

## 2022 QE REPORT

Impact of the COVID-19 pandemic on preventable diabetes-related and hypertension admissions, 2017-2020

NOVEMBER 2022



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## Overview

This report examines the relationship between diabetes related Prevention Quality Indicators (PQIs) and socioeconomic status among Medicare Fee-For-Service (FFS) and commercially insured adults from 2017 to 2020. During the last two years of this time period, the COVID-19 pandemic substantially disrupted the healthcare system. These impacts were especially felt amongst those with chronic health conditions, including individuals with diabetes. Between 2017 and 2020, the CDC estimates 37.1% of the United States population aged 18 years and older had either diagnosed (28.5%) or undiagnosed (8.5%) diabetes.<sup>1</sup> While diabetes management has improved in recent years, in 2020 the COVID-19 pandemic caused many individuals to postpone preventive care, including deferral of diabetic screenings and treatment.<sup>2</sup> One study found prescription fills for diabetes medications decreased more than 10% and maintenance visits for asymptomatic chronic care fell over 50% during the pandemic.<sup>3</sup> The pandemic also worsened existing health disparities. Due to higher rates of chronic health conditions such as diabetes and heart disease, individuals of lower socioeconomic status were inherently at greater risk of developing severe COVID-19 illness.<sup>4,5</sup>

Diabetes is considered an ambulatory care sensitive condition, which means hospital admissions for complications of such conditions can be avoided if patients have access to appropriate and timely preventive care. PQIs quantify admissions that may have been prevented if high-quality, and timely preventive outpatient care had been accessible.<sup>6</sup> Lower PQI admission rates suggest the population had access to quality outpatient care, resulting in fewer potentially avoidable admissions. A decrease in admission rates could also signify a disruption to the healthcare system in general (i.e., shutdowns caused by the coronavirus pandemic). We included in the report and analysis the following PQIs, which pertain to either diabetes or the common diabetic comorbidity of hypertension:

- **Diabetes Short-Term Complications Admission Rate (PQI 01):** Admissions for a principal diagnosis of diabetes with short-term complications (ketoacidosis, hyperosmolarity, or coma).
- **Diabetes Long-Term Complications Admission Rate (PQI 03):** Admissions for a principal diagnosis of diabetes with long-term complications (renal, eye, neurological, circulatory, or complications not otherwise specified).
- **Hypertension Admission Rate (PQI 07):** Admissions with a principal diagnosis of hypertension. Excludes kidney disease combined with dialysis access procedure admissions and cardiac procedure admissions.
- **Uncontrolled Diabetes Admission Rate (PQI 14):** Admissions for a principal diagnosis of diabetes without mention of either short-term (ketoacidosis, hyperosmolarity, or coma) or long-term (renal, eye, neurological, circulatory, or other unspecified) complications.
- **Lower-Extremity Amputation among Patients with Diabetes Rate (PQI 16):** Admissions for any-listed diagnosis of diabetes and any-listed procedure of lower-extremity amputation (except toe amputations). Excludes any listed diagnosis of traumatic lower-extremity amputation admissions.

PQIs were assessed by payer type, demographics (age and sex), and socioeconomic status:

Dimension	Description
<b>Payer type</b>	Either commercial insurance or Medicare
<b>Age</b>	Categorized into AHRQ-defined age groups: 18 - 39 years, 40 - 64 years, 65 - 74 years, and ages 75 and older
<b>Sex</b>	Biological sex either male or female
<b>Socioeconomic Status (SES) Index</b>	Measure of socioeconomic status developed by AHRQ. The SES Index was categorized into five levels defined by quintiles where the first quintile included the lowest index scores and the fifth quintile contained the highest. The SES Index was categorized into these five levels based on 2020 combined payer data weighted by the combined payer (overall) population.

## Data Sources

We combined commercial and Medicare FFS payer data to construct the reference population and analytic data set. The overall combined payer reference population totaled 140,948,743 individuals aged 18 and older and represented ZIP code areas from 50 states and D.C. This report uses health plan data approved for use in public reporting from BHI's Blue Data Repository (BDR). The BDR is comprised of medical and pharmacy claims, membership data, and provider data for more than 200 million Americans – all contributed monthly by Blue Cross Blue Shield Plans for their commercial populations. Any claim records not associated with these select preapproved plans and products were excluded. The commercial payer population consisted of 91,852,456 (65.17%) members between the ages of 18 and 64 with coverage at any point between 2017 and 2020 from the BDR. Commercial members aged 65 years and older were excluded from the analysis to prevent potentially doubly counting members also eligible for Medicare. The Medicare population included 49,096,287 (34.83%) beneficiaries aged 18 and older with Part A coverage for at least one month during 2017 and 2020 who were not enrolled in a Medicare Advantage product for any part of that same year.

