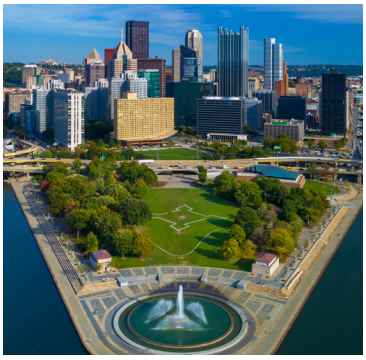
SANOFI

2020

MANAGED CARE DIGEST SERIES®



Pittsburgh Business Group ON HEALTH

Pittsburgh Business Group on Health

Type 2 Diabetes Report™

Featuring Demographic, Utilization, Charge, and Pharmacotherapy Data With a Focus on Patients With Commercial Insurance Coverage

13th Edition

PBGH TYPE 2 DIABETES REPORT™

INTRODUCTION

Sanofi U.S. (Sanofi) and the Pittsburgh Business Group on Health (PBGH) are pleased to present the 13th edition of the *Type 2 Diabetes Report™*, an overview of key demographic, utilization, charge, pharmacotherapy, and health outcome measures for Type 2 diabetes patients in Pittsburgh and western Pennsylvania (Erie and Johnstown), as well as parts of Ohio (Youngstown) and West Virginia (Wheeling). The report also provides supplemental data on patients with respiratory conditions as well as IQVIA's state and national benchmarks, which help providers and employers better identify opportunities to serve the needs of their patients. All data are drawn from the Sanofi **Managed Care Digest Series®**.

Most of the data in this report (current as of calendar year 2019) were gathered by IQVIA, Durham, NC, a leading provider of innovative health care data products and analytic services. A review process takes place, before and during production of this report, between IQVIA and Forte Information Resources LLC.

Sanofi, as sponsor of this report, maintains an arm's-length relationship with the organizations that prepare the report and carry out the research for its contents. The desire of Sanofi is that the information in this report be completely independent and objective.

PBGH EMPLOYER MEMBERS

84 Lumber Company
Allegheny County
Allegheny County Airport Authority
Allegheny Technologies Incorporated
American Eagle Outfitters
Ampco-Pittsburgh Corporation
API Technolgies Corp.
ArcelorMittal Tubular Products USA LLC
Baptist Homes Society
Brinker International Payroll Company, LP
Calgon Carbon Corporation
Carmeuse Lime & Stone
Carnegie Mellon University
Carpenter Technology Corporation
Central Electric Cooperative, Inc.
Civil & Environmental Consultants, Inc.
Clearview Federal Credit Union
Cleveland Brothers
CONSOL Energy Inc.
County of Berks
Covestro LLC
Cronimet Corporation
Development Dimensions International
Dick's Sporting Goods, Inc.
Dollar Bank, F.S.B.
Duquesne Light Company
Duquesne University
Eat'n Park Hospitality Group
Eckert Seamans Cherin & Mellott, LLC
Electronics for Imaging
Elite Transit Solutions
Ellwood Group, Inc.
Equitrans Midstream
Equipment & Controls, Inc.
Federal Home Loan Bank of Pittsburgh
Federated Hermes
First Commonwealth Bank
First National Bank of PA
FirstEnergy
Giant Eagle, Inc.
InventHelp
ITxM
K&L Gates
Koppers
L.B. Foster Company
Levin Furniture
Lutheran SeniorLife
MARC USA
Michael Baker International
Mitsubishi Electric Power Products, Inc.
MSA
NEP Group, Inc.
NOVA Chemicals Inc.
Oncology Nursing Society
Penn United Technologies, Inc.
Peoples Natural Gas
PITT OHIO
Pittsburgh Technical College
PNC Bank
Point Park University
PortAuthority
PPG Industries
Pressley Ridge
PSECU
ReedSmith
SAE International
Spang Engineered Solutions
Specialty Tires of America
TeleTracking Technologies
The Board of Pensions of the Presbyterian Church (USA)
The Hillman Company
The Kraft Heinz Company
Think Communications Inc.
Tobii Dynavox
Transtar, Inc.
Triad Metals International
Trib Total Media
U.S. Steel and Carnegie Pension Fund
University of Pittsburgh
Wabtec Corporation
Wesco Distribution, Inc.
Westinghouse Electric Company LLC

PBGH ALLIED MEMBERS

Adagio Health
Allegheny County Schools Health Insurance Consortium
Connected Health
Empower³ Center for Health LLC
Excela Health
Gateway Rehab
ZOLL Services LLC

CONTENTS

CONTACT

Clare Hunter, PharmD/MBA
Clinical Account Executive

P. 716-849-8298
E. clare@arxcel.com

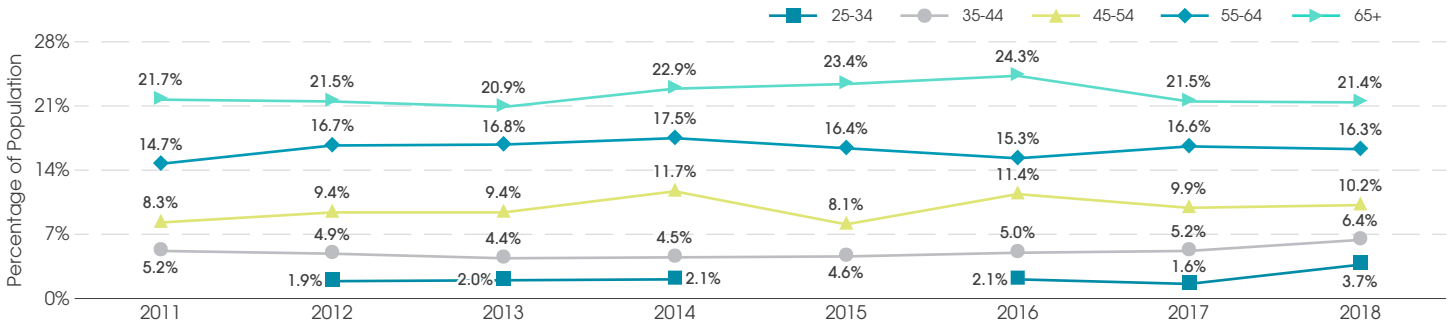
MANAGED CARE DIGEST SERIES® SINCE 1987
managedcaredigest.com

Provided by: Sanofi U.S., Bridgewater, NJ

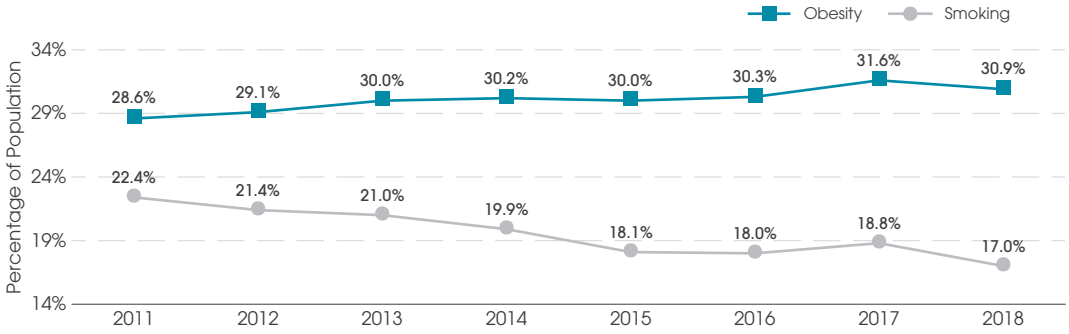
Data provided by: IQVIA, Durham, NC

PATIENT DEMOGRAPHICS

PERCENTAGE OF ADULTS SELF-REPORTING DIABETES, BY AGE, PENNSYLVANIA, 2011–2018



PERCENTAGE OF ADULTS WITH CURRENT SMOKING OR OBESITY, PENNSYLVANIA, 2011–2018



Data source: Centers for Disease Control and Prevention Behavioral Risk Factor Surveillance System © 2020

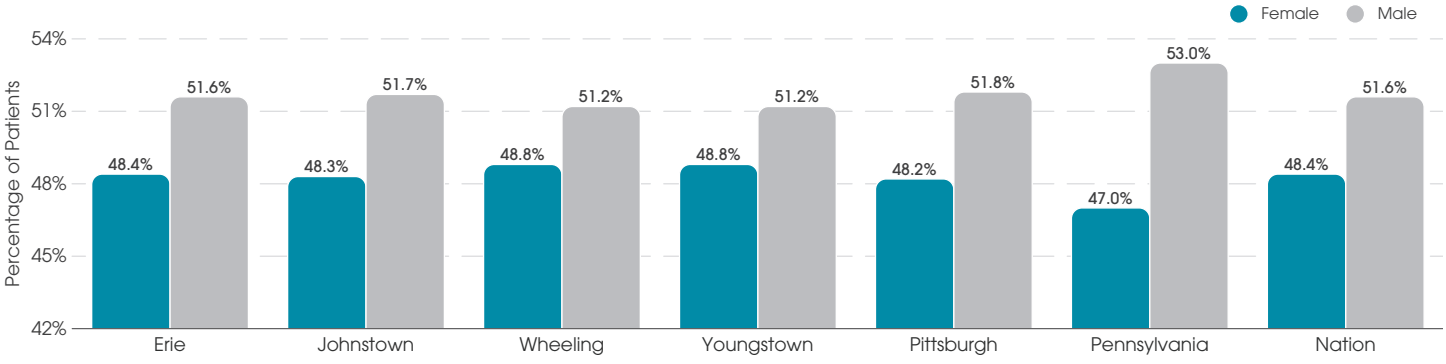
DISTRIBUTION OF COMMERCIAL TYPE 2 DIABETES PATIENTS, BY AGE, 2018–2019

	0–17		18–35		36–64		65–79		80+	
MARKET	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Erie	n/a	0.5%	2.2%	2.0%	49.4%	47.1%	34.5%	36.2%	13.8%	14.4%
Johnstown	n/a	0.5	1.6	1.4	51.7	48.4	28.8	33.7	17.8	16.1
Wheeling	0.3%	n/a	1.6	1.4	46.1	46.3	38.1	38.2	13.9	14.0
Youngstown	0.3	0.2	1.8	1.9	50.5	48.3	34.1	36.1	13.3	13.5
Pittsburgh	0.3	0.3	2.0	1.9	48.7	47.4	34.5	36.0	14.6	14.4
Pennsylvania	**0.3**	**0.3**	**2.0**	**1.9**	**52.0**	**50.4**	**32.6**	**34.0**	**13.1**	**13.4**
NATION	**0.3%**	**0.3%**	**2.3%**	**2.3%**	**56.7%**	**55.1%**	**31.3%**	**32.6%**	**9.5%**	**9.8%**

SHARE OF PITTSBURGH TYPE 2 DIABETES PATIENTS WITH ≥2 COMPLICATIONS RISES

More than 44% of commercial Type 2 diabetes patients in Pittsburgh had two or more complications in 2019, an increase of 2.7 percentage points from 41.6% in 2017, and a higher percentage than either Pennsylvania (39.8%) or the nation (37.4%) in 2019. That year, 11.0% of Pittsburgh Type 2 diabetes patients had an A1c greater than 9.0% on their latest exam, a portion that fell below that of the nation's, but exceeded the corresponding Medicare percentage for Pittsburgh (9.5%).

