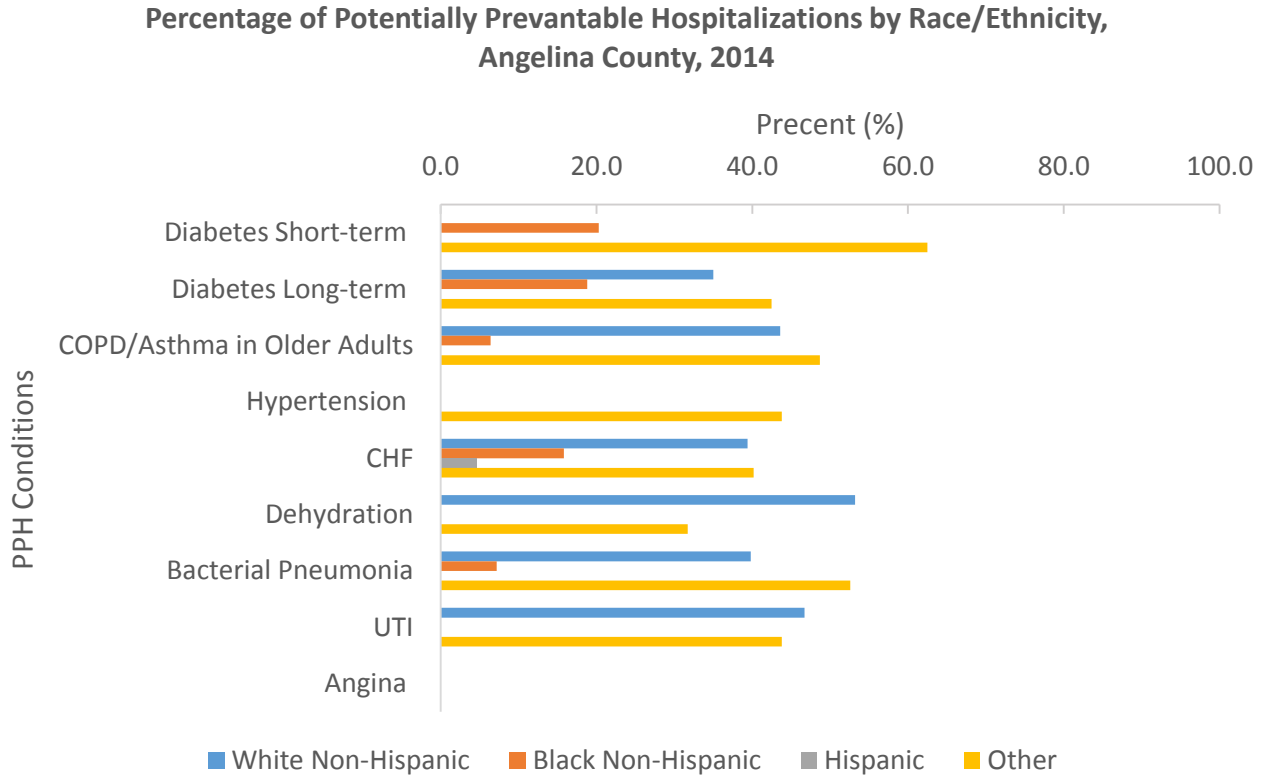


Figure 2 - Percentage of PPH by Race/Ethnicity, Angelina County, 2014



Note: Data not reported for conditions with fewer than 12 hospitalizations reported for a specific race/ethnicity category. Please refer to the limitation section regarding reporting of race/ethnicity.