The SES Index is composed of seven individual component measures related to socioeconomic position and is based on the five-year data profile from the American Community Survey (ACS) for years 2016-2020.<sup>7,8</sup> Both the ACS data and AHRQ's SES Index are available for public use on their respective sites.<sup>7,9</sup> The SES Index values were joined to the commercial and Medicare data based on the member's or beneficiary's residential five-digit ZIP code. The resulting data represented 38,472 ZIP code areas. Only 1.6% of total members were found to be missing SES Index data and were excluded from the analysis.

## Methodology

We calculated the five PQIs of interest using the 2022 version of the publicly available AHRQ SAS QI Software.<sup>6,10</sup> The input data contained inpatient admissions records with coverage at time of admission from the combined payer population with standard AHRQ exclusions applied. The analytic data set, serving as the numerator data, contained 51,435,216 eligible inpatient admissions, of which 11,631,936 (22.61%) admissions were attributed to commercially insured members and 39,803,280 (77.39%) admissions were attributed to Medicare beneficiaries. The reference population, serving as the denominator data, used all eligible commercial members between the ages of 18 and 64 and Medicare beneficiaries over the age of 18, which totaled 140,948,743 unique members and beneficiaries across the four-year span. The population data were aggregated at the ZIP code area-level and stratified by age in five-year intervals, sex, payer type, and SES Index as five levels (quintiles) for years 2017 through 2020.

## Results

**Overall:** From 2017 to 2020, admission rates for diabetes short-term complications (PQI 01) exhibited the largest difference in rates with an overall 31.7% increase and admissions for lower extremity amputations (PQI 16) saw a slight decrease of 2.4% [Table 1; Table 2]. Whereas admission rates for diabetes long-term complications (PQI 03), hypertension (PQI 07), and uncontrolled diabetes (PQI 14) decreased between 2017 and 2020 by 12.6%, 13.4%, and 27.2%, respectively. When comparing year 2019 to 2020, however, all PQI admission rates decreased with the largest decreases (> 15%) seen in admission rates for long-term diabetes complications, hypertension, and uncontrolled diabetes (PQIs 03, 07, and 14) [Table 2]. Observed admission rates aligned closely with the national benchmarks published in the 2022 AHRQ benchmark data tables.<sup>11</sup> Observed admission rates for short-term diabetes complications (PQI 01) exhibited lower rates when compared to the national benchmark across all four analysis years; however, the four other PQIs studied (PQIs 03, 07, 14, and 16) demonstrated higher rates than the national benchmarks in years 2017, 2018, and 2019. In 2020, hypertension and uncontrolled diabetes admission rates (PQIs 07 and 14) fell below the national benchmarks [Figure 1].

**Payer Type:** We identified higher observed admission rates for Medicare beneficiaries compared to commercially insured members across all PQIs from 2017 to 2020. Medicare beneficiaries experienced the highest admission rates for long-term diabetes complications (PQI 03), with the highest rate observed of 280.3 per 100,000 in 2019. Commercial members showed consistently low rates for uncontrolled diabetes (PQI 14) and lower-extremity amputations (PQI 16), with rates for both measures not exceeding 10.1 per 100,000 between 2017 and 2020 [Table 1]. Among the commercial population, even though the admission rate for short-term diabetes complications (PQI 01) did not fall between 2019 and 2020, the trend trajectory demonstrates that admissions slowed.

**Age:** As expected, observed admission rates for long-term diabetes complications (PQI 03), hypertension (PQI 07), uncontrolled diabetes (PQI 14), and lower-extremity amputations among patients with diabetes (PQI 16) all generally increased as age increased from 2017 to 2020. However, an inverse relationship was observed between age and short-term diabetes complications, where members of the younger age groups (18 to 39 years, 40 to 64 years) had higher observed rates than members of the older age groups (65 to 74 years, ages 75 and older) [Table 1]. The Medicare population between the ages of 18 to 64 consisted of medically high-risk disabled individuals with higher observed inpatient admission rates compared to Medicare beneficiaries aged 65 and older.

**Sex:** Observed inpatient admission rates were higher for males than females with short- and long-term diabetes complications (PQIs 01, 03), uncontrolled diabetes (PQI 14), and lower-extremity amputations (PQI 16). However, females revealed higher hypertension admission rates (PQI 07) than males from 2017 to 2020. Hypertension admission rates ranged from 30.0 points (2017) to 21.0 points (2020) higher in females than males [Table 1]. This finding aligned with the 2022 AHRQ benchmark data, where females had a higher hypertension admission rate than males (68.0 per 100,000 vs. 56.9 per 100,000 respectively).<sup>11</sup>