DISTRIBUTION OF COMMERCIAL TYPE 2 DIABETES PATIENTS, BY GENDER, 2019



Data source: IQVIA © 2020

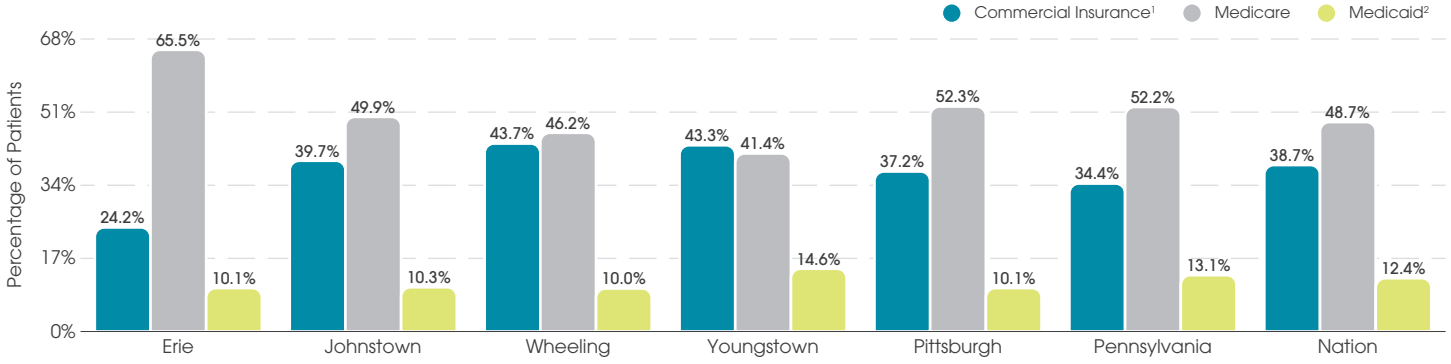
NOTE: Throughout this report, the Youngstown, OH, market includes Warren and Boardman, and parts of Pennsylvania; the Wheeling, WV, market includes parts of Ohio. An n/a indicates that data were not available. Behavioral Risk Factor Surveillance System (BRFSS) data on diabetes are based on responses to the survey question, "Have you ever been told by a doctor that you have diabetes?" Age 25–34 data were not available for 2011 and 2015. BRFSS data on obesity and current smoking status were calculated based on one or more responses to BRFSS questions.

PATIENT DEMOGRAPHICS

PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY PAYER, 2018–2019

	Commercial Insurance[1]		Medicare		Medicaid[2]	
MARKET	2018	2019	2018	2019	2009	2019
Erie	24.8%	24.2%	64.6%	65.5%	10.2%	10.1%
Johnstown	36.7	39.7	50.8	49.9	12.1	10.3
Wheeling	39.9	43.7	48.7	46.2	10.9	10.0
Youngstown	41.5	43.3	43.7	41.4	14.0	14.6
Pittsburgh	36.8	37.2	52.3	52.3	10.3	10.1
Pennsylvania	**34.4**	**34.4**	**52.4**	**52.2**	**12.6**	**13.1**
NATION	**38.5%**	**38.7%**	**48.3%**	**48.7%**	**12.7%**	**12.4%**

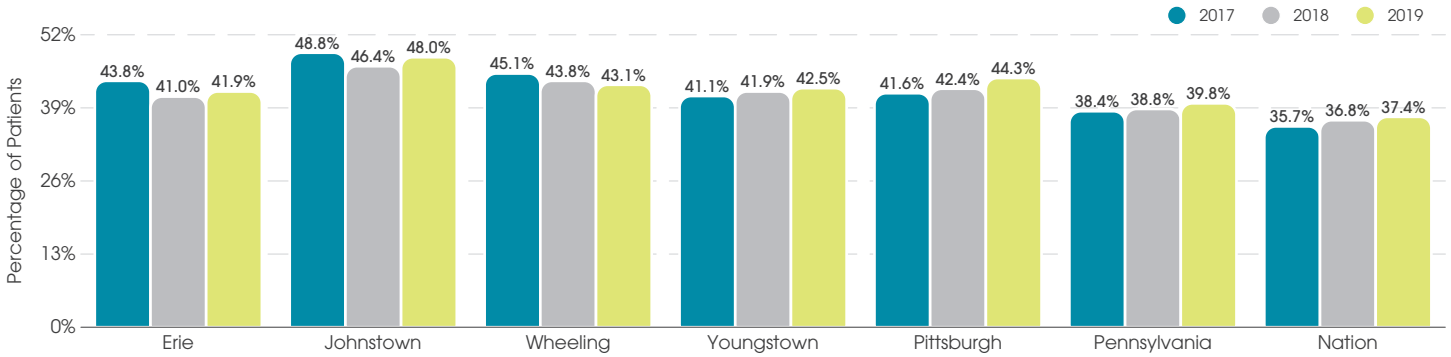
PERCENTAGE OF TYPE 2 DIABETES PATIENTS, BY PAYER, 2019



PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS WITH ≥2 COMORBIDITIES, 2017–2019[3]

MARKET	2017	2018	2019
Erie	59.9%	54.0%	52.0%
Johnstown	62.9	62.1	66.7
Wheeling	68.7	64.5	60.8
Youngstown	61.2	61.6	61.5
Pittsburgh	61.3	62.3	62.7
Pennsylvania	**60.5**	**60.5**	**59.8**
NATION	**59.7%**	**60.2%**	**59.3%**

PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS WITH ≥2 COMPLICATIONS, 2017–2019[4]



Data source: IQVIA © 2020

[1] Includes HMOs, PPOs, point-of-service plans, and exclusive provider organizations.
[2] Medicaid includes fee-for-service and managed care.
[3] A comorbidity is a condition a patient with diabetes may also have, which may not be directly related to the diabetes. Comorbidities were narrowed down to a subset of conditions which are typically present in patients with diabetes. Comorbidities of diabetes include, but are not limited to, depression, hyperlipidemia, hypertension, knee osteoarthritis, obesity, pneumonia, and rheumatoid arthritis.
[4] A complication is defined as a patient condition caused by diabetes. Complications of diabetes include, but are not limited to, atherosclerotic cardiovascular disease (ASCVD), cardiovascular (CV) disease, congestive heart failure, hypoglycemia, myocardial infarction (MI), nephropathy, neuropathy, peripheral artery disease (PAD), retinopathy, and stroke. ASCVD includes patients with acute coronary syndromes (ACS), MI, stroke, and other cardiovascular diseases.

UTILIZATION

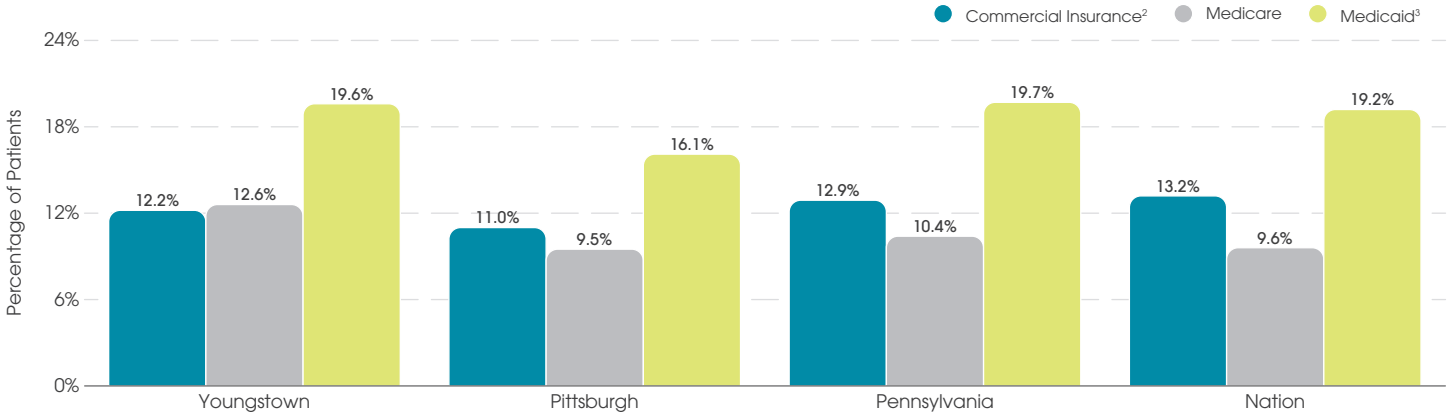
PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS RECEIVING VARIOUS SERVICES, 2017–2019

	A1c Test[1]			Blood Glucose Test			Ophthalmologic Exam			Serum Cholesterol Test			Urine Microalbumin Test		
MARKET	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019	2010	2018	2019
Erie	89.5%	89.7%	91.0%	91.1%	92.4%	92.2%	47.8%	50.4%	52.9%	77.8%	78.8%	80.1%	49.7%	51.7%	50.5%
Johnstown	87.1	87.4	89.2	88.9	89.6	90.3	47.5	47.4	50.8	74.4	75.8	77.8	45.0	47.0	47.1
Wheeling	82.5	83.9	83.9	86.5	87.9	88.8	36.7	35.8	37.5	71.9	71.3	73.3	39.0	37.9	40.4
Youngstown	87.7	89.4	89.8	87.3	87.4	87.1	42.8	45.3	47.1	72.5	70.9	71.0	48.2	47.2	46.9
Pittsburgh	87.9	89.4	90.1	90.6	91.2	91.3	52.5	53.6	53.8	78.0	79.6	80.4	51.6	53.2	53.8
Pennsylvania	**86.8**	**88.3**	**88.6**	**89.8**	**90.5**	**90.7**	**52.2**	**53.0**	**53.0**	**76.8**	**78.0**	**78.3**	**48.4**	**49.6**	**49.5**
NATION	**89.6%**	**90.1%**	**90.5%**	**92.3%**	**92.7%**	**92.8%**	**42.7%**	**43.0%**	**42.6%**	**80.6%**	**80.4%**	**80.4%**	**50.2%**	**50.5%**	**49.8%**

PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS, BY A1c LEVEL RANGE, 2017–2019[1]

	≤7.0%			7.1–7.9%			8.0–9.0%			>9.0%			>10.0%		
MARKET	2017	2018	2019	2017	2018	2019	2017	2018	2019	2017	2018	2019	2010	2018	2019
Wheeling	47.6%	47.0%	56.5%	21.4%	22.7%	20.0%	10.3%	13.6%	11.3%	20.7%	16.7%	12.2%	n/a	8.3%	n/a
Youngstown	51.3	48.9	57.3	22.1	23.2	19.4	13.4	14.1	11.2	13.2	13.8	12.2	4.5%	3.2	3.0%
Pittsburgh	53.7	54.9	56.1	20.0	19.6	20.9	12.4	12.0	12.0	13.9	13.5	11.0	5.2	4.4	3.7
Pennsylvania	**54.7**	**54.0**	**53.3**	**20.2**	**20.8**	**21.7**	**11.8**	**12.1**	**12.1**	**13.3**	**13.1**	**12.9**	**4.7**	**4.3**	**4.0**
NATION	**55.3%**	**55.1%**	**55.2%**	**18.8%**	**19.0%**	**19.7%**	**11.7%**	**11.8%**	**11.9%**	**14.3%**	**14.1%**	**13.2%**	**5.0%**	**4.9%**	**4.4%**

PERCENTAGE OF TYPE 2 DIABETES PATIENTS WITH AN A1c LEVEL >9.0%, BY PAYER, 2019[1]



TOP-PERFORMING STATE: PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS, BY A1c LEVEL RANGE, 2019[1]

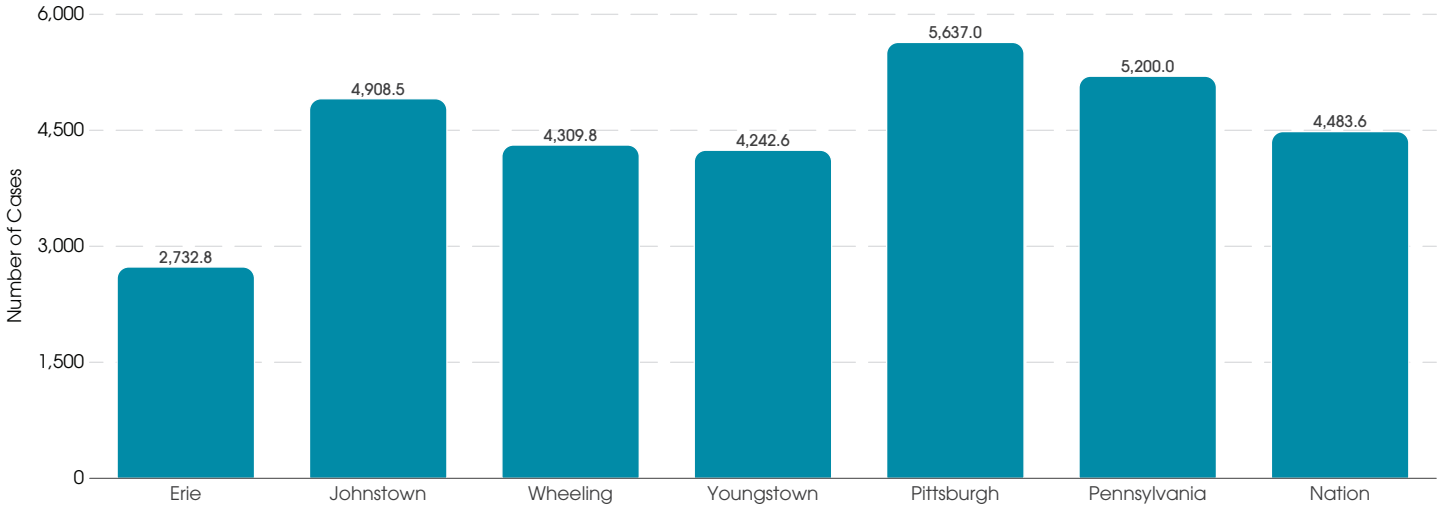
MARKET	≤7.0%	>9.0%
TOP-PERFORMING STATE[4]	**58.9%**	**9.5%**

Data source: IQVIA © 2020

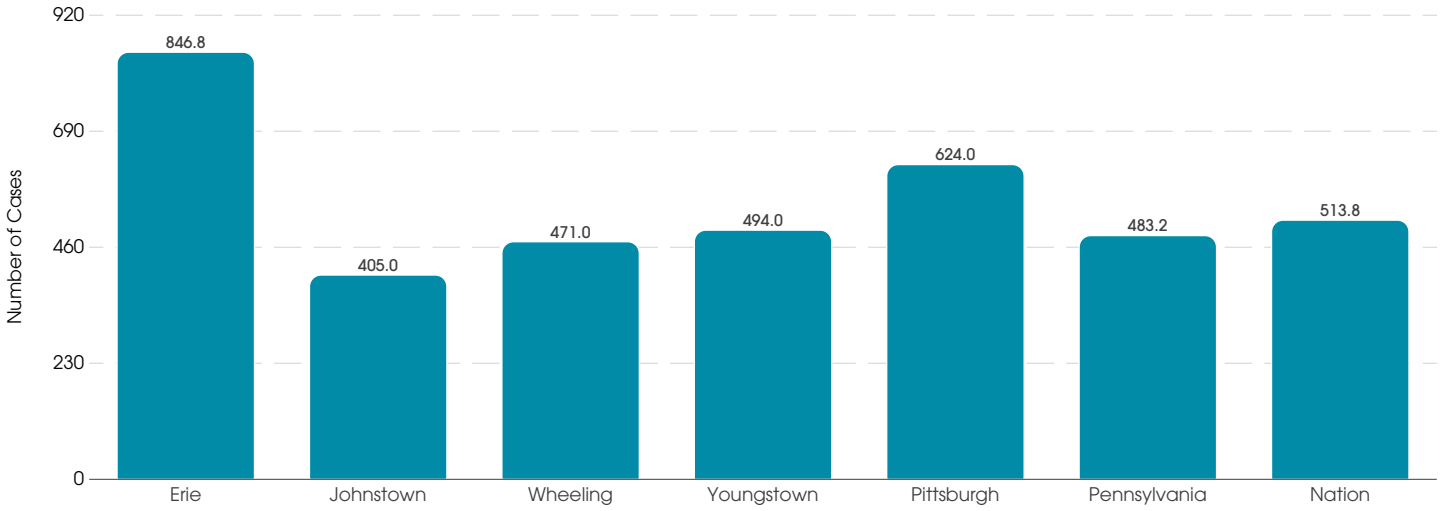
[1] The A1c test measures the average blood sugar level during the past 2–3 months. Figures reflect the percentage of diabetes patients who have had at least one A1c test in a given year.
[2] Includes HMOs, PPOs, point-of-service plans, and exclusive provider organizations.
[3] Medicaid includes fee-for-service and managed care.
[4] The top-performing state represents the state with the highest or lowest percentage of patients with diabetes in any given category.
NOTE: Some data were unavailable for the selected markets.

HOSPITAL DISCHARGE DATA

NUMBER OF COMMERCIAL OUTPATIENT DIABETES MELLITUS CASES PER HOSPITAL PER YEAR, 2018



NUMBER OF COMMERCIAL INPATIENT DIABETES MELLITUS CASES PER HOSPITAL PER YEAR, 2018



AVERAGE LENGTH OF STAY (DAYS) AND CHARGES PER INPATIENT DIABETES MELLITUS CASE, 2018

MARKET	Average Length of Stay	Average Charges[1]
Erie	4.9	$41,016
Johnstown	4.8	21,140
Wheeling	4.3	13,797
Youngstown	4.4	34,354
Pittsburgh	5.2	50,960
Pennsylvania	**4.9**	**48,676**
NATION	**5.0**	**$43,911**

Data source: IQVIA © 2020

[1] Charge data are per-case averages for patients with a particular diagnosis of interest. Charges may be for treatment related to other diagnoses. Data reflect the total charges billed by the acute-care hospital for the entire episode of care, and may include accommodation, pharmacy, laboratory, radiology, and other charges not billed by the physician. Data do not necessarily indicate final amounts paid.

NOTE: Throughout this report, unless otherwise specified, hospital case data include primary and secondary diagnoses. Hospital data come from IQVIA's *Hospital Procedure & Diagnosis* (HPD) database. Case counts, average length of stay, and charge data are based on all short-term, acute-care hospitals and are effective as of 2018. Psychiatric, rehabilitation, armed forces, and long-term acute-care hospitals are excluded.

PROFESSIONAL CHARGES

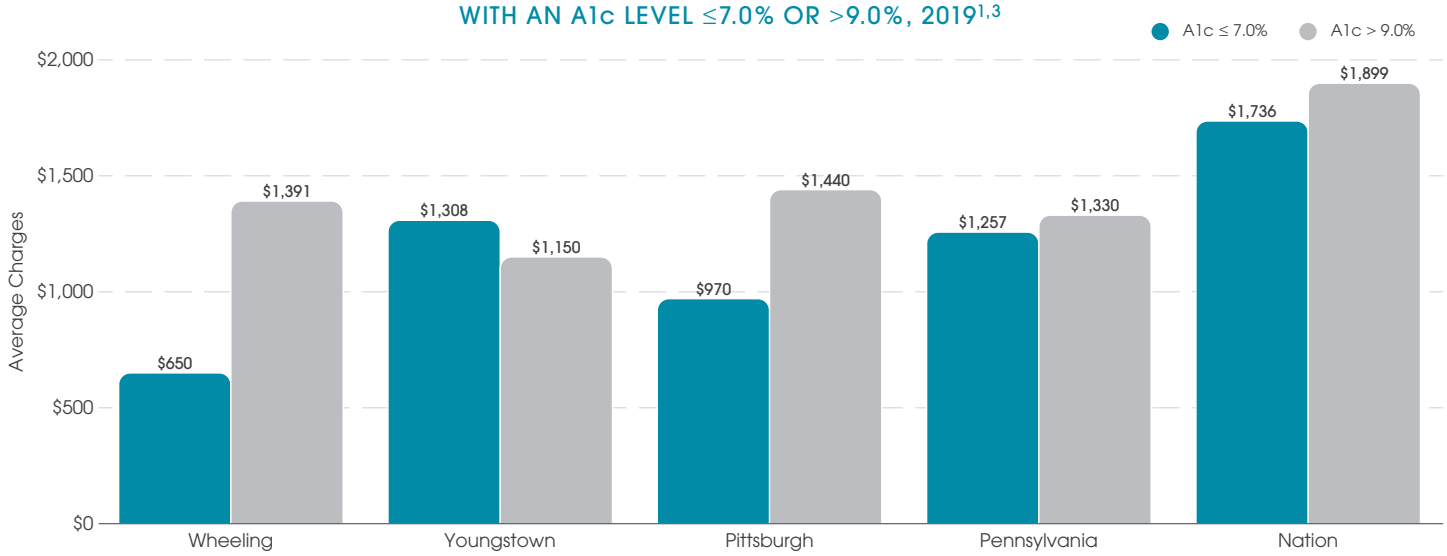
PROFESSIONAL CHARGES PER YEAR FOR COMMERCIAL TYPE 2 DIABETES PATIENTS, BY SETTING, 2018–2019[1]