Demographics (Age Groups), Angelina County and Potentially Preventable Hospitalizations (PPH), 2014

Table 3 – Angelina County Demographics by Age Groups, 2014

	18-44 Years		45-64 Years		65-74 Years		75+ Years		Total	
	N	%	N	%	N	%	N	%	N	%
Angelina	30,093	45.5	22,613	34.2	7,786	11.8	5,679	8.6	66,171	100.0

Table 4 – PPH Demographics by Age Groups, Angelina County, 2014

	18-44 years		45-64 years		65-74 years		75+ years	
PPH Conditions	N	%	N	%	N	%	N	%
Diabetes Short-term	40	62.5	20	31.3	--	--	--	--
Diabetes Long-term	14	17.3	34	42.0	19	23.5	14	17.3
COPD/Asthma in Older Adults	--	--	87	37.2	71	30.3	67	28.6
Hypertension	--	--	14	42.4	--	--	--	--
CHF	12	4.7	74	29.1	61	24.0	107	42.1
Dehydration	--	--	19	24.1	20	25.3	29	36.7
Bacterial Pneumonia	16	6.4	69	27.6	53	21.2	112	44.8
UTI	28	20.4	31	22.6	12	8.8	66	48.2
Angina	--	--	--	--	--	--	--	--

Note: The four highlighted conditions were selected for FY 2016 - 2017.
- - indicates less than 12 hospitalizations.
COPD/Asthma in Older Adults is only among adults age 40 and over.

Number of Potentially Preventable Hospitalizations (PPH) and Risk Adjusted Rates, 2014

Definition of Risk Adjusted Rate: The risk adjusted rate allows us to compare communities that are different in their age and gender distribution. Risk adjusted rates statistically compensate (or adjust) for risk factor differences in two communities so that the outcome rates (here PPHs) can be compared legitimately despite the differences. In this report we have adjusted the rate for age and gender as those are identified as the risk factors that influence the PPHs.

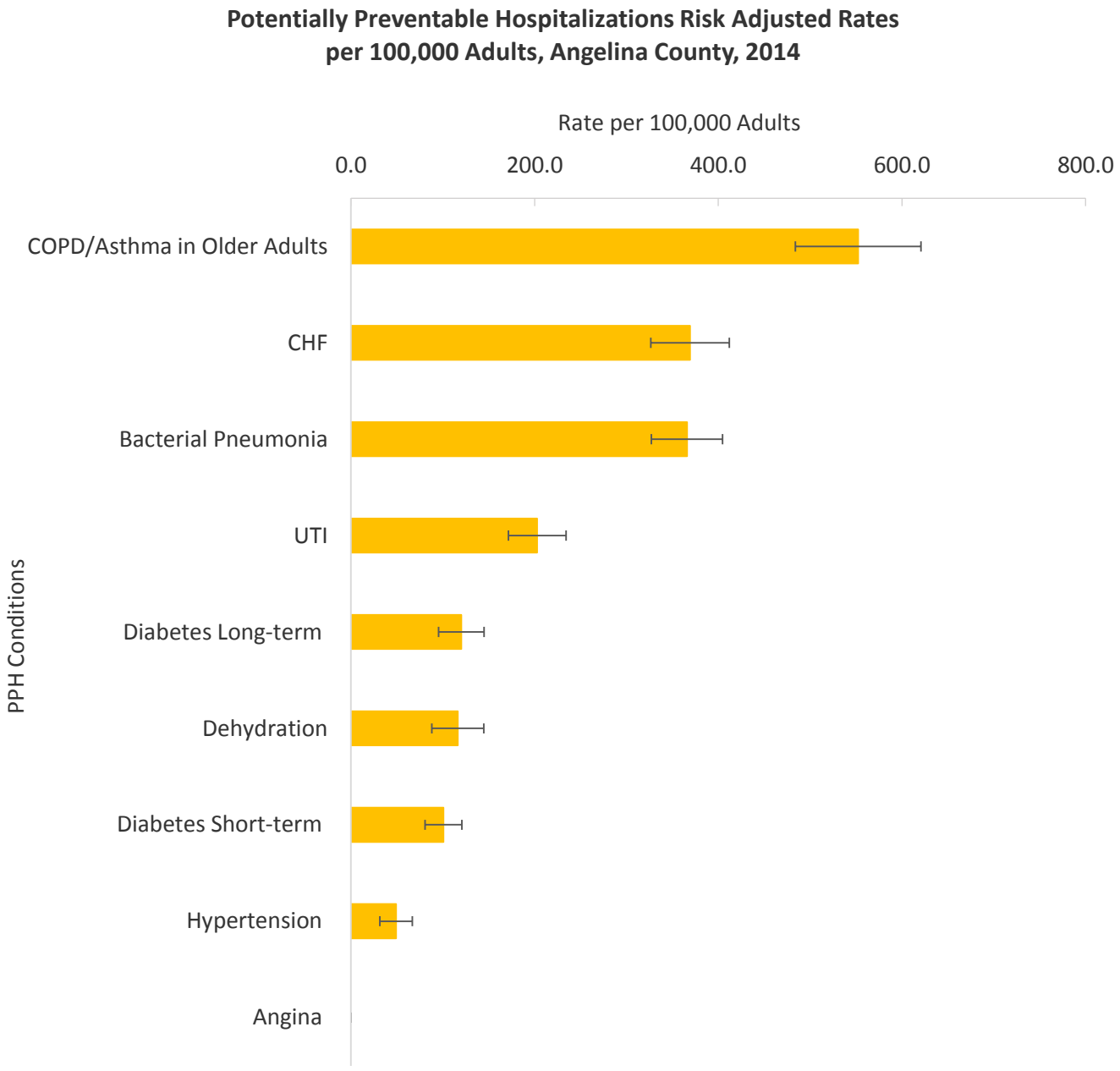
For example, County A has 100 COPD hospitalizations, while County B has 200 COPD hospitalizations in the same year. This may lead to misinterpretation that County B has higher COPD hospitalizations. However, County A has a senior citizen population of 10% and County B has a senior citizen population of 40%. Using the risk adjusted rate we can compare these counties while accounting for the age differences in the population.