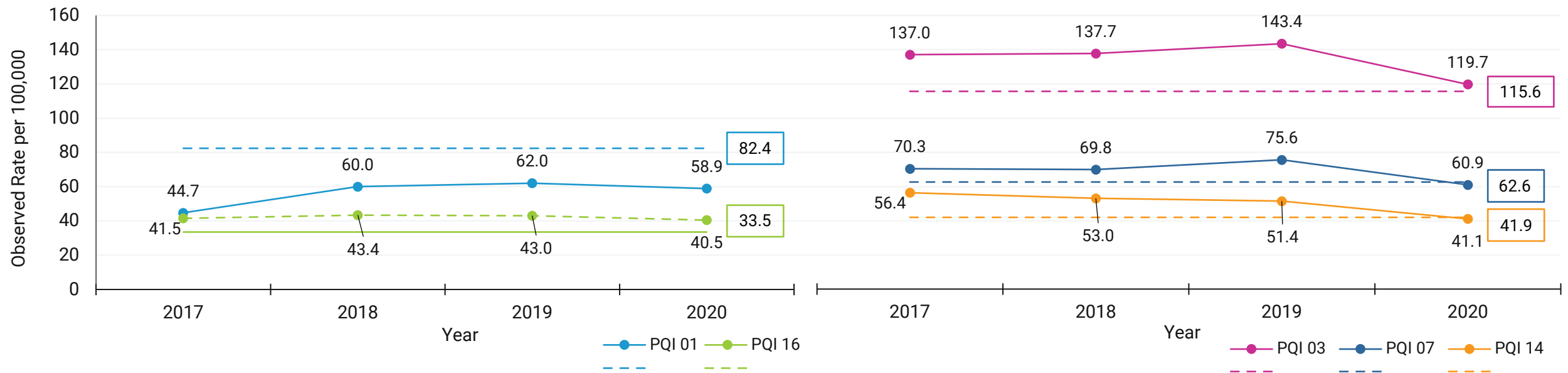
**SES Index:** When evaluated by SES Index as five levels, the observed rates for all PQI measures depicted the same relationship – observed admission rates increased as SES Index decreased [Table 1; Figure 2]. This finding exemplifies the known impact social determinants of health have on health outcomes. Among PQIs exhibiting the largest overall decreases in rates for year 2019 to 2020, percentage decrease in admission rates for diabetes long-term complications (PQI 03), hypertension (PQI 07), and uncontrolled diabetes (PQI 14) remained relatively consistent across quintiles demonstrating that both low and high SES Index quintiles were impacted by the pandemic.

**Table 1.** Distribution of Prevention Quality Indicator (PQI) inpatient admission rates per 100,000, by payer type, age, and sex, and SES Index, 2017-2020.\*

	PQI 01: Diabetes Short-Term Complications Admission Rate				PQI 03: Diabetes Long-Term Complications Admission Rate				PQI 07: Hypertension Admission Rate				PQI 14: Uncontrolled Diabetes Admission Rate				PQI 16: Lower-Extremity Amputation Among Patients with Diabetes Admission Rate			
Year	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020	2017	2018	2019	2020
<b>Overall</b>	44.7	60.0	62.0	58.9	137.0	137.7	143.4	119.7	70.3	69.8	75.6	60.9	56.4	53.0	51.4	41.1	41.5	43.4	43.0	40.5
<b>Payer Type</b>																				
Medicare	67.3	96.0	91.7	82.9	264.9	268.6	280.3	234.3	145.7	147.0	150.5	120.2	113.9	108.7	105.9	85.1	83.6	87.9	87.0	81.8
Commercial	26.5	31.8	39.1	40.9	34.1	35.4	37.5	34.0	9.6	9.5	17.6	16.6	10.1	9.5	9.3	8.1	7.6	8.5	8.9	9.6
<b>Age (years)</b>																				
18 to 39	64.0	68.4	71.2	65.8	31.5	28.1	27.2	23.9	15.0	14.9	17.8	14.4	13.5	12.2	11.4	8.9	3.7	4.1	3.7	3.6
40 to 64	47.3	65.8	70.1	67.6	170.1	168.5	171.5	144.7	50.5	50.7	61.3	51.1	48.8	45.6	43.1	34.1	50.8	53.7	53.3	51.3
65 to 74	30.1	51.9	50.4	48.0	176.5	184.4	194.0	161.9	85.0	85.0	85.7	68.5	71.7	69.2	67.0	54.3	60.5	63.6	62.8	59.3
75+	26.9	43.4	43.9	41.8	179.5	187.2	206.7	169.8	187.0	186.5	193.1	154.6	123.4	117.3	117.3	95.1	56.0	57.8	58.7	53.6
<b>Sex</b>																				
Male	45.2	61.3	64.5	62.5	175.9	178.9	187.8	159.1	54.8	54.8	60.9	50.1	57.1	53.8	52.6	42.0	60.4	63.3	63.0	60.2
Female	44.3	58.8	59.6	55.4	100.5	98.9	101.4	82.2	84.8	84.0	89.5	71.1	55.6	52.3	50.3	40.1	23.7	24.5	24.0	21.8
<b>SES Index</b>																				
Low 27.9 – 50.9	65.6	90.6	95.0	91.9	210.6	213.6	226.1	193.4	103.3	105.2	116.0	93.9	85.4	81.0	79.8	65.3	67.1	71.3	73.3	70.4
51.0 – 53.2	47.6	65.8	69.6	68.7	139.9	145.5	155.2	136.1	69.4	69.9	79.0	66.7	56.2	55.0	53.7	45.5	42.5	46.0	46.9	45.6
53.3 – 55.5	39.5	52.6	56.1	56.4	110.6	120.0	128.5	112.7	58.0	61.2	67.8	56.9	46.1	45.4	45.3	36.9	33.2	36.7	37.1	37.7
55.6 – 58.7	30.2	42.0	46.7	45.1	90.1	95.2	104.5	89.0	50.5	51.3	56.4	47.6	38.3	37.8	38.7	31.1	24.1	27.5	28.3	28.0
High 58.8 – 76.8	19.2	28.2	29.5	28.5	61.7	63.4	70.9	58.3	38.3	38.7	43.0	35.6	27.6	27.3	28.7	23.6	16.0	16.8	18.0	17.2