	Ambulatory Surgery		Emergency Department		Inpatient		Outpatient		Office/ Clinic	
MARKET	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Erie	$2,978	$3,209	$1,092	$1,067	$2,953	$2,689	$1,339	$1,544	$1,495	$1,693
Johnstown	2,059	2,114	868	935	3,004	3,314	994	1,115	1,415	1,277
Wheeling	3,716	3,322	1,056	1,213	2,773	3,591	1,386	1,267	2,003	1,971
Youngstown	2,268	2,302	914	919	3,299	3,275	1,378	1,293	1,600	1,649
Pittsburgh	2,099	1,972	1,109	1,220	2,639	2,780	1,005	1,002	1,517	1,577
Pennsylvania	**2,284**	**2,350**	**1,213**	**1,309**	**3,433**	**3,524**	**1,322**	**1,391**	**1,642**	**1,667**
NATION	**$2,905**	**$3,027**	**$1,609**	**$1,748**	**$4,064**	**$4,132**	**$1,625**	**$1,651**	**$2,227**	**$2,237**

PROFESSIONAL CHARGES PER YEAR FOR COMMERCIAL TYPE 2 DIABETES PATIENTS WITH A COMORBIDITY OF HYPERTENSION, BY SETTING, 2018–2019[1,2]

	Ambulatory Surgery		Emergency Department		Inpatient		Outpatient		Office/ Clinic	
MARKET	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Erie	$2,832	$3,261	$1,119	$1,102	$3,125	$2,718	$1,482	$1,644	$1,697	$1,880
Johnstown	2,016	2,133	927	1,009	3,216	3,606	1,040	1,222	1,514	1,341
Wheeling	3,726	3,635	1,115	1,289	2,735	3,777	1,507	1,318	1,931	1,914
Youngstown	2,275	2,272	948	896	3,499	3,463	1,457	1,375	1,704	1,715
Pittsburgh	2,076	2,005	1,144	1,247	2,799	2,948	1,076	1,055	1,617	1,666
Pennsylvania	**2,297**	**2,371**	**1,254**	**1,353**	**3,649**	**3,741**	**1,401**	**1,478**	**1,789**	**1,812**
NATION	**$2,940**	**$3,049**	**$1,682**	**$1,822**	**$4,263**	**$4,348**	**$1,713**	**$1,745**	**$2,413**	**$2,431**

PROFESSIONAL EMERGENCY DEPARTMENT CHARGES PER YEAR FOR COMMERCIAL TYPE 2 DIABETES PATIENTS WITH AN A1c LEVEL ≤7.0% OR >9.0%, 2019[1,3]



Data source: IQVIA © 2020

[1] Professional charges are those generated by the providers delivering care to patients with diabetes in various settings.
[2] A comorbidity is a condition a patient with diabetes may also have, which may not be directly related to the diabetes. Comorbidities were narrowed down to a subset of conditions which are typically present in patients with diabetes. Comorbidities of diabetes include, but are not limited to, depression, hyperlipidemia, hypertension, knee osteoarthritis, obesity, pneumonia, and rheumatoid arthritis.
[3] The A1c test measures the average blood sugar level during the past 2–3 months. Figures reflect the percentage of diabetes patients who have had at least one A1c test in a given year.
NOTE: Some data were unavailable for Erie and Johnstown.

PHARMACOTHERAPY

PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS RECEIVING VARIOUS INSULIN AND COMBINATION THERAPIES, 2019

MARKET	Long-Acting Basal Category 1	Long-Acting Basal Category 2	Rapid-Acting Insulin	Mixed Insulin	Fixed Ratio (Long-Acting Insulin/GLP-1 RA)	Free Ratio (Variable Long-Acting Insulin + GLP-1 RA)
Erie	21.3%	7.8%	17.7%	1.7%	1.4%	9.6%
Johnstown	17.1	5.8	13.0	1.8	1.0	6.7
Wheeling	15.9	12.3	11.5	1.0	1.3	7.5
Youngstown	16.2	5.9	10.7	2.2	0.7	5.8
Pittsburgh	18.2	8.2	14.3	2.3	1.2	7.9
Pennsylvania	**16.1**	**6.8**	**12.3**	**2.2**	**0.9**	**6.6**
NATION	**16.1%**	**6.9%**	**10.6%**	**2.1%**	**0.9%**	**6.4%**

PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS RECEIVING VARIOUS NON-INSULIN ANTIDIABETIC THERAPIES, 2019

MARKET	Biguanides	DPP-4 Inhibitors	GLP-1 RAs	Insulin Sensitizing Agents	SGLT-2 Inhibitors
Erie	62.5%	11.9%	20.4%	2.6%	14.8%
Johnstown	65.1	13.6	16.1	2.1	15.9
Wheeling	69.7	13.5	20.9	5.5	18.2
Youngstown	69.4	12.0	15.7	3.5	16.0
Pittsburgh	66.7	11.4	20.0	2.4	16.8
Pennsylvania	**67.5**	**13.5**	**17.7**	**5.0**	**17.0**
NATION	**69.6%**	**11.8%**	**18.2%**	**6.6%**	**15.9%**

COMPOSITE A1c LEVELS FOR COMMERCIAL TYPE 2 DIABETES PATIENTS, BY THERAPY, 2017–2019[1]

	Long-Acting Basal Category 1		Long-Acting Basal Category 2		GLP-1 RAs		SGLT-2 Inhibitors		Fixed Ratio (Long-Acting Insulin/ GLP-1 RA)		Free Ratio (Variable Long-Acting Insulin + GLP-1 RA)	
MARKET	2017	2019	2017	2019	2017	2019	2017	2019	2017	2019	2017	2019
Youngstown	8.76%	8.40%	8.94%	9.31%	7.99%	8.01%	7.90%	7.89%	n/a	n/a	9.02%	8.55%
Pittsburgh	8.42	8.03	8.60	7.99	7.66	7.51	7.77	7.61	n/a	n/a	8.29	7.76
Pennsylvania	**8.42**	**8.30**	**8.69**	**8.34**	**7.87**	**7.79**	**7.88**	**7.81**	**8.60%**	**8.19%**	**8.43**	**8.16**
NATION	**8.54%**	**8.42%**	**8.69%**	**8.45%**	**7.92%**	**7.85%**	**7.96%**	**7.89%**	**9.09%**	**8.64%**	**8.40%**	**8.30%**

Data source: IQVIA © 2020

[1] Composite A1c level is an average of the patients' most recent A1c measurement in 2017 compared with the most recent A1c measurement in 2019 in a subset of patients with a reported A1c in the respective year.
NOTE: Some data were unavailable for the selected markets.

Biguanides: Decrease the production of glucose by the liver, decrease intestinal absorption of glucose, and increase the peripheral uptake and use of circulating glucose.

Dipeptidyl Peptidase 4 (DPP-4) Inhibitors: Inhibit DPP-4 enzymes and slow inactivation of incretin hormones, helping to regulate glucose homeostasis through increased insulin release and decreased glucagon levels.

GLP-1 Receptor Agonists (RAs): Increase glucose-dependent insulin secretion and pancreatic beta-cell sensitivity, reduce glucagon production, slow rate of absorption of glucose in the digestive tract by slowing gastric emptying, and suppress appetite. "Fixed ratio (long-acting insulin/GLP-1 RA)" refers to the two therapies combined in a single product. "Free ratio (variable long-acting insulin + GLP-1 RA)" refers to the two therapies taken separately and concurrently.

Insulin Sensitizing Agents: Increase insulin sensitivity by improving response to insulin in liver, adipose tissue, and skeletal muscle, resulting in decreased production of glucose by the liver and increased peripheral uptake and use of circulating glucose.

Long-Acting Basal Category 1/Category 2: Insulin replacement product with a long duration of action. "Category 1" refers to long-acting basal insulins approved through 2014 and follow-on long-acting insulins approved after 2014. "Category 2" refers to non-follow-on long-acting basal insulins approved in or after 2015.

Mixed Insulin: Insulin replacement product combining a short-acting and an intermediate-acting insulin product.

Rapid-Acting Insulin: Insulin replacement product with a rapid onset and shorter duration of action than short-acting insulin.

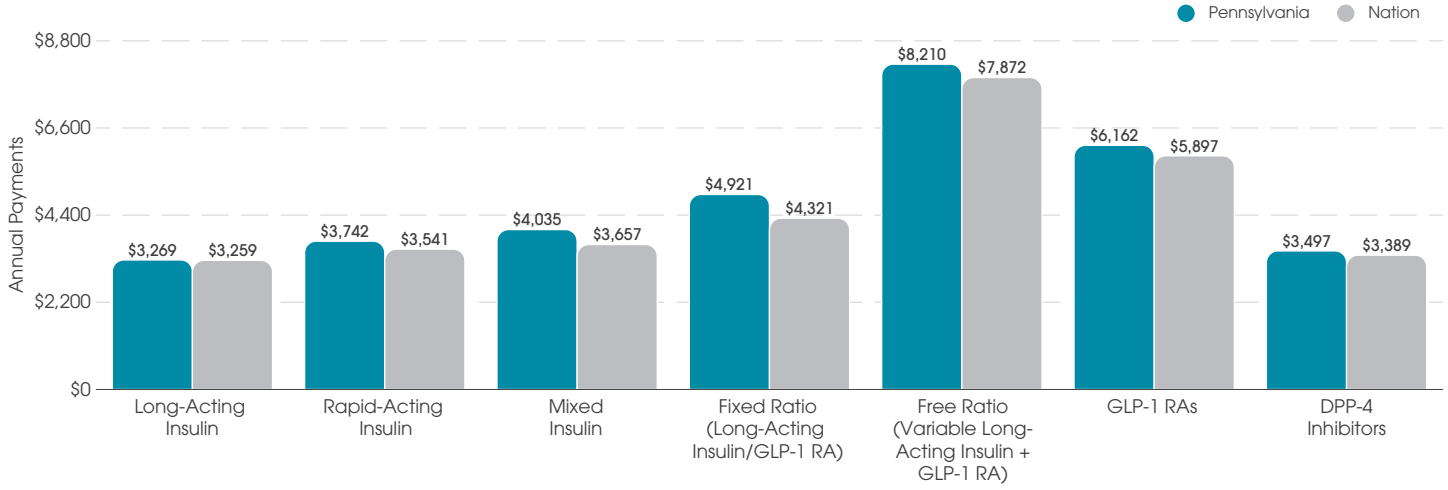
Sodium/Glucose Cotransporter 2 (SGLT-2) Inhibitors: Lower blood glucose concentration so that glucose is excreted instead of reabsorbed.