Table 5 - Number of PPH and the Risk Adjusted Rates, Angelina County, 2014

PPH Conditions	Number of Hospitalizations	Risk Adjusted Rates (95% Confidence Interval)
Diabetes Short-term	64	100.7 (80.6-120.8)
Diabetes Long-term	81	120.3 (95.6-144.9)
COPD/Asthma in Older Adults	234	552.4 (454.1-620.7)
Hypertension	33	49.2 (31.4-67.0)
CHF	254	369.2 (326.5-411.9)
Dehydration	79	116.3 (88.1-144.6)
Bacterial Pneumonia	250	365.9 (327.3-404.6)
UTI	137	202.9 (171.6-234.2)
Angina	--	--

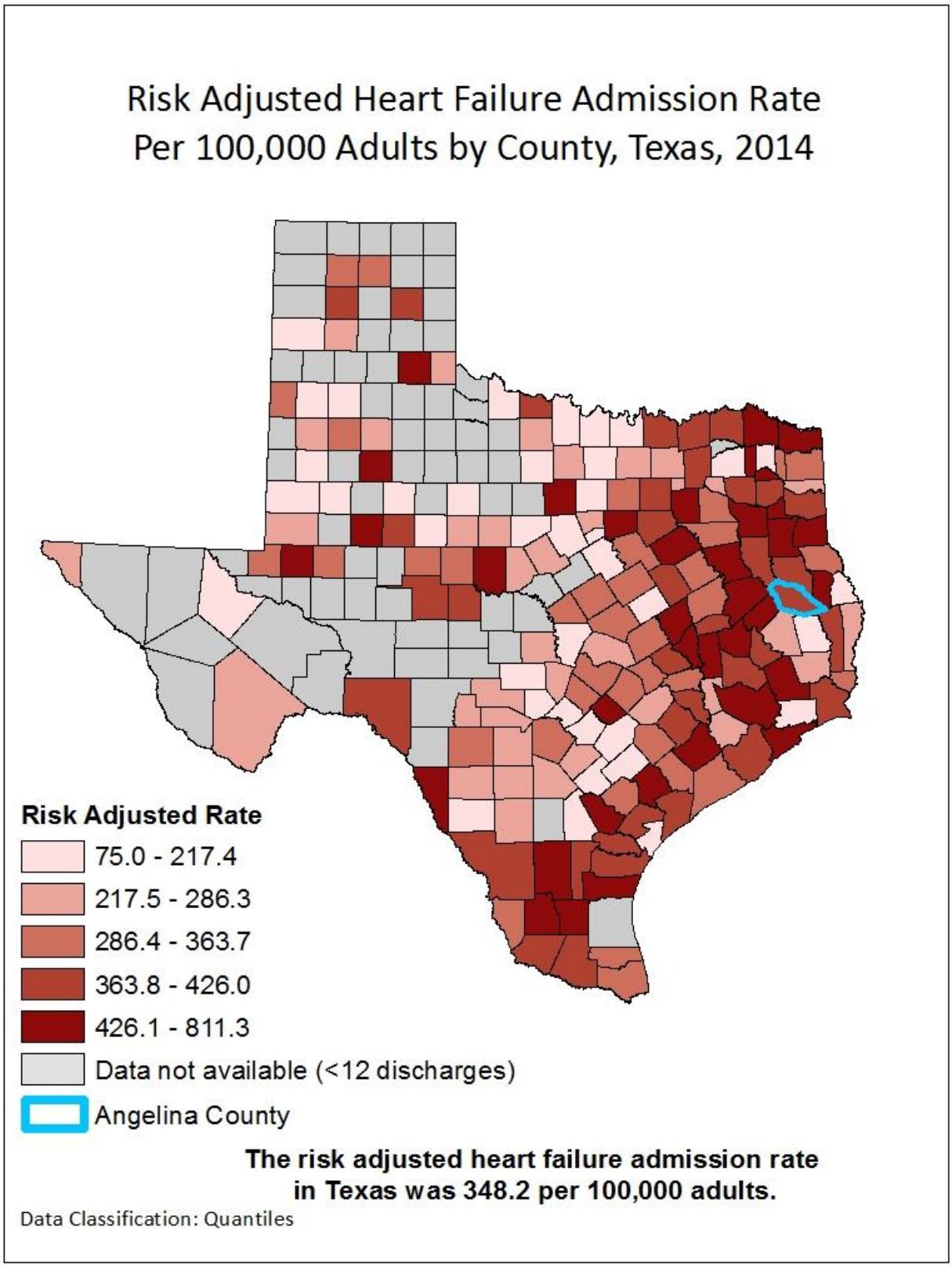
Note: The four highlighted conditions were selected for FY 2016 - 2017.
-- indicates less than 12 hospitalizations.

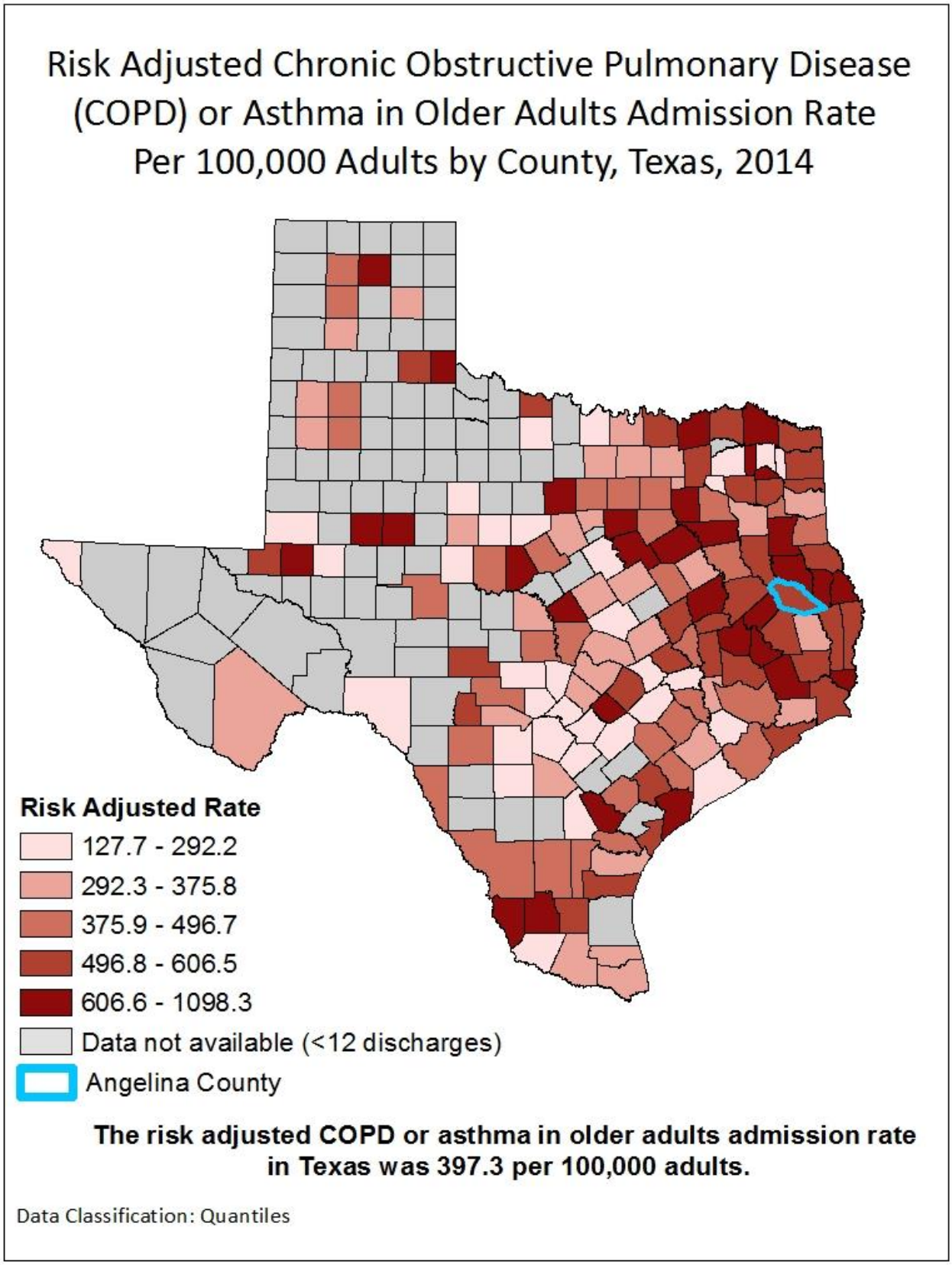
Figure 3 – Risk Adjusted Rates of PPH, Angelina County, 2014