\*The complete tables containing total admissions and population at risk can be found in the Appendix [Tables 1a - 1e].

**Overall observed admission rates aligned with AHRQ 2022 benchmarks; Diabetes- and hypertension-related admissions fell between 2019 and 2020**



**Figure 1.** Observed admission rates for combined payer (overall) data compared to the 2022 AHRQ benchmark data for the overall population aged 18 years or older (horizontal dashed lines and boxed values).<sup>11</sup> The graph on the left shows the admission rates for diabetes short-term complications and lower extremity amputations among patients with diabetes (PQIs 01 and 16) fell by less than 6% between 2019 and 2020. The graph on the right shows admission rates for diabetes long-term complications, hypertension, and uncontrolled diabetes (PQIs 03, 07, and 14) declined by more than 15% between 2019 and 2020 [Table 2].

## Key Findings

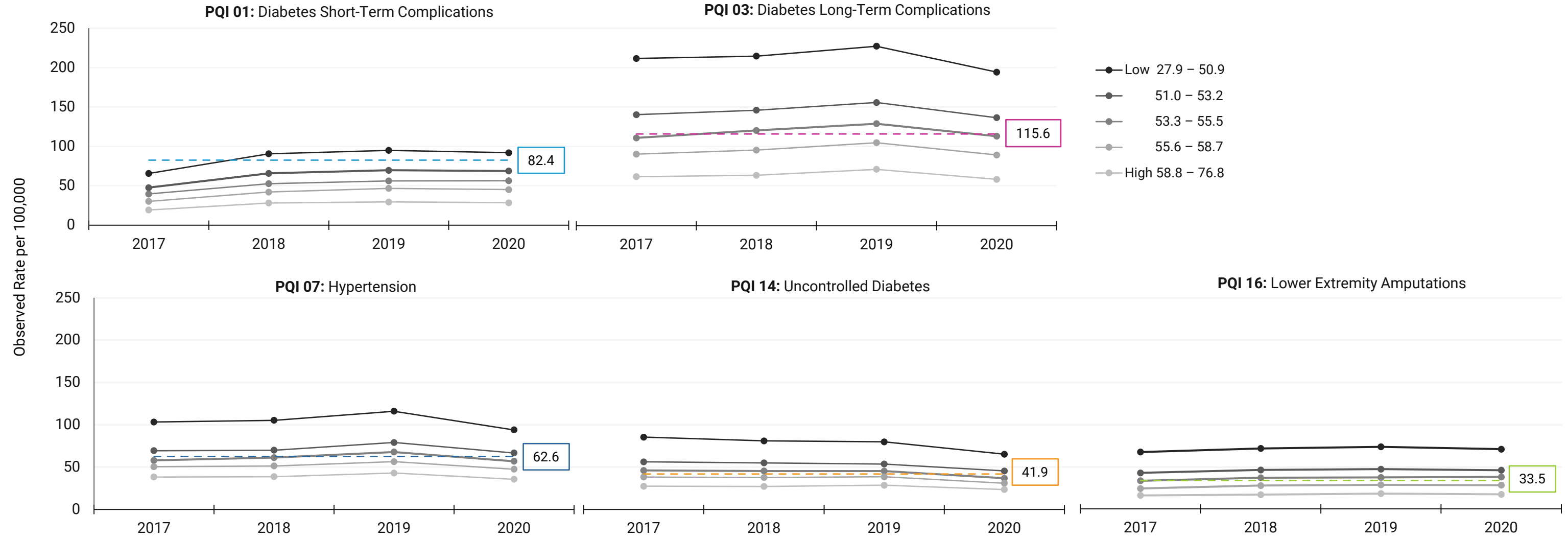
- Preventable inpatient admission rates are indicative of the impact of COVID-19:** The combined payer (overall ) observed admission rates illustrate the impact of the 2020 coronavirus pandemic. Observed admission rates for short- and long-term diabetes complications, hypertension, and lower-extremity amputations (PQIs 01, 03, 07, and 16) generally increased between 2017 and 2019; however, the year 2020 revealed a marked decrease in PQIs relating to diabetes (PQIs 01, 03, 14, 16) and hypertension (PQI 07).
- High acuity admissions remained relatively stable:** From 2017 to 2020, short-term diabetes complications admissions (PQI 01) increased from an observed rate of 44.7 to 58.9 per 100,000 and admissions for lower extremity amputations (PQI 16) fell by one point from an observed rate of 41.5 to 40.5 per 100,000. Despite the overall increase in PQI 01 and marginal change in PQI 16, when comparing 2019 to 2020, admission rates for short-term diabetes complications (PQI 01) and lower extremity amputations (PQI 16) saw only a slight decrease (less than 6% change). Between 2019 and 2020 the admission rate for short-term diabetes complications (PQI 01) decreased by 3.1 per 100,000 and similarly, lower extremity amputations (PQI 16) decreased by 2.5 per 100,000 [Table 2].
- When care could be deferred, lower acuity admissions decreased:** The three other PQIs studied (PQIs 03, 07, and 14) exhibited an overall decrease from 2017 to 2020. When isolating years 2019 and 2020, the greater than 15% decrease in rates for these two years alone drove the meaningful decrease in rates from 2017 to 2020. Between 2019 and 2020, admission rates for long-term complication admissions (PQI 03) decreased by 23.8 per 100,000, hypertension (PQI 07) decreased by 14.6 per 100,000, and uncontrolled diabetes (PQI 14) decreased by 10.4 per 100,000 [Figure 1; Table 2].
- Admission rates may have differed based on acuity:** CMS published guidelines in April 2020 “to aggressively address COVID-19”, which “provide[d] recommendations to limit [...] medical services that could be deferred, such as non-emergent, elective treatment, and preventive medical services”.<sup>12</sup> Judging by the substantial decrease of more than 15% in admission rates for diabetes long-term complications (PQI 03), hypertension (PQI 07), and uncontrolled diabetes (PQI 14), commercial members and Medicare beneficiaries may have deferred care and avoided hospital visits for conditions considered less severe [Table 2].<sup>2</sup> However, admission rates tied to acute events requiring urgent medical intervention, such as short-term diabetes complications (PQI 01) and lower extremity amputations (PQI 16), fell marginally during the 2020 pandemic period. We can infer from the slight decrease in these admission rates between 2019 and 2020 that members and beneficiaries who still required immediate attention sought medical care.
- Disparate admission rates may reflect differences in access to preventive care:** When stratifying by SES Index, lower SES levels showed disproportionately higher observed admission rates as compared to higher SES Index levels, which demonstrated consistently lower rates across all PQIs and analysis years. Particularly, admission rates among lower SES Index levels were substantially higher for diabetes long-term complications (PQI 03) and hypertension (PQI 07) [Figure 2].