PHARMACOTHERAPY

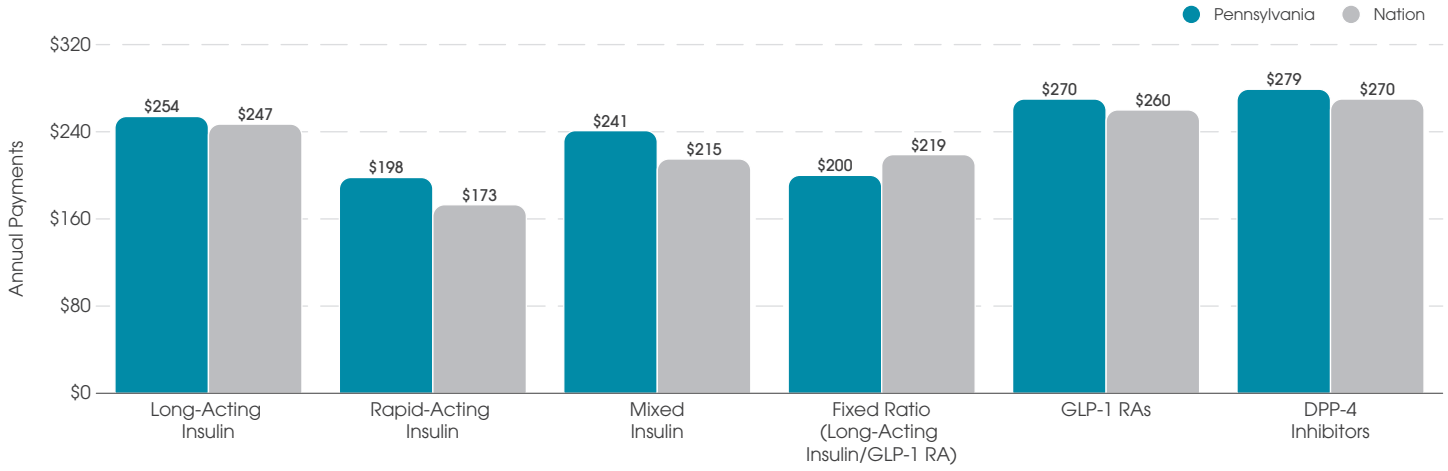
ANNUAL PAYMENTS PER COMMERCIAL TYPE 2 DIABETES PATIENT FOR VARIOUS INSULIN AND COMBINATION THERAPIES, 2019[1]

MARKET	Long-Acting Insulin	Rapid-Acting Insulin	Mixed Insulin	Fixed Ratio (Long-Acting Insulin/GLP-1 RA)	Free Ratio (Variable Long-Acting Insulin + GLP-1 RA)
Erie	$3,112	$3,798	$3,829	$3,133	$7,534
Johnstown	2,803	3,023	2,873	3,462	7,099
Wheeling	3,635	3,733	6,171	3,963	9,514
Youngstown	2,811	3,256	2,941	4,629	7,161
Pittsburgh	3,170	3,315	4,579	4,470	7,853
Pennsylvania	**3,269**	**3,742**	**4,035**	**4,921**	**8,210**
NATION	**$3,259**	**$3,541**	**$3,657**	**$4,321**	**$7,872**

ANNUAL PAYMENTS PER COMMERCIAL TYPE 2 DIABETES PATIENT FOR VARIOUS INSULIN, COMBINATION, AND NON-INSULIN ANTIDIABETIC THERAPIES, 2019[1]



ANNUAL OUT-OF-POCKET COSTS PER COMMERCIAL TYPE 2 DIABETES PATIENT FOR VARIOUS INSULIN, COMBINATION, AND NON-INSULIN ANTIDIABETIC THERAPIES, 2019



Data source: IQVIA © 2020

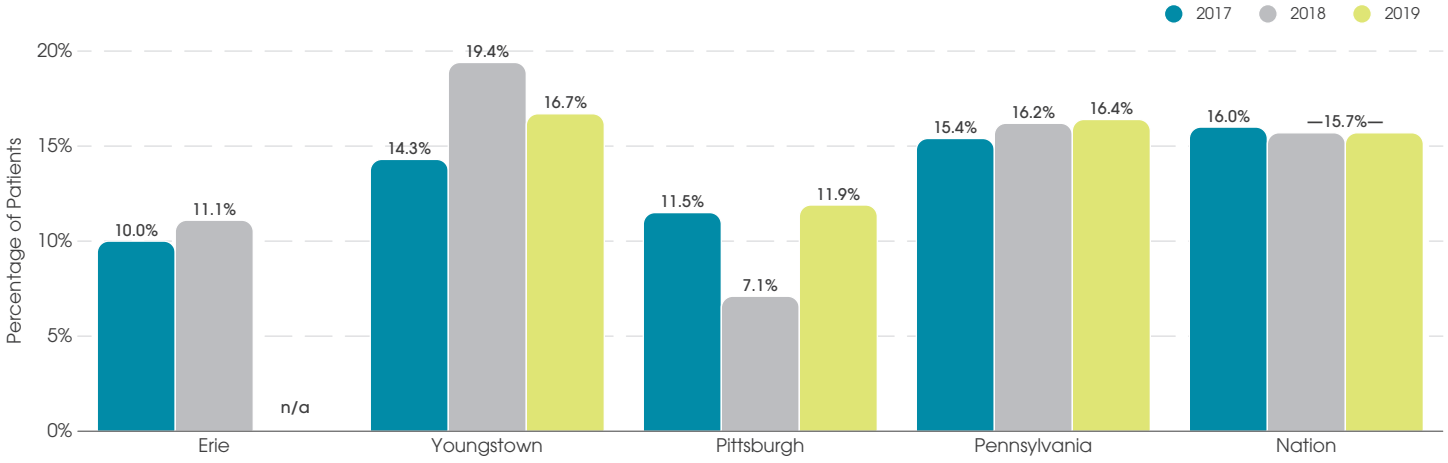
[1] Figures reflect the per-patient yearly payments for diabetes patients receiving a particular type of therapy. These are the actual amounts paid by the insurer and patient for such prescriptions. Costs mainly include copayments, but can also include tax, deductibles, and cost differentials where applicable.

PHARMACOTHERAPY

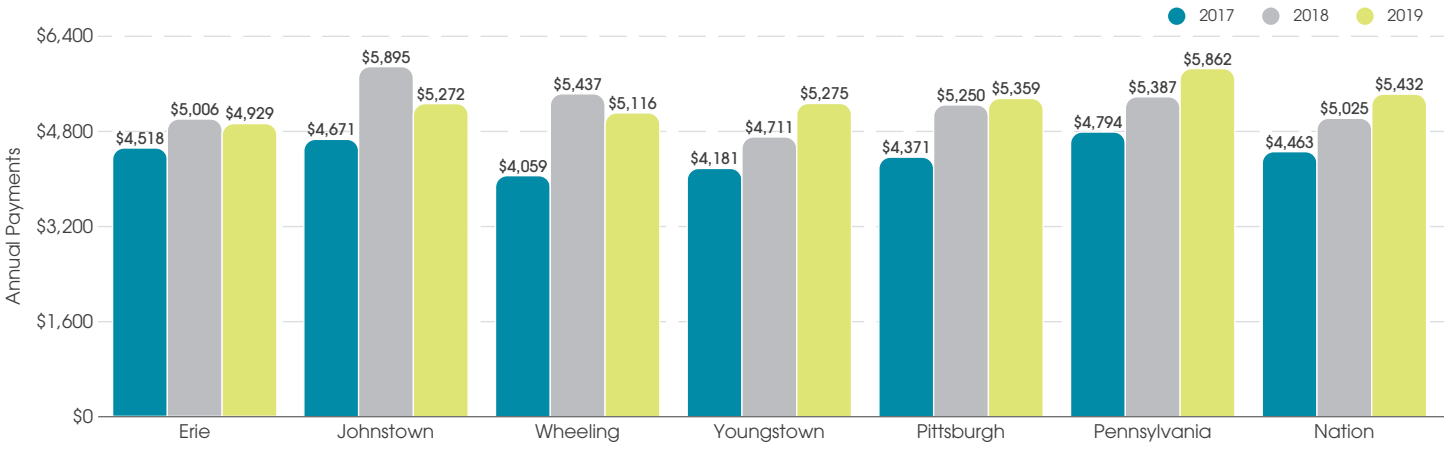
PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS RECEIVING THREE ORAL ANTIDIABETIC PRODUCTS, 2017–2019

MARKET	2017	2018	2019
Erie	9.8%	9.1%	9.1%
Johnstown	11.2	10.8	10.7
Wheeling	12.6	11.9	13.0
Youngstown	12.2	11.9	11.1
Pittsburgh	10.9	10.1	10.0
Pennsylvania	**11.4**	**11.2**	**11.3**
NATION	**11.0%**	**10.9%**	**11.0%**

PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS WITH AN A1c LEVEL >9.0% RECEIVING THREE ORAL ANTIDIABETIC PRODUCTS, 2017–2019[1]



ANNUAL PAYMENTS PER COMMERCIAL TYPE 2 DIABETES PATIENT RECEIVING THREE NON-INSULIN ANTIDIABETIC PRODUCTS, 2017–2019[2]



Data source: IQVIA © 2020

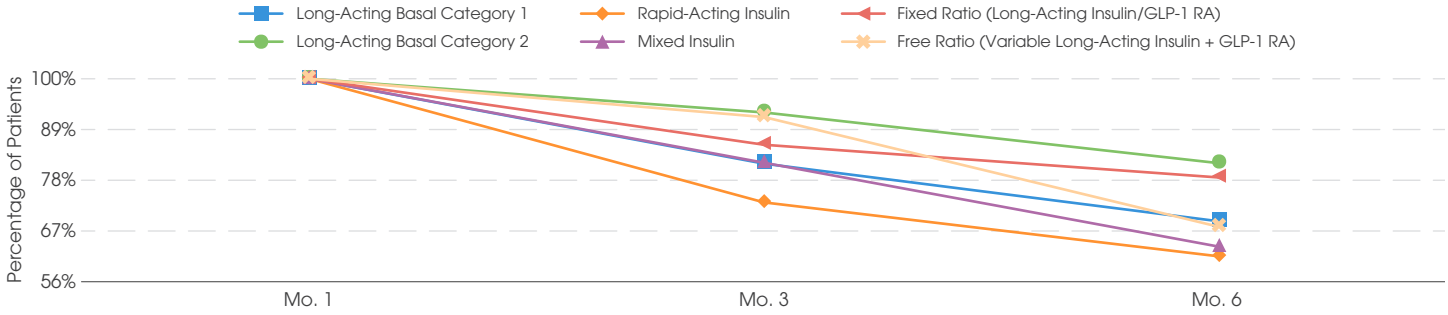
[1] The A1c test measures the average blood sugar level during the past 2–3 months. Figures reflect the percentage of diabetes patients who have had at least one A1c test in a given year.