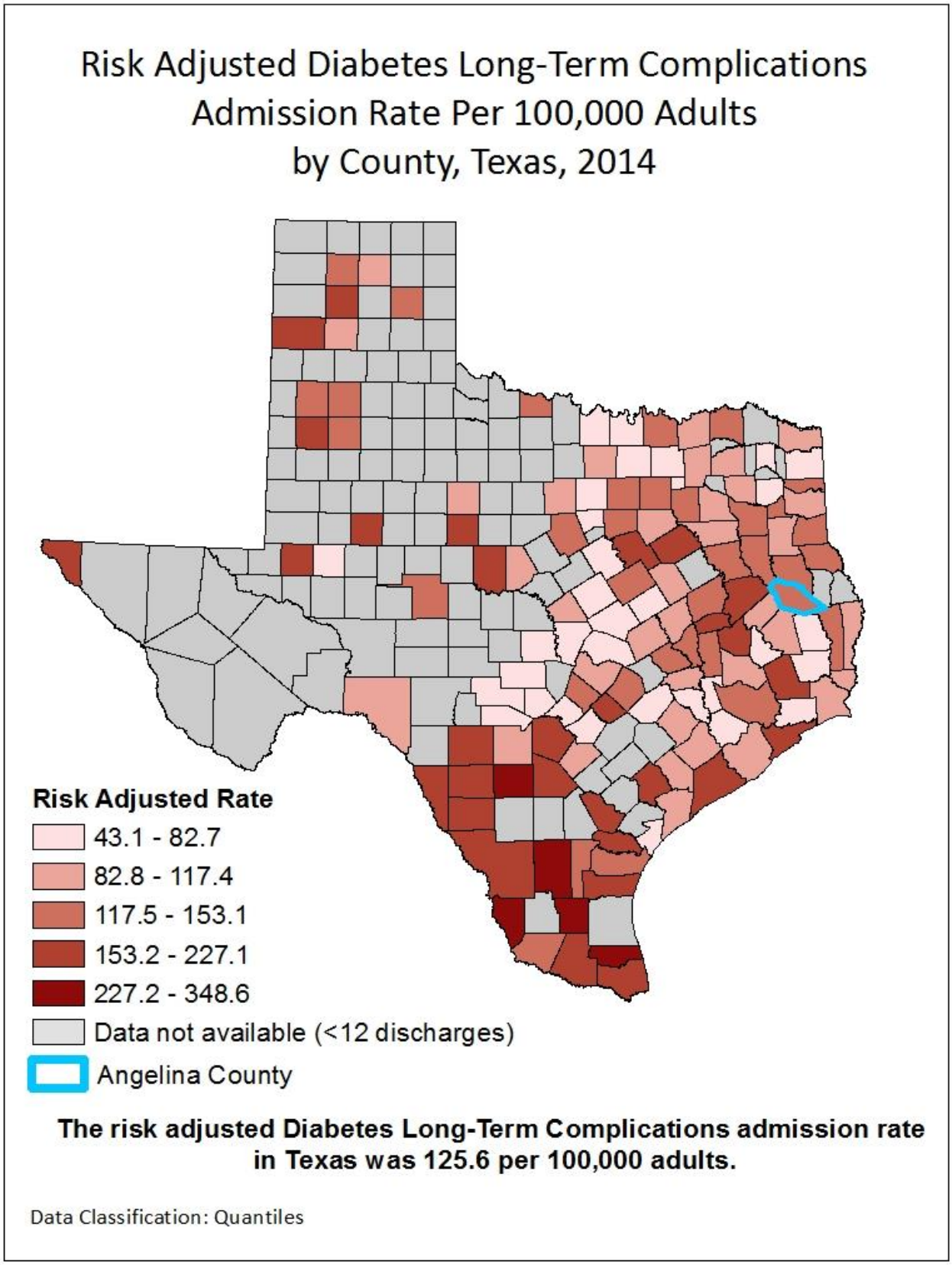


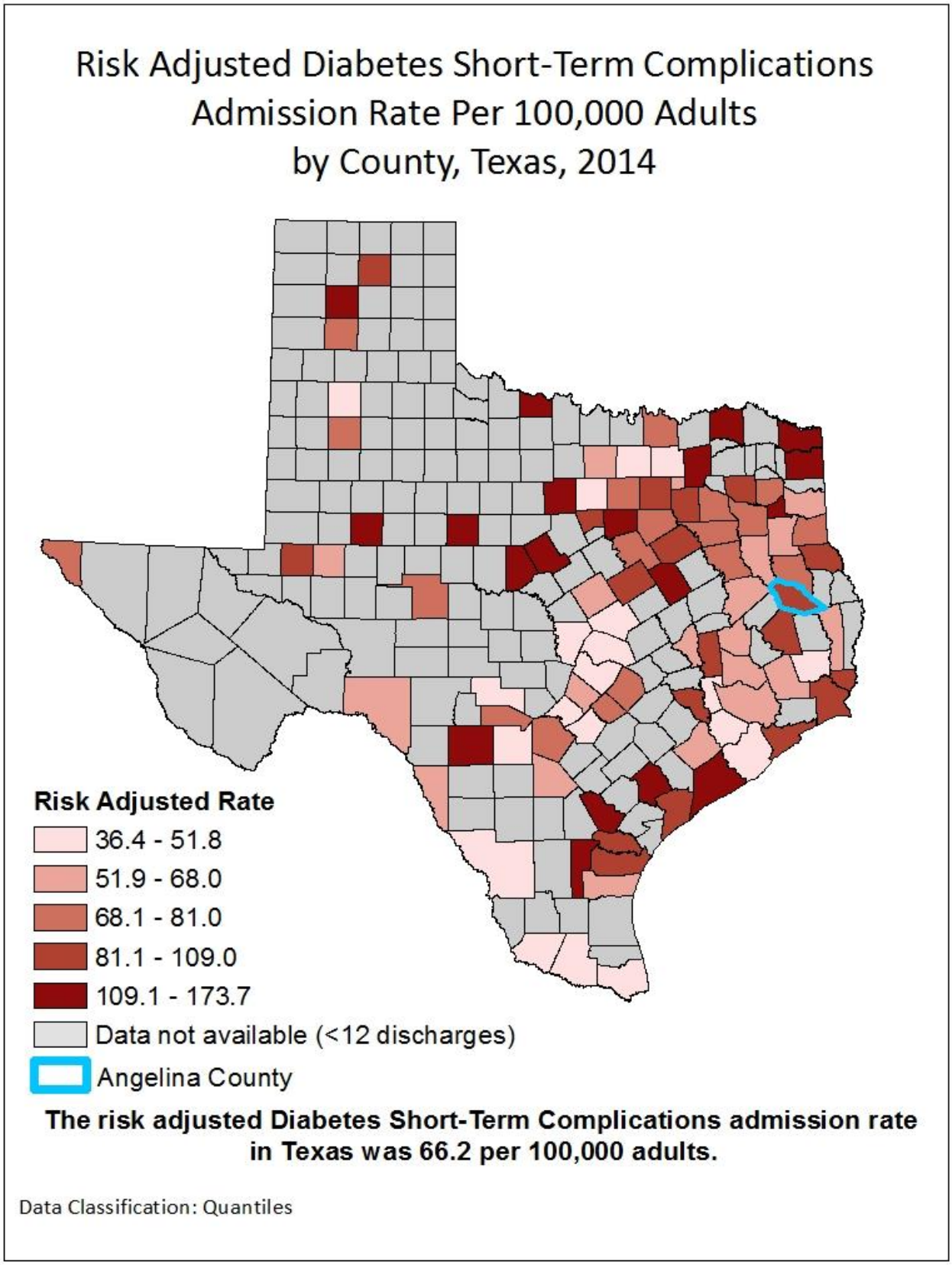
Note: Data not reported for conditions with fewer than 12 hospitalizations reported.