**Table 2.** Year-over-year comparison of rate differences and percent change in observed inpatient admission rates for diabetes-related PQIs.\*

Prevention Quality Indicator	2017	2018	2017 vs. 2018		2019	2018 vs. 2019		2020	2019 vs. 2020		Overall 2017 - 2020	
	Rate	Rate	Difference	% Change	Rate	Difference	% Change	Rate	Difference	% Change	Difference	% Change
Diabetes Short-Term Complications (PQI 01)	44.7	60.0	15.3	34.2%	62.0	2.0	3.4%	58.9	-3.1	-5.1%	14.2	31.7%
Diabetes Long-Term Complications (PQI 03)	137.0	137.7	0.7	0.5%	143.4	5.7	4.2%	119.7	-23.8	-16.6%	-17.3	-12.6%
Hypertension (PQI 07)	70.3	69.8	-0.5	-0.7%	75.6	5.7	8.2%	60.9	-14.6	-19.4%	-9.4	-13.4%
Uncontrolled Diabetes (PQI 14)	56.4	53.0	-3.3	-5.9%	51.4	-1.6	-3.1%	41.1	-10.4	-20.2%	-15.3	-27.2%
Lower Extremity Amputations (PQI 16)	41.5	43.4	1.9	4.5%	43.0	-0.4	-0.8%	40.5	-2.5	-5.8%	-1.0	-2.4%

\*Rates reported per 100,000 for the population at risk. Year 2017 serves as the reference.

Observed admission rates across PQIs 01, 03, 07, 14 and 16 increased as SES Index decreased



**Figure 2.** Distribution of SES Index in five levels (quintiles) for diabetes short- and long-term complications, hypertension, uncontrolled diabetes, and lower extremity amputations among patients with diabetes (PQIs 01, 03, 07, 14, and 16) from year 2017 to 2020 with the horizontal dashed lines and associated values representing the overall AHRQ 2022 benchmark data.<sup>11</sup>



## Limitations

While this report provides data sourced from a large commercially insured population that is geographically distributed, contributing a reliable comparison across the PQI measures compared to the Medicare data, there are a few limitations to consider. All claims data, including Medicare and commercial insurance, are only as reliable as the information recorded – undiagnosed disease and inconsistencies in medical coding can impact the effectiveness of these data. The Medicare population was limited to only FFS, excluding Medicare Advantage (commercially insured population aged 65 and older). Records with a ZIP code for which the SES Index could not be calculated were removed, as well.