[2] Figures reflect the per-patient yearly payments for diabetes patients receiving a particular type of therapy. These are the actual amounts paid by the insurer and patient for such prescriptions. Costs mainly include copayments, but can also include tax, deductibles, and cost differentials where applicable.

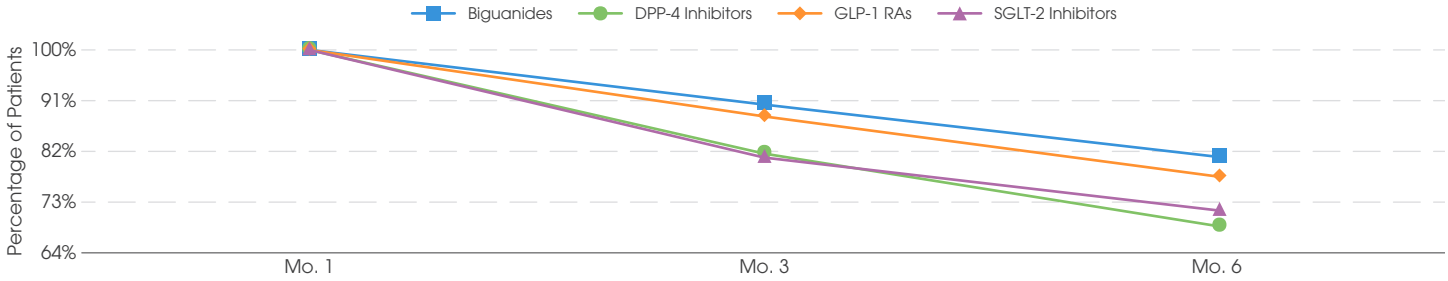
NOTE: Some data were unavailable for Johnstown and Wheeling.

PERSISTENCY

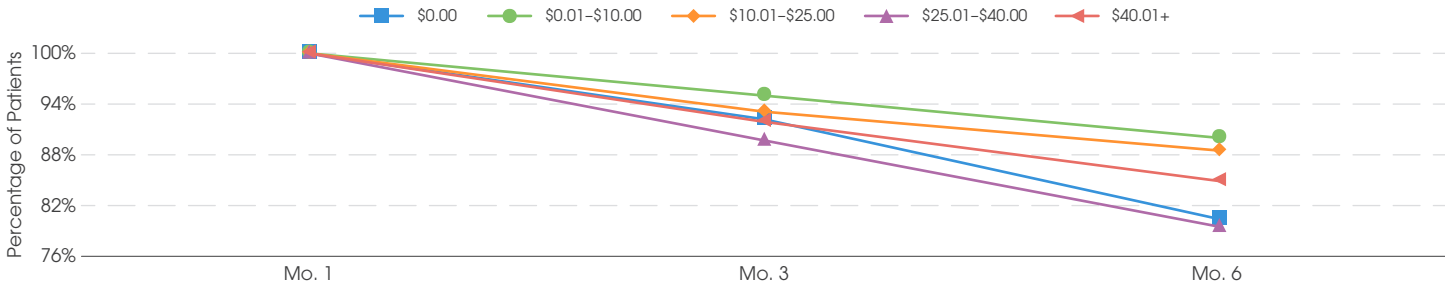
PERSISTENCY: COMMERCIAL TYPE 2 DIABETES PATIENTS, VARIOUS INSULIN THERAPIES, PITTSBURGH, 2019



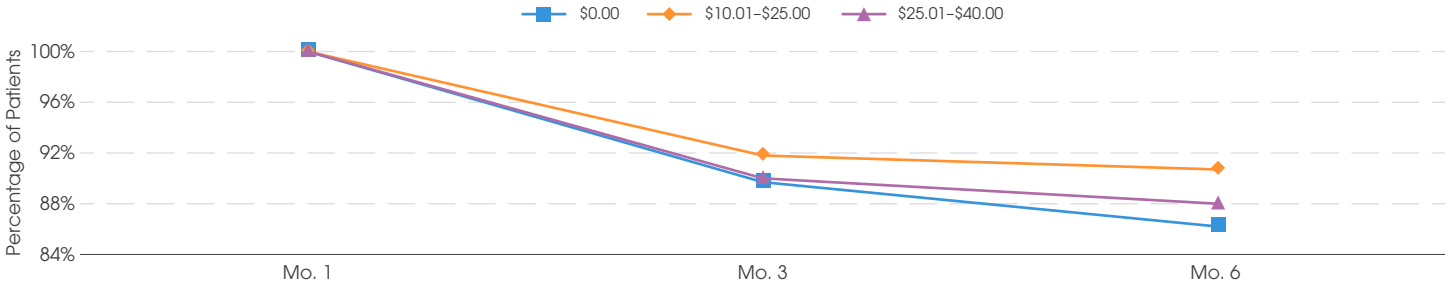
PERSISTENCY: COMMERCIAL TYPE 2 DIABETES PATIENTS, VARIOUS NON-INSULIN ANTIDIABETIC THERAPIES, PITTSBURGH, 2019



PERSISTENCY: COMMERCIAL TYPE 2 DIABETES PATIENTS RECEIVING LONG-ACTING INSULIN, BY OUT-OF-POCKET COSTS, PITTSBURGH, 2019



PERSISTENCY: COMMERCIAL TYPE 2 DIABETES PATIENTS RECEIVING GLP-1 RAs, BY OUT-OF-POCKET COSTS, PITTSBURGH, 2019



Data source: IQVIA © 2020

NOTE: "Persistency" measures whether patients maintain their prescribed therapy. It is calculated by identifying patients who filled a prescription for the reported drug class in the six months prior to the reported year, and then tracking prescription fills for those same patients in each of the months in the current reported year. If patients fill a prescription in a month, they are reported among the patients who have continued or restarted on therapy. Continued means that the patient has filled the drug group in each of the preceding months. Restarted means that the patient did not fill in one or more of the preceding months. Continuing and restarting patients are reported together. Persistency is tracked for patients who are new to therapy (those who have not filled the therapy in question in the six months prior to their first fill of the study period). Some data were unavailable for Pittsburgh.

DIABETES AND CO-OCCURRING CONDITIONS

PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS, BY CO-OCCURRING CONDITION, 2019[1]

MARKET	CKD	Depression	ESRD	Hyper-lipidemia	Hyper-tension	Hypo-glycemia	Nephro-pathy	Neuro-pathy	Obesity
Erie	16.6%	14.3%	2.0%	64.0%	74.3%	4.2%	30.0%	40.3%	33.6%
Johnstown	23.2	17.2	1.7	72.0	79.0	2.1	39.1	36.2	37.2
Wheeling	13.6	11.7	2.0	64.4	85.2	2.8	26.5	38.2	26.3
Youngstown	17.0	13.0	2.3	64.6	81.8	2.5	28.9	37.2	28.9
Pittsburgh	20.8	12.7	2.6	65.5	79.8	3.1	36.4	40.4	42.8
Pennsylvania	**19.7**	**12.5**	**2.3**	**65.9**	**79.0**	**2.9**	**34.4**	**35.8**	**36.5**
NATION	**20.0%**	**11.4%**	**2.5%**	**66.8%**	**80.6%**	**3.0%**	**34.6%**	**35.9%**	**29.3%**

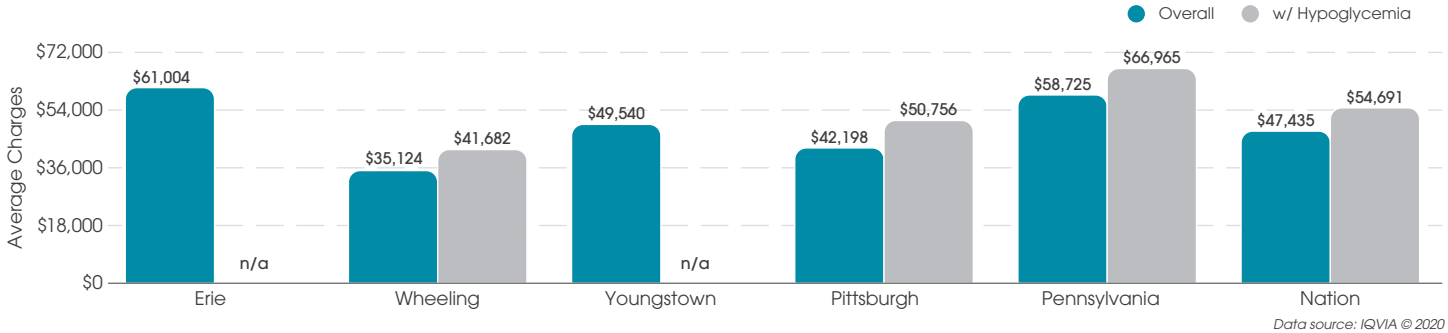
COMPOSITE A1c LEVELS FOR COMMERCIAL TYPE 2 DIABETES PATIENTS WITH VARIOUS CO-OCCURRING CONDITIONS, 2019[1,2]

MARKET	CKD	Depression	ESRD	Hyper-lipidemia	Hyper-tension	Hypo-glycemia	Nephro-pathy	Neuro-pathy	Obesity
Erie	n/a	n/a	n/a	7.48%	7.09%	n/a	6.71%	7.17%	7.88%
Johnstown	n/a	n/a	n/a	7.36	7.23	n/a	7.42	7.79	6.89
Wheeling	n/a	6.71%	n/a	7.03	7.32	n/a	7.72	7.63	7.27
Youngstown	6.96%	6.61	n/a	7.12	7.10	6.98%	7.01	7.28	7.22
Pittsburgh	6.94	7.08	6.72%	7.08	7.17	7.22	7.10	7.27	7.21
Pennsylvania	**7.18**	**7.35**	**6.96**	**7.32**	**7.32**	**7.61**	**7.31**	**7.48**	**7.39**
NATION	**7.11%**	**7.21%**	**6.89%**	**7.28%**	**7.28%**	**7.59%**	**7.25%**	**7.42%**	**7.32%**