Figure 4 – Risk Adjusted Rates of PPH for 4 Selected Conditions, Angelina County, 2014




Risk Adjusted Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate Per 100,000 Adults by County, Texas, 2014
Risk Adjusted Rate
127.7 - 292.2
292.3 - 375.8
375.9 - 496.7
496.8 - 606.5
606.6 - 1098.3
Data not available (<12 discharges)
Angelina County
The risk adjusted COPD or asthma in older adults admission rate in Texas was 397.3 per 100,000 adults.
Data Classification: Quantiles


Risk Adjusted Diabetes Long-Term Complications
Admission Rate Per 100,000 Adults
by County, Texas, 2014
Risk Adjusted Rate
43.1 - 82.7
82.8 - 117.4
117.5 - 153.1
153.2 - 227.1
227.2 - 348.6
Data not available (<12 discharges)
Angelina County
The risk adjusted Diabetes Long-Term Complications admission rate in Texas was 125.6 per 100,000 adults.
Data Classification: Quantiles


Risk Adjusted Diabetes Short-Term Complications
Admission Rate Per 100,000 Adults
by County, Texas, 2014
Risk Adjusted Rate
36.4 - 51.8
51.9 - 68.0
68.1 - 81.0
81.1 - 109.0
109.1 - 173.7
Data not available (<12 discharges)
Angelina County
The risk adjusted Diabetes Short-Term Complications admission rate in Texas was 66.2 per 100,000 adults.
Data Classification: Quantiles

Hospital Charges and Length of Stay of Potentially Preventable Hospitalizations (PPH), Angelina County, 2014

Table 6 – Hospital Charges and Length of Stay of PPH, Angelina County, 2014

PPH Conditions	Average Charge ($)	Median Charge ($)	Total Charge ($)	Charge per Adult County Resident ($)	Average Length of Hospital Stay (Days)
Diabetes Short-term	29,238	25,818	1,871,210	28	3.7
Diabetes Long-term	56,240	39,946	4,555,401	69	6.5
COPD/Asthma in Older Adults	45,649	34,775	10,681,805	161	5.0
Hypertension	31,410	27,975	1,036,525	16	3.0
CHF	50,322	38,561	12,781,733	193	5.7
Dehydration	34,993	29,377	2,764,416	42	4.4
Bacterial Pneumonia	51,724	39,806	12,930,978	195	5.9
UTI	40,714	29,539	5,577,853	84	4.8
Angina	--	--	--	--	--

Note: The four highlighted conditions were selected for FY 2016 - 2017.
-- indicates less than 12 hospitalizations.