We used the 2022 version of the publicly available AHRQ SAS QI Software to calculate PQIs for retrospective data spanning years 2017 through 2020.<sup>6</sup> AHRQ updates the measures to reflect ICD-10-CM coding changes with new ICD-10-CM codes introduced and others retired each year. These coding changes can impact both payer types with either Medicare or commercial payers adopting codes differently. Applying current software to data which predates the software's release can impact rates due to variation in coding trends in prior years.

There is also an inherent time lag between deferred diabetic care, such as missed outpatient visits and skipped medications, during the COVID-19 pandemic and any resulting inpatient admissions. It may take months or years for diabetes-related complications, resulting from deferred care, to become severe enough to require inpatient admission. Therefore, we may not see the COVID-19 pandemic's complete effect on inpatient admissions until subsequent analyses with 2021 and 2022 data.

## Conclusion

We found that all PQIs relating to diabetes (PQIs 01, 03, 14, and 16) and hypertension (PQI 07) decreased between 2019 and 2020, which illustrates how the COVID-19 pandemic disrupted admissions for individuals seeking urgent medical attention, as well as hospital visits for preventive services. When stratifying PQIs by levels of the SES Index, lower quintiles demonstrated consistently higher observed admission rates across the entire analysis period from 2017 to 2020. Our findings support a growing volume of literature, which underscores how the coronavirus pandemic disproportionately affected already vulnerable individuals in lower socioeconomic positions.<sup>4</sup> Higher admission rates for lower SES Index quintiles across all diabetes- and hypertension-related PQIs, especially for year 2020, contributed to the body of evidence corroborating that the dramatic decline in preventive care and deferred screenings seen in 2020 pose longer term effects on population health.<sup>2</sup> In future analyses, we hope to compare additional years of data following the pandemic period to see if potentially avoidable diabetes- and hypertension-related admission rates improve.

## Appendix

**Tables 1a – 1e.** Combined payer (overall) distribution of Prevention Quality Indicator (PQI) observed admission rates per 100,000, as well as by payer type, demographics (age and sex), and SES Index as quintiles for years 2017, 2018, 2019, and 2020 with total admissions (numerators) and population at risk (denominator data).

**Table 1a.** Diabetes Short-Term Complications Admission Rate (PQI 01)

	2017			2018			2019			2020		
	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate
<b>Overall</b>	37,166	83,156,093	44.7	50,485	84,148,361	60.0	52,315	84,337,299	62.0	49,591	84,219,744	58.9
<b>Payer Type</b>												
Medicare	24,939	37,068,958	67.3	35,459	36,925,617	96.0	33,744	36,794,663	91.7	29,880	36,033,305	82.9
Commercial	12,227	46,087,135	26.5	15,026	47,222,744	31.8	18,571	47,542,636	39.1	19,711	48,186,439	40.9
<b>Age (years)</b>												
18 to 39	13,830	21,593,598	64.0	15,223	22,250,315	68.4	16,021	22,490,485	71.2	14,967	22,750,456	65.8
40 to 64	14,400	30,460,862	47.3	20,144	30,626,750	65.8	21,264	30,320,930	70.1	20,436	30,231,222	67.6
65 to 74	5,403	17,948,182	30.1	9,419	18,136,463	51.9	9,269	18,392,128	50.4	8,776	18,296,305	48.0
75+	3,533	13,153,451	26.9	5,699	13,134,833	43.4	5,761	13,133,756	43.9	5,412	12,941,761	41.8
<b>Sex</b>												
Male	18,162	40,217,046	45.2	25,035	40,845,292	61.3	26,492	41,044,276	64.5	25,646	41,009,697	62.5
Female	19,004	42,939,047	44.3	25,450	43,303,069	58.8	25,823	43,293,023	59.6	23,945	43,210,047	55.4
<b>SES Index</b>												
Low 27.9 – 50.9	16,026	24,414,540	65.6	20,203	22,306,425	90.6	18,948	19,951,552	95.0	15,974	17,373,044	91.9
51.0 – 53.2	8,262	17,365,642	47.6	11,321	17,217,813	65.8	12,002	17,236,858	69.6	11,514	16,748,608	68.7
53.3 – 55.5	5,539	14,020,896	39.5	7,716	14,669,056	52.6	8,522	15,185,105	56.1	9,158	16,241,480	56.4
55.6 – 58.7	4,383	14,505,079	30.2	6,537	15,556,013	42.0	7,493	16,060,473	46.7	7,436	16,485,647	45.1
High 58.8 – 76.8	2,203	11,447,216	19.2	3,660	13,000,252	28.2	4,278	14,515,144	29.5	4,546	15,975,742	28.5