PROFESSIONAL INPATIENT CHARGES FOR COMMERCIAL TYPE 2 DIABETES PATIENTS PER YEAR, OVERALL VS. WITH VARIOUS CO-OCCURRING CONDITIONS, 2019[1,3]

MARKET	Overall	w/ CKD	w/ Depression	w/ ESRD	w/ Hyper-lipidemia	w/ Hyper-tension	w/ Hypo-glycemia	w/ Nephro-pathy	w/ Neuro-pathy	w/ Obesity
Erie	$2,689	n/a	$2,696	$3,752	$2,943	$2,718	$2,956	$2,774	$3,100	$3,186
Johnstown	3,314	$3,720	2,837	9,956	3,697	3,606	5,373	3,736	4,561	3,101
Wheeling	3,591	4,898	4,190	6,533	3,580	3,777	8,348	4,979	4,985	4,575
Youngstown	3,275	4,916	3,858	7,637	3,294	3,463	4,416	4,418	4,028	4,198
Pittsburgh	2,780	3,705	3,303	5,426	2,865	2,948	4,319	3,380	3,187	3,094
Pennsylvania	**3,524**	**4,358**	**4,154**	**6,329**	**3,814**	**3,741**	**5,429**	**4,257**	**4,019**	**3,845**
NATION	**$4,132**	**$5,341**	**$4,815**	**$7,804**	**$4,353**	**$4,348**	**$5,914**	**$5,129**	**$4,914**	**$4,573**

INPATIENT FACILITY CHARGES FOR COMMERCIAL TYPE 2 DIABETES PATIENTS PER YEAR, OVERALL VS. WITH HYPOGLYCEMIA, 2019[4,5]



Data source: IQVIA © 2020

[1] A co-occurring condition is a condition a patient with diabetes may also have, which may or may not be directly related to the diabetes. Co-occurring conditions were narrowed down to a subset of conditions, including, but not limited to, atherosclerotic cardiovascular disease (ASCVD; includes patients with acute coronary syndromes, myocardial infarction, stroke, and other cardiovascular conditions), chronic kidney disease (CKD), gastrointestinal (GI) symptoms, congestive heart failure, hypoglycemia, obesity, peripheral artery disease (PAD), and stroke.

[2] The A1c test measures the average blood sugar level during the past 2–3 months. Figures reflect the percentage of diabetes patients who have had at least one A1c test in a given year.

[3] Professional charges are those generated by the providers delivering care to patients with diabetes in various settings.

[4] Data reflect the charges generated for diabetes patients by the facilities that delivered care. The data also reflect the average amounts charged, not the amounts paid.

[5] A complication is defined as a patient condition caused by diabetes. Complications of diabetes include, but are not limited to, atherosclerotic cardiovascular disease (ASCVD), cardiovascular (CV) disease, congestive heart failure, hypoglycemia, myocardial infarction (MI), nephropathy, neuropathy, peripheral artery disease (PAD), retinopathy, and stroke. ASCVD includes patients with acute coronary syndromes (ACS), MI, stroke, and other cardiovascular diseases.

NOTE: CKD is chronic kidney disease. ESRD is end-stage renal disease. Some data were unavailable for Johnstown.

DIABETES AND CARDIOVASCULAR DISEASE

PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS WITH VARIOUS COMPLICATIONS, 2019[1]

MARKET	ASCVD	CV Disease	Congestive Heart Failure	MI	PAD	Stroke
Erie	38.2%	34.7%	15.2%	3.1%	16.0%	4.7%
Johnstown	50.8	45.3	14.0	2.9	23.6	4.5
Wheeling	46.2	44.7	13.6	4.4	17.4	4.4
Youngstown	43.1	41.5	15.7	3.8	15.9	4.9
Pittsburgh	44.2	42.1	15.2	3.5	19.0	4.6
Pennsylvania	**41.3**	**39.2**	**13.6**	**3.2**	**17.4**	**4.6**
NATION	**38.8%**	**38.7%**	**13.0%**	**3.1%**	**16.6%**	**4.2%**

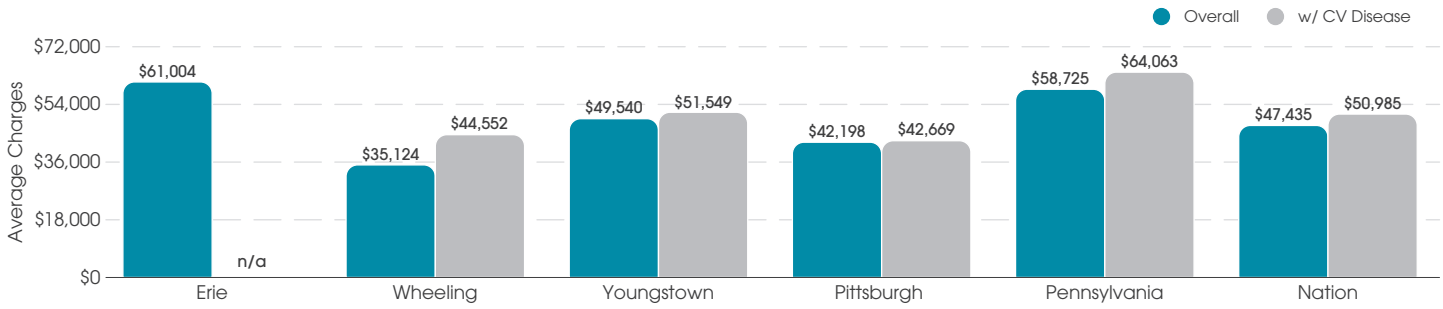
COMPOSITE A1c LEVELS FOR COMMERCIAL TYPE 2 DIABETES PATIENTS WITH VARIOUS COMPLICATIONS, 2019[1,2]

MARKET	ASCVD	CV Disease	Congestive Heart Failure	MI	PAD	Stroke
Erie	6.90%	n/a	n/a	n/a	n/a	n/a
Johnstown	7.00	6.73%	n/a	n/a	n/a	n/a
Wheeling	6.91	6.79	6.93%	n/a	6.95%	n/a
Youngstown	7.04	6.98	6.93	6.96%	7.17	7.51%
Pittsburgh	7.15	7.14	7.13	6.91	7.11	7.01
Pennsylvania	**7.28**	**7.25**	**7.26**	**7.44**	**7.25**	**7.26**
NATION	**7.21%**	**7.22%**	**7.22%**	**7.38%**	**7.15%**	**7.33%**

PROFESSIONAL INPATIENT CHARGES FOR COMMERCIAL TYPE 2 DIABETES PATIENTS PER YEAR, OVERALL VS. WITH VARIOUS COMPLICATIONS, 2019[1,3]

MARKET	Overall	w/ ASCVD	w/ CV Disease	w/ Congestive Heart Failure	w/ MI	w/ PAD	w/ Stroke
Erie	$2,689	n/a	n/a	n/a	$3,007	$3,093	$2,704
Johnstown	3,314	$4,123	$4,244	$4,020	7,468	4,930	5,083
Wheeling	3,591	4,532	4,557	5,425	6,392	5,331	5,158
Youngstown	3,275	3,839	3,956	4,932	5,559	4,757	4,123
Pittsburgh	2,780	3,240	3,415	3,773	4,467	3,535	3,499
Pennsylvania	**3,524**	**4,051**	**4,227**	**4,678**	**5,217**	**4,452**	**4,435**
NATION	**$4,132**	**$4,830**	**$4,976**	**$5,637**	**$6,511**	**$5,416**	**$5,429**

INPATIENT FACILITY CHARGES FOR COMMERCIAL TYPE 2 DIABETES PATIENTS PER YEAR, OVERALL VS. WITH CARDIOVASCULAR DISEASE, 2019[1,4]



Data source: IQVIA © 2020

[1] A complication is defined as a patient condition caused by diabetes. Complications of diabetes include, but are not limited to, atherosclerotic cardiovascular disease (ASCVD), cardiovascular (CV) disease, congestive heart failure, hypoglycemia, myocardial infarction (MI), nephropathy, neuropathy, peripheral artery disease (PAD), retinopathy, and stroke. ASCVD includes patients with acute coronary syndromes (ACS), MI, stroke, and other cardiovascular diseases.

[2] The A1c test measures the average blood sugar level during the past 2–3 months. Figures reflect the percentage of diabetes patients who have had at least one A1c test in a given year..

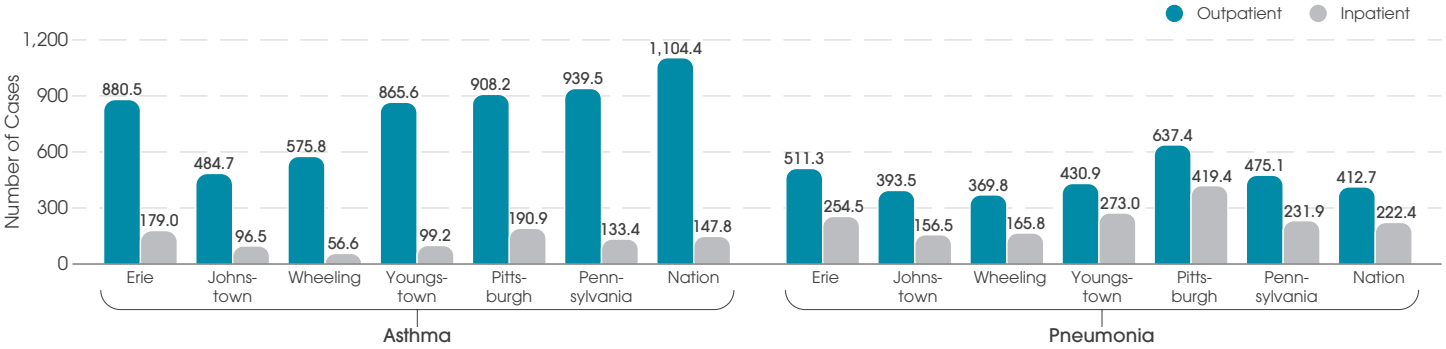
[3] Professional charges are those generated by the providers delivering care to patients with diabetes in various settings.

[4] Data reflect the charges generated for diabetes patients by the facilities that delivered care. The data also reflect the average amounts charged, not the amounts paid.