Expected Primary Source of Payment of Potentially Preventable Hospitalizations (PPH), Angelina County, 2014

Table 7 – Expected Primary Payer of PPH, Angelina County, 2014

	Medicaid		Medicare		Private Health Insurance		Uninsured		Other	
PPH Conditions	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Diabetes Short-term	--	--	--	--	39	60.9	--	--	--	--
Diabetes Long-term	--	--	50	61.7	19	23.5	--	--	--	--
COPD/Asthma in Older Adults	--	--	163	69.7	58	24.8	--	--	--	--
Hypertension	--	--	19	57.6	13	39.4	--	--	--	--
CHF	12	4.7	195	77.1	40	15.8	--	--	--	--
Dehydration	--	--	59	74.7	16	20.3	--	--	--	--
Bacterial Pneumonia	13	5.2	188	75.2	46	18.4	--	--	--	--
UTI	--	--	94	68.6	32	23.4	--	--	--	--
Angina	--	--	--	--	--	--	--	--	--	--

Note: The four highlighted conditions were selected for FY 2016 - 2017.
-- indicates less than 12 hospitalizations.

Future Recommendations

- Incorporate the percentage of each PPH condition that has a secondary diagnosis of mental illness or substance abuse.
- Include more data visualizations, specifically the bar charts such as Figure 1 and 2 to compare between demographics with PPH conditions and county population demographics that further include age groups and gender.
- Develop benchmarks for condition-specific risk adjusted rates that allow for comparisons between the benchmark and county-level data.

Technical Notes

Measure Information:

The preventable hospitalization conditions in this report were selected from the Prevention Quality Indicators created by the Agency for Healthcare Research and Quality (AHRQ). AHRQ (www.ahrq.gov) is the lead federal agency responsible for research on health care quality, costs, outcomes, and patient safety.

Each potentially preventable hospitalization condition is defined by ICD-9-CM diagnosis codes. AHRQ may change the definition for these conditions each year.

All values may not add to the total because of missing data. The number of missing values may be different for each variable.

Limitations:

- Hospitalization data are based on inpatient hospitalization and do not include emergency department (ED) visits which did not result in hospital admission.
- The Texas Hospital Inpatient Discharge Public Use Data represent the number of inpatient hospitalizations. Since the data have been de-identified and an individual can be hospitalized more than once for the same condition during the data collection period, multiple hospitalizations for the same individual and the same diagnosis cannot be distinguished.
- Texas Hospital Inpatient Discharge Public Use Data is not a complete source of information on PPH-related discharges because some hospitals in Texas are exempt from reporting requirements. This may result in an underestimation of the number of related discharges.
- Incidence rates and patterns of newly diagnosed conditions are not captured by the data in this report. Using hospitalization data, we cannot determine if a hospitalization serves as an initial diagnosis of a specific condition.
- Hospital charges are based on all charges incurred during a hospital stay for a discharge where a specific PPH condition was the primary diagnosis. Charges may not be specifically associated with PPH care and may be associated with secondary diagnoses.
- Hospital charges are not the same as hospital costs or payments.
- Race and ethnicity data are generally not collected by hospitals and may be subjectively captured.
- Race is changed to 'Other' and ethnicity is suppressed if a hospital has fewer than ten discharges of a race in a single quarter.

Related Links:

1) PPH Program at Texas Department of State Health Services. (http://www.dshs.state.tx.us/ph/)

2) Prevention Quality Indicators, Agency for Healthcare Research and Quality. (http://www.qualityindicators.ahrq.gov/modules/pqi_resources.aspx)

3) Texas Hospital Inpatient Public Use Data File (PUDF), Texas Health Care Information Collection, Center for Health Statistics. (http://www.dshs.state.tx.us/thcic/hospitals/inpatientpudf.shtm)

4) Centers for Disease Control (CDC). (http://www.cdc.gov/)

Additional Information:

Health Promotion and Chronic Disease Prevention Section. (https://www.dshs.state.tx.us/chronic/)