**Table 1b.** Diabetes Long-Term Complications Admission Rate (PQI 03)

	2017			2018			2019			2020		
	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate
<b>Overall</b>	113,917	83,155,873	137.0	115,882	84,148,131	137.7	120,965	84,337,002	143.4	100,794	84,219,402	119.7
<b>Payer Type</b>												
Medicare	98,202	37,068,717	264.9	99,185	36,925,390	268.6	103,150	36,794,378	280.3	84,413	36,032,986	234.3
Commercial	15,715	46,087,156	34.1	16,697	47,222,741	35.4	17,815	47,542,624	37.5	16,381	48,186,416	34.0
<b>Age (years)</b>												
18 to 39	6,809	21,593,286	31.5	6,254	22,250,014	28.1	6,117	22,490,109	27.2	5,447	22,750,068	23.9
40 to 64	51,827	30,460,949	170.1	51,596	30,626,805	168.5	52,005	30,321,000	171.5	43,755	30,231,262	144.7
65 to 74	31,671	17,948,182	176.5	33,441	18,136,465	184.4	35,689	18,392,129	194.0	29,623	18,296,304	161.9
75+	23,610	13,153,456	179.5	24,591	13,134,847	187.2	27,154	13,133,764	206.7	21,969	12,941,768	169.8
<b>Sex</b>												
Male	70,748	40,217,019	175.9	73,067	40,845,216	178.9	77,064	41,044,184	187.8	65,260	41,009,617	159.1
Female	43,169	42,938,854	100.5	42,815	43,302,915	98.9	43,901	43,292,818	101.4	35,534	43,209,785	82.2
<b>SES Index</b>												
Low 27.9 – 50.9	51,427	24,414,418	210.6	47,653	22,306,285	213.6	45,112	19,951,364	226.1	33,605	17,372,876	193.4
51.0 – 53.2	24,287	17,365,580	139.9	25,047	17,217,762	145.5	26,751	17,236,811	155.2	22,792	16,748,522	136.1
53.3 – 55.5	15,503	14,020,861	110.6	17,597	14,669,017	120.0	19,513	15,185,065	128.5	18,307	16,241,460	112.7
55.6 – 58.7	13,072	14,505,031	90.1	14,808	15,555,980	95.2	16,778	16,060,442	104.5	14,680	16,485,605	89.0
High 58.8 – 76.8	7,068	11,447,214	61.7	8,246	13,000,243	63.4	10,294	14,515,129	70.9	9,320	15,975,720	58.3

Table 1c. Hypertension Admission Rate (PQI 07)

	2017			2018			2019			2020		
	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate
<b>Overall</b>	58,462	83,155,569	70.3	58,762	84,147,899	69.8	63,722	84,336,790	75.6	51,298	84,219,161	60.9
<b>Payer Type</b>												
Medicare	54,024	37,068,443	145.7	54,270	36,925,171	147.0	55,368	36,794,169	150.5	43,318	36,032,758	120.2
Commercial	4,438	46,087,126	9.6	4,492	47,222,728	9.5	8,354	47,542,621	17.6	7,980	48,186,403	16.6
<b>Age (years)</b>												
18 to 39	3,229	21,593,126	15.0	3,314	22,249,943	14.9	4,002	22,490,031	17.8	3,287	22,749,994	14.4
40 to 64	15,371	30,460,805	50.5	15,536	30,626,658	50.7	18,585	30,320,875	61.3	15,457	30,231,104	51.1
65 to 74	15,262	17,948,182	85.0	15,411	18,136,464	85.0	15,768	18,392,127	85.7	12,540	18,296,303	68.5
75+	24,600	13,153,456	187.0	24,501	13,134,834	186.5	25,367	13,133,757	193.1	20,014	12,941,760	154.6
<b>Sex</b>												
Male	22,046	40,216,885	54.8	22,373	40,845,119	54.8	24,984	41,044,090	60.9	20,565	41,009,499	50.1
Female	36,416	42,938,684	84.8	36,389	43,302,780	84.0	38,738	43,292,700	89.5	30,733	43,209,662	71.1
<b>SES Index</b>												
Low 27.9 – 50.9	25,209	24,414,319	103.3	23,473	22,306,236	105.2	23,145	19,951,288	116.0	16,318	17,372,814	93.9
51.0 – 53.2	12,051	17,365,537	69.4	12,043	17,217,689	69.9	13,622	17,236,777	79.0	11,173	16,748,475	66.7
53.3 – 55.5	8,130	14,020,833	58.0	8,976	14,668,988	61.2	10,302	15,185,043	67.8	9,245	16,241,417	56.9
55.6 – 58.7	7,322	14,505,008	50.5	7,987	15,555,961	51.3	9,058	16,060,435	56.4	7,839	16,485,591	47.6
High 58.8 – 76.8	4,388	11,447,182	38.3	5,026	13,000,245	38.7	6,247	14,515,113	43.0	5,692	15,975,713	35.6