NOTE: Some data were unavailable for Johnstown.

DIABETES AND RESPIRATORY CONDITIONS

NUMBER OF COMMERCIAL OUTPATIENT AND INPATIENT CASES PER HOSPITAL, 2018



TOTAL NUMBER OF ALL-PAYER OUTPATIENT AND EMERGENCY DEPARTMENT CASES AND EMERGENCY DEPARTMENT PERCENTAGE OF OUTPATIENT CASES, 2018

	Asthma			Pneumonia		
MARKET	Outpatient Cases	Emergency Department Cases	Emergency Department Percentage of Outpatient Cases	Outpatient Cases	Emergency Department Cases	Emergency Department Percentage of Outpatient Cases
Erie	6,822	3,294	48.3%	3,769	1,773	47.0%
Johnstown	3,931	1,950	49.6	1,828	507	27.7
Wheeling	5,741	1,328	23.1	3,465	1,172	33.8
Youngstown	12,890	3,645	28.3	6,729	2,415	35.9
Pittsburgh	48,722	17,107	35.1	29,584	6,591	22.3
Pennsylvania	**391,204**	**142,565**	**36.4**	**158,153**	**41,519**	**26.3**
NATION	**8,580,127**	**3,011,892**	**35.1%**	**3,436,492**	**1,189,396**	**34.6%**

PERCENTAGE OF COMMERCIAL TYPE 2 DIABETES PATIENTS WITH ASTHMA OR PNEUMONIA, 2018–2019[1]

	w/ Asthma		w/ Pneumonia	
MARKET	2018	2019	2018	2019
Erie	5.5%	5.4%	8.3%	8.8%
Johnstown	5.7	5.4	8.2	8.5
Wheeling	5.7	6.1	8.9	8.7
Youngstown	6.3	6.7	7.0	6.5
Pittsburgh	6.2	6.0	8.7	8.2
Pennsylvania	**6.8**	**6.7**	**6.7**	**6.8**
NATION	**6.2%**	**6.1%**	**5.8%**	**5.8%**

PROFESSIONAL INPATIENT CHARGES FOR COMMERCIAL TYPE 2 DIABETES PATIENTS PER YEAR, OVERALL VS. W/ ASTHMA OR PNEUMONIA, 2019[1,2]

MARKET	Overall	w/ Asthma	w/ Pneumonia
Erie	$2,689	$3,151	$2,561
Johnstown	3,314	2,231	4,954
Wheeling	3,591	4,565	5,248
Youngstown	3,275	4,255	5,745
Pittsburgh	2,780	3,349	4,163
Pennsylvania	**3,524**	**3,901**	**5,356**
NATION	**$4,132**	**$4,289**	**$6,579**

Data source: IQVIA © 2020

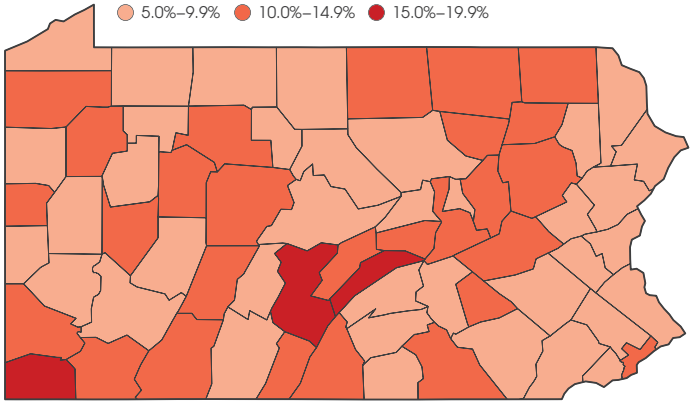
[1] A comorbidity is a condition a patient with diabetes may also have, which may not be directly related to the diabetes. Comorbidities were narrowed down to a subset of conditions which are typically present in patients with diabetes. Comorbidities of diabetes include, but are not limited to, depression, hyperlipidemia, hypertension, knee osteoarthritis, obesity, pneumonia, and rheumatoid arthritis.

[2] Professional charges are those generated by the providers delivering care to patients with diabetes in various settings.

KEY FINDINGS

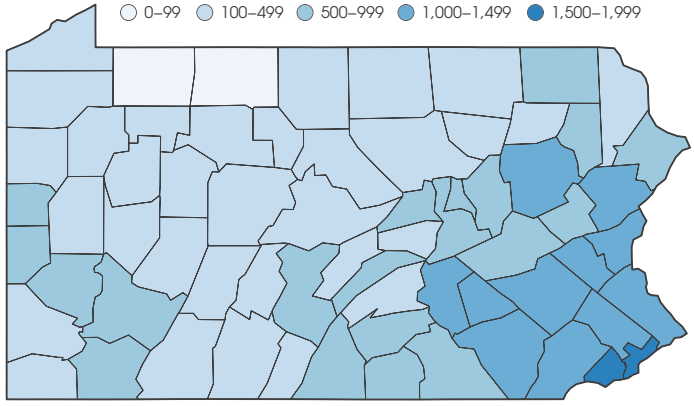
- In Pittsburgh, more than 44% of commercially insured Type 2 diabetes patients had two or more complications from their disease in 2019, an increase of nearly two percentage points from the prior year, and a higher share than those of Pennsylvania or the nation in either year.
- Roughly 43% of commercial Type 2 diabetes patients in PIttsburgh also had obesity in 2019, compared with 36.5% across Pennsylvania and 29.3% for the nation as a whole.
- Just over 90% of commercially insured Type 2 diabetes patients in Pittsburgh received an A1c test in 2019, which fell shy of the national rate of 90.5%. Of those with a test in Pittsburgh, 11.0% had an A1c level greater than 9.0%.
- Average annual emergency department charges for Pittsburgh Type 2 diabetes patients with an A1c level over 9.0% were $1,440 in 2019, 48.5% more than similar charges generated by their counterparts with an A1c ≤7.0% ($970).

DIAGNOSED DIABETES, ADULTS AGED 20+ YEARS (AGE-ADJUSTED PERENTAGE), 2017



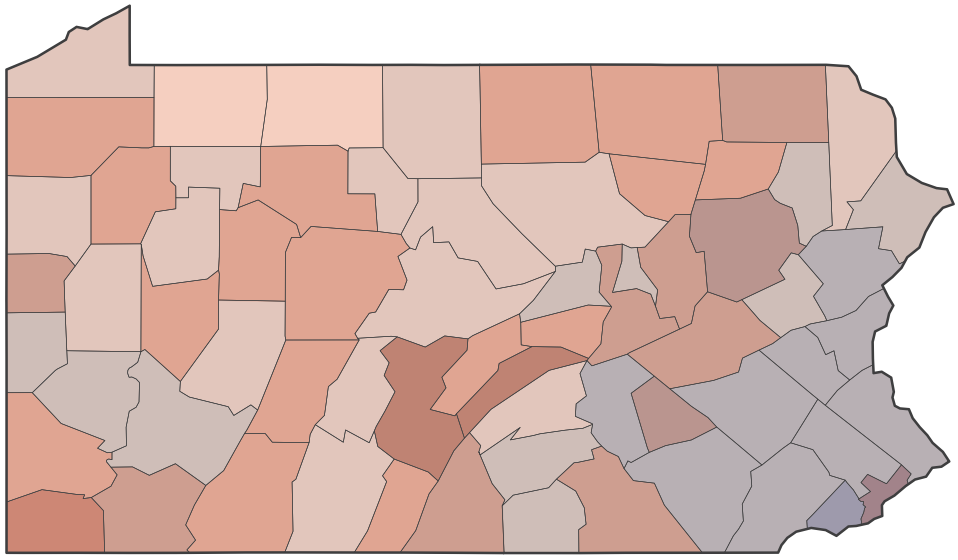
Data source: Centers for Disease Control and Prevention Behavioral Risk Factor Surveillance System © 2020
NOTE: Behavioral Risk Factor Surveillance System (BRFSS) data on diabetes are based on responses to the survey question, "Have you ever been told by a doctor that you have diabetes?"

NUMBER OF LABORATORY CONFIRMED COVID-19 CASES PER 100,000, AS OF AUGUST 28, 2020



Data source: USAFacts © 2020

DIAGNOSED DIABETES + COVID-19 CASES PER 100,000



METHODOLOGY

IQVIA generated the data for this report out of health care professional (837p) and institutional (837i) insurance claims, representing more than 11.7 million unique patients nationally in 2019 with a diagnosis of Type 2 diabetes (ICD-10 codes E08, E09, E11, E13). Data from physicians of all specialties are included.

IQVIA also gathers data on prescription activity from the National Council for Prescription Drug Programs (NCPDP). These data account for some 2 billion prescription claims annually, or more than 86% of the prescription universe. These prescription data represent the sampling of prescription activity from a variety of sources, including retail chains, mass merchandisers, and pharmacy benefit managers. Cash, Medicaid, and third-party transactions are tracked. Data arriving into IQVIA are put through a rigorous process to ensure that data elements match to valid references, such as product codes, ICD-10 (diagnosis) and CPT-4 (procedure) codes, and provider and facility data.

Proprietary lab data derive from one of the largest independent commercial lab companies in the U.S. Patient information is de-identified, matched, and linked with other patient data assets (e.g., medical claims data). The most common attributes used are the de-identified patient ID, observation date, diagnosis, test name, test code, and test result.

Claims undergo a careful de-duplication process to ensure that when multiple, voided, or adjusted claims are assigned to a patient encounter, they are applied to the database, but only for a single, unique patient.

Through its patient encryption methods, IQVIA creates a unique, random numerical identifier for every patient, and then strips away all patient-specific health information that is protected under the Health Insurance Portability and Accountability Act (HIPAA). The identifier allows IQVIA to track disease-specific diagnosis and procedure activity across the various settings where patient care is provided (hospital inpatient, hospital outpatient, emergency rooms, clinics, doctors offices, and pharmacies), while protecting the privacy of each patient.

Hospital inpatient and outpatient case count, ED percentage, and disease-specific readmission rate data come from IQVIA's *Hospital Procedure & Diagnosis* (HPD) database, which features an extensive set of inpatient and outpatient discharge records (including diagnoses and procedures data) integrated with hospital claims data. HPD has visibility into more than 80% of all inpatient hospital claims nationwide and 100% of Medicare-reimbursed hospital inpatient and outpatient discharges. To account for non-Medicare hospital discharge information, HPD leverages non-Medicare medical claims data linked to individual facilities via physician affiliations and projects this data based on a combination of non-Medicare coverage metrics and hospital-level profiling information. Data are effective as of December 2018.