**Table 1d.** Uncontrolled Diabetes Admission Rate (PQI 14)

	2017			2018			2019			2020		
	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate
<b>Overall</b>	46,859	83,155,502	56.4	44,637	84,147,839	53.0	43,366	84,336,705	51.4	34,572	84,219,132	41.1
<b>Payer Type</b>												
Medicare	42,227	37,068,376	113.9	40,152	36,925,109	108.7	38,968	36,794,087	105.9	30,671	36,032,729	85.1
Commercial	4,632	46,087,126	10.1	4,485	47,222,730	9.5	4,398	47,542,618	9.3	3,901	48,186,403	8.1
<b>Age (years)</b>												
18 to 39	2,911	21,593,092	13.5	2,713	22,249,889	12.2	2,564	22,489,975	11.4	2,022	22,749,962	8.9
40 to 64	14,850	30,460,774	48.8	13,964	30,626,652	45.6	13,072	30,320,845	43.1	10,318	30,231,106	34.1
65 to 74	12,868	17,948,183	71.7	12,557	18,136,463	69.2	12,327	18,392,129	67.0	9,930	18,296,303	54.3
75+	16,230	13,153,453	123.4	15,403	13,134,835	117.3	15,403	13,133,756	117.3	12,302	12,941,761	95.1
<b>Sex</b>												
Male	22,974	40,216,854	57.1	21,982	40,845,084	53.8	21,569	41,044,069	52.6	17,234	41,009,486	42.0
Female	23,885	42,938,648	55.6	22,655	43,302,755	52.3	21,797	43,292,636	50.3	17,338	43,209,646	40.1
<b>SES Index</b>												
Low 27.9 – 50.9	20,856	24,414,305	85.4	18,070	22,306,199	81.0	15,923	19,951,254	79.8	11,344	17,372,790	65.3
51.0 – 53.2	9,767	17,365,537	56.2	9,473	17,217,681	55.0	9,249	17,236,763	53.7	7,620	16,748,474	45.5
53.3 – 55.5	6,468	14,020,826	46.1	6,664	14,668,987	45.4	6,882	15,185,034	45.3	5,998	16,241,408	36.9
55.6 – 58.7	5,559	14,504,998	38.3	5,874	15,555,954	37.8	6,209	16,060,430	38.7	5,126	16,485,581	31.1
High 58.8 – 76.8	3,155	11,447,175	27.6	3,543	13,000,241	27.3	4,167	14,515,117	28.7	3,766	15,975,725	23.6

**Table 1e.** Lower-Extremity Amputation Among Patients with Diabetes Admission Rate (PQI 16)

	2017			2018			2019			2020		
	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate	Admissions	Population at Risk	Rate
<b>Overall</b>	34,506	83,155,488	41.5	36,479	84,147,813	43.4	36,265	84,336,691	43.0	34,108	84,219,101	40.5
<b>Payer Type</b>												
Medicare	31,003	37,068,360	83.6	32,461	36,925,085	87.9	32,021	36,794,071	87.0	29,471	36,032,699	81.8
Commercial	3,503	46,087,128	7.6	4,018	47,222,728	8.5	4,244	47,542,620	8.9	4,637	48,186,402	9.6
<b>Age (years)</b>												
18 to 39	803	21,593,064	3.7	902	22,249,860	4.1	841	22,489,938	3.7	812	22,749,935	3.6
40 to 64	15,482	30,460,791	50.8	16,439	30,626,654	53.7	16,158	30,320,869	53.3	15,507	30,231,103	51.3
65 to 74	10,858	17,948,181	60.5	11,540	18,136,463	63.6	11,555	18,392,127	62.8	10,851	18,296,303	59.3
75+	7,363	13,153,452	56.0	7,598	13,134,836	57.8	7,711	13,133,757	58.7	6,938	12,941,760	53.6
<b>Sex</b>												
Male	24,309	40,216,856	60.4	25,873	40,845,081	63.3	25,865	41,044,071	63.0	24,701	41,009,485	60.2
Female	10,197	42,938,632	23.7	10,606	43,302,732	24.5	10,400	43,292,620	24.0	9,407	43,209,616	21.8
<b>SES Index</b>												
Low 27.9 – 50.9	16,384	24,414,301	67.1	15,911	22,306,193	71.3	14,616	19,951,253	73.3	12,237	17,372,789	70.4
51.0 – 53.2	7,381	17,365,531	42.5	7,913	17,217,683	46.0	8,078	17,236,755	46.9	7,641	16,748,468	45.6
53.3 – 55.5	4,650	14,020,826	33.2	5,384	14,668,989	36.7	5,633	15,185,032	37.1	6,124	16,241,408	37.7
55.6 – 58.7	3,492	14,504,992	24.1	4,281	15,555,954	27.5	4,551	16,060,429	28.3	4,612	16,485,580	28.0
High 58.8 – 76.8	1,826	11,447,176	16.0	2,180	13,000,232	16.8	2,619	14,515,112	18.0	2,744	15,975,709	17.2